

US EPA ARCHIVE DOCUMENT

Formosa Plastics Corporation, Texas
Olefins 3 and Propane Dehydrogenation Plant
Prevention of Significant Deterioration Permit for Greenhouse Gas Emissions
PSD-TX-1383-GHG

**Responses to Public Comments
and
Summary of Permit Revisions**

U.S. Environmental Protection Agency
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I. Summary of the Formal Public Participation Process

The U.S. Environmental Protection Agency, Region 6 (EPA) proposed to issue a Prevention of Significant Deterioration (PSD) permit to the Formosa Plastics Corporation, Texas Point Comfort Plant Expansion: Olefins 3 and Propane Dehydrogenation (PDH) Plant on June 21, 2014. The public comment period on the draft permit began June 21, 2014 and closed on July 21, 2014. EPA announced the public comment period through a public notice published in the *Port Lavaca Wave* on June 21, 2014 and on Region 6's website. EPA also notified agencies and municipalities on June 19, 2014 in accordance with 40 CFR Part 124.

The Administrative Record for the draft permit was made available at EPA Region 6's office. EPA also made the draft permit, Statement of Basis and other supporting documentation available on Region 6's website, and available for viewing at the Calhoun County Public Library Point Comfort Branch in Point Comfort, TX.

EPA's public notice for the draft permit also provided the public with notice of a public hearing. The public notice stated that "Any request for a public hearing must be received by the EPA either by email or mail by July 14, 2014 and must state the nature of the issues proposed to be raised in the hearing...EPA maintains the right to cancel a public hearing if no request for a public hearing is received by July 14, 2014, or the EPA determines that there is not a significant interest. If the public hearing is cancelled, notification of the cancellation will be posted by July 18, 2014, on the EPA's Website <http://yosemite.epa.gov/r6/Apermit.nsf/AirP>. Individuals may also call the EPA at the contact number listed above to determine if the public hearing has been cancelled." During the comment period, EPA did not receive any written requests for a public hearing. EPA posted its announcement that there would not be a hearing on July 18, 2014. On July 16, 2014 the applicant provided EPA a comment describing an administrative error in one of the emissions calculations for the facility.

Update to Applicability Analysis

On June 23, 2014, the United States Supreme Court issued a decision addressing the application of stationary source permitting requirements to greenhouse gases (GHG). *Utility Air Regulatory Group (UARG) v. Environmental Protection Agency (EPA)* (No. 12-1146). The Supreme Court said that the EPA may not treat greenhouse gases as an air pollutant for purposes of determining whether a source is a major source required to obtain a Prevention of Significant Deterioration (PSD) or title V permit. However, the Court also said that the EPA could continue to require that PSD permits, otherwise required based on emissions of conventional pollutants, contain limitations on GHG emissions based on the application of Best Available Control Technology (BACT). Pending further EPA engagement in the ongoing judicial process before the District of Columbia Circuit Court of Appeals, the EPA is proceeding with this final permitting decision consistent with EPA's understanding of the Supreme Court's decision.

In this final permit decision, the EPA is continuing to apply the PSD BACT requirement to GHG emissions from Formosa Plastics Corporation, Texas Point Comfort Plant (Formosa). This project is otherwise subject to PSD because it emits a regulated NSR pollutant other than GHG (specifically CO, NO_x, VOC, and PM//PM₁₀/PM_{2.5}) above the major source thresholds. In addition, the proposed source emits or has the potential to emit 75,000 tons per year (tpy) or more of GHG on a carbon dioxide

equivalent (CO₂e) basis (*see* 40 C.F.R § (49)(iv); *PSD and Title V Permitting Guidance for Greenhouse Gases* (March 2011) at 12-13). Formosa submitted three separate permit applications for the three different operational area expansions. The permits to be issued authorize the construction of Olefins3/PDH Plant (PSD-TX-1383-GHG), LDPE Plant (PSD-TX-1384-GHG), and Gas Turbine Plant (PSD-TX-760-GHG). The total combined GHG emissions for the expansion project is 3,868,872 tpy. Since the Supreme Court recognized EPA's authority to limit application of BACT to sources that emit GHGs in greater than *de minimis* amounts, EPA believes it may apply the 75,000 tons per year threshold in existing regulations at this time to determine whether BACT applies to GHGs at this facility. Accordingly, this project continues to require a PSD permit that includes limitations on GHG emissions based on application of BACT.

