Air Pollution Control – Permits & Compliance

Wisconsin Department of Natural Resources – Air Management
Jeffery Johnson, P.E.
June 23-25, 2014
Overview

- Available Resources
- Air Management (AM) Program – Industrial Sand Mining (ISM) Sector
  - Staff & Assignments/Objectives
- Air Pollution Control Permitting
- Regulatory Framework
Overview (Cont.)

- Compliance Demonstration
  - Stack testing
  - Control devices
  - Fugitive Dust Practices
  - Recordkeeping / Reporting
- Public Concerns
  - Off-site fugitive emissions
  - Crystalline silica
  - Monitoring
- Q&A
Available Resources

- Past Seminars / DNR Information
  - http://dnr.wi.gov/topics/mines/silica.html
    - ‘Training’ tab
  - The ‘Resources’ tab also has fact sheets
AM Program – ISM Sector

- **Staff & Assignments**
  - John Dague – Cumberland
    - Barron, Burnett, Chippewa*, Rusk
  - John Stoffel – Baldwin
    - Barron*, Buffalo, Chippewa, Dunn, Pepin, Pierce, St. Croix
  - Tanner Connors – Eau Claire
    - Clark, Eau Claire, Jackson, Trempealeau (North), Wood
  - Frederick (Myron) Smith – La Crosse
    - Crawford, Juneau, Monroe, Trempealeau (South)
AM Program – ISM Sector

- Staff Objectives
  - Source verification
  - Annual Full Compliance Evaluation
  - Quarterly Partial Compliance Evaluations
  - Complaint response
- Other/Misc
  - Compliance certifications, monitoring reports
  - Ambient air monitoring / variance
  - Plan reviews
  - Enforcement
Air Permits - Exemptions

- Construction Permits
  - NR 405 [Major Prevention of Significant Deterioration (PSD)]
  - NR 406 [Minor New Source Review (NSR)]
- Operation Permits
  - NR 407
- Exempt from construction permit usually equates to being exempt from operation permit.
  - When dealing with an entire/new facility
Air Permits - Exemptions

- Construction Permits - NR 406
- Specific Categories
  - Industrial sand mines with actual production less than 2,000 ton/mo. (12-mo avg.).
  - Fixed sand and gravel plants with capacity 25 ton/hr or less.
  - Portable sand and gravel plants with capacity 150 ton/hr. or less.
  - Addition or replacement of specific equipment (and have or applied for an operation permit) [406.04(1)(zc), Wis. Adm. Code]
Air Permits - Exemptions

- Construction Permits - NR 406 (cont.)

- Controlled Actual Emissions (aka 10 Ton Per Year (TPY) exemption)
  - Any emission unit that meets the criteria.
  - <1,666 lb/mo, 12-mo ave (10 TPY)
  - Can’t be subject to Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) under NR 445.
  - Can’t be subject to a New Source Performance Standard (NSPS) or Maximum Achievable Control Technology (MACT).
  - Submit claim of exemption (and fee) and/or operation permit application.
Air Permits - Exemptions

- Construction Permits - NR 406 (cont.)
- General Category
  - Specific pollutant thresholds
    - Maximum Theoretical Emissions (MTE) based!
  - Can’t be subject to BACT/LAER under NR 445.
  - Can’t be subject to an NSPS or MACT.
Air Permits - Exemptions

- Operation Permits - NR 407
  - Entirely new source: if exempt under 406, typically exempt under 407.
  - Existing permitted source: exempt under 406 does **not** exempt under 407.
    - Typically, an update to the operation permit (revision request, application) required.
    - Application required **BEFORE** commencing construction or modification.

ch. NR 407, Wis. Adm. Code: Operation Permits
Air Permits - Exemptions

- Exempt Status - Responsibilities
  - Application not always required (except for 10 TPY exemption, or have an operation permit)
  - Can request DNR decision (fee applicable)
  - Must maintain adequate records demonstrating continuous exempt status
    - Status changes? Submit proper application ASAP
  - **Exempt from permit ≠ exempt from regulation**
    - Must be able to demonstrate compliance with any application standard/regulation
Air Permits – GCP/GOP

- General Permits
  - Cover specific source categories
  - Available for both construction (GCP) and/or operation (GOP)
- Permit already issued, applying for coverage under the permit
  - Rock crushing plants
  - Hot mix asphalt plants
  - Printers
- Decision within 15 days of application
Air Permits – RCP/ROP

- Registration Permits
  - Cover any source (pollutant based)
  - Available for both construction (RCP) and/or operation (ROP)
- Permit already issued, applying for coverage under the permit
  - 25 TPY threshold for criteria pollutants
  - 2.5/6.5 for single/all FHAPs
- Decision within 15 days of application
- Completed online
Air Permits – Traditional

