



Observations of a Part-Time Air Permit Writer

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Or, alternatively ...

What could possibly be said that hasn't been covered already?

Well, here are some observations of a part-time air permit writer on:

- PM_{2.5}
- NSR Reform
- GHG Permitting

But first, in order to keep you awake, we are going to play a quick game.



PM_{2.5}: Applicable Regulations

AQ318 – PM_{2.5} NSR Implementation Rule

- Promulgated June 20, 2011.
- Mirrors the federal rule promulgated May 16, 2008.
- SO₂ and NO_x are now regulated as precursors to PM_{2.5}.
- Addressed condensable PM.

PM₁₀ Surrogate Policy is no longer in place.



How is LDEQ Addressing PM_{2.5}?

Title V Renewals and Significant Modifications

Applications for Title V renewals and significant modifications submitted on or after **March 1, 2011**, should address PM_{2.5} for all sources.

Minor Modifications

Applicants proposing physical changes or changes in the method of operation should address PM_{2.5} emissions for the affected sources to show that the project increase (or net emissions increase, if necessary) is below 10 TPY.



Quantifying PM_{2.5} and Condensable PM

To verify compliance with PM₁₀/PM_{2.5} limits, LDEQ will **thoughtfully** transition from Method 5 to:

Method 201A

- Measures filterable PM_{2.5}.
- Can also be used to measure PM₁₀.

Method 202

- Measures condensable PM.



Quantifying PM_{2.5} and Condensable PM

Transition to Methods 201 and 202 (cont.)

- Details will be outlined in the hopefully soon-to-be-final Stack Testing Guidelines
- Method 5 will still be viable in certain circumstances.
- Method 201A cannot be conducted on all stacks.
- LDEQ will verify there are sufficient accredited laboratories.



PM_{2.5} Limits in Air Permits

PM_{2.5} limitations now appear in the “Emission Rates for Criteria Pollutants” table.

EMISSION RATES FOR CRITERIA POLLUTANTS AND CO₂e

AI ID: 133 - Reynolds Metals Co - Lake Charles Carbon Co

Activity Number: PER20110002

Permit Number: 0520-00011-V3

Air - Title V Regular Permit Renewal

All phases

Subject Item	VOC			Lead			PM _{2.5}		
	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year
Facility Support and Maintenance Operations									
EQT 0088	0.74	0.74	0.18				0.64	0.64	0.16
Raw Material and Product Handling, Storage, and Transfer Operations									
EQT 0015							0.001	0.005	
EQT 0016							0.001	0.005	
GRP 0011							0.003		0.01

Note: Emission rates in bold are from alternate scenarios and are not included in permitted totals unless otherwise noted in a footnote.



NSR Reform

December 20, 2005: LDEQ adopted EPA's NSR Reform rules by promulgating revisions to LAC 33:III.504 (NNSR) and 509 (PSD).

January 24, 2008: EPA submitted comments.

October 6, 2008: LDEQ responded to EPA's concerns, agreeing to adopt language that parallels the federal rules and to initiate rulemaking as expeditiously as possible once EPA confirms that such revisions acceptably address the agency's concerns.



NSR Reform

February 20, 2011: To ensure SIP-approvability of LDEQ's PSD and NNSR regulations, LDEQ proposed to remove the definition of "malfunctions" from § 504 & § 509, and replace the reference to § 519 in § 504 with text that parallels the federal rule at 40 CFR 51.165 (AQ318).

June 20, 2011: LDEQ adopted AQ318 and now believes the concerns raised by EPA in its January 24, 2008, correspondence, at least with regard to the wording of LDEQ's rules, have been fully addressed.



Regulation of Greenhouse Gases (GHG)

As you know, “Step 2” of the GHG Tailoring Rule began on July 1, 2011.

Projects can trigger PSD (BACT) based solely on increases of GHGs.

- Major Source Threshold = 100,000 TPY CO₂e
- Significance Level = 75,000 TPY CO₂e



Regulation of Greenhouse Gases

“The only applicable control ... is regular performance monitoring and maintenance”

is **not** a BACT analysis
(even though it’s probably true).



