



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590



REPLY TO THE ATTENTION OF:

Matthew Stuckey
Chief
Permits Branch
Office of Air Quality
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204

Dear Mr. Stuckey:

We have reviewed the Indiana Department of Environmental Management's (IDEM) draft prevention of significant deterioration (PSD) and Title V permit for Indiana Gasification, LLC in Rockport, Indiana (permit number 147-30464-00060) to construct and operate a new facility to convert coal and petroleum coke into pipeline-quality synthetic natural gas and liquefied carbon dioxide (CO₂). Indiana Gasification's proposal raises some novel issues, specifically with respect to the plan to capture CO₂ emissions, and U.S. Environmental Protection Agency staff are available to consult with IDEM on these questions as the State proceeds to address all comments and finalize this permit. The proposed project is a major source of emissions of greenhouse gases (GHG), nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), sulfuric acid mist (H₂SO₄), and particulate matter (PM), including PM less than 10 microns in size (PM₁₀) and less than 2.5 microns in size (PM_{2.5}).

In order to ensure that the project meets Federal Clean Air Act requirements, that the permit will provide necessary information so that the basis for the permit decision is transparent and readily accessible to the public, and that the permit record provides adequate support for the decision, EPA has the following comments:

1. The permit record does not appear to include any air quality analysis to show that this source will not cause a violation of the ozone national ambient air quality standards. 40 C.F.R. 51.166(k); 40 C.F.R. 51.166(m). EPA's 8-hour ozone implementation phase 2 rule (November 29, 2005; 70 FR 71612) requires that NO_x be considered as an ozone precursor under PSD. One of the elements of that rule is a requirement that the PSD program regulations define the term "significant" for ozone to include 40 tons per year (tpy) of NO_x. See 40 CFR 51.166(b)(23)(i). In accordance with 40 CFR 51.166(m)(1)(a), a permit application must contain an air quality analysis for each pollutant that a new source would have the potential to emit in significant amounts. Since the

proposed Indiana Gasification permit has NOx emissions above this significance threshold for ozone, EPA regulations require that the record contain an ozone impact analysis for this source. A quantitative modeling analysis is not necessarily required, but IDEM should consult with EPA Region 5 regarding the appropriate form for such an analysis in this case. 40 CFR Part 51, Appendix W, §5.2.1.c. Although IDEM is in the process of adopting the requirements of the Phase 2 rule into the Indiana state implementation plan, even before those rules are finalized, EPA's expectation is that IDEM will conduct a source impact analysis on ozone for sources emitting NOx over the 40 tpy significance level for ozone to ensure that its permits are consistent with the Clean Air Act and the minimum requirements described in 40 CFR 51.166 for state PSD permitting programs.

2. The draft permit does not show the potential to emit (PTE) for total GHG emissions. Please add the GHG PTE to the permit, either on a mass basis for the individual GHG gases or on a CO₂ equivalent (CO₂e) basis. The GHG PTE should account for CO₂ emissions and any other GHG emitted from the facility (e.g., methane, nitrous oxide).
3. The draft permit contains emission limits for CO₂, but does not contain limits for other GHG pollutants. Please clarify, in the permit record, how compliance will be demonstrated for any non-CO₂ GHG emitted from the facility.
4. Please clarify, in the permit record, whether there are any GHG emissions from the gasifier.
5. Syngas hydrocarbon flare (EU-001)
 - a. The flare minimization plan requirement (permit conditions D.2.4(1)(D), D.2.4(2)(C), D.2.4(3)(B), and D.2.4(B)) for this unit applies during startups, shutdowns, and other flaring events. The best available control technology (BACT) emissions limits for PM/PM₁₀/PM_{2.5}, CO, SO₂, and NOx apply to startup and shutdown, but does not mention limits for other flaring events. Since BACT applies at all times, the permit should include BACT limits that apply during other flaring events. The permit may specify different BACT limits that apply during other flaring events but cannot exclude BACT limits during those events.
 - b. Permit condition D.2.4(3)(B) limits SO₂ emissions during a shutdown event to 85.21 pounds per hour (lb/hr) or 255.6 lb per 24-hour period. The technical support document lists SO₂ emissions from this flare as 1.97 tpy. However, the 255.6 lb per 24-hour limit could result in maximum SO₂ emissions of 46.65 tpy. Given the disparity between the projected limits and the maximum potential limits, please explain how the source expects

to limit the total frequency and duration of shutdown events.

