EMAILED
5/5/2022

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF AIR QUALITY
STATE STREET COMMONS
100 W. WATER STREET, SUITE 6A
DOVER, DELAWARE 19904

ENGINEERING & COMPLIANCE

PHONE
(302) 739-9402

May 5, 2022

BioEnergy Devco
28338 Enviro Way
Seaford, Delaware, 19973

ATTENTION: Peter Ettinger
Chief Development Officer

SUBJECT: **Request for Additional Information & Clarification**

Dear Mr. Ettinger:

Thank you for providing a prompt response to the Department's March 30, 2022, letter requesting additional information related to the permit application submitted for the proposed construction of an anaerobic digestion system and associated biogas upgrade and air pollution control equipment. As you are aware, the Department has a few follow-up questions related to the information provided in your April 7, 2022, response, as well as a couple of additional questions which were not previously asked.

These items were discussed during an April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. The following numbered list summarizes these questions, the Department's understanding of the response provided during the meeting, and a request for additional information or written response related to the subjects:

1. Item 5.a in the Department's March 30, 2022, request for additional information letter asked for clarification on which method would be used in monitoring the H_2S and VOC/siloxane removal vessels for breakthrough. Your April 7, 2022, response letter included the following statement:

   Use of both methods provides redundancy in monitoring breakthrough in the H2S and VOC/siloxane removal vessels. The pressure drop can be monitored remotely via the HMI, while the sampling between vessels will be part of the operator's daily checklist.

   In addition to this response (and in response to other questions included in the request), the response letter included specifications of the proposed equipment as an attachment at the end of the letter. At the bottom of the page summarizing the specifications for the H_2S removal media, the following statement was provided:

   040522 GJM – H2S removal expected to be 100% removal efficiency assuming proper monitoring (including calibration of online H2S analyzer) of breakthrough and change out frequency of media if and when H2S breakthrough is seen.

   Please provide the H_2S analyzer manufacturer's recommended calibration and maintenance requirements since that is an integral part of ensuring that the 100% removal efficiency of the pollutant is achieved.

For the VOC/siloxane adsorption media, the April 7, 2022, response letter proposed weekly sampling between the in-series vessels by use of "draeger tube or portable gas analyzer". No calibration or maintenance information is required if draeger tubes are the option used, but the manufacturer's calibration and maintenance recommendations are required if a portable gas analyzer is chosen as the monitoring method.

In addition to the calibration and maintenance recommendations for the monitoring equipment proposed for use in relation to the H_2S and VOC/siloxane removal media, please provide the manufacturer-recommended maintenance recommendations for the proposed flare, RTO, and emergency generator equipment. This may include, but is not necessarily limited to, calibrations, tune-ups, inspections, or other routine preventative maintenance that is recommended to ensure proper operation of the proposed equipment.

2. Item 6 in the Department's March 30, 2022, request for additional information stated the following:

The "Untreated biogas Characteristics" section of the "Filter Operations" page indicates that data from existing biogas plants was used in modeling of the project and estimating biogas quantity and characteristics. Please elaborate on the process that was used in estimating the quantity and composition of biogas expected to be generated in the proposed AD system as it relates to the type and quantity of feedstock proposed for use.

The following statement was provided in the April 7, 2022, response letter:

Bioenergy Devco has built and assisted operations and maintenance for approximately 240 plants since 1996. The expected biogas quantity and quality is derived from said operating experience. Given that no two plants are identical, we believe the parameters stated in the air permit applications represent the best available information and are most representative of future operating conditions.

Considering that this source is unique, I believe this explanation is acceptable with the condition that emissions from the RTO are tested upon startup of the equipment. The specific requirements related to testing will be specified in the draft permit.

Aside from ensuring compliance with the permit's emission limitations, during the April 25, 2022, meeting we discussed the methods by which estimated emissions from the process would be calculated. It is my understanding through our conversation that emissions from natural gas combustion in the RTO and flare will be estimated through the measurement of fuel flow to each source and using the AP-42 emission factors submitted in the permit application.

Emissions generated from the combustion of tailgas by the flare shall be calculated by measuring the flow of that gas stream and using the emission factors submitted in the permit application.

