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

MAY 02 2012

Mr. Michael VanDerSnick
Environmental Manager
Equistar Chemicals LP
P.O Box 777
Channelview, TX 77530

RE: Application Completeness Determination for Equistar Chemicals, L.P.
Greenhouse Gas Prevention of Significant Deterioration Permit
Channelview North-Methanol Unit Restart, Channelview, Texas

Dear Mr. VanDerSnick:

This letter is in response to your application received by this office on October 27, 2011 for a Greenhouse Gas Prevention of Significant Deterioration permit. After our initial review of the application and supporting information, we have determined that additional information is required to begin the processing of the draft application. Enclosed is a list of the information required (see Enclosure).

Upon receipt of the additional information, the Environmental Protection Agency (EPA) will prepare a completeness determination. 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.

Although not required as a part of our completeness determination, the EPA may not issue a final permit without determining that there will be no effects on endangered species or until it has completed consultation under Section 7 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 (16 USC 470f). To expedite these consultations, the EPA requests that permit applicants provide a Biological Assessment and a cultural resources report covering the project and action area to the EPA.

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

cc: Mr. Mike Wilson, P.E.
Director, Air Permits Division
Texas Commission on Environmental Quality

ENCLOSURE

EPA Completeness Comments
Equistar Chemicals, L.P.
Application for Greenhouse Gas Prevention of Significant Deterioration Permit
Channelview North-Methanol Unit Restart, Channelview, Texas

BACT Analysis

1. On page 9-5 of the permit application, you conclude that because of the excessive cost of designing, constructing and operating the pipeline to transport compressed CO_2 to the Denbury Green Pipeline (a commercial CO_2 pipeline) the sequestration option is infeasible for this project. Please supplement your BACT analysis by providing any additional technical information you may have to support this conclusion. Please provide your supporting cost analysis on equipment design including any conclusions on a cost per pound of CO_2e removed basis, total annualized costs, and cost effectiveness for implementing CCS control technology for this project and any associated energy penalty that may result from the implementation of this add-on control.

2. On page 5-1 of the permit application, you indicate "the unit also has the capability of injecting carbon dioxide as a supplemental feed." Was the construction of a CO2 recovery plant considered for this project? Please provide supplemental data that discusses the basis for its elimination from your consideration.

3. On page 9-13 of the permit application, you indicate that using monoethanolamine (MEA) for capture of CO_2 from the exhaust gas is a "commercially mature technology". Please provide detailed information to supplement the 5-step top down BACT analysis (e.g., safety or environmental concerns, design, equipment cost, maintenance and operation cost analysis, cost per pound of CO_2 removed) that supports its elimination from your BACT consideration.

4. On page 9-15 of the permit application, you indicate the furnace will combust natural gas as the primary fuel and may combust hydrogen (H_2) fuel gas as a secondary fuel when practicable and available. Please provide additional information pertaining to the use of H_2 as a secondary fuel gas to the furnace. What circumstances will allow or disallow hydrogen to be used as a secondary fuel? Please explain what precludes H_2 being used as the primary fuel in lieu of natural gas?

5. On page 9-8 of the permit application the "Installation of Energy Efficiency Options on the Furnaces" section indicates Equistar intends to increase the energy efficiency of the cracking furnaces. The application states "the furnace employed by Equistar incorporates many design features to provide continuous high efficiency operation." Please provide benchmarking data comparing the reformer furnace to other existing or similar sources, i.e., the percent energy efficiency of the various components outlined in the application, such as the firebox or radiant section, burners and convection section. Please include any manufacturer's technical data that supports your conclusions, as well as the associated