- Non-exempt, and don’t qualify for general or registration permit
- Apply for both construction AND operation permit
- Process can take ~3+ months
  - Complete application
  - Public comment period
  - Public hearing
Air Permits – Traditional

- Contain all applicable requirements
- Construction permit issued first (most cases)
  - Complete construction, initial operation
  - Conduct necessary initial compliance demonstrations
- Operation permit issued upon successful completion of construction/compliance activities
  - Both permits noticed, no re-notice of operation permit necessary (most cases)
- Construction permit revision: changes
Air Permits – Traditional

- Must have construction permit (issued) BEFORE* commencing construction
  - “Commence construction” means to engage in a program of on-site construction, including a site clearance, grading, dredging or landfilling specifically designed for a stationary source in preparation for the fabrication, erection or installation of the building components of the stationary source.
  - *Waiver available
    - Specific criteria to be met

s. NR 400.02(44), Wis. Adm. Code; “Commence construction”
s. NR 406.03(2), Wis. Adm. Code; Waiver of construction permit requirements
Air Regulations

- Most common applicable regulations:
  - NR 404 – National Ambient Air Quality Standards
  - NR 415 – Particulate Emissions
    - Fugitive dust prevention
    - Point (stack) source limitations
    - Ambient monitoring
  - NR 431 – Visible Emissions
  - NR 438 – Emission Reporting
  - NR 439 – Reporting, Recordkeeping, Testing, Inspection and Determination of Compliance
Air Regulations

- Most common applicable regulations (cont):
  - NR 440 / 40 CFR Part 60 – New Source Performance Standards
    - NR 440.688 / 40 CFR 60 Subpart OOO – Nonmetallic mineral processing plants
    - NR 440.73 / 40 CFR 60 Subpart UUU – Calciners and dryers in mineral industries

s. NR 440.688 is outdated, refer to 40 CFR Part 60 Subpart OOO for most recent version of rule.
Compliance Demonstration

- Stack Testing
  - Initial demonstration
    - Construction permit phase / start-up
  - Continuous demonstration
    - Operation permit phase / continuous operation
- Required/Authority by:
  - Specific regulation (example: NSPS)
  - ‘Catch-all’ s. NR 439.075(b), Wis. Adm. Code

NR 439.075, Wis. Adm. Code: Periodic compliance emission testing requirements.
Compliance Demonstration

- Control Devices
  - Operate a control device
  - Monitoring of control device operation
    - Example: baghouse – pressure drop
- Malfunction Prevention and Abatement Plan
- Required/Authority by:
  - Specific regulation
  - s. NR 439.055, Wis. Adm. Code
  - s. NR 439.11

NR 439.055, Wis. Adm. Code: Methods and procedures for determining compliance using instrumentation of air pollution control equipment and source processes.

Compliance Demonstration

- Pollution Prevention Practices/Plans
  - Fugitive Dust Prevention Plan
    - s. NR 415.04 - Practices
    - s. NR 415.075(6) - Plan
  - Not prescriptive by rule
    - 415.04, “... precautions shall include, but not be limited to:”
    - 415.075(6), “Other information as the department may deem pertinent”

NR 415.04, Wis. Adm. Code: Fugitive Dust.
NR 415.075, Wis. Adm. Code: Particulate matter emission limitations for ledge rock quarries and industrial sand mines
Compliance Demonstration

- Pollution Prevention Practices/Plans
  - Fugitive Dust Prevention Plan (continued)
    - Important note: s. NR 415.04(intro), “No person may cause, allow or permit any materials to be handled, transported or stored without taking precautions to prevent particulate matter from becoming airborne. ...”
    - Proactive NOT Reactive; do not wait to see airborne dust before taking actions
Compliance Demonstration

- Recordkeeping
  - Primary method of demonstrating compliance
  - Specified by permit
  - Part II, Section M.
  - Required/Authority by:
    - Specific regulation
    - s. NR 439.04, Wis. Adm. Code
Compliance Demonstration

- Recordkeeping (cont.)
  - s. NR 439.04, Wis. Adm. Code
    - Records of all sampling, testing, and monitoring conducted or required under chs. NR 400 to 499 OR under an air pollution control permit.
    - Any other records relating to the emission of air contaminants which may be requested in writing by the department.
Compliance Demonstration

- Reporting
  - Specified by permit
  - Part II, Section D.
  - Required/Authority by:
    - Specific regulation
    - s. NR 439.03, Wis. Adm. Code
Compliance Demonstration