It is my understanding that emission factors for the combustion of tailgas in the RTO will be determined through measuring the flow of gas and emissions generated on the day(s) of testing. Because it will be impossible to separate the emissions generated from the combustion of natural gas from the emissions generated from the combustion of tailgas, any emissions in excess of the emissions expected from the combustion of natural gas will be attributed to the tailgas combustion unless an alternative method is determined.

I am not requesting any additional response to this item unless an alternative method of estimating emissions is proposed or you have additional comments to add on the subject.

3. The following questions and responses were asked and provided regarding the solid feedstock receiving area (Item 7.a in the March 30, 2022, letter requesting additional information):

   The March 30, 2022, request for additional information asked for "The sequence of events involved in the unloading and transfer of solid feedstock and an estimated residence time of material in the area prior to transfer into the pre-tanks." The April 7, 2022, letter to the Department provided the following response:

   Solid deliveries will enter the building, back in, and offload onto the walking floor area. The feedstock is then immediately conveyed and mixed with liquid feedstocks before being pumps to pre-tanks. The unloading and processing of a single load is approximately 30 minutes.

   The March 30, 2022, request for additional information letter also asked for "A plan of action in the event that equipment malfunction, for example, prevents the unloading and transfer of solid feedstock from occurring in the manner in which it was designed." The April 7, 2022, letter to the Department provided the following response:

   The design of the plant includes preventative measures to ensure that, in the event of an equipment malfunctions, the solid feedstock will be handled as designed:

   There are three walking floor feeders. Typically, only one walking floor is required, or two may be required for maximum conditions. In the event one feeder malfunctions, there will be either one or two others available for use.

   There will be an inventory of spare parts. In the event of an equipment malfunction, the other feeders will be used while maintenance is being done on the malfunctioning part.

   I feel that these responses are acceptable but, as discussed during the April 25, 2022, meeting, I am proposing that requirements to prohibit the stockpiling of feedstock and requiring the stoppage of feedstock receipt and/or shutdown of receiving area ventilation system in the event that there is an unplanned malfunction of the feedstock transfer system that prevents feedstock from being transferred to the pre-tanks.

   In lieu of an estimate of emissions from this and other processes, I am also proposing requirements to conduct daily qualitative odor surveys at areas of the site where odors could be generated. This shall include, but is not necessarily limited to, the solid feedstock receiving area, feedtank separator, and any other locations where feedstock or digestate could reasonably be vented to the atmosphere. In the event that excessive odors are observed, corrective action and fenceline odor surveys would be triggered.

   As discussed during the April 25, 2022, meeting, the frequency of the odor surveys may be reduced in response to the findings of emissions testing or due to the lack of odors identified over an extended period of conducting the surveys. No additional response to this item is required unless there are any proposed alternatives to conducting these surveys, or additional comments to add on the matter.

4. The following question and response were asked and provided regarding the feedtank separators portion of the process (Item 7.b in the March 30, 2022, letter requesting additional information):

   In the March 30, 2022, request for additional information I stated that it was my "understanding that filters will be implemented to control odors". I indicated this understanding because of the following statement which was provided in the "Engineering Report":

The facility equipment that will have process odor control is mainly the feedtank separators prior to the solid separation of digestate downstream of the digesters. This equipment will have process filters to eliminate odors. Filters will be changed according to the maintenance requirements for correct functioning of the system. Changes will be done with the use of all required Personal Protective Equipment.

Additionally, the March 30, 2022, letter asked you to "quantify and submit the pre- and post-control emissions anticipated to be generated in this area along with the specifications of the filters proposed for use." The April 7, 2022, letter to the Department provided the following response:

In lieu of use of a filter(s) to control potential VOC emissions (odors), Bioenergy Devco proposes to sample/monitor potential VOC/odor emission sources within 6 months of achieving steady-state operations after plant startup. Once data is obtained, the data will be evaluated and controls will be added, if necessary to comply with applicable regulations.

This issue was discussed during the April 25, 2022, meeting and it was my understanding that filters are no longer being considered for use in this area of the process. Please provide written confirmation that this is the case and any additional information you feel is necessary.

