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

DEC 12 2011

Mr. Thomas Warnement
Senior Environmental Representative
Equistar Chemicals LP
P.O. Box 777
Channelview, TX 77530

RE: Equistar Chemicals, LP Applications for Greenhouse Gas Prevention of Significant Deterioration Permits for Olefins production units, OP-1 and OP-2

Dear Mr. Warnement:

This letter is in response to your two applications dated September 23, 2011 and received by this office on September 29, 2011 for a Greenhouse Gas Prevention of Significant Deterioration permit. After our initial review of the above application and all supporting information, we have determined that additional information is required to begin the processing of both applications. 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 on the technical information of your applications. This information is necessary for EPA to develop a Statement of basis and rationale for the terms and conditions for a draft permits. 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 applications, an amendment or new applications 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. In addition, the EPA must undergo consultation pursuant to Section 106 of the National Historic Preservation Act. 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. We understand that Equistar, through its authorized representatives from LyondellBassell, has agreed with EPA to designate certain representatives of LyondellBassell and its environmental consultant to act as designated non-federal representatives to the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service if necessary, for purposes of Section 7 consultation.

If you have any questions concerning the review of your application, please contact Alfred C. Dumaual of my staff at (214) 665-6613.

Sincerely yours,

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

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

ENCLOSURE

EPA Completeness Comments on the Equistar Chemicals, LP Greenhouse Gas Permit Applications for Olefins 1 (OP-1) and Olefins 2 (OP-2) production units dated September 23, 2011

General

The permit applications are missing the contemporaneous emissions data for greenhouse gas pollutants as discussed in the Contemporaneous Netting Section on page 15 of the EPA document entitled "PSD and Title V Permitting Guidance for Greenhouse Gases" (March 2011). Please provide PSD analysis with emissions data of the plant from a contemporaneous period of five years prior to the date of the proposed construction; creditable emission increases or decreases during the contemporaneous period on a pollutant-by-pollutant basis; and changes in net emissions.

Aggregation Analysis

Two PSD permit applications for Greenhouse Gas emissions were submitted to the EPA for modification of existing units and construction of new units at two olefins production lines, OP-1 and OP-2, both located at the North plant of Equistar's Channelview facility. Concurrently, two separate New Source Review (NSR) project permit applications were submitted to the state air permitting agency, Texas Commission on Environmental Quality (TCEQ). It needs to be determined if modifications to OP-1 and OP-2 olefins production units should or should not be combined into a single application for PSD applicability and the PSD BACT analysis. Please provide an aggregation analysis to justify the appropriateness in treating each Olefin production project as a separate PSD project and not as a single PSD project.

Be mindful of the EPA memo dated September 22, 2009, by which Gina McCarthy withdrew the January 12, 2007 guidance memorandum entitled "Source Determinations for Oil and Gas Industries". The aggregation of facilities must be done in accordance with 40 CFR 52.21(b)(6) on a case by case basis. Permitting authorities shall rely on the three regulatory criteria for identifying emissions activities that belong to the same "building", "structure", "facility", or "installation". These are (1) whether the activities are under the control of the same person (or person under common control); (2) whether the activities are located on one or more contiguous or adjacent properties; and (3) whether the activities belong to the same industrial grouping.

Past guidance by the EPA on the emission unit aggregation in regards to multiple NSR/PSD projects occurring within a certain time frame at the same plant has been consistent, and it has been concluded that the construction and installation of emission units were treated as a single project. In a letter issued by the EPA Region V on March 16, 1992, the EPA provided guidance regarding NSR modifications at 3M facility located in Maplewood, Minnesota. The guidance indicated that even though the multiple minor permit modifications were approved

by the state permitting agency, 3M's minor permit modifications at the plant over an eighteen (18) month period was considered a single major NSR modification. EPA Region V determined that 3M had circumvented the Prevention of Significant Deterioration (PSD) regulations through these small projects.

Understanding that the permit applications for OP-1 and OP-2 are major PSD and both subject to BACT, EPA requests that Equistar still provide an analysis to justify why these two projects should be considered separate and not as a single PSD project.

BACT Analysis

1. The permit application concludes that carbon capture and storage (CCS) has "excessive cost of designing, constructing and operating the pipeline to transport compressed CO_2...make this sequestration option infeasible for this project." Please provide supporting cost analysis which includes a cost per pound of pollutant CO2e removed, total annualized costs and cost effectiveness for implementing CCS control technology for both these projects.

