UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

NOV 2 0 2012

Mr. Paresh Bhakta
Site Director
Celanese Ltd. Clear Lake Plant
P.O Box 58190
Houston, TX 77258-8190

RE: Application Completeness Determination for Celanese, Ltd.
Greenhouse Gas Prevention of Significant Deterioration Permit
Clear Lake Plant – Methanol Unit Plant

Dear Mr. Bhakta:

This letter is in response to your application received by this office on August 10, 2012 for a Greenhouse Gas Prevention of Significant Deterioration permit. After our review of the application and supporting information, we have determined that this application is incomplete based on the requirements of 40 CFR 124 and additional information is required to begin the processing of the draft application. Enclosed is a list of the additional information required (see Enclosure).

The requested information is necessary for EPA to develop a Statement of Basis and Rationale for the terms and conditions for the requisite permit. As we develop our preliminary determination, it may be necessary for EPA to request additional clarifying or supporting information. If the supporting information substantially changes the original scope of the permit application, an amendment or new application may be required.

The EPA may not issue a final permit without determining that: 1) there will be no effects on threatened or endangered species or their designated critical habitat, or 2) until it has completed consultation under Section 7(a)(2) of the Endangered Species Act (16 USC § 1536). In addition, the EPA must undergo consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA) (16 USC § 470f). As a reminder, NHPA implementing regulations require that EPA provide information to the public with an opportunity for participation in the Section 106 process. 36 CFR § 800.2(d). We look forward to receiving the Biological Assessment and Cultural Resources Reports that you have agreed to prepare for EPA for our use in complying with these statutes.

If you have any questions concerning the review of your application, please contact Melanie Magee of my staff at (214) 665-7161.

Sincerely yours,

Carl E. Edlund, P.E.
Director
Multimedia Planning and
Permitting Division

ENCLOSURE
EPA Completeness Comments
Celanese, Ltd.
Application for Greenhouse Gas Prevention of Significant Deterioration Permit
Clear Lake Plant – Methanol Unit

1. On page 1-2 of the permit application, Celanese indicates that "Finished methanol is fed to the Acetic acid plant or shipped from the Methanol plant by truck, railcar and/or pipeline. The loading emissions are controlled by a 3rd party. No net increase in GHG emissions from 3rd party will result since heat requirements are off-set by reduction in natural gas required." The 3rd party operator for the loading operations supports the Celanese Methanol plant, therefore additional information regarding the GHG emission increases and decreases are required as part of this application.

2. Please provide supplemental data to the process flow diagram to identify all pieces of equipment and the GHG emission sources with associated emission point numbers (EPN). Please indicate utilities, such as cooling towers, steam boilers, etc. Also, include the compressors, sulfur removal system, saturator, pre-heaters, and three-column distillation train. Also include all feed, product and recycle streams to and from this equipment. On page 1-2 of the permit application, it is indicated that the storage area consist of five existing fixed-roof storage tanks and a proposed new internal floating roof (IFR). Will there be emission increases from the existing tanks? If so, please provide the emission rate increases for the existing tanks. The application does not include emission rates for the proposed IFR tank. In addition, the tank scrubber is identified on the process flow diagram as an emission source with an associated emission source number, but calculations of GHG emissions are not present in Appendix A. If this is a source of GHG, please supplement BACT analysis to include the tank scrubber and emission calculations.

3. Being mindful of EPA's PSD and Title V Permitting Guidance for GHG dated March, 2011 on page 17 which states the following:

> "The CAA and corresponding implementing regulations require that a permitting authority conduct a BACT analysis on a case-by-case basis, and the permitting authority must evaluate the amount of emissions reductions that each available emissions-reducing technology or technique would achieve, as well as the energy, environmental, economic and other costs associated with each technology or technique. Based on this assessment, the permitting authority must establish a numeric emissions limitation that reflects the maximum degree of reduction achievable for each pollutant subject to BACT through the application of the selected technology or technique. However, if the permitting authority determines that technical or economic limitations on the application of a measurement methodology would make a numerical emissions standard infeasible for one or more pollutants, it may establish design, equipment, work practices or operational standards to satisfy the BACT requirement."

In addition to the proposed tons per year emission limit provided in the permit application, please propose output based or efficiency based limits for all GHG emission sources (e.g., lb or ton CO_2/Methanol produced (ton) or Heat Required (MMBtu)). Please provide an analysis that substantiates any reasons for infeasibility of a numerical emission limitation. For the emission

sources where numerical emission limitations are infeasible, please propose an operating work practice standard that can be practically enforceable.

4. On page 3-8 of the permit application the "Installation of Energy Efficiency Options" section describes the energy efficiencies that will be incorporated into the design of the reformer.

    a. What is the proposed monitoring strategy for the air preheater? We request details on the operating parameters you would propose to monitor and control to ensure proper combustion and heat transfer is occurring.
    b. What is the proposed monitoring, recordkeeping and compliance strategy to ensure maximum heat recovery from the primary and secondary reformer flue gas to the process and utility fluids used internally in the unit, i.e., flue gas stack temperature, steam pressures. Will the parameters be monitored continuously?
    c. Please provide supplemental discussion for the primary and secondary reformer's control strategy for the following operating parameters: feedstock/steam ratios, temperatures and pressures. What operating parameters are you proposing to monitor to minimize the amount of natural gas fed to the reformer for a given methanol capacity?
    d. Is the combustion turbine that will be used to generate electricity and meet internal demand a new or existing installation? Are there any new or increased emissions associated with the combustion turbine? Please document why the combustion turbine is not subject to PSD applicability and/or BACT, or please supplement the 5-step BACT analysis as appropriate to include the combustion turbine (See Comment #3 for proposing a BACT limit) including as necessary the combustion turbine on the process flow diagram with corresponding EPN and emission rate data along with any proposed monitoring and recordkeeping strategy to ensure combustion efficiency.
    e. Process gas will be captured and utilized as fuel allowing for a reduction in the amount of natural gas fuel required. The process gas is "high" in hydrogen content, further reducing the amount of GHG emissions. What is the anticipated hydrogen concentration in this stream?

