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# Advanced Air Permitting Topics (in 25 minutes!)

AEF Convention  
October 2016

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# Topics

- > Permit Flexibility
- > Non-Criteria Pollutant Control Strategy
- > NSPS & NESHAP Regulations
- > PM / PM<sub>10</sub> / PM<sub>2.5</sub> Permitting Issues

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# Air Permit Flexibility

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# Permit Flexibility



- > Some types of facilities are “static” and don’t need much permit flexibility
  - ❖ Raw materials, fuels, and equipment arrangement not likely to change
- > Dynamic facilities need permit flexibility
  - ❖ Multi-fuel boilers
  - ❖ Painting operations
  - ❖ Multiple end products produced from same equipment

# Permit Flexibility



- > Permit flexibility is not automatic!
  - ❖ ADEQ typically takes what you put in the permit application and converts into standardized permit conditions
  - ❖ ADEQ will not do your strategic thinking for you (consultants can help with that)
- > You have to “ask” for flexibility in the air permit application
  - ❖ Typically done via **emissions calculations** and **suggested permit conditions**

# No Flexibility Example

6. Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not process more than the following components or substitute components of equal or lesser HAPs content:

Component	Quantity Per Month	Formulation (by weight percent)
Bird Song Adhesive	261 gallons	34 % Acetone 24.9% Hexane 12 % Toluene
Toluene Cleanup	7 gallons	100% Toluene
Sterling Lacquer Redi-Mix Gold	112 gallons	75% Toluene
Tnemec F161-AE05A	150 gallons	2.1% Ethyl Benzene 9% Xylene

- > Problem: Applicant accidentally listed only the materials currently used and did not know to ask for flexibility

# Good Flexibility Example

1. *The permittee shall not use paints, primers, or other products with a VOC content that exceeds 8.0 pounds per gallon (as applied) in the painting operations*
  2. *The permittee may not emit any HAP with a TLV less than 19.5 mg/m<sup>3</sup> at or above ten tons per year in the painting operations*
- > Note that specific products subject to change are not “hard wired” into permit

# Ask and Ye Shall Receive?

- > Have a problematic inflexible permit condition?
  - ❖ Look at other ADEQ air permits for ideas for better alternative condition
- > Existing permits:
  - ❖ Contact ADEQ to discuss alternatives
  - ❖ Submit permit application for change
- > Draft permits:
  - ❖ Be sure to comment and negotiate!
  - ❖ Don't let a draft problematic condition get into the final permit!





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# Non-Criteria Pollutant Control Strategy



# Non-Criteria Pollutant Control Strategy Improvements

- > NCPCS updated April 2015
- > Greatly reduced friction between ADEQ and most of regulated community
- > Biggest helpful change: Initial screening step limited to air toxics:
  - ❖ Emitted at  **$\geq 10$  tons/year, or**
  - ❖ ACGIH TLV of  **$< 1$  mg/m<sup>3</sup>**
- > Greatly reduces number of air toxics requiring further analysis

# Remaining NCPCS Problem Areas

## > **Painting operations:**

- ❖ Variable HAP profiles difficult to permit
- ❖ Some paints might contain small amounts of toxics with low TLVs < 1 mg/m<sup>3</sup> (metal HAPs, formaldehyde, isocyanates)

## > **Metal fabrication operations due to trace HAP metals with low TLVs (chromium, manganese, nickel, etc.)**

- ❖ Welding
- ❖ Steel fabrication (cutting, surface blasting)

# NCPCS vs. Painting Operations

- > One facet of NCPCS: Attempts to limit toxicity impacts of HAPs emitted from painting operations
- > Traditionally a complex subject to address in permits
  - ❖ Painting HAPs variable since different paints have different HAPs
  - ❖ Facilities use new/different paints over time. Impractical to modify permit for each paint change.

# NCPCS vs. Painting

## > Old thinking:

- ❖ Paints emit HAPs
- ❖ Some HAPs are highly toxic
- ❖ Permit must contain onerous permit conditions surrounding paint HAPs, just in case

## > Faults:

- ❖ Unlikely that paints used in large amounts will have high concentrations of highly toxic HAPs
- ❖ Theoretical worst-case emissions not reflective of actual emissions
- ❖ Onerous permit conditions create artificial permit violations (cure worse than disease!)