II. EPA's Response to Public Comments

This section summarizes the public comments received by EPA and provides our responses to the comments. EPA received one comment letter from the applicant on July 16, 2014.

Comment 1: Identified an error in the annual GHG emission limits for the PDH reactors (emission point identification number (EPN): PDH-REAC1 through PDH-REAC4) reported in the draft permit and statement of basis. The error is the omission of the GHG emission contributions from combustion of the PDH regeneration gas. The regeneration gas contributes the following quantities:

- 305 metric tons/yr CO₂
- <.0001 metric tons/yr CO₂
- <.00001 metric tons/yr CO₂

Response: After reviewing the Formosa Olefins 3 application that includes a description of the PDH process and PDH reactor emission data calculations, EPA agrees that the PDH regeneration gas stream contributions to the PDH reactor group emission were inadvertently omitted. EPA has subsequently revised the annual emission limit that are found in the Olefins 3 final permit to reflect the PDH regeneration gas contributions. A copy of the annual emission limits table is included in this response to comments.

III. Revisions in Final Permit

The following is a list of administrative and clarifying changes for the *Formosa Plastics Corporation, Olefins 3 Plant (PSD-TX-1383-GHG) Prevention of Significant Deterioration Permit, Final Permit Conditions*.

1. Cover Sheet

The cover sheet titled "Prevention of Significant Deterioration Permit for Greenhouse Gas Emissions Issued Pursuant to the Requirements at 40 CFR §52.21" has been modified to state the following:

In accordance with 40 CFR §124.15(b)(3), this PSD Permit becomes effective ~~30 days after the service of notice of this final decision unless review is requested on the permit pursuant to 40 CFR §124.19~~ immediately upon issuance of this final decision.

This change is made as a result of not receiving any comments during the comment period requesting a material change in the BACT limits contained in the draft permit or otherwise opposing its issuance. As noted above, the applicant did provide EPA with a comment describing an administrative error in one of the emissions calculations for the facility, which resulted from a failure by EPA to include the emissions from regeneration gas combustion identified in the application in the annual emissions calculations for the PDH reactors. EPA has made a small administrative change to the annual emission limits in the final permit to reflect that error, as identified below. However, since the comment and resulting change were ministerial in nature and did not affect the substance of the BACT terms contained in the permit or the analysis underlying them, we find that it is appropriate to apply the permit effectiveness provisions contained in 40 CFR §124.15(b)(3).

2. Page 7 – II. Annual Emission Limits

The table titled “Table 1. Annual Emission Limits” has been modified in response to a comment received from the applicant on July 16, 2014 to include the GHG emission contributions from the combustion of the PDH regeneration gas. The GHG emission contributions of this stream have been added to the PDH reactor group GHG emissions and also reflected in the total annual emission limit. The following table indicates the revisions to the table:

Annual Emission Limits

Annual emissions, in tons per year (TPY) on a 12-month total, rolling monthly, shall not exceed the following:

Table 1. Annual Emission Limits

FIN	EPN	Description	GHG Mass Basis		TPY CO ₂ e ^{1,2}	BACT Requirements
				TPY ¹		
OL3-FUR1	OL3-FUR1	Pyrolysis Cracking Furnaces	CO ₂	1,462,447 ³	1,464,112 ³	Furnace Gas Exhaust Temperature ≤ 290°F on a 365-day rolling average basis for each Pyrolysis cracking furnace. Maximum heat input rate of 220 MMBtu/hr. See permit conditions III.A.1.
OL3-FUR2	OL3-FUR2					
OL3-FUR3	OL3-FUR3					
OL3-FUR4	OL3-FUR4					
OL3-FUR5	OL3-FUR5					
OL3-FUR6	OL3-FUR6		CH ₄	29.7 ³		
OL3-FUR7	OL3-FUR7					
OL3-FUR8	OL3-FUR8					
OL3-FUR9	OL3-FUR9					
OL3-FUR10	OL3-FUR10					
OL3-FUR11	OL3-FUR11		N ₂ O	3 ³		
OL3-FUR12	OL3-FUR12					
OL3-FUR13	OL3-FUR13					
OL3-FUR14	OL3-FUR14					
OL3-BOIL1	OL3-BOIL1	Steam Boilers	CO ₂	818,713 ⁴	819,629 ⁴	Minimum boiler efficiency of 78% on a 12-month rolling average. Maximum heat input rate of 431 MMBtu/hr. Proper furnace design and operation.
OL3-BOIL2	OL3-BOIL2		CH ₄	16.67 ⁴		
OL3-BOIL3	OL3-BOIL3		N ₂ O	1.7 ⁴		
OL3-BOIL4	OL3-BOIL4					