I also agree that sampling emissions from this location in the process is the best method of understanding the air quality impact. Requirements to conduct testing of emissions following startup of the proposed equipment will be included in the draft permit. In the event that testing reveals emissions above the permitting threshold, an application for this emission source shall be submitted to the Department within thirty (30) days of receiving the test report, and additional controls may be required.

5. Item 8 in the Department's March 30, 2022, request for additional information letter asked for verification that the emissions estimated in the permit application were correct and that additional emissions of pollutants such as NO_X, CO, and PM were not anticipated from the combustion of the tailgas in the RTO & flare. For the flare, some additional emissions (other than those generated from the combustion of natural gas) of CO and NO_X were estimated from the combustion of tailgas. No additional emissions of these pollutants were estimated in RTO.

   The April 7, 2022, letter to the Department provided the following response:

   Additional emissions of NOx, CO or PM are not expected in the process of combusting the biogas.

   This document from the United Nations Framework Convention on Climate Change suggests that the composition of biogas from anaerobic digestion operations is typically "50 to 70% CH_4 and 30 to 50% CO_2, with traces of H_2S and NH_3 (1 to 5%)." The typical composition of biogas generated by anaerobic digestion systems defined in the document (including compounds like CH_4, CO_2, and H_2S) generally aligns with information included in the permit application. The one exception being that NH_3 has not been included in estimates of the biogas stream composition to date.

   During the April 25, 2022, meeting, the question of whether NH_3 could reasonably be a pollutant generated by the proposed AD system was asked. The answer provided was that NH_3 is not expected to be a pollutant generated by the proposed AD system. Please provide written confirmation that this is the case and any additional information you feel is necessary.

6. The following questions and responses were asked and provided regarding the storage of solid digestate (Item 11 in March 30, 2022, letter requesting additional information):

   The request for additional information letter asked if "this storage bunker [would] be vented to the atmosphere?"

The April 7, 2022, letter to the Department provided the following response:

Yes.

The Department's letter included the follow-up question, "if so, have potential emissions from the storage of solid digestate been quantified?"

The April 7, 2022, letter to the Department provided the following response:

No potential emissions from the storage bunker have been quantified; however, based on operating experience at other similar facilities, no emissions are expected to exceed applicable regulatory thresholds.

This issue was addressed in the April 25, 2022, meeting between the Department and representatives of BioEnergy Devco. It is my understanding that the solid digestate storage bunker and the previously addressed feedtank separators section of the process are the same potential source of emissions. Please provide written confirmation that this is the case and any additional information you feel is necessary.

7. Item 12 in the Department's March 30, 2022, request for additional information was in reference to information provided in the permit application regarding temperature excursions related to the H_2S and VOC/siloxane carbon adsorption systems. I had interpreted these excursions to mean that there could be a period during startup of the AD system in which the temperature of the adsorption media would be outside of the range for the media to function properly and remove the intended pollutants. The following questions were asked in the March 30, 2022, request for additional information, and the italicized text in each sub-bullet includes the information provided in the April 7, 2022 response letter:

    - What causes the excursions?
        - *The media reacting with O2/H2O in the micropores.*
    - Is the temperature of the H2S and VOC/siloxane adsorption beds continuously monitored and recorded?
        - *The temperature can be seen in upstream and downstream transmitters.*
    - How long are the excursions expected to last?
        - *A few hours at most. The manufacturer has a method of "treating" and inerting the media prior to putting it online that has drastically reduced the temperature excursions that are typically seen. This includes introducing biogas after inerting and letting the gas assimilate with the vessel and media prior to introduction of live process gas. In the manufacturer's experience, this has reduced the length, as well as the temperature range of the excursion.*
    - What is the expected impact of the excursion on the composition of the gas stream that is eventually emitted to the atmosphere?
        - *Little to none, as the temperature is not changing the CH4/CO2 mixture.*
    - Are there any other expected instances where excursions are expected to occur?
        - *No, assuming proper procedures are followed regarding inerting.*

    This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. It is my understanding, based on responses provided during the meeting, that the excursion events are not expected to have an impact on the adsorption media's ability to fully remove the intended contaminants from the biogas stream. Please provide written confirmation that this is the case and any additional information you feel is necessary.