# Typical Confusing Paint HAP Permit Condition

The permittee shall not use a coating in sources SN-06, 07, 08, 14, 15, and 16 with a HAP content greater than that for the corresponding TLV in the following table. The limits of this condition do not apply to the hexamethylene diisocyanate (HDI) content of materials. The HDI or MDI containing materials will be covered by other Specific Conditions. Compliance with this condition will be shown by compliance with Specific Condition 10. [Regulation 18, §18.1004 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

Maximum HAP Content (lb/gal)	Minimum HAPs TLV (mg/m <sup>3</sup> )
3.06	60
2.55	50
2.04	40
1.53	30
0.76	15
0.51	10

# Alternative Method - Paint HAP

## Reasonable Expectation

- > Gets away from problematic theoretical worst-case emissions methodology
- > Use recent actual paint HAP annual emissions inventory
- > Extrapolate recent actual HAP emissions to correspond to reasonable maximum annual production rate
- > Shows that the reasonably expected HAPs emission scenario does not warrant concern and further investigation
- > Permit will not have to contain onerous and confusing paint HAP permit conditions

# Reasonable Expectation Extrapolation Method Example

- > Recent actual emissions:
  - ❖ Toluene actual emissions = 4.0 tons/yr
  - ❖ VOC actual emissions = 70 tons/yr
- > Permitted VOC emissions = 120 tons/yr
- > Toluene linear extrapolation:  
$$4.0 \text{ tons/yr actual} * 120/70 = 6.9 \text{ tons/yr}$$
- > Toluene is a “no-concern” HAP since less than 10 ton/yr ADEQ concern level (and TLV > 1.0 mg/m<sup>3</sup>)



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# Federal NSPS & NESHAP Regulations

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# NSPS & NESHAP Regs Explosion



- > Many new federal NSPS & NESHAP regs promulgated in recent years
- > Regs affecting smaller and smaller facilities
  - ❖ Emergency generators and fire pumps
  - ❖ Some painting operations
  - ❖ Some metal fabrication operations
- > Now, most facilities are subject to one or more NSPS/NESHAP regs

# Dealing with NSPS / NESHAP Regulations vs. Air Permits



- > Reminder: Federal NSPS & NESHAP regs are self-implementing!
  - ❖ Applicable, even if not in your permit yet!
- > ADEQ attempts to address applicable NSPS/NESHAP regs in air permits
  - ❖ Cut & paste applicable paragraphs into body of permit
  - ❖ May or may not be completely accurate or up to date (the actual CFR regulation is the Bible)
  - ❖ You can be in compliance with the NSPS/NESHAP conditions of the air permit, but not necessarily in compliance with the actual federal regs!

# NSPS / NESHAP Survival Skills

- > **YOU** need to be expert (or at least semi-expert) in the NSPS/NESHAP regs that potentially affect your facility!
- > **YOU** are responsible for analyzing the NSPS/NESHAP regs and submitting the analysis to ADEQ
- > Big Problem: NSPS/NESHAP regs are difficult to analyze and comply with
  - ❖ Most permittees need outside consulting help doing this

# NSPS / NESHAP Compliance Binder



- > Additional compliance tool needed outside of the air permit
- > For each applicable NSPS/NESHAP reg, have a “compliance binder” to assist
- > Contains:
  - ❖ Regulatory analysis specific to facility
  - ❖ List of “action items”
  - ❖ Placeholder for required records and reports

# Regulatory Analysis Excerpt

§. 60.40c·Applicability and delegation of authority.· ↵

60.40c(a)· · · ↵

Except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h). ¶

*Editorial Note: · · Boiler #1 subject · · Boilers #2 and #3 not subject since constructed prior to 06/09/1989, and not modified or reconstructed. ■*

# Action Items Table Excerpt

Action Item	Discussion
Submit Initial Notification of Applicability	Submit to EPA/ADEQ by 1/20/2014. Submitted on 10/31/2013.
Boiler Tune-Ups Every Two Years	The initial tune up must be performed no later than 3/21/2014. Subsequent tune ups no more than 25 months following previous tune up.
One-Time Energy Assessment	The initial energy assessment must be performed no later than 3/21/2014. Technically, this is only required for the largest of the four boilers (SN-01, 1942 Frost) since it is greater than 10 MMBtu/hr.
Submit Notification of Compliance Status	Submit to EPA by 7/19/2014. These are submitted electronically to EPA.

