Air Quality Issues for US Refineries:

Release Reporting Strategies & Emission Factor Changes

December 6, 2016

Release Reporting Strategies
Why it matters

"Next Gen" Compliance:

- Increased Transparency to encourage enforcement (including citizen suit actions)
- Calls to the NRC can end up in the newspaper
- Continuous release reports and calls to the SERC/LEPC are public record

General Duty Clause:

- Enforcement and "tickets"

No Programmatic Reminder:

- Include periodic review in your management system – new equipment, process change, . . .

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Reporting Exemption: Federally Permitted Releases

THE LAW: ". . . emission into the air subject to a permit or control regulation under section 111, section 112, title I part C, title I part D, or state implementation plans . . .

- ". . . **must be in conformance with [the limit] in order to be exempt** from [] emergency reporting . . ."

THE GUIDANCE:

- The control of hazardous air pollutant emissions can be achieved through a variety of means: **express emissions limitations; technology requirements; operational requirements; work practices; or other control practices**.
- Whether control of hazardous substance emissions is achieved directly or indirectly, **the means must be specifically designed to limit or eliminate emissions of a designated hazardous pollutant or a criteria pollutant.**

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Release Reporting
Hazardous Air Pollutants

HCN, April 2015

- New emission factor reveals the presence of a HAP emitted in excess of the RQ
- Rule clarifies intent to control all organic and inorganic HAPs
- The release is federally permitted (at least) when the rule is finalized.

What Now: episodic reporting

EPA's Thoughts on HCN Sources

https://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf

Table 1-1. Summary of Pollutants and Emission Sources Inclusion in a Petroleum Refinery's Emission Inventory (continued)

CAS Number or Pollutant Code	Substance	Equipment Leaks	Storage Tanks	Stationary Combustion	Process Vents										Flares	Wastewater	Cooling Towers	Product Loading	Fugitive Dust Sources	Startup/Shutdown	Malfunctions
					Catalytic Cracking Unit	Fluid Coking Unit	Delayed Coking Unit	Catalytic Reforming Unit	Sulfur Recovery Plants	Hydrogen Plant	Asphalt Plant	Coke Calcining	Blowdown Systems	Vacuum Systems							
74-90-8	Hydrogen cyanide (& cyanide compounds)			●	●	●	●	○	○	●	●	●	○	○	●	○	○	○		●	●

● Designates compound/source pairings for which emission estimates should be developed.
○ Designates compound/source pairings for which emission estimates may be developed depending on the available data.

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HCN – Practical Considerations

When Do You Have a Reportable Release Given "Federally Permitted Release" exemption under MACT UUU?

- EPA has stated in RSR Preamble (FR 75204):
  - "that the only proven (HCN) control technique is the use of complete combustion as defined by a CO level of 500 ppmv or less".
  - ICR – All < 500 ppm CO – no trends of CO vs. HCN
  - Vendor data and combustion kinetic theory support that HCN emissions would be "much greater" if incomplete combustion were occurring.

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HCN – Practical Considerations

When Do You Have a Reportable Release Given "Federally Permitted Release" exemption under MACT UUU?

- What if > 500 ppm CO conditions are observed? How long until you might hit 10 lb RQ?
- Answer may vary, but do you have a plan and rationale established?

Continuous Release Reporting
Ammonia, not a HAP, not a criteria pollutant

Is ammonia "federally permitted"?

- CAA section 111, criteria air pollutants
  - It's not a criteria pollutant, but it's a PM2.5 precursor
- CAA section 112, hazardous air pollutants
  - It's not a HAP.
- Title V permit limit for ammonia
- Risk Management Program, which is typically included in Title V
- State Implementation Plan
- State-Only Enforceable

EPA's Thoughts on Ammonia Sources

https://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf

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7664-41-7	Ammonia	○	○	○	●	●						○				○	○				

● Designates compound/source pairings for which emission estimates should be developed.
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New Emission Factors (EF) and Changes in EF Why they matter:

Emitting [something] not in your permit (e.g. HCN)

- HS, EHS, “TAP”, “Air Contaminant”, “Non-Criteria Air Pollutant”
- Release reporting for HS/EHS in excess of RQ
- Permitting may have been required

Emitting more than your permit allows: (e.g., new emission factors for flares)

- Emissions are in excess of your permit limit
- Reliance on EF for NSR/PSD permitting

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New Emissions Factors for Flares

Oct 7, 2016, EPA settles with Air Alliance Houston:

- Challenging AP-42 emission factor for flares:
  - Underestimates VOCs per MMBtu –THC as surrogate for VOC, minimum heat value in combustion zone, average destruction efficiency, molecular weight . . .

December 15, 2016:

- If EPA revises the emissions factors, Air Alliance Houston will drop its lawsuit against EPA.

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New Emission Factor, Flares
Volatile Organic Compounds (and constituent HAPs)

Permitting considerations

- Increase in VOCs expected
  - lb/hr and tpy limits on VOCs from flares
  - reliance on emission factor in NSR/PSD or other permitting?
- VOC limits control constituent HAPs
  - As long as the purpose of the limit was to control the constituent HAP and you are in compliance with the VOC limit

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Requests for EPA Clarification on EF Impacts

December 2014 – Industry comments on proposed AP-42 changes:

- https://www3.epa.gov/ttn/chief/consentdecree/Comments_as_of_Dec_22_2014.pdf
- Permit compliance – tie to EF in effect when permit established or allow adjustment of limits
- EPA should address NSR implications
- Disallow retroactive emission fees
- Follow GHG MRR precedent - EPA modified GWPs but stated the factors should not become retroactive

2011 – Industry comments on EPA's Draft "Recommended Procedures for Development of Emission Factors and Use of WebFIRE"

EPA Position on EF Impacts

April 2015 – EPA Summary of Public Comments and Responses (AP-42 Changes)

- Outside Scope; EPA does not recommend use in permitting

August 2013 – EPA "Draft Final Recommended Procedures for Development of Emissions Factors and Use of the WebFIRE Database (EPA-453/D-13-001):

- Use in regional inventories; Tools in air quality management
- Aware that EFs have been applied by other entities (e.g., federal, state, tribal, local agencies; consultants; industries) for other purposes
- EFs applied without consideration of limitations (e.g., EFs not particularly suitable to developing short-term or site-specific emissions estimates)
- ***Users*** of EFs should consider the impact of the reliability of EFs on their non-inventory programs (e.g., *apply statistical procedures to account for variability*)… users of EFs may wish to conduct periodic retesting to confirm or revise the EF as necessary.

Checklist for Emission Factor Changes

Where am I relying on the existing emission factor?

- For emergency release reporting?
- In historic permitting?
  - Can I meet the limit(s) based on the new factor
- For purposes of periodic reporting?

What are the consequences of the change?

- Address release reporting first (notice is required to be immediate);
- Address permitting second;
- Address reporting as you go.

Permitting/Release Reporting Goals

Permitting

- Be aware of permit limits based on EF
- Determine how your state responds to changes in EF
- Develop strategy to address changes in EF

Release reporting:

- Minimize episodic and continuous release reporting
- Ensure that release reports are accurate and (for continuous release reports) up to date
  - CERCLA/EPCRA, TRI, Title V, deviation reports, and state emissions inventories . . .

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