8. Unrelated to questions previously asked in the March 30, 2022, request for additional information, the proposed site drawings included in the application showed the presence of a "hot water boiler" on site. This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. During this meeting it was stated that the boiler was an existing boiler left at the site from the days when it operated for the purposes of Perdue's pellet and prill operations.

   While the exact size and type of fuel combusted by the boiler was not known during the meeting, it was estimated that the boiler was likely below the Department's permitting threshold for external combustion equipment. It was also stated that the boiler would likely be removed and replaced by a new boiler. In either case, Section 2.0 of Appendix A to 7 DE Admin. Code 1102 ("Permits") includes the following relevant exceptions from permitting requirements at minor sources:

   2.0 Except as provided for in 7 DE Admin. Code 1122, "Restriction on Quality of Fuel in Fuel Burning Equipment," external combustion fuel burning equipment which:
   2.1 Uses any fuel and has a rated heat input of less than 10 million British-Thermal Units (BTUs) per hour.
   2.2 Uses only natural gas, LP gas, or other desulfurized fuel gas and has a rated heat input of less than 15 million British-Thermal Units (BTUs) per hour.

   Should the existing boiler, or any future replacements of the existing boiler, exceed the applicable threshold specified in Section 2.0 of Appendix A to 7 DE Admin. Code 1102, an application for its construction or operation shall be submitted, prior to commencing operation of construction, as applicable.

9. Unrelated to questions previously asked in the March 30, 2022, request for additional information letter, it was noticed that no information regarding the on-site storage of finished biogas was provided in the application. This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. During this meeting it was indicated that no on-site biogas storage would occur downstream of the biogas upgrade system, and that all biogas produced would either be loaded onto trucks for off-site transfer or injected directly into a natural gas transmission pipeline, upon completion. Please provide written confirmation that this is the case and any additional information you feel is necessary.

Requested information may be sent to me electronically as it becomes available. Please contact me at (302) 739-9402 if you have any questions or concerns.

Sincerely,

Jordan Matthews, P.E.
Environmental Engineer
Engineering & Compliance Section

ASM:JLF:JGM
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pc: Dover File

MEMORANDUM

TO: Amy S. Mann, P.E. ASM

THROUGH: Joanna L. French, P.E. JLF

FROM: Jordan G. Matthews, P.E. JGM

SUBJECT: BioEnergy Development Group, LLC
Request for Additional Information & Clarification

DATE: April 26, 2022

BACKGROUND

On March 30, 2022, the Department sent a "Request for Additional Information" letter to representatives of BioEnergy Devco regarding the application for the proposed construction an anaerobic digestion (AD) process at the BioEnergy Innovation Center (BIC) in Seaford. This letter included thirteen (13) different topics for which additional information or clarification was requested. A letter dated April 7, 2022, was received electronically on April 11, 2022 and included responses to each of the questions. Upon review of the answers, a number of additional follow-up questions were identified. These questions, as well as a couple of questions which were not originally identified, were discussed during an April 25, 2022, in-person meeting between myself, Joanna French and the following representatives of BioEnergy Devco:

- Peter Ettinger, Chief Development Officer
- Christine McKiernan, Managing Director Engineering & Construction
- Brian Lyncha, Senior Project Manager for Verdantas, LLC
- David Small, Mid-Atlantic Client Services for Verdantas, LLC

The following list summarizes the issues identified and discussed, along with the responses provided and additional information requested.

1. Item 5.a in the Department's March 30, 2022, request for additional information letter asked for clarification on which method would be used in monitoring the H_2S and VOC/siloxane removal vessels for breakthrough. The April 7, 2022, response letter included the following statement:

   Use of both methods provides redundancy in monitoring breakthrough in the H2S and VOC/siloxane removal vessels. The pressure drop can be monitored remotely via the HMI, while the sampling between vessels will be part of the operator's daily checklist.

   In addition to this response (and in response to other questions included in the request), the response letter included specifications of the proposed equipment as an attachment at the end of the letter. At the bottom of the page summarizing the specifications for the H_2S removal media, the following statement was provided:

   040522 GJM – H2S removal expected to be 100% removal efficiency assuming proper monitoring (including calibration of online H2S analyzer) of breakthrough and change out frequency of media if and when H2S breakthrough is seen.