decrease in GHG per pound of product. Also provide any supporting data to substantiate operating and design improvements to the proposed furnace compared to the past operation and design, e.g., past energy consumed per ton of product and what will be the difference compared to the new construction, comparative benchmark studies to similar operations. On page 9-12 of the permit application, you state that the reformer furnace is designed for conditions that will maximize the carbon oxides (CO+CO2) yield to moles of natural gas ratio which will minimize the amount of natural gas fed to the reformer for a given methanol capacity. The permit application indicates that the yield relies on high outlet temperature and low pressure. How will these operating parameters be maintained? Will it be continuously monitored? Is it manually or computer driven? In order to minimize fuel gas usage, the process gas will be preheated in the convection section to the "maximum extent practicable before entering the radiant section." Further heat recovery will be utilized by preheating boiler feed water. How will heat recovery in the convection section be ensured? Will temperatures be continuously monitored? Is it manually or computer driven? What are the proposed recordkeeping and monitoring requirements? On page 9-13 of the permit application, you indicate the "design-basis of this reforming furnace is targeted to achieve 91% thermal efficiency" Please provide comparative benchmark studies to existing or similar sources. What operating parameters will be monitored to ensure the heat recovery efficiency? Per page 9-9, how will uniform distribution of the feed and heating in the tubes be ensured? Will the pressure drop down the length of each tube be continuously monitored? What will be the operating parameters that will ensure minimum excess air? Please include a discussion on how O2 analyzers will be utilized to determine optimum excess air to provide proper combustion. Per page 9-16, please provide further discussion as to how "careful control" will be ascertained for the furnace operating parameters pertaining to feedstock/steam ratios, temperatures, pressures, and residence times. What will be the monitoring method, recordkeeping requirements (e.g., computer or manual)?

6. On page 9-15 of the permit application, you indicate "new, high efficiency burners are to be retrofitted to further enhance overall energy efficiency, thereby reducing the GHG emission potential...the technologies being employed are proven..." Please provide manufacturer's data on the percent efficiency of burners compared to past design and comparative benchmark to similar or existing sources may have utilized the same retrofit enhancements. On page 9-10 of the permit application, you indicate "state-of-art computational flow dynamics modeling of the burner arrangement and burner flame pattern will be utilized to ensure proper firebox operation." How will this translate into operating parameters that will be monitored to ensure good combustion? If available, please provide benchmark data that compares other existing or similar sources that utilize this same technology. Please provide details concerning the preventive maintenance on burners, frequency and recordkeeping. How often will burners be inspected? How will

this be ensured? What recordkeeping requirements are you proposing? What will alert on-site personnel to problems?

7. The permit application indicates that Best Operational Practices include periodic tune ups and oxygen trim controls.

    a. Please submit a detailed description of the anticipated procedures that are proposed as part of the tune-ups and include a proposed schedule for planned maintenance.

    b. Oxygen trim control for inlet combustion air volume will be utilized to increase efficiency. Please indicate whether this function is continuously monitored. Please provide your proposed monitoring and recordkeeping requirements.

8. On page 9-17 of the permit application, you indicate that N_2O catalysts are technically infeasible. Please provide technical information and references to support this conclusion.

9. 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."

    Please propose short-term emission limitations or efficiency based limits for all emission sources. For the emission sources where this is not feasible, please propose an operating work practice standard. Please provide detailed information that substantiates any reasons for infeasibility of a numerical emission limitation.

10. On page 9-19 of the permit application, you conclude a flare gas recovery system for maintenance, startup, and shutdown streams to be technically infeasible due to its composition and variability. Please provide more information regarding the composition and variability of this stream and in support of this conclusion.

11. On page 10-8 of the NNSR/PSD permit amendment application you provided to TCEQ for the Methanol Restart Project, 28LAER Leak Detection and Repair (LDAR) is proposed as LAER for VOC emissions from fugitive equipment. However, on page 9-24

of the GHG PSD permit application you provided to EPA, an alternative method to Method 21 monitoring has been proposed for leak detection and repair, although an alternative work practice may be used to detect leaking equipment. Please provide a basis for not proposing 28 LAER for the fugitive emission components that are in the GHG application.

Calculations

12. Please provide supplemental technical data that was used as a basis to calculate the flow rates to the loading and methanol process flares. Also, include documentation that was referenced in the footnotes. Although formulas were provided, please include an example of the actual calculations performed to obtain the numerical values. Also, include supplemental technical data to support basis or rationale for the values calculated (e.g., turnaround time, volume of equipment, the time allotted for chiller to be out of service, the *TCEQ Air Permit Technical Guidance for Chemical Sources Flares and Vapor Oxidizer* documents, high heating value, etc.). The vapors sent to the loading flare are based on a chiller recovery of 90%. Please provide the design data that substantiates the % recovery that was used. How was the composition of the components in the vent gas determined? (e.g., stack testing). Please provide stream analysis data. Please provide flare design data for the pilot flow rates.