

Enforcement Symposium

A Review of Permitting for NSR and Title V

October 4, 2016

David Lusk,

Senior Air Quality Engineer, Butte County AQMD

Presentation Outline

- History of Air Pollution Regulations
- The Clean Air Act
- Clean Air Act Amendments of 1990
- New Source Review
- Title V Permitting



History of Air Pollution Regulations

- 1943-Los Angeles smog episode
- 1945-Los Angeles Bureau of Smoke Control established within the Department of Health
- 1947-California Air Pollution Control Act creates air districts
- 1947-Los Angeles APCD began
- 1977-South Coast AQMD formed



Beginnings of the Federal Clean Air Act

- 1955-Federal Air Pollution Control Act passed to provide funding for research
- 1963-Clean Air Act
- 1967-Air Quality Act
- 1970-Clean Air Act
 - Health and Welfare Standards (National Ambient Air Quality Standards)
 - State Implementation Plans
 - Best Available Control Technology
 - Hazardous Air Pollution Control
- 1977-Clean Air Act Amendments (added Prevention of Significant Deterioration and Major Source New Source Review)
- 1990-Clean Air Act Amendments (Added Title V Permitting)

National Ambient Air Quality Standards (NAAQS)

- Set up for Criteria Pollutants
 - Ozone and Precursors
 - Oxides of Nitrogen (NO_x)
 - Volatile Organic Compounds (VOC)
 - Particulate Matter (PM₁₀ and now PM_{2.5})
 - Sulfur Dioxide (SO₂)
 - Nitrogen Dioxide (NO₂)
 - Carbon Monoxide (CO)
 - Lead (Pb)
- Status:
 - Attainment-meeting standards
 - Nonattainment-not meeting standards
 - Unclassifiable-data not available, considered attainment

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m ³ ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb ⁽²⁾	Annual Mean
Ozone (O₃)		primary and secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)		primary	1 hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

State AAQS for PM2.5

<https://www.arb.ca.gov/desig/adm/adm.htm>



State Implementation Plans

- Each State (or jurisdiction) must adopt and submit a plan to EPA that provides for the implementation, maintenance, and enforcement of the NAAQSs.
- Plan includes:
 - Enforcement program
 - Control measures and regulations for stationary sources
 - Permitting program

Permitting

- Systematic review of equipment or processes prior and post construction to ensure compliance with all applicable regulations.
- Authority to Construct and Permit to Operate are documents issued by an Air District's Air Pollution Control Officer granting permission to install and operate equipment or processes that emit or have the potential to emit air contaminants

Functions of an Air Permit

- Compliance Guide for Facility and Inspectors
- Inventory of Emissions
- Justification for new Rules and Controls
- Provides Method of Enforcing Rules and Regulations
- Ensure compliance with other programs and rules (i.e. Hot Spots)
- Limits or Caps source emissions
- Instrument for fees

California Health and Safety Code

§42300(a)

- *Every district board may establish, by regulation a permit system that requires, except as otherwise provided in Section 42310, that before any person builds, erects, alters, replaces, operated, or uses any article machine equipment or other contrivance which may cause the issuance of air contaminants, the person obtain a permit to do so from the air pollution control officer of the district.*
- §42310 provide for exemptions

Permit applications required for.....

- New equipment or processes
- Most Modifications to existing equipment
- Most Replacements of existing equipment
- Changes in method of Operation or Control
- Requests to modify permit conditions:
 - Monitoring conditions
 - Hours of operation limits
 - Usage or consumption limits
 - Emission limits
- Relocation of equipment
- Transfer of Ownership
- Emission Reduction Credits (ERCs)

Permits or Applications not required for...

- Exemptions in HSC §42310:
 - Any vehicle
 - Any structure designed for and used exclusively as a dwelling for not more than four families
 - An incinerator used exclusively in connection with such a structure
 - Barbecue equipment which is not used for commercial purposes
 - Repairs or maintenance not involving structural changes to any equipment which has a permit
- Exemptions as specified in District rules
- PERP

Common Equipment and Processes...

- Storage and transfer of gasoline and other petroleum products
- Dry cleaning machines
- Oil and natural gas wells and production equipment
- Boilers, steam generators, and process heaters
- Engines (natural gas, diesel, gasoline)
- Turbines
- Electrical power plants
- Automotive refinishing
- Graphic Arts

(con't.)

- Contaminated soil vapor extraction operations
- Aggregate crushing and sand and gravel screening
- Semi-conductor manufacturing
- Ethylene Oxide Sterilizers
- Cotton gins
- Abrasive Blasting
- Rendering Plants
- Landfill gas control equipment
- Crematories
- Nut processing and drying

Newer processes becoming permitted..

- Composting operations
- Pyrolysis units
- Wine Fermentation
- Biodiesel and ethanol plants
- Anaerobic digesters

Portable Equipment Registration Program

- State regulations preempt districts from permitting, registering, or regulating PERP equipment (except in specific circumstances)
- Applicable to temporary operations and short term activities with portable equipment such as:
 - Water well drilling rigs
 - Air Compressors
 - Concrete Batch Plants
 - Abrasive Blasting Operations
 - Generators
 - Pumps
 - Wood chippers/grinders
 - Cranes

What is a Stationary Source or Facility?