   I am asking that BioEnergy Devco provide the manufacturer's recommended calibration and maintenance requirements for the H_2S analyzer since that is an integral part of ensuring that the 100% removal efficiency of the pollutant is achieved.

For the VOC/siloxane adsorption media, the April 7, 2022, response letter proposed weekly sampling between the in-series vessels by use of "draeger tube or portable gas analyzer". No calibration or maintenance information is required if draeger tubes are the option used, but the manufacturer's calibration and maintenance recommendations are required if a portable gas analyzer is chosen as the monitoring method.

In addition to the calibration and maintenance recommendations for the monitoring equipment proposed for use in relation to the H_2S and VOC/siloxane removal media, I am also asking BioEnergy Devco to provide the manufacturer-recommended maintenance recommendations for the proposed flare, RTO, and emergency generator equipment. This may include, but is not necessarily limited to, calibrations, tune-ups, inspections, or other routine preventative maintenance that is recommended to ensure proper operation of the proposed equipment.

2. Item 6 in the Department's March 30, 2022, request for additional information stated the following:

   The "Untreated biogas Characteristics" section of the "Filter Operations" page indicates that data from existing biogas plants was used in modeling of the project and estimating biogas quantity and characteristics. Please elaborate on the process that was used in estimating the quantity and composition of biogas expected to be generated in the proposed AD system as it relates to the type and quantity of feedstock proposed for use.

   The following statement was provided in the April 7, 2022, response letter:

   Bioenergy Devco has built and assisted operations and maintenance for approximately 240 plants since 1996. The expected biogas quantity and quality is derived from said operating experience. Given that no two plants are identical, we believe the parameters stated in the air permit applications represent the best available information and are most representative of future operating conditions.

   Considering that this source is unique, I am willing to accept this explanation with the condition that emissions from the RTO are eventually tested upon startup of the equipment. The specific requirements related to testing will be specified in the draft permit.

   Aside from ensuring compliance with the permit's emission limitations, during the April 25, 2022, meeting we discussed the methods by which estimated emissions from the process would be calculated. It is my understanding through our conversation that emissions from natural gas combustion in the RTO and flare will be estimated through the measurement of fuel flow to each source and using the AP-42 emission factors submitted in the permit application.

   Emissions generated from the combustion of tailgas by the flare shall be calculated by measuring the flow of that gas stream and using the emission factors submitted in the permit application.

   It is my understanding that emission factors for the combustion of tailgas in the RTO will be determined through measuring the flow of gas and emissions generated on the day(s) of testing. Because it will be impossible to separate the emissions generated from the combustion of natural gas from the emissions generated from the combustion of tailgas, any emissions in excess of the emissions expected from the combustion of natural gas will be attributed to the tailgas combustion.

I am not requesting any additional response to this item unless an alternative method of estimating emissions is proposed.

3. The following questions and responses were asked and provided regarding the solid feedstock receiving area (Item 7.a in the March 30, 2022, letter requesting additional information):

   The March 30, 2022, request for additional information asked for "The sequence of events involved in the unloading and transfer of solid feedstock and an estimated residence time of material in the area prior to transfer into the pre-tanks." The April 7, 2022, letter to the Department provided the following response:

   Solid deliveries will enter the building, back in, and offload onto the walking floor area. The feedstock is then immediately conveyed and mixed with liquid feedstocks before being pumps to pre-tanks. The unloading and processing of a single load is approximately 30 minutes.

   The March 30, 2022, request for additional information letter also asked for "A plan of action in the event that equipment malfunction, for example, prevents the unloading and transfer of solid feedstock from occurring in the manner in which it was designed." The April 7, 2022, letter to the Department provided the following response:

   The design of the plant includes preventative measures to ensure that, in the event of an equipment malfunctions, the solid feedstock will be handled as designed:

   There are three walking floor feeders. Typically, only one walking floor is required, or two may be required for maximum conditions. In the event one feeder malfunctions, there will be either one or two others available for use.

   There will be an inventory of spare parts. In the event of an equipment malfunction, the other feeders will be used while maintenance is being done on the malfunctioning part.

   I feel that these responses are acceptable but am considering including requirements to prohibit the stockpiling of feedstock in the receiving area (or elsewhere on site) and requiring the stoppage of feedstock receipt and/or shutdown of receiving area ventilation system in the event that there is an unplanned malfunction of the feedstock transfer system that prevents feedstock from being transferred to the pre-tanks.

