Updated: August 21, 2017

Attached are written comments that EPA has received on the emissions factors proposed on June 5, 2017.

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1	2	Andrew Keyfauver, Wyoming Department of Environmental Quality
2	4	Christopher Laplante, State of Colorado Department of Public Health and Environment, Air Pollution Control Division
3	7	Benjamin Kunstman, Environmental Integrity Project, and Juan Parras, TEJAS

From:	Andrew Keyfauver
To:	EFComments
Subject:	THC emission factors
Date:	Monday, August 14, 2017 10:57:49 AM
Attachments:	doc04439920170814084033.pdf

Attached are Wyoming Department of Environmental Quality - Air Quality Division comments regarding EPA's proposed total hydrocarbon emission factor for enclosed ground flares. If you should have any question regarding the AQD's comments please feel free to contact us.

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Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

DEQ

Matthew H. Mead, Governor

Todd Parfitt, Director

August 14, 2017

Via e-mail
U.S. Environmental Protection Agency
efcomments@epa.gov

Re: Review and Analysis of Emissions Test Reports for Purposed of Reviewing the Natural gas Production Flares Emissions Factor Under Clean Air Act Section 130

The Wyoming Department of Environmental Quality (WDEQ) appreciates the opportunity to comment on the Environmental Protection Agency's (EPA) proposed new and revised emission factors for flares for Section 13.5 of AP-42.

WDEQ has reviewed the data utilized in the analysis for revising the emission factors for enclosed ground flares and has concerns about the revised total hydrocarbon (THC) emission factor given the limited data pool. EPA should conduct a more thorough analysis that includes a larger data set than the nine (9) sources used in the analysis. This small sample size does not adequately categorize emissions from the various types of enclosed ground flares being represented by the emission factor.

While EPA considers the manufacturer tests, in Table 6, to be an unrelated set of test data, these data should be considered representative. The test data is required for an enclosed ground flare to be certified as meeting requirements under 40 CFR §60.5413 or §60.5413a. Industry is utilizing these certified enclosed ground flares in order to meet the percent destruction requirements for methane and volatile organic compounds (VOC) (40 CFR §60.5412 and §60.5412a). WDEQ also relies on this type of test data in order to ensure that emission controls are meeting destruction efficiency requirements for Best Available Control Technology (BACT).

WDEQ also has concerns about the far-reaching implications that could arise due to such development in the THC emission factor. These implications include, but are not limited to, significant changes in emissions inventories, permitting for Prevention of Significant Deterioration and Non-Attainment New Source Review, especially where VOC emissions are determined as a percentage of THC.

In summary, the EPA should reevaluate the proposed emission factor for THC by conducting or considering more extensive emissions testing on various types of flares. The EPA should consider various types of flare designs and the Btu contents of fuels that are burned by the flares to arrive at a more appropriate THC emission factor for this important source category.

Thank you again for the opportunity to provide comment on this proposal. Please feel free to contact this office at (307) 777-7391 should you have any questions regarding these comments.

Sincerely,

Nancy E. Vehr
Administrator
Air Quality Division

From:	Laplante - CDPHE, Christopher
To:	EFComments
Cc:	Dena Wojtach - CDPHE; mark.mcmillan@state.co.us
Subject:	Public Comments Regarding Proposed New Emissions Factors: AP-42 Section 13.5 for Industrial Flares
Date:	Friday, August 18, 2017 4:20:41 PM
Attachments:	StateColoradoPublicCommentstoEPA_AP42Section13.5June2017Update_8_18_2017.pdf

EPA:

The State of Colorado Department of Public Health and Environment, Air Pollution Control Division ("Division") respectfully submits the following attached comments on the U.S. Environmental Protection Agency's ("EPA") proposed updates to AP-42 Section 13.5 Industrial Flare emissions factors. These comments are being submitted pursuant to the instructions provided online and by the August 18, 2018 deadline.

Please feel free to contact me if you have any questions regarding this submittal.

Respectfully,

Chris

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Are you curious about ground-level ozone in Colorado? Visit our ozone webpage to learn more.