- **Stationary Source or Facility:** Any building, structure, or emissions unit which emits or may emit any affected pollutant directly or as a fugitive emission, including all pollutant-emitting activities which are:
 - Located on one or more contiguous or adjacent properties, and which may be separated by a public right-of-way; and,
 - Under the same or common ownership, operation, or control, or which are owned or operated by entities which are under common control and belong to the same industrial grouping, either by virtue of falling within the same two-digit Standard Industrial Classification (SIC) Code or by virtue of being part of a common industrial process, manufacturing process, or connected process involving a common raw material

What is an Emissions Unit?

- Emissions Unit: an identifiable operation or piece of process equipment such as a source operation which emits, may emit, or results in the emissions of any affected pollutant directly or as fugitive emissions.



New Source Review

- Preconstruction permitting program for both Major and Minor Sources
- Applies to all New and Modified Sources
- District NSR required by California Clean Air Act and the Federal Clean Air Act
- Federal NSR applicable only to Major new sources or major modifications at existing sources
- NSR applies to VOC and NO_x as precursors to Ozone
- NSR allows for industrial growth and minimizes emission increases that may hinder compliance with attainment of ambient air quality standards

NSR Components

- Attainment Areas: Minor Source NSR and Prevention of Significant Deterioration (PSD) for Major Sources
- Non-Attainment Areas: Federal NSR for Major Sources
- Applicability:
 - Type and amount of Pollutants emitted
 - Air basin Attainment Status and District requirements
 - Applies to any emissions unit subject to permitting

NSR Elements

- Requires permitting
- District performs engineering evaluation
- Requires Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER) for sources triggering significance thresholds
- Offsets
- Public Notification

NSR Applicability

- **Does Affect:**
 - New emission units
 - Modifications to existing units with emission increases
 - Replacement of emission units (district specific)
 - Relocation of emission units (district specific)
- **Does Not Affect:**
 - Modifications with no emissions increase
 - Exempt units now requiring permits
 - Modifications for Rule Compliance
 - Replacement of emission units (district specific)
 - Relocation of emission units (district specific)

BACT

- Maximum degree of reduction for each pollutant
- Obtained through production processes and available methods and technologies
- Reviewed on a case by case basis
- Considers energy, environmental, and economic impacts
- NSPS and NESHAPs considered minimum BACT

LAER

- Most stringent emission limitation contained in SIP for class and category of source
- Most stringent emission limitation achieved in practice for a class and category of source
- Does not generally consider economic factors
- Technology transfer considered technologically feasible and cost-effective
- NSPS and NESHAPs are considered minimum LAER
- Sometimes referred to as “California BACT”

What is BACT/LAER?

- Control device requirement
- Minimum reduction or destruction efficiency
- Numerical Limit (ppmvd, lbs/MMBtu, lbs/hr etc)
- Rule compliance
 - BACT/LAER generally more stringent than most District rules which are typically prohibitory in nature for existing sources
- Fuel Requirements
- Product or raw material limits

Sources of BACT/LAER Info

- EPA's BACT/LAER Clearinghouse
- California ARB BACT Guidelines
- SCAQMD Guidelines
- BAAQMD Guidelines
- SJVUAPCD Guidelines
- Air District Rules for existing and new equipment
- Federal/State/District NSR permits
- Consultants, journals, reports, newsletters

Emission Offsets

- Commonly called Emission Reduction Credits or “ERCs”
- For Nonattainment Pollutants and their precursors
- Required by State law (HSC §40918, 19, 20) depending on nonattainment severity; thresholds:
 - Moderate 25 TPY
 - Serious 15 TPY
 - Severe 10 TPY
- Required by federal law for Major sources at 100 TPY threshold

Offset Considerations

- Nonattainment pollutants requiring offsets
- Amount of offset
- Offset threshold (State or federal and severity)
- Location of offset in relation to the proposed source
- Allowable sources for offsets
- Baseline for calculating offset required
- Enforceability of proposed offsets

ERCs Validity Criteria

- Real
- Enforceable
- Permanent
- Surplus
- Quantifiable

Offset Ratios

- ERCs are “derated” based on distance from the origin to the proposed source
- Ratios are included in district NSR rules
- Typical ratios:
 - Onsite: 1 for 1
 - Within 20 miles: 1.2 to 1
 - From 20 to 50 miles: 1.5 to 1
 - Greater than 50 miles: 2 to 1
- Special provisions for trading offsets between districts

Sources of ERCs

- Shutdown of equipment
- Reduction in throughput, consumption, or hours of operation
- Replacement with a lower emitting unit
- Installation of a control device
- Cleaner burning fuel
- Over control beyond rule requirements
- Other modifications that decrease emissions

ERC Issues

- Availability
- Significance of offsets in meeting air quality standards
- Inter-pollutant trading
- Surplus at the time of banking versus use
- ERCs generated from non-permitted or non-traditional sources
- Inter-district trades (HSC §40709.6)