   In lieu of an estimate of emissions from this and other processes, I am also considering requirements to conduct daily qualitative odor surveys at areas of the site where odors could be generated. This shall include, but is not necessarily limited to, the solid feedstock receiving area, feedtank separator, and any other locations where feedstock or digestate could reasonably be vented to the atmosphere. In the event that excessive odors are observed, corrective action and fenceline odor surveys would be required.

   As discussed during the April 25, 2022, meeting, the frequency of the odor surveys could be reduced in response to the findings of emissions testing or due to the lack of odors identified over an extended period of conducting the surveys. No additional response to this item is required unless there are any proposed alternatives to conducting these surveys, or additional comments to add on the matter.

4. The following question and response were asked and provided regarding the feedtank separators portion of the process (Item 7.b in the March 30, 2022, letter requesting additional information):

   In the March 30, 2022, request for additional information I stated that it was my "understanding that filters will be implemented to control odors". I indicated this understanding because of the following statement which was provided in the "Engineering Report":

   The facility equipment that will have process odor control is mainly the feedtank separators prior to the solid separation of digestate downstream of the digesters. This equipment will have process filters to eliminate odors. Filters will be changed according to the maintenance requirements for correct functioning of the system. Changes will be done with the use of all required Personal Protective Equipment.

   I additionally asked BioEnergy to "quantify and submit the pre- and post-control emissions anticipated to be generated in this area along with the specifications of the filters proposed for use." The April 7, 2022, letter to the Department provided the following response:

   In lieu of use of a filter(s) to control potential VOC emissions (odors), Bioenergy Devco proposes to sample/monitor potential VOC/odor emission sources within 6 months of achieving steady-state operations after plant startup. Once data is obtained, the data will be evaluated and controls will be added, if necessary to comply with applicable regulations.

   This issue was discussed during the April 25, 2022, meeting and it is my understanding that filters are no longer being considered for use in this area of the process. I have asked that BioEnergy confirm that this is the case and provide additional information, if necessary.

   I agree that sampling emissions from this location in the process is the best method of understanding the air quality impact. Requirements to conduct testing of emissions following startup of the proposed equipment will be included in the draft permit. In the event that testing reveals emissions above the permitting threshold, an application for this emission source shall be submitted to the Department within thirty (30) days of receiving the test report, and additional controls may be required.

5. Item 8 in the Department's March 30, 2022, request for additional information letter asked for verification that the emissions estimated in the permit application were correct and that additional emissions of pollutants such as NO_X, CO, and PM were not anticipated from the combustion of the tailgas in the RTO & flare. For the flare, some additional emissions (other than those generated from the combustion of natural gas) of CO and NO_X were estimated from the combustion of tailgas. No additional emissions of these pollutants were estimated in RTO.

   The April 7, 2022, letter to the Department provided the following response:

   Additional emissions of NOx, CO or PM are not expected in the process of combusting the biogas.

   This document from the United Nations Framework Convention on Climate Change suggests that the composition of biogas from anaerobic digestion operations is typically "50 to 70% CH_4 and 30 to 50% CO_2, with traces of H_2S and NH_3 (1 to 5%)." The typical composition of biogas generated by anaerobic digestion systems defined in the document (including compounds like CH_4, CO_2, and H_2S) generally aligns with information included in the permit application. The one exception being that NH_3 has not been included in estimates of the biogas stream composition to date.

During the April 25, 2022, meeting, the question of whether NH_3 could reasonably be a pollutant generated by the proposed AD system was asked. The answer provided was that NH_3 is not expected to be a pollutant generated by the proposed AD system. I am asking BioEnergy to confirm that this is the case and provide additional information, if necessary.

6. The following questions and responses were asked and provided regarding the storage of solid digestate (Item 11 in March 30, 2022, letter requesting additional information):

   The request for additional information letter asked if "this storage bunker [would] be vented to the atmosphere?"

   The April 7, 2022, letter to the Department provided the following response:

   Yes.

   The Department's letter included the follow-up question, "if so, have potential emissions from the storage of solid digestate been quantified?"