FIN	EPN	Description	GHG Mass Basis		TPY CO ₂ e ^{1,2}	BACT Requirements See permit conditions III.A.2
				TPY ¹		
PDH-REAC1 PDH-REAC2 PDH-REAC3 PDH-REAC4	PDH-REAC1 PDH-REAC2 PDH-REAC3 PDH-REAC4	PDH Reactors	CO ₂	235,105 ⁵ 236,450 ⁵	235,513 ⁵ 236,858 ⁵	.393 lbs CO ₂ e/lb propylene, Maximum heat input rate of 191 MMBtu/hr. Use of Good Combustion Practices. See permit condition III.A.3.
			CH ₄	7.4 ⁵		
			N ₂ O	.75 ⁵		
OL3-FLRA/FLRB	OL3-FLRA/FLRB	Elevated flare; 1 st stage and 2 nd stage	CO ₂	75,826 ⁶	84,452 ⁶	Use of Good Operating and Maintenance Practices. See permit condition III.A.4.
			CH ₄	359 ⁶		
			N ₂ O	2.18 ⁶		
OL3-LPFLR1	OL3-LPFLR1	Low pressure flare	CO ₂	9,156	9,856	Use of Good Operating and Maintenance Practices. See permit condition III.A.4.
			CH ₄	27		
			N ₂ O	.09		
OL3-LPFLR2	OL3-LPFLR2	Low pressure flare	CO ₂	9,156	9,856	Use of Good Operating and Maintenance Practices. See permit condition III.A.4.
			CH ₄	27		
			N ₂ O	.09		
OL3-FUG	OL3-FUG	Olefins 3 Fugitives	CO ₂	No Numerical Limit Established ⁷	No Numerical Limit Established ⁷	Implementation of an effective LDAR program. See permit conditions III.A.7.
			CH ₄	No Numerical Limit Established		
PDH-FUG	PDH-FUG	PDH Fugitives	CO ₂	No Numerical Limit Established ⁸	No Numerical Limit Established ⁸	See permit conditions III.A.7.
			CH ₄	No Numerical Limit Established ⁸		
OL3-DK1 OL3-DK2	OL3-DK1 OL3-DK2	Decoking drum	CO ₂	329 ⁹	329 ⁹	See permit conditions III.A.1. j., k., and l.

FIN	EPN	Description	GHG Mass Basis		TPY CO ₂ e ^{1,2}	BACT Requirements
				TPY ¹		
OL3-MAPD	OL3-MAPD	MAPD Regenerator	CO ₂	No Numerical Limit Established ¹⁰	No Numerical Limit Established ¹⁰	See permit conditions III.A.4.
PDH-MSSVO	PDH-MSSVO	PDH MSS Vessel opening	CO ₂ e	No Numerical Limit Established ¹¹	No Numerical Limit Established ¹¹	See permit conditions III.A.8.
OL3-MSSVO	OL3-MSSVO	Olefins 3 MSS Vessel opening	CO ₂ e	No Numerical Limit Established ¹²	No Numerical Limit Established ¹²	See permit conditions III.A.8.
OL3-GEN	OL3- GEN	Emergency generator engine	CO ₂	447	448	See permit conditions III.A.6.
			CH ₄	No Numerical Limit Established ¹³		
			N ₂ O	No Numerical Limit Established ¹³		
PDH-GEN	PDH-GEN	Emergency generator engine	CO ₂	447 ¹⁴	447	See permit conditions III.A.6.
			CH ₄	No Numerical Limit Established ¹⁴		
			N ₂ O	No Numerical Limit Established ¹⁴		
Totals¹⁵			CO ₂	2,611,625 2,612,971	2,625,842 2,627,187	
			CH ₄	472		
			N ₂ O	8		