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

Submitted electronically August 18, 2017, via e-mail to efcomments@epa.gov

U.S. Environmental Protection Agency
Docket Center, Mail Code 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460

August 18, 2017

Re: Public Comments Regarding Proposed New Emissions Factors for Enclosed Ground Flares at Natural Gas Production Sites in AP-42 Section 13.5 for Industrial Flares

The State of Colorado Department of Public Health and Environment, Air Pollution Control Division ("Division") submits the following comments on the U.S. Environmental Protection Agency's ("EPA") proposed updates to AP-42 Section 13.5 Industrial Flare emissions factors as published online at https://www.epa.gov/air-emissions-factors-and-quantification/proposed-new-emissions-factors-enclosed-ground-flares.

Colorado has a long established history estimating emissions from the oil and natural gas production sector and currently maintains an emissions inventory reflecting approximately 11,000 stationary sources and 24,000 emissions points associated with oil and gas operations. Colorado reviewed the proposed revisions to AP-42 Section 13.5 and respectfully submits the following comments.

1. With the introduction of the proposed new emission factors, EPA continues to title the headings for the emissions factors in Tables 13.5-1, 13.5-2 and 13.5-3 simply as "Emissions Factor" without clearly distinguishing whether the emission factor values provided represent controlled emissions or uncontrolled emissions. Many state air quality programs in addition to the federal New Source Review permitting program require operators to estimate uncontrolled emissions routinely to represent the potential to emit of emissions sources for assessing regulatory requirements. Through Colorado's experience completing emissions inventory work the lack of clarity in these headings on the emissions factor tables has led to examples of companies using the emissions factor to represent uncontrolled emissions (e.g. the emissions rate entering the flare from the associated process unit) which greatly underestimates the potential emissions from the emissions source or process routing VOC/THC pollutants to the flare.

   Colorado recommends that EPA consider developing a paragraph in the body of Section 13.5 or in a footnote to the tables that explains this important nuance. For example the language could state:

   "The VOC and THC emissions factors contained in Tables 13.5-1, 13.5-2 and 13.5-3 are representative of the emissions rates from the outlet of the flare. Since the

flare is not the originating source of the VOC or THC emissions, but rather the emissions control device controlling these pollutants routed from a process at the facility, the emissions factors are representative of controlled emissions rates. Therefore, these values are not representative of the uncontrolled VOC or THC routed to the flare from the associated process. With this in mind, these emissions factors may not be appropriate for estimating the uncontrolled VOC/THC emissions or potential to emit from the emissions sources utilizing the flare as an emissions control device."

In addition to this language, Colorado feels a formatting change to each of the tables would more clearly identify whether the emissions factors are controlled or uncontrolled values. In table 13.5-1, the column titled "Emissions Factor Value" should be split into two columns. One titled "Uncontrolled Emissions Factor Value" which would contain the emissions factor for Nitrogen Oxides and one titled "Controlled Emissions Factor Value" which would contain the emissions factors for THC. In Table 13.5-2, the column titled "Emissions Factor (lb/10^6 Btu)" should be split into two columns. One titled "Uncontrolled Emissions Factor (lb/10^6 Btu)" which would contain the emissions factor for Carbon Monoxide and one titled "Controlled Emissions Factor (lb/10^6 Btu)" which would contain the emissions factor for VOC. In Table 13.5-3 the column titled "Emissions Factor (lb/MMscf gas burned)" should simply be retitled "Controlled Emissions Factor (lb/MMscf gas burned)"

In summary, the Division feels the updates proposed to AP-42 Section 13.5 would benefit from additional clarifying language that distinguishes whether the emissions factors represented are indicative of controlled or uncontrolled emissions rates. If you have any questions pertaining to these comments, please feel free to contact my staff member Chris Laplante at 303-692-3216 or via email at christopher.laplante@state.co.us.

Thank you for the opportunity to submit these comments.