5. On page 3-9 of the permit application, it is indicated that Celanese will utilize "high efficiency burners to reduce emissions from non-GHG pollutants…Subsequently, the fuel demands to produce an equivalent reforming firing duty will be lower than utilizing standard non-high efficiency burners." Please provide benchmark data that compares other industry existing or similar burners that utilize this same technology. Please provide details concerning the preventive maintenance on burners, frequency and recordkeeping. How often will burners be inspected? What recordkeeping requirements are you proposing? What will alert on-site personnel to problems?

6. On page 3-10 of the permit application, it is indicated that Best Operational Practices will include: 1) Celanese monitoring stack excess O_2 to ensure efficient combustion. The fuel requirements and combustion efficiency increase as the facility operates with more excess air; 2) Celanese's procedures for methanol converter catalyst activation generates less greenhouse gas emissions compared to other technologies using catalyst because the time required for start-up venting, and resulting volume of waste gas is significantly reduced.

    a. Will O_2 analyzers be utilized for monitoring the stack gas? Will this monitoring be continuous? What do you propose as the compliance monitoring and recordkeeping strategy to ensure that the target O2 concentration of 3%, which has been identified as the

target concentration to increase the thermal efficiency of the reformer by 5-25% on average, is maintained?

b. Please provide supporting data that compares the GHG emissions created by other technologies using catalyst that do not use the same procedures Celanese will use for methanol converter catalyst activation.

7. On page 3-12 of the permit application, you state "The Clear Lake Plant is located approximately 12 miles from Denbury Green Pipeline; however, the distance from the pipeline, the excessive cost of designing, constructing and operating the pipeline to transport compressed CO_2 to the Denbury Green Pipeline, and lack of similar demonstrated projects makes this sequestration option infeasible for this project." In addition on page 3-14, you indicate that using monoethanolamine (MEA) for capture of CO_2 from the exhaust gas is a "commercially mature technology" and that solvent scrubbing has been used in the chemical industry for separation of CO2 in exhaust streams.

   a. Please supplement the 5-step top down BACT analysis by supporting your cost analysis on equipment design including any conclusions on a cost per pound of CO2e removed basis, total annualized costs, and cost effectiveness for implementing CCS control technology for this project, safety or environmental concerns and any associated energy penalty that may result from the implementation of this add-on control and supports its elimination from your BACT consideration.

8. On page 3-15 of the permit application, you present additional costs for the project of $400,000,000 to provide pipeline hydrogen to the methanol reformer. Please provide supporting data that supports this cost estimate. (e.g. design, equipment cost, operation and maintenance cost, etc.), In addition, you provide the greenhouse gas (GHG) emissions that are created as a result of hydrogen (H_2) production as "8.89 pounds of greenhouse gas emissions per pound of hydrogen produced" and the GHG emissions that are avoided at the Clear Lake Plant from burning pipeline hydrogen as "7.02 pounds of greenhouse gas". Please provide supporting data and/or resources used to calculate the numbers presented.

9. On page 3-17 of the permit application, your selection of BACT for the flare is "good flare design." Please provide supplemental information that discusses the design and operation of the flare, i.e., percent combustion efficiency, percent emission reduction, proposed monitoring and recordkeeping strategy, maintenance schedule, etc. Will it be computer controlled? If so, will there be manual overrides? Please provide benchmark comparison data of this new flare system to similar or existing flares in the methanol industry. Was a flare gas recovery system considered? Please provide information regarding the vent composition of the stream to the flare.

10. For the BACT discussion, Section 3.5.5, please provide a basis for not proposing for the fugitive components the instrumented detection of methane under the TCEQ 28 LAER leak detection and repair (LDAR) program in conjunction with IR camera.

11. Please provide supplemental technical data to support the basis and rationale for the values calculated, i.e., maximum firing rates, fuel compositions and flow rates, operating hours, equipment design, heating values, loading factors, etc., for the Methanol Reformer and MSS emissions presented in the tables located in the Appendix of the application. Please include actual calculations performed to obtain the numerical values. Please provide technical resources

to support these calculations. How was the composition of the components in the flare vent gas determined? (e.g., stack testing).

12. The information on the feed and emissions to the methanol unit reformer (Appendix A) needs additional explanation such as the use of pure H2 fuel having the same mole% as that of natural gas fuel. Please also include the carbon factor (lbs of carbon/lb of fuel) in this table.

13. The Background section states that Celanese Clear Lake Plant is an "existing major source as defined within the Federal Prevention of Significant Deteriorations (PSD) Permit Program." Does this statement indicate the plant is an existing major stationary source for a regulated NSR pollutant that is not GHGs? Provide the necessary information for EPA to determine whether the applicability provisions of 40 CFR 52.21(b)(49)(iv) or 40 CFR 52.21(b)(49)(v) apply to the project.