Breaking the LFGTE Permit Log Jam

Federal Combustion Rules put States on Shaky Ground

16th Annual LMOP Conference and Project Expo

Presented by Matt Lamb, Sr. Scientist

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State of LFGTE Permitting in North Carolina

Log Jam at Taylors Falls 1884

Who is affected?

- **Private developers seeking to permit gensets**
- **Universities pursuing carbon footprint reduction**
- **County governments scrambling to meet ARRA deadlines**
- **State Energy agency administering EECBG funds**
- **Private landfill operators facing NSPS deadlines**

What is the Cause?

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What is the Cause?

CAAA90

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What is the Cause?

WWW

CAAA90

NSPS

3C/25C

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What is the Cause?

WWW

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NESHAP

MACT

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What is the Cause?

WWW

IIIWW

CAAA90

NSPS

NESHAP

MACT

JJJ

3C/25C

ZZZZ

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What is the Cause?

WWW
MRR
PSD
CAAA90
GHG
MACT
HAP
NESHAP
NSPS
JJJ
3C/25C
ZZZZ

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What is the Cause?

WWW
MRR
PSD
CAAA90
IIIW
NSPS
NESHAP
NHSM
MACT
GHG
CISWI
JJJJ
3C/25C
ZZZZ

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What is Solid Waste?

What is Contained Gaseous Material?

What is Solid Waste?

- **Commercial and Industrial Solid Waste Incineration (CISWI) and Non-Hazardous Secondary Materials (NHSM) Rule amendments:**
  - **Deleted exemptions for generators**
  - **Redefined the term "contained gaseous materials"**
  - **Comments, rule stays, reconsiderations, lawsuits, and court orders**
  - **Amended rules remained in effect**
  - **Unattainable CO limit of 157 ppm**

Conflicting Comfort

- **EPA issued several "comfort" letters**
  - **American Forest and Paper Assoc. (May 2011)**
  - **Waste Management, Inc. (August, 2011)**
  - ***"burning of gaseous material… does not involve treatment or other management of a solid waste"***

BUT

- ***"Landfill gas is not a traditional fuel"***
- **NC DAQ confused by conflicting guidance**
- **Burden of proof on permittee**

Two Paths to Permits

1. Schedule of Compliance

- **DAQ offered "Schedule of Compliance"**
  - **DAQ issues permit but considered permit holder non-compliant with CISWI**
  - **Offers SOC generous enough to allow reconsideration to become final**
  - **Risk borne by permittee**
  - **Difficult to finance a project that is non-compliant from day one**

2. Force EPA Determination

- **DAQ issued CISWI permit for an LFG flare**
  - **DAQ hopes during EPA review CISWI would be determined non-applicable**

OOPS

  - **EPA issued permit as written, with CISWI conditions intact**

A Third Way

- **Legitimacy Test**
  - **Demonstrate that landfill gas:**
    1. **Remains in control of the "generator"**

       OR

    2. **Is managed as a valuable commodity**
    3. **Has significant heat content**
    4. **Has contaminant levels comparable to traditional fuel**

Cooperative Effort with DAQ

- **Natural gas contaminants are difficult to identify/quantify**
- **Evaluation of LFG contaminants against emission limits/factors**

Contaminant	ppmv (unless otherwise noted)	Source	ppmv (unless otherwise noted)	Source	MW	CFM	lb/hr	tpy	EPA de minimis (tpy unless otherwise noted)	Notes
	Natural Gas		LFG							
Nitrogen	3,100 - 25,000	Perry's Handbook	262,000	EPA Field Tests (Raw LFG)						NOx emission rate same as natural gas-fired enging
Sulfur	0.34 ppmw									See sulfur compounds below
Hydrogen Sulfide (H_2S)	1,800	Ohio Raw Gas Sample	336	EPA Field Tests (Raw LFG)						Lower than Traditional Fuel
Metals										
Arsenic (As)	35.5 - 86.5	EPA/OAQPS Survey for Final NHSM Rule	0.004	EPA Field Tests (Raw LFG)	74.9	519	2.42074E-05	0.00011	0.005 tpy	Lower than EPA de minimis
Beryllium (Be)	20.3 - 45.6	EPA/OAQPS Survey for Final NHSM Rule	No Data							
Cadmium (Cd)	3.6 - 8.3	EPA/OAQPS Survey for Final NHSM Rule	0.00098	EPA Field Tests (Raw LFG)	112	519	8.86852E-06	0.00004	0.01 tpy	Lower than EPA de minimis
Chlorine (Cl)	2140 - 2870	EPA/OAQPS Survey for Final NHSM Rule	No Data							
Chromium (Cr)	164.3 - 274.6	EPA/OAQPS Survey for Final NHSM Rule	0.008	EPA Field Tests (Raw LFG)	52	519	3.36125E-05	0.00015	0.002	Lower than EPA de minimis. The hexavalent was used as the most protective assumption
Lead (Pb)	55.3 - 78.3	EPA/OAQPS Survey for Final NHSM Rule	0.005	EPA Field Tests (Raw LFG)	207	519	8.36271E-05	0.00037	0.01	Lower than EPA de minimis

Success!

- **Three landfill gas to energy projects permitted**
  - **Developer**
  - **University**
  - **County**
- **All three are currently under construction**

CISWI/NHSM Reconsideration Status

- **December 21, 2012: Reconsideration Rules are finalized**
- **Previous definition of *"contained gaseous fuels"* reinstated as:**

  "…gases that are in a container when the container is combusted"

NC DAQ Status

- **Rule implementation within 60 days of publish date**
- **To date, no notice has been published in the Federal Register**

Acknowledgements

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North Carolina Department of Air Quality

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