2. The permit application indicates that use of natural gas as a primary fuel and fuel gas containing hydrogen gas (H_2) as a secondary fuel over other fuel types is a primary option for lowering the GHG emissions. Provide benchmarking data or technical information explaining why natural gas would be considered the primary fuel type over fuel gas containing H_2. Incorporate all relevant factors including economic and energy impact analysis. Since H_2-containing fuel will have lower CO2 emissions, it is not clear in the application why natural gas is being used as the primary fuel. Please provide any technical data and/or cost analyses to support the use of natural gas as the primary fuel for the BACT analyses.

3. The permit application indicates that the Equistar intends to increase the energy efficiency of the cracking furnaces in the "Installation of Energy Efficiency Options on the Furnaces" section. Please provide benchmarking data or any other technical support information that supports your conclusions, pertinent information would include percent increase in energy efficiency in various components of the cracking furnace such as firebox/radiant section, burners, convection section, fan, stack, quench exchangers and steam drum compared to other existing olefins cracking furnaces, as well as the associated decrease in GHG per pound of product. Additionally the permit application also indicates that Equistar's operational parameters on the cracking furnaces will provide energy efficiency. In the past how much energy per ton of product is used based on the most recent constructed cracking furnace and how will this be different compared to the proposed cracking furnaces? EPA notes that the application does detail the type of equipment and proposed technology for energy efficiency but does not have a comparative benchmark study to indicate other industry operation or designed units.

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

    a. Please submit a detailed description of the measures that constitute the tune-ups and include a schedule for planned maintenance and a recordkeeping requirement to demonstrate compliance with the BACT.

    b. It is indicated that the use of an oxygen trim control for inlet combustion air volume will increase efficiency. Please quantify this efficiency change and indicate your proposed monitoring method to assure BACT is maintained during all periods of operations. Also indicate whether this function is computer driven or manually driven, frequency of use and incorporate a monitoring and recordkeeping requirement to show that the oxygen trim control continuous operation.

5. The permit application indicates that N_2O catalysts are technically infeasible; please provide technical information to support this conclusion.

6. The permit application indicates that limiting air in the decoking process would drive kinetics to favor CO generation but is considered "environmentally detrimental"; please provide a detailed technical discussion and analysis of this detrimental effect in support of your conclusions.

7. The permit application does not provide a short-term pound per hour limitation for any of GHG pollutants for the proposed emission units. BACT is a short term emission limit. Please indicate your proposed emission limit in lbs GHG/lb product or lbs GHG/hr and the applicant's monitoring method. CEMS is the preferable method followed by parametric fuel monitoring with emission factors, etc.

8. The permit application discusses the technical infeasibility for a flare gas recovery system with process gas streams with a high nitrogen content. Please provide a technical discussion in regards to the nitrogen content generated during the Olefin processing, in particular the natural gas combustion and decoking process and how this may contribute to the technical infeasibility for a flare gas recovery system.

9. Discuss the technical parameters for the planned flare to be installed with a "good flare design" as opposed to a standard flare design including destruction efficiencies for the particular composition of plant gas and compare it to other typical, most recent flare designs. What is the applicant's proposed monitoring method for the flare to ensure that the flare operates optimally to minimize GHG and other criteria pollutants?

Calculations

10. The heat capacity input for natural gas combustion for the cracking furnaces is based on site-specific data and is used to determine uncontrolled potential emissions. Are there other cracking units located at the site and how do they compare in terms of capacity and design to these units? Please provide benchmarking data how this site specific data was obtained and how it was verified (e.g., stack testing).

11. In the decoking pot emissions calculations, the number of decokes per year is twenty-six (26), please provide a technical discussion how this value was obtained, is it an average value or the maximum possible number of decokes per year? Include in your discussion benchmarking data to indicate how the pounds of CO_2 per hour (lb/decoke) and maximum pounds per hour (max lb/hr) was determined and that CO_2 is the only GHG pollutant created in the decoking process.

12. Please provide the detailed explanation of assumptions made in (or lack of) the CO2e emission calculations for waste gas to the flares, fugitive emissions, modifications to the cooling tower (as discussed in the NSR permit application to TCEQ), and proposed equipment components.

13. Please provide GHG emission calculations for startup and shut-down/maintenance periods for all emission units subject to the PSD BACT including the cracking furnaces.

Impact Analysis

14. Pursuant to 40 CFR Section 52.21(o), Additional Impact Analyses, an applicant is required to provide an analysis of the impairment to the soils and vegetation that would occur as a result of the modification. This permit application and the current TCEQ application do not have any air quality analysis that may assist in such a determination.

Record Keeping and Monitoring

15. Please provide to the EPA the methods/frequency of monitoring to ensure enforceability of the BACT pursuant to 40 CFR 52.21(n).