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

APR 0 2 2012

Mr. Gary Wojnowski
Principal Environmental Engineer
Equistar Chemicals LP
P.O. Box Drawer D
Deer Park, TX 77536-1900

RE: Application for Determination for Equistar Chemicals, L.P.
Greenhouse Gas Prevention of Significant Deterioration Permit
Olefin Production Unit, QE-1 Unit, LaPorte Complex Texas

Dear Mr. Wojnowski:

This letter is in response to your application received by this office on September 29, 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 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.

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. Steve Hagle, P.E.
Deputy Director, Office of Air
Texas Commission on Environmental Quality

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**
**Olefins Production Unit (QE-1), LaPorte Complex, Texas**

BACT Analysis

1. The permit application concludes 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 provide 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. The permit application indicates that using monoethanolamine (MEA) for capture of $CO_2$ from the exhaust gas is a "commercially mature technology". Please define this phrase as used on page 9-13 in your application? 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.

3. The permit application indicates the use of natural gas as a primary fuel and fuel gas containing hydrogen ($H_2$) gas as a secondary fuel over other fuel types is a primary option for lowering the GHG emissions. 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?

4. The permit application indicates that Equistar intends to increase the energy efficiency of the cracking furnaces in the "Installation of Energy Efficiency Options on the Furnaces" section. The application states the design will incorporate the "latest improvements in heat transfer and fluid flow to maximize the energy efficiency and energy recovery." What latest improvements are being referenced and please include the referenced material? Please provide benchmarking data comparing the 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, convection section, fan, stack, quench exchangers and steam drum. 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. Please provide manufacturer's data on the percent efficiency of burners compared to past design, comparative benchmark to similar industries. 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. To maintain the combustion efficiency, the burner maintenance will be included in the preventive maintenance program and burners will be inspected while in service. Please provide details concerning the preventive maintenance on burners, frequency and recordkeeping. How often will burners be inspected while in service? How will this be ensured? What recordkeeping requirements are you proposing? What will alert on-site personnel to problems? 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)?

5. 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.

6. On page 9-17, the permit application indicates that $N_2O$ catalysts are technically infeasible. Please provide technical information and references to support this conclusion.

7. 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.

8. On page 9-20, the permit application concludes the technical infeasibility for a flare gas recovery system for maintenance, startup, and shutdown streams to be routed to a recovery system due to its composition and variability. Please provide more information regarding the composition and variability of this stream and how this may justify this conclusion.

9. On page 9-24, an alternative method to Method 21 monitoring has been proposed for leak detection and repair, but when an alternative work practice is used to detect leaking equipment, the regulated equipment must also be monitored annually using Method 21. Please refer to 40 CFR 63.11(d)(7).

Calculations

10. The annual average heat input capacity for natural gas combustion for the cracking furnaces is based on an assumed 80% of the maximum rated capacity of the furnace to determine CO2 emission rate. Please provide benchmarking data how this heat input capacity was obtained and how it compares to other recently permitted units nationally?

11. Please provide supporting technical data that was used to calculate the $CO_2e$ emission calculations for in the decoking emissions calculations. Please include in this data how the CO emission factor (lb/decoke) and the mole ratio of $CO_2/CO$ was derived or obtained? Please provide a technical discussion how the value of 26 decokes per year was obtained? Please indicate if benchmark data was used in these calculations?

12. Please include all supporting information that was referenced on page 4 of 4 in the Appendix (e.g., the MSS permit application, volume calculations for new equipment used to calculate the waste gas to the flares, the documents pertaining to the TCEQ approved DRE for main flare and acetylene recovery unit flare, etc)? Please provide vent flow composition. Please provide supplemental data that was used to calculate fugitive emission rate on page 3 of 4.