From: "Day, Jan L., Celanese/US" <jan.day@celanese.com>
To: Erica LeDoux/R6/USEPA/US@EPA
Cc: "Nelwyn Morhmann (Nelwyn.Mohrmann@sageenvironmental.com)" <Nelwyn.Mohrmann@sageenvironmental.com>
Date: 02/01/2013 07:15 AM
Subject: Celanese Methanol application supplemental information

Erica,

Thank you for meeting with us yesterday! We greatly appreciate your time and effort on this project and responding back to us promptly. The additional information you requested is provided below and in the corresponding attachments. I am available today if you would like to discuss any of the responses. We trust that, with this information, you will be able to deem the application "complete."

During our call, you also mentioned Celanese's Biological Assessment. On Monday, Celanese met with AC Demaual to discuss these reports, and early next week, Celanese will provide the additional information that he and Tina Arnold requested.

Item 1: Provide clarification on the GHG emissions from MeOH loading being controlled by a third party thermal oxidizer.
Response: Currently the third party thermal oxidizer is using methane as a fuel in order to maintain the required heat capacity it needs for complete combustion. Any methanol loading vapors sent to the thermal oxidizer would reduce the amount of methane needed as a supplemental fuel. Using the formula in 40 CFR Part 98 (GHG Reporting Rule) for Tier 3 combustion sources, the thermal oxidizer would emit similar GHG emissions using methanol as a supplemental fuel in place of methane because methane and methanol contain the same number of carbons. An example calculation is attached that compares CO_2 generated from the combustion of both methanol and methane

Item 2: Include notes/descriptions of the abbreviations used by Celanese in the process flow diagram.
Response: Attached is the updated process flow diagram that defines all the acronyms used in the PFD in the notes section.

Item 3: Update the process description to include discussion on the SCR.
Response: Below is the updated Section 1.4, paragraph 3 from the permit application (the updates are **bolded**).

The partially reformed gas stream from the Primary reformer is sent to the Secondary reformer where it is reacted with oxygen and the remaining methane converted to synthesis gas. Combustion emissions from the Primary reformer are routed to a single stack (EPN: REFORM). ***The reformer stack will be equipped with a selective Catalytic Reduction (SCR) system to reduce emissions of Nitrogen Oxides (NOx). Ammonia will be used as the reductant in the process thereby converting NOx into nitrogen and water. Therefore, the SCR system will not generate any GHG emissions****. The process synthesis gas leaving the Secondary reformer is cooled, compressed and sent to the converter loop where CO, CO_2, and H_2 are reacted to produce crude methanol, a mixture of methanol and water. Process streams including the synthesis gas and converted methanol will be monitored using process analyzers. Most of the steam that is required to operate the Methanol plant is produced by heat recovery from the synthesis gas leaving the secondary reformer; the remainder is produced by heat recovery from the Methanol converters.*

Item 4: Provide clarification on the energy source of the syngas compression system**.**
Response: The syngas compression system will receive its energy from a steam driven turbine. Therefore, this will not be a source of GHG emissions.

Item 5: Provide a description on the LDAR program (28LAER) that will be used, including how leaks will be addressed.
Response: The TCEQ's 28 LAER program is similar to the MACT HON Equipment Leak program. It requires periodic monitoring of piping components and equipment for leaks, with a leak definition of 500 ppmv. Any AVO indication of leaks (such as a drip) would also be considered a leak. As we discussed, Celanese's typical practice allows the LDAR monitoring technician to complete the first attempt immediately when he finds a leak. If the necessary repair is beyond the technician's skill set or if process conditions do not allow the technician to make the repair immediately, the first attempt at repair will be completed within 5 days from when the leak was discovered. Within 15 days after a leak is discovered, the plant will verify that the leak has been stopped with a leak detection monitor (i.e. Method 21). Attached is a copy of the TCEQ's boiler plate language of the 28LAER program, as reference.

Item 6: Provide the Reformer operating limit of 33 MMBtu (HHV) / metric ton of methanol produced in short tons instead of metric ton.
Response: Using a conversion factor of 1.10 short tons per metric ton, the reformer would have a limit of 30 MMBtu (HHV)/short ton of methanol produced.

Feel free to contact either me at 281-474-8802 or Nelwyn at 512-258-8500 if you would like any additional information.

Jan Day
Staff Environmental Engineer
Celanese Chemicals


Boiler Plant Conditions_rev28laer.pdf


Celanese GHG Application PFD-013113.pdf


Celanese MeOH Loading Calculation.pdf