

A Disservice to VOC Service

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AIR & WASTE MANAGEMENT
ASSOCIATION

SINCE 1907

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Abstract & Acknowledgements

Abstract

- TCEQ's continued tweaks to its BACT guidelines for fugitive monitoring components have created an overly stringent position that is not supported by historical precedent, state BACT, and federal LDAR rules. This presentation will provide the historical context and demonstrate why the Agency's inconsistent position is far from cost-effective in reducing VOC emissions, and tremendously burdensome on some fugitive emission sources.

Acknowledgement

- Jennifer Keane, Baker Botts



Background

- “In VOC Service” has been historically interpreted and understood by EPA and TCEQ as equipment contacting $\geq 10\%$ VOC by weight
- State and federal LDAR rules exclude equipment (i.e., fugitive components) not in VOC service from monitoring and repair
- TCEQ has removed this language from permit conditions, making process streams contacting any amount of VOCs subject to LDAR
- This re-interpretation makes Texas permits more stringent and less cost-effective than other states requiring LDAR

The Evolution of Fugitive Special Conditions

Piping, Valves, Connectors, Pumps, Agitators, and Compressors in VOC Service - 28VHP

A. These conditions shall not apply (1) where the Volatile Organic Compound (VOC) has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

Piping, Valves, Connectors, Pumps, Agitators, and Compressors — 28VHP

14. Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment:

A. The requirements of paragraphs F and G shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

The Evolution of MAERT Fugitive Footnotes

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
NGFUG	Natural Gas Fugitives (6)	VOC	0.11	0.49

6. Fugitive emissions are an estimate only. August 19, 1999

(6) Emission rate is an estimate and compliance is demonstrated by meeting the requirements of the applicable special conditions and permit application representations. January 9, 2008

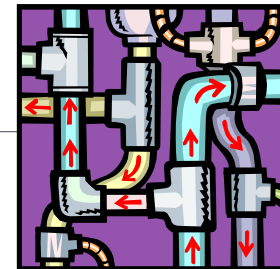
(6) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations. December 21, 2012

How Did We Get Here?

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 21, 2006



“18. Piping, Valves, Connectors, Pumps, and Compressors in VOC Service - 28VHP...(A). These conditions shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.044 psia at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list to be made available upon request.”

Just like your review, our review did not find a definition of “in VOC service” in the various “definition sections” of state statutes, rules and regulations. However, 30 Texas Administrative Code §115.357(1) provides a monitoring exemption for “in VOC service” based upon VOC partial pressure, similar to your permit term and condition. Since both a state rule and the permit provisions define “in VOC service” based upon what is an exemption, we are unable to concur with your request to apply the federal definition to your permits. In addition, for your proposed definition to be consistent with the federal definition, it would need to include the language italicized below:

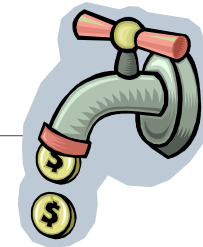
In VOC service means the pieces of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight and the piece of equipment is not in heavy liquid service as defined in 40 CFR 60.481; provided that the provisions in 40 CFR 60.485(d) are used to determine that a piece of equipment is not in VOC service.

TCEQ's Position and Counterpoints



- “In VOC Service” can be added back to permits in exchange for quantifying emissions from components < 10 wt. % VOC
 - *Nonattainment Area rules exempt <10 wt. % VOC components at refineries, chemical/polymer plants and < 1 wt. % VOC at gas plants*
- MAERT footnote regarding representations means that permit emission calculations must use accurate component counts
 - *TCEQ has stated that permits should not include a contingency for future components, but what's a pre-construction permit for anyway?*
- The only allowable PTE estimation methodology is average emission factors with controls, not correlation equations
 - *Other states utilize correlation equations, which makes comparisons of future actuals to past actuals possible, potentially avoiding NNSR*

The Numbers



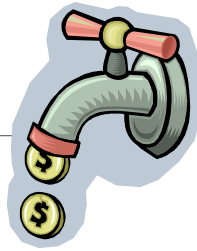
Potential to Emit (based on 1,000 valves)

■ PTE using Average Emission Factors

Valve Service SOCMI w/o C ₂ =	Emission Factor (lb/hr-comp)	VOC Weight %		Control Efficiency	Potential to Emit (tpy)	
		low	high		1 wt% VOC	9 wt% VOC
Gas/Vapor	0.0089	1%	9%	97%	0.012	0.11

■ PTE using EPA Correlation Equations

Valve Service SOCMI w/o C ₂ =	Leak Distribution	Leak Concentration (ppm)	Emission Factor (lb/hr-comp)	Control Efficiency	Potential to Emit (tpy)	
					1 wt% VOC	9 wt% VOC
Gas/Vapor	98%	10	0.00003	0%	0.007	0.07
	1%	500	0.0009			
	1%	10,000	0.0128			



Best Available Control Technology Cost Effectiveness

■ Cost-effectiveness using Average Emission Factors

Valve Service SOCMI w/o C ₂₌	Emission Factor (lb/hr-comp)	VOC Weight %		Control Efficiency	Cost Effectiveness (\$/ton)	
		low	high		1 wt% VOC	9 wt% VOC
Gas/Vapor	0.0089	1%	9%	97%	\$13,223	\$1,469

■ Cost-effectiveness using EPA Correlation Equations

Valve Service SOCMI w/o C ₂₌	Leak Distribution	Leak Concentration (ppm)	Emission Factor (lb/hr-comp)	Control Efficiency	Cost Effectiveness (\$/ton)	
					1 wt% VOC	9 wt% VOC
Gas/Vapor	98%	10	0.00003	97%	\$703,011	\$78,112
	1%	500	0.0009			
	1%	10,000	0.0128			



TCEQ should:

- Follow EPA's evaluation that LDAR is not cost effective for equipment contacting process streams with <10 wt. % VOC
- Consider evaluating cost-effectiveness using actual data
- Restore and define "In VOC Service" in permit conditions to match federal and state rule LDAR exemptions
- Harmonize the PTE and EIQ fugitive quantification methods

Industry should:

- Consider forward-looking PBRs for fugitive components to pre-authorize component additions
- Keep advocating for more consistent methods of quantifying PTE for fugitive components to match your EIQ

Questions?

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