BACT Determinations for GHGs

To date, LDEQ has issued 2 PSD permits that addressed BACT for GHGs:

- Nucor Steel Louisiana
- Entergy Louisiana – Ninemile Point Plant

The public comment period for Sabine Pass LNG has recently concluded (public comments received).

A PSD permit for Westlake Vinyls is on public notice.

Only 2 are currently under review:

- Reynolds Metals – Lake Charles Carbon Company
- Washington Parish Energy Center One, LLC (review suspended by applicant).



Regulation of Greenhouse Gases

EPA Resources

- “PSD and Title V Permitting Guidance for Greenhouse Gases” (March 2011)
- GHG Mitigation Strategies Database
- GHG Control Measures “White Papers” (8)
- Implementing GHG Permitting - Questions and Answers (3)
- RACT/BACT/LAER Clearinghouse (RBLC)

All resources can be accessed at

<http://www.epa.gov/nsr/ghgpermitting.html>.



GHGs: Carbon Capture and Storage (CCS)

The focus of this presentation will be on CCS.

EPA classifies CCS as an add-on pollution control technology that is “available” for facilities emitting CO₂ in large amounts, including fossil fuel-fired power plants, and for industrial facilities with high-purity CO₂ streams.

CCS is composed of three main components:

- CO₂ capture
- Transport
- Storage



GHGs: Carbon Capture and Storage (CCS)

According to EPA, “CCS may be eliminated from a BACT analysis in Step 2 if the three components working together are deemed technically infeasible for the proposed source.”

If you deem carbon capture and storage technically feasible, it must be eliminated based on adverse energy, environmental, or economic impacts (step 4).

- Quantify costs!



GHGs: Carbon Capture and Storage (CCS)

CCS is very, very expensive. For example, published data puts the CCS system to be installed by Lake Charles Cogeneration at \$435.6 million.

- Large-scale CCS projects are heavily subsidized by the federal government.

Remember cost effectiveness is not simply capital cost of the equipment / tons CO₂ reduced.

- Use the methodology described in Appendix B of the 1990 NSR Manual.

At what point (\$/ton) does a project become economically infeasible?



GHGs: Carbon Capture and Storage (CCS)

CO₂ Capture:

Don't just assume CO₂ capture is technically infeasible.

- Mitchell Energy (Bridgeport, TX) was able to capture ~ 500 tons of CO₂ per day (TPD) from the flue gas streams of fired heaters, internal combustion engines, and gas turbines from 1991 – 1999.
- Northeast Energy Associates (Bellingham, MA) is currently capturing approximately 320 TPD from the exhausts of two natural gas-fired combustion turbines.



GHGs: Carbon Capture and Storage (CCS)

CO₂ Storage:

There are no suitable geologic reservoirs in south Louisiana (e.g., basalt formations, organic rich shale basins, un-mineable coal areas, and saline formations) for CO₂ storage.*

Examine if there any opportunities for enhanced oil recovery in the immediate vicinity of the facility.

* "2010 Carbon Sequestration Atlas of the United States and Canada," 3rd Edition, U.S. Department of Energy, National Energy Technology Laboratory
http://www.netl.doe.gov/technologies/carbon_seq/refshelf/atlasIII



GHGs: Carbon Capture and Storage (CCS)

CO₂ Transport:

Denbury's Green Pipeline connects Denbury's existing NEJD Pipeline, which runs from Jackson Dome in MS to Donaldsonville, LA, to the Hastings Oil Field, located south of Houston, TX.

- 800 million scf of CO₂ per day (about 17 million TPY)
 - Lake Charles Cogeneration (Lake Charles, LA):
4.5 million TPY
 - Air Products and Chemicals (Port Arthur, TX):
1 million TPY



GHGs: Carbon Capture and Storage (CCS)

CO₂ Transport: (cont.)

Denbury's Green Pipeline





Questions / Comments?

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