- The TPY emission limits specified in this table are not to be exceeded for this facility and include emissions from the facility during all operations and include MSS activities.
- Global Warming Potentials (GWP): CO₂ = 1; CH₄ = 25; N₂O = 298
- The GHG Mass Basis TPY limit and the CO₂e TPY limit for the pyrolysis cracking furnaces applies for all fourteen furnaces combined. Each furnace cannot exceed the following limits: 104,461 TPY CO₂, 2.12 TPY CH₄, 0.22 TPY N₂O, and 104,579 TPY CO₂e.
- The GHG Mass Basis TPY limit and the CO₂e TPY limit for the steam boilers is for all four boilers combined. Each boiler cannot exceed the following limits: 204,678 TPY CO₂, 4.2 TPY CH₄, 0.42 TPY N₂O, and 204,907.26 TPY CO₂e.
- The GHG Mass Basis TPY limit and the CO₂e TPY limit for the PDH reactors is for all four reactors combined. Each PDH reactor cannot exceed the following limits: ~~58,776~~ 59,113 TPY CO₂, 1.8 TPY CH₄, 0.19 TPY N₂O, and ~~58,878~~ 59,214 TPY CO₂e.
- The flare emissions include MSS Emissions from Olefins3 plant, MSS emissions from the PDH plant, and pilot gas firing. Emissions due to Pilot Gas are included.
- Fugitive emissions for Olefins are estimated to be .25 TPY CO₂, 4.58 TPY CH₄, and 115 TPY CO₂e. The emission limit will be a design/work practice standard/SOP as specified in the permit.
- Fugitive emissions for PDH are estimated to be 0.25 TPY CO₂, 0.92 TPY CH₄, and 23.17 TPY CO₂e. The emission limit will be a design/work practice standard/SOP as specified in the permit.
- The GHG Mass Basis TPY limit and the CO₂e TPY limit for the furnace decoke vents is for both furnaces decoke vents combined.
- Emissions from the C3/C4 Hydrogenation Reactor Regeneration Vent are estimated at 33 TPY of CO₂e. The emission limit will be a design/work practice standard/SOP as specified in the permit.
- The MSS CO₂e emissions to the atmosphere from equipment openings for the Olefins plant is not to exceed 55 TPY. The emission limit will be a design/work practice standard/SOP as specified in the permit.

12. The MMS CO₂e emissions limit to the atmosphere from equipment openings for the PDH plant is not to exceed 9 TPY. The emission limit will be a design/work practice standard/SOP as specified in the permit.
13. Emergency generator emissions from the Olefins plant is estimated to be 446 TPY CO₂, 0.018 TPY CH₄, 0.004 TPY N₂O, and 448 TPY CO₂e. The emission limit will be a design/work practice standard/SOP as specified in the permit.
14. Emergency generator emissions from the PDH plant is estimated to be 446 TPY CO₂, 0.022 TPY CH₄, and 447 TPY CO₂e. The emission limit will be a design/work practice standard/SOP as specified in the permit.
15. Total emissions include the potential to emit (PTE) for fugitive emissions. Totals are given for informational purposes only and do not constitute emission limits.

IV. Endangered Species Act

On February 14, 2014, EPA submitted the final draft biological assessment (BA) to the NOAA Southeast Regional Office, Protected Resources Division of National Marine Fisheries Service (NMFS) for its concurrence that the issuance of the permit may affect, but is not likely to adversely affect three federally-listed species. NOAA-NMFS provided concurrence and agreed with EPA's determination on May 23, 2014.

On April 16, 2014, EPA sent the final draft BA to the Southwest Region, Corpus Christi, Texas Ecological Services Field Office of the U.S. Fish and Wildlife Services (USFWS) for its concurrence that the issuance of the permit may affect, but is not likely to adversely affect three federally-listed species. The USFWS sent a letter with concurrence to the EPA on July 25, 2014.

V. National Historic Preservation Act (NHPA)

On May 22, 2014, EPA sent a letter to the State Historic Preservation Officer (SHPO) requesting concurrence on EPA findings for Formosa's cultural survey. The SHPO sent a letter with concurrence to the EPA on July 7, 2014.