Federal New Source Review

- Codified in 40 CFR Part 51 Subpart I and 40 CFR Part 52 Subpart A
- Preconstruction permitting program
- Applicability depends on Attainment status
 - Attainment: Prevention of Significant Deterioration (PSD)
 - Non-Attainment: New Source Review

Federal NSR Requirements

- Applies to Major sources and Major modifications
- Thresholds in Non-attainment areas:
 - 100/70 TPY of PM, SO_x or CO
 - 10/25/50/100 TPY of VOC or NO_x depending on severity
- LAER
- Offsets
- Analysis of Alternatives
- No visibility impacts on Class 1 areas
- Public notification



Prevention of Significant Deterioration

- Thresholds: 250 TPY or 100 TPY for Names/Listed sources
- Applies to Attainment and Unclassified area
- If major for one pollutant, significant emission rates determine applicability of other pollutants
- BACT
- Ambient Air Quality analysis & modeling for compliance with the NAAQS
- Pre-construction and post construction monitoring
- Additional impacts analysis (soil, vegetation, visibility)
- No adverse impacts to Class 1 areas
- Public Notice

Title V—the other federal permit

- Nationwide permitting program for Major stationary sources
- Consolidates all federally enforceable air pollution control requirements into a single comprehensive “Operating Permit”
- Permit term is 5 years
- Requires public notice and input into permit process
- Cannot add any new requirements

Title V Applicability

- 40 CFR Part 70—State and local Title V programs
 - Approved by EPA
 - Implemented by Rule
 - Permits prepared and forwarded to EPA for review
 - Issuance after EPA approval/comment period
 - Can be appealed
- 40 CFR part 71—Federal Title V programs (EPA)
- Some sources requiring Title V permits regardless of PTE(i.e., Section 112 NESHAPs sources such as ACIs)

Title V Elements

- Requires annual compliance certification
- May require semi-annual compliance certification
- Must declare a “Responsible Official”
- Periodic Monitoring (Partial and Full Compliance Evaluations)
- May require enhance monitoring through Compliance Assurance Monitoring (CAM)
- Periodic modifications (Administrative, Minor, Significant)
- Requires renewal application prior to permit expiration

Potential to Emit Rule

(Actual emission < 50% Major Source)

- SIP approved, general rule that creates federally enforceable limits
- EPA may not recognize limits on District permits if not federally enforceable
- Limit is 50% of Major source threshold
- Actual emissions are surrogates for potential emissions
- Usually less complex facilities
- Requires annual recordkeeping and reporting
- “Permitted” emissions can be greater than Major Source threshold

Synthetic Minor Rule

- Permit limits less than Major Source Threshold
- May require “voluntary” limits (throughputs, concentration, consumption”
- District permit requires EPA and Public review
- Permit Conditions limit source to below Major Source thresholds
- Conditions may be more stringent than district rule
- Conditions must be enforceable as a practical matter
- May need increased monitoring
- May need to place limits on exempt equipment

Ag Sources and Title V

- Typically “growing crops and raising fowl or livestock” not permitted
- SB 700
 - Defined “Agricultural Source”
 - Allowed removal of Agricultural Exemption
 - Established specific permitting and exemption requirements
 - Emission Control for PM10
 - Requires control of Confined Animal Facilities (CAF)
 - Required CAPCOA to complete Ag Controls Clearinghouse
 - Did not remove nuisance exemption

Ag Source and Title V (con't.)

- Agricultural Source includes:
 - CAF
 - IC Engines, both portable, stationary and off-road
 - Sources otherwise subject to district permitting (gasoline tanks, silos, etc.)
 - Title V categories:
 - PTE* > Major Source Threshold
 - Actual Emissions > 50% Major Source Threshold
 - Actual Emissions < 50% Major Source Threshold
 - De Minimus (generally less than 1 TPY)
 - Sources implementing all listed mitigations
- *Does not include fugitive or off road engine emissions

PSD/Title V and GHGs

- Originally proposed GHGs could trigger PSD via the Tailoring Rule
- Court case in 2014 decided otherwise
- July 2015, EPA revises rule to remove vacated portions
- GHG only applicable for Sources already subject to PSD
- EPA promulgating BACT Significant Emission Rate (SER) which would trigger BACT review for PSD sources
- Title V is not applicable for source solely because of GHGs

Permitting and Public Notice

- Public Notice triggers:
 - Toxics: HSC § 42301.6
 - New Source Review Rules (Major and Minor)
 - ERC creation
 - EPA Grant Program
 - Title V
- EPA proposing electronic notification requirements (<https://www.epa.gov/nsr/clean-air-act-permitting-electronic-notice-proposal>)

Resources:

- ARB Course #197 New Source Review and Title V Permitting
- CAPCOA Basic Engineering Training
- EPA: <https://www.epa.gov/nsr/new-source-review-policy-and-guidance-document-index>
- Local NSR/Title V Rules

Questions???

David Lusk

Senior Air Quality Engineer

Butte County AQMD

dlusk@bcaqmd.org

(530) 332-9400, ext. 107