- Reporting (cont.)
  - Primary reporting requirements
    - Annual/semi-annual monitoring reports
    - Compliance certification
    - Annual emission inventory
Compliance Demonstration

- Reporting (cont.)
  - Other reporting requirements
    - Malfunctions or unscheduled events
    - Exceedences or Deviations - cause, duration, corrective measures / plans
    - Shutdown, breakdown, malfunction of monitoring device
    - Planned shutdown of control device while continued operation
Compliance Demonstration

- Reporting (cont.)
  - Any information to determine compliance as necessary, as requested by department
    - ‘Catch-all’, s. NR 439.03(1), Wis. Adm. Code
Public Concerns – Air Pollution

- Off-site fugitive emissions
- Inhalation of crystalline silica
- Monitoring

- Department internal workgroup to address
- Collection of data
Public Concerns – Air Pollution

- Off-site fugitive emissions
  - Regulated under NR 415
  - Must take precautions to prevent particulate matter from becoming airborne
    - Some required to implement a fugitive dust control plan
  - Precautions/Prevention ≠ continuous zero dust
    - Mild, severe, extreme weather can create dust regardless of best preventative measures taken
Public Concerns – Air Pollution

- Inhalation of crystalline silica
  - Non-regulated pollutant, specifically; EPA nor WDNR
  - Indirect regulation; particulate matter
    - WI particulate matter or fugitive dust regulations similar to other state’s regulations that have standard for CS/RCS.
    - Types of control or best management practices already in place; surrogate for CS/RCS.
- Workplace exposure ≠ ambient exposure
- Largest sources of ambient CS/RCS does not include mining
Public Concerns – Air Pollution

- Monitoring Data
  - 11 facilities, 13 monitors
  - PM10
  - All (valid) data indicates attainment with NAAQS
  - Available online
    - http://dnr.wi.gov/topic/mines/silica.html
    - ‘Air Monitoring’ tab
    - Interactive map
    - PDFs of data available
Public Concerns – Air Pollution

- Monitoring Data (continued)
  - Data through Quarter 4 of 2013
    - 909 valid samples collected
    - Highest concentration reported = 103.4 μg/std m³ (68.9% of daily PM10 NAAQS)
    - Average sample concentration = 13.8 μg/std m³
Public Concerns – Air Pollution

- Monitoring Equipment and Operational Specifications
  - Must meet EPA citing criteria
  - Must meet EPA measurement systems and methods
    - Quality Assurance Handbook – Ambient Air Specific Methods - VOL.II – EPA.
    - Federal Reference Method (FRM), or Federal Equivalent Method (FEM)
Public Concerns – Air Pollution

- Monitoring Equipment and Operational Specifications (cont)
  - Operating and quality control procedures must be adequate to insure good control of the accuracy and precision of the data.
  - Must go through initial audit, then annual audits
    - System and operational audits
Public Concerns – Air Pollution

- Monitoring Equipment and Operational Specifications (cont)
  - Monitoring data obtained any other way is not valid in comparing to NAAQS

- Comparison to standard is not straightforward
  - Example: one data point above standard is not an exceedance/violation
Public Concerns – Air Pollution

- Limitations of Monitoring
  - Not a definitive ‘red light’ if exceedance found
  - Culpability
    - Source impact
    - Other potential sources
    - Natural events (forest fires)
- Multiple monitors doesn’t necessarily add value
  - Environmental variations: weather, traffic, other operations, etc.
- Immense analysis required to assess any data point’s true origin(s)
Public Concerns – Air Pollution

- Limitations of Monitoring (cont)
  - PM10 vs. PM2.5 concerns
    - PM10 known pollutant of mechanical processes
    - PM2.5 not directly tied to mechanical processes
      - Secondary formation (chemical reactions in air)
        - Ammonia, nitrogen oxides, etc.
        - Most commonly found substances on filters
      - Combustion sources
    - ‘Regional pollutant’; travels much further than PM10
Upcoming Issues

- Department internal workgroup covering all aspects from all affected programs
- Collection of data continues
- Air Management program inspections
  - Annual on-site planned, and quarterly unplanned
  - *Immediate* complaint response activities
- Special studies
  - *See next slide*
Upcoming Issues

- Completion of special study by Dr. John Richards, Air Control Techniques (independent research)
  - PM4 sampling near EOG site(s).
    - Total PM4 particulate
    - PM4 crystalline silica
  - Modified EPA method(s)
    - There is no current approved method for PM4 ambient sampling
- UWEC
  - Dr. Crispin Pierce, monitoring near industrial sand operations
  - Geology Dept., cementation study to identify potential for raw materials to produce particle size pollution
Questions ?