   The April 7, 2022, letter to the Department provided the following response:

   No potential emissions from the storage bunker have been quantified; however, based on operating experience at other similar facilities, no emissions are expected to exceed applicable regulatory thresholds.

   This issue was addressed in the April 25, 2022, meeting between the Department and representatives of BioEnergy Devco. It is my understanding that the solid digestate storage bunker and the previously addressed feedtank separators section of the process are the same potential source of emissions. I have asked that BioEnergy Devco confirm that this is the case and provide additional information, if necessary.

7. Item 12 in the Department's March 30, 2022, request for additional information was in reference to information provided in the permit application regarding temperature excursions related to the H_2S and VOC/siloxane carbon adsorption systems. I had interpreted these excursions to mean that there could be a period during startup of the AD system in which the temperature of the adsorption media would be outside of the range for the media to function properly and remove the intended pollutants. The following questions were asked in the March 30, 2022, request for additional information, and the italicized text in each sub-bullet includes the information provided in the April 7, 2022 response letter:

   - What causes the excursions?
     - *The media reacting with O2/H2O in the micropores.*
   - Is the temperature of the H2S and VOC/siloxane adsorption beds continuously monitored and recorded?
     - *The temperature can be seen in upstream and downstream transmitters.*
   - How long are the excursions expected to last?
     - *A few hours at most. The manufacturer has a method of "treating" and inerting the media prior to putting it online that has drastically reduced the temperature excursions that are typically seen. This includes introducing biogas after inerting and letting the gas assimilate with the vessel and media prior to introduction of*

live process gas. In the manufacturer's experience, this has reduced the length, as well as the temperature range of the excursion.

- What is the expected impact of the excursion on the composition of the gas stream that is eventually emitted to the atmosphere?
    - *Little to none, as the temperature is not changing the CH4/CO2 mixture.*
- Are there any other expected instances where excursions are expected to occur?
    - *No, assuming proper procedures are followed regarding inerting.*

This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. Joanna and I were informed that the excursion events are not expected to have an impact on the adsorption media's ability to fully remove the intended contaminants from the biogas stream. I am asking BioEnergy Devco to confirm that this is the case and provide additional information, if necessary.

8. Unrelated to questions previously asked in the March 30, 2022, request for additional information, proposed site drawings included in the application showed the presence of a "hot water boiler" on site. This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. Joanna and I were informed that the boiler was an existing boiler left at the site from the days when it operated for the purposes of Perdue's pellet and prill operations.

   While the exact size and type of fuel combusted by the boiler was not known, it was estimated that the boiler was likely below the Department's permitting threshold for external combustion equipment. We were also informed that the boiler would likely be removed and replaced by a new boiler. In either case, Section 2.0 of Appendix A to 7 DE Admin. Code 1102 ("Permits") includes the following relevant exceptions from permitting requirements at minor sources:

   2.0 Except as provided for in 7 DE Admin. Code 1122, "Restriction on Quality of Fuel in Fuel Burning Equipment," external combustion fuel burning equipment which:
   2.1 Uses any fuel and has a rated heat input of less than 10 million British-Thermal Units (BTUs) per hour.
   2.2 Uses only natural gas, LP gas, or other desulfurized fuel gas and has a rated heat input of less than 15 million British-Thermal Units (BTUs) per hour.

   Should the existing boiler, or any future replacements of the existing boiler, exceed the applicable threshold specified in Section 2.0 of Appendix A to 7 DE Admin. Code 1102, an application for its construction or operation shall be submitted, prior to commencing operation of construction, as applicable.

9. Unrelated to questions previously asked in the March 30, 2022, request for additional information letter, it was noticed that no information regarding the on-site storage of finished biogas was provided in the application. This issue was discussed at the April 25, 2022, meeting between representatives of the Department and BioEnergy Devco. Joanna and I were informed that no on-site biogas storage would occur downstream of the biogas upgrade system, and that all biogas produced would either be loaded onto trucks for off-site transfer or injected directly into a natural gas transmission pipeline, upon completion. I am asking that BioEnergy Devco confirm that this is the case and provide additional information, if necessary.

RECOMMENDATIONS

I recommend that the attached letter outlining the additional information required in order to complete the review of the application be sent to the Company.

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