6. Two acid gas removal (AGR) unit vents (EU-007A-B)

- a. Permit conditions D.4.9(c) and D.4.9(d) list a CO₂ BACT emission limit of 1,290,000 tpy for the AGR units that represents a significant reduction in emissions compared to the first two years of operation. This CO₂ reduction is to be achieved by the production of liquified CO₂ that will be sold to third parties for use in enhanced oil recovery. Permit condition D.4.16 includes a compliance determination method for CO₂ emissions; however, this condition does not appear to account for monitoring CO₂ emissions from the liquefaction process. The permit should include a monitoring requirement that accounts for the removal of CO₂ from the AGR emission stream in order to demonstrate compliance with the 1,290,000 tpy limit for emissions of CO₂ from the facility.
- b. A continuous emission monitoring system (CEMS) for NO_x, SO₂, and CO₂ is being proposed for the wet sulfuric acid (WSA) plant but not the AGR system vent. Since the AGR vent is the largest source of GHG emissions from the facility, please clarify whether a CO₂ CEMS was considered for the AGR vent and, if so, why a CO₂ CEMS was not included in the draft permit.
- c. Permit condition D.4.11 limits methanol emissions at the AGR units to 9.0 tons per 12-month period and combined hazardous air pollutant (HAP) emissions to 22.5 tons per 12-month period so that the source remains below the major source threshold for HAPs. The permit includes monitoring, reporting, and recordkeeping requirements for the methanol limit; however, the permit does not include monitoring requirements to assure compliance with the combined HAP limit. Furthermore, we note that the calculations attached to the draft permit document show potential HAP emissions above the 25 tpy major source threshold. Please include monitoring requirements in the permit to assure compliance with the combined HAP emissions limit.

7. Section D.5 lists permit conditions for two WSA plant trains (EU-015A-B). In permit condition D.5.8, NO_x is limited to 10.2 lb/hr based on a 24-hour block daily average when the flow to the selective catalytic reduction (SCR) is operating above its optimal temperature of 750 degrees F. However, there is no limit established for when the flow to the SCR is below 750 degrees F. Since BACT

must apply at all times, the permit should include a limit for these units when the flow to the SCR is below 750 degrees F.

8. Section D.7 includes PM, PM₁₀, PM_{2.5}, CO, SO₂, and NO_x BACT emission limits for the five gasifier preheat burners (EU-008A-E). However, the limits themselves are based on the emissions for only one gasifier preheat burner operating under normal conditions of 18 MMBTU/hr, not all five gasifiers operating at the site. It is unclear whether this condition is meant to apply individually to each gasifier or collectively to all five gasifiers operating at once. We note that the calculations attached to the draft permit (pages 417-426 and 508-517 of the electronic file) contain emission factors and equations necessary for obtaining the BACT limits. The limits listed are for an individual gasifier preheat burner as opposed to all five preheat burners. Please clarify in the permit the BACT limit(s) that applies to the five gasifier preheat burners.
9. Section D.18 lists permit conditions for the zero liquid discharge (ZLD) inert gas vent (EU-033). Permit condition D.18.4 says that operation of the carbon adsorber (for mercury emissions) will allow the source to limit source-wide HAP emissions to less than 10 tpy of a single HAP and to less than 25 tpy of all HAPs. However, the condition does not provide a specific HAP limit for this unit. If use of this control device is necessary to limit source-wide HAPs to less than 10/25 tpy, then the permit should include an emission limit for this unit in order to demonstrate that the source is not a major source for HAPs. According to the calculations attached to the draft permit, a limit on mercury emissions from this unit is not necessary to limit source-wide HAP emissions below the 10/25 tpy threshold. If these calculations are correct, the permit should clarify that this control option is not required to keep HAP emissions below 10/25 tpy.
10. We have identified the following typographical errors in the permit:
 - a. In permit condition D.5.22, 326 IAC 3-5-7(5) should be 326 IAC 3-5-7(c)(4).
 - b. In permit condition D.6.17, 326 IAC 3-5-7(5) should be 326 IAC 3-5-7(c)(4).

We appreciate the opportunity to provide comments on this draft permit. Please feel free to contact me or have your staff contact Sam Portanova of my staff, at (312) 886-3189 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Genevieve Damico". The signature is written in black ink and is positioned above the printed name and title.

Genevieve Damico

Chief

Air Permits Section