

US EPA ARCHIVE DOCUMENT



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

JUN 20 2013

Ms. Cheryl Steves  
Environmental Manager  
The Dow Chemical Company  
2301 N. Brazosport Blvd  
Freeport, TX 77541

RE: Application Completeness Determination for Light Hydrocarbons 9  
Greenhouse Gas Prevention of Significant Deterioration Permit  
Freeport, Brazoria County, Texas

Dear Ms. Steves:

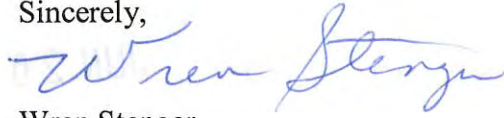
This letter is in response to your application received by this office on November 28, 2012, for a Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) permit. After our initial review of the application and supporting information, we have determined that this application is incomplete based on the requirements of 40 CFR Part 124 and additional information is required to begin the processing of the application. Enclosed is a list of the information required (see Enclosure). Please notify us if a complete response is not possible by July 10, 2013.

The requested information is necessary for the United States Environmental Protection Agency (EPA) to develop a Statement of Basis and Rationale for the terms and conditions for any proposed permit. As we develop our preliminary determination, it may be necessary for the 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 (ESA) (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, the 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 appreciate your March 2013 submittal of the ESA and the NHPA related documents that will assist in the timely completion of these requirements.

If you have any questions concerning the review of your application, please contact Brad Toups of my staff at (214) 665-7258.

Sincerely,



Wren Stenger  
Director  
Multimedia Planning and  
Permitting Division

Enclosure

## ENCLOSURE

**The EPA Completeness Comments  
Ethylene Production Facility (LHC-9) at the Dow Texas Operations – Freeport  
Brazoria County, Texas  
Application for Greenhouse Gas Prevention of Significant Deterioration Permit**

1. Upstream/Downstream effects and other PSD triggers. You indicate in section 1.5 of the November 28, 2012 application (App) that “No modifications are necessary to these units [existing cogeneration units] as they are currently sized to provide adequate energy to meet current and future site needs.” Please show by calculation what if any effect on emissions increases will occur as the cogeneration units are effectively “debottlenecked” by the addition of this new process. Include the emissions from these units in the plantwide PSD analysis of emissions increases and decreases, as applicable, recognizing that an emission unit whose emissions increase over the baseline due to a project may not trigger a best available control technology (BACT) review for unmodified sources which experience an emissions increase.

In your analysis of the contemporaneous period sitewide increases and decreases, have any of the listed values already been utilized in PSD subject projects at the site? If so, please remove the increases and decreases from your list for those changes that have been relied upon in previous PSD analyses and revise your analysis.

2. Since the project proposes the construction of an entirely new process at the existing site, will Dow utilize any electrical components containing sulfur hexafluoride (SF<sub>6</sub>)? If so, please include those units, and provide the supporting analysis, including emissions limitations, BACT, work practice standards, monitoring, testing, and recordkeeping as required to support the authorization of those sources as well.
3. Decoking process. App page 7. What are the parameters that will be monitored to trigger decoking? How will these parameters be monitored and used to assure maximum energy efficiency and in process control?
4. Caustic wash. App page 8. You indicate that the caustic wash is to remove CO<sub>2</sub> and sulfur compounds, but I do not see any of the process streams that contain sulfur compounds. Also, from which emission point are the CO<sub>2</sub> emissions, if any? Please clarify.
5. Dryers. App page 8. What is the heat source for the dryers?
6. Cracking Furnaces. App page 13. Does the differential firing rate of the three furnaces ( EPN OC2H126, 127, and 128) and emissions compared to furnaces 121-125 (App page A-5) warrant a different GHG efficiency value for these two groups of furnaces? Why or why not? How will Dow tune the furnace firing variations between fuels to assure that the target GHG efficiency value is reached for each furnace and each operating scenario? Which parameters will Dow monitor and how will Dow utilize various process parameters to minimize the number of decoking cycles, startups and shutdowns, and other operating scenarios that reduce furnace efficiency or cause off-spec product to be routed to the flare?
7. Flares. App section 3.2. You indicate that Dow will use the emissions methods referenced in 40 CFR §98.243(d) to calculate emissions from the flare’s pilot fuel and fuel from the process streams

routed to the flare. Will you actually use 40 CFR §98.253(b)(1)-(3) which the previous reference cites? Also, what are the expected emissions from de-inventorying any furnace off-spec cracked materials or any other downstream material when the process is taken off-line or when starting up again after a planned or unplanned outage? Where are those emissions accounted for? What is the expected time duration of such an event, and how many such events are planned, given that any given furnace is expected to go 50 days between de-coking cycles? Do these events warrant their own efficiency values or BACT limitations? Why or why not?

8. Equipment leak fugitive emissions. Will the 28 VHP LDAR program include proper calibration for quantifying methane emission leaks in addition to non methane volatile organic carbon compounds? Will you be using correlation equations to estimate emissions based on the instrumental readings obtained in your LDAR program? How will you determine, document, and quality assure the determined emissions from this source?
9. Overall process efficiency. App section 4.1.4.3. Since maximizing the use of thermal energy released in the furnace is important to minimization of GHG emissions and overall process efficiency, do you plan to monitor stack exit temperature as well as temperatures of the flue gas after each stage of heat transfer? With exit temperatures of 271° F for 5 furnaces and 308 °F for three (App page A-5), will flue gas condensation in the stack pose maintenance problems that would result in increased down time?
10. Applicability. App page 1. Is the site an existing major source for a regulated NSR pollutant that is not GHGs? While your application cites an approximate 745 tpy increase in CO, your applicability discussion only refers to the test for "Step 2" modifications. Please specify whether and how your basis of applicability falls under 40 CFR 52.21(b)(49)(iv).