# NSPS / NESHAP Compliance Binder

- > Living document: Grows over time with added records & reports
- > Should be updated when:
  - ❖ Underlying CFR regulation is modified by EPA
  - ❖ Change in affected equipment at facility
- > Compliance binder is “lead” document, air permit is “lag” document
  - ❖ In dynamic situations, air permit can’t keep up with changing federal NSPS/NESHAP regs



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# PM / PM<sub>10</sub> / PM<sub>2.5</sub> Permitting Issues

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# Condensable PM Issues

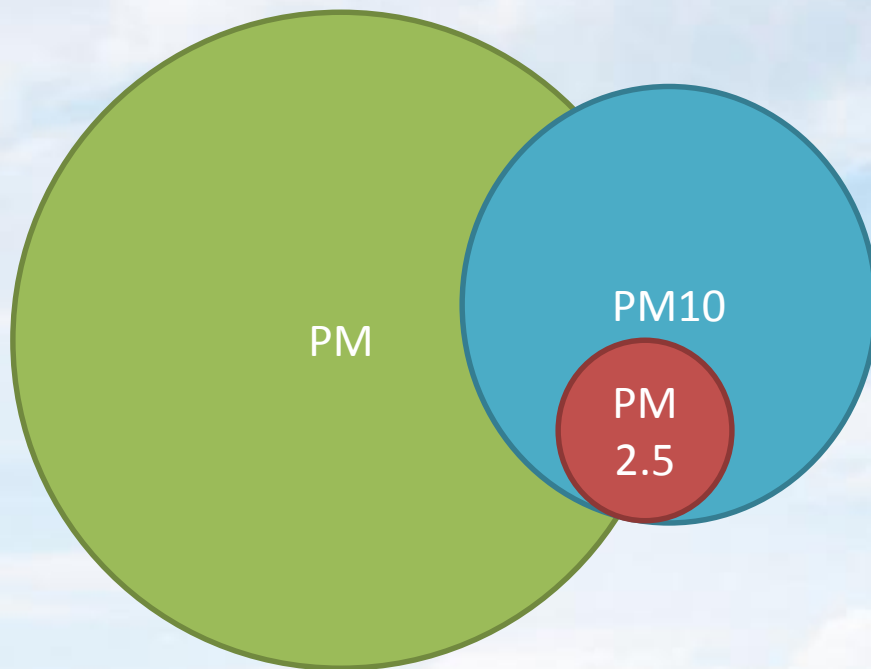
- > “Hot” emissions sources can have significant condensable PM
  - ❖ Gaseous at high stack temps, but condense into small particulates at cooler ambient temps
  - ❖ Sulfates and nitrates are big factors
- > ADEQ recently incorporated  $PM_{2.5}$  into the state regulations
  - ❖ Note that  $PM_{10}$  has been addressed in ADEQ permits for years

# PM / PM<sub>10</sub> / PM<sub>2.5</sub> Juggling

- > PM is filterable portion only
- > PM<sub>10</sub> = PM<sub>10</sub> filterable + condensables
- > PM<sub>2.5</sub> = PM<sub>2.5</sub> filterable + condensables
  - ❖ PM<sub>2.5</sub> is a subset of PM<sub>10</sub>
- > In past, permitting generally focused on filterable PM, condensables many times overlooked
  - ❖ PM = PM<sub>10</sub> in many existing permits (fine for some situations, not for others!)
  - ❖ Can lead to permit trouble for some types of equipment
  - ❖ Deeper thinking now required!

# PM / PM<sub>10</sub> / PM<sub>2.5</sub>

- > Related, but different
- > Each source will have a different profile!



# Current ADEQ PM<sub>10</sub> / PM<sub>2.5</sub> Policy

- > PM<sub>10</sub> should include condensables (if any)
  - ❖ Permittees need to address at time of future permit applications
- > PM<sub>10</sub> limits cover PM<sub>2.5</sub> in most cases
  - ❖ PM<sub>2.5</sub> is a subset of PM<sub>10</sub>
- > PM<sub>2.5</sub> normally not to be addressed in ADEQ permits in near future, unless
  - ❖ PSD permit required to address it
  - ❖ Need to limit PM<sub>2.5</sub> for a special reason, like staying below minor mod trigger levels
  - ❖ A good idea to calculate PM<sub>2.5</sub> in permit applications, even if ADEQ does not list it in permits

# Condensable PM Challenges

- > **WARNING!!!** Your “old” PM<sub>10</sub> permit limits for “hot stacks” may not be large enough when condensables included!
  - ❖ Might have considered filterable PM<sub>10</sub> only in past calculations!
- > Potential danger at stack test time
  - ❖ Particularly important for “hot stack” sources with periodic stack testing
- > Don’t want to sleepwalk into permit violations associated with condensables



# Condensable PM Issues

- > You don't want to fail a stack test due to unrecognized condensables!
  - ❖ CAO with a fine?
  - ❖ Retesting?
  - ❖ Permit modification application?
- > **Advice:** For hot stack sources subject to periodic testing, during next scheduled test perform additional internal tests to gather needed data
  - ❖ PM filterable, PM<sub>10</sub> filterable, PM<sub>2.5</sub> filterable, and condensable PM
  - ❖ Title V renewal application: propose new values based on testing data
    - ◆ Remember to add safety factors to tested values!



# Questions



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