# Louisiana Department of Environmental Quality (LDEQ)
# Office of Environmental Services

## STATEMENT OF BASIS

Air Products & Chemicals Inc
Air Products & Chemicals Inc - Syngas Separation Unit
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 31512
Activity Number: PER20060001
Proposed Permit Number: 0180-00071-V0

## I. APPLICANT

**Company:**
Air Products & Chemicals Inc - Syngas Separation Unit
36637 Hwy 30
Geismar, Louisiana 70734

**Facility:**
Air Products & Chemicals Inc
36637 Hwy 30
Geismar, Ascension Parish, Louisiana
Approximate UTM coordinates are 3,343.310 km East and 693.30km North.

## II. FACILITY AND CURRENT PERMIT STATUS

The Syngas Separation Unit (SSU) processes raw synthesis gas supplied from BASF's acetylene production facility. The raw feed gas is rich in hydrogen and carbon monoxide with minor amounts of carbon dioxide, methane, oxygen, nitrogen, argon, and other gases. The SSU separates and purifies the feed stream into its primary constituents of hydrogen and carbon monoxide. The facility also produces a 1:1 $H_2$:CO syngas mixture.

The SSU produces hydrogen and carbon monoxide by separation and purification. No combustion units are involved in this process. The primary sources of atmospheric emissions from the facility are fugitive emissions, a $CO_2$ stripper column vent, and typical combustion emissions from a smokeless industrial warm flare and a cold flare.

The facility can supply carbon monoxide and syngas to BASF and Shell Chemical Company, and hydrogen to customers in the southern Louisiana area via an existing Air Products-owned pipeline.

Air Products & Chemicals Inc.'s Syngas Separation Unit is a designated Part 70 source. The Unit currently operates under state operating permit no. 0180-00071-02, issued October 30, 2004.

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## III. PROPOSED PROJECT/PERMIT INFORMATION

### Application

A permit application was submitted by Air Products & Chemicals, Inc. on October 12, 2007 requesting a Part 70 operating permit for the Syngas Separation Unit. Additional information dated October 18, 2008 was also submitted.

### Project

The Department requested that the Cold Flare and Warm Flare case emissions be removed from the facility's GCXVII emissions and included as part of the Cold Flare (Source ID 102-97) and Warm Flare (Source ID 103-97) emissions. The Department also requested that pilot gas combustion and flare stream combustion be added to both flare emission points. The Cold Flare is used solely to control startup and shutdown activities at the facility, and all emissions associated with this source are now included in existing Source ID 102-97. The Warm Flare is used to control startup and shutdown emissions and for control of emissions during normal operations. Therefore, there are two sources for the Warm Flare. Existing Source ID 103-97 has been updated to include emissions associated only with normal operations. A new source, Source ID 103-97-A, has been included for emissions associated only with startup and shutdown operations of the Warm Flare.

The changes requested by the Department and emission reconciliations have resulted in the facility's carbon monoxide emissions exceeding the major source threshold of 100 TPY.

### Proposed Permit

Permit no. 0180-00071-V0 will be the initial Part 70 air operating permit for the Syngas Separation Unit.

### Permitted Air Emissions

Estimated emissions in tons per year are as follows:

| Pollutant | Before | After | Change |
|---|---|---|---|
| $PM_{10}$ | 4.00 | 4.01 | + 0.01 |
| $SO_2$ | 0.01 | 0.01 | - |
| $NO_X$ | 1.60 | 2.85 | + 1.25 |
| CO | 83.50 | 102.91 | + 19.41 |
| VOC | 7.61 | 7.79 | + 0.18 |

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# IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

## Applicability and Exemptions of Selected Subject Items

| ID No: | Requirement | Notes |
|---|---|---|
| UNF 01<br>SSU | NSPS Subpart M – National Emission Standards for Asbestos<br>[40 CFR 61] | DOES NOT APPLY. There is no asbestos present at the facility.<br>[40 CFR 61.144 (a)] |
| | Control of Emissions of Nitrogen Oxides ($NO_x$)<br>[LAC 33: III. Chapter 22] | DOES NOT APPLY. The facility does not have one or more affected point sources that collectively emit or have the potential to emit 25 TPY of $NO_x$.<br>[LAC 33:III.2201.B] |
| EQT 04<br>107-97 | Waste Gas Disposal<br>[LAC 33:III.2115] | DOES NOT APPLY. The facility does not emit 25 TPY or more of VOC. |

## Prevention of Significant Deterioration/Nonattainment Review

The facility is not a major source as defined under the PSD program.

## Streamlined Equipment Leak Monitoring Program

There is no streamlined equipment leak monitoring at the facility.

## MACT Requirements

This facility is a minor source of toxic air pollutants (TAPs) pursuant to LAC 33:III Chapter 51.

## Air Quality Analysis

Emissions associated with the proposed facility were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

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**General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

**Insignificant Activities**

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

## V. PERMIT SHIELD

There is no permit shield.

## VI. PERIODIC MONITORING

Presence of flame shall be monitored by a heat sensing device continuously for both flares, the Industrial Warm Flare (EPN 103-97) and Methane-Wash Cold Box "Cold" Flare (EPN 102-97).

Heat content of the Industrial Warm Flare (EPN 103-97) shall be monitored by gas analysis annually to ensure the heat content is above 200 BTU/SCF.

When flaring to the Cold Flare (EPN 102-97), the flue gas composition shall be made available upon request.

A review of the remaining sources indicates that monitoring under 40 CFR 64: Compliance Assurance Monitoring is not required.

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## VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide ($H_2S$) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides ($NO_X$) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane ($CH_4$), Ethane ($C_2H_6$), Carbon Disulfide ($CS_2$)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

$PM_{10}$ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide ($SO_2$) – An oxide of sulfur.

Sulfuric Acid ($H_2SO_4$) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.