Sincerely,

Garry Kaufman
Director, Air Pollution Control Division
Colorado Department of Public Health and Environment

cc: Mark McMillan, APCD
Dena Wojtach, APCD
Christopher Laplante, APCD

From:	Benjamin Kunstman
To:	EFComments
Cc:	parras.juan@gmail.com
Subject:	Proposed New Emissions Factors for Enclosed Ground Flares EIP TEJAS Comments
Date:	Saturday, August 19, 2017 7:40:39 AM
Attachments:	08.18.17 Proposed New Emissions Factors for Enclosed Ground Flares EIP TEJAS Comments.pdf

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Dear Administrator Pruitt:

We appreciate the opportunity to comment on the U.S. Environmental Protection Agency's proposed emissions factor updates for natural gas production flares, and submit the attached comments on behalf of Environmental Integrity Project and Texas Environmental Justice Advocacy Services ("TEJAS"). Thank you for your consideration, and we look forward to working with you further.

Respectfully Submitted,

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August 18, 2017

VIA CERTIFIED MAIL
Mr. Scott Pruitt
Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Pruitt.scott@epa.gov

Re: Comments on the Review and Analysis of Emissions Test Reports for Purposes of Reviewing the Natural Gas Production Flares Emissions Factor Under Clean Air Act Section 130

Dear Administrator Pruitt:

We appreciate the opportunity to comment on the U.S. Environmental Protection Agency's (herein "EPA") proposed emissions factor updates for natural gas production flares, and submit these comments on behalf of Environmental Integrity Project and Texas Environmental Justice Advocacy Services ("TEJAS"). The EPA has established the factors that can be used to estimate emissions of volatile organic compounds (VOCs) and other pollutants from industrial flares. Emission factors for natural gas production facilities are found within AP-42 Section 13.5 Industrial Flares, and within the WebFIRE database. Under Section 130 of the CAA, 42 U.S.C. § 7430, the Administrator has a mandatory duty to review and, if necessary, revise these emission factors at least once every three years. Under the terms of Consent Decree entered by the court in *Air Alliance Houston v. McCarthy*, No. 1:16-cv -01998-RC, EPA agreed "no later than June 5, 2017, to review and either propose revisions to the Natural Gas VOC emissions factor under CAA section 130, 42 U.S.C. § 7430, or propose a determination that revision of the Natural Gas VOC emissions factor is not necessary under CAA section 130."

Based on its review, EPA proposed the following revisions:

1. A "total hydrocarbon" (THC) emission factor of 332 lbs. THC (as propane)/MMscf gas burned for enclosed ground flares controlling emissions from numerous sources at natural gas production sites, including glycol dehydrators, condensate storage tanks, pumps and compressors. EPA rated this emission factor as "poorly representative."
2. A THC emission factor of 2.53 lbs. THC (as propane)/MMscf gas burned for enclosed ground flares at chemical plants operating at more than 30% of their

maximum design flow rate. EPA rated this emission factor as "moderately representative."

3. A THC emission factor of 31.1 lbs. THC (as propane)/MMscf gas burned for enclosed ground flares for chemical plants operating at 30% or less of maximum design flow rate. EPA also considered this factor to be "moderately representative."

EPA also determined that the CHIEF VOC emission factors for natural gas flares provided within WebFIRE does not require revision.

a. Commenters support EPA's proposal to develop a separate emission factor for chemical plant flares when operating at low capacity and request further explanation of whether a low-capacity THC emission factor may be appropriate for enclosed ground flares at natural gas production facilities.

During its review, EPA compared manufacturer test data for enclosed ground flares to field test data at natural gas production facilities following emission factor development procedures.[1] This analysis found that not only was the field test data statistically different from the manufacturer test data, but also that there were two distinct categories within the manufacturer data, dividing between low capacity test conditions (ramping between 0 and 30% of maximum design flow rate) and all other test conditions (ramping between 30 and 70% of maximum design rate, ramping between 70 and 100% of maximum design rate, and held steady at 90-100% of maximum design rate). This led EPA to develop two separate emission factors for enclosed ground flares at chemical manufacturing facilities, with low percent load having a higher emission factor (31.1 lbs. THC/MMscf) than normal to high percent load (2.53 lbs. THC/MMscf).

Commenters request an explanation of whether a similar low capacity factor should be developed for enclosed ground flares at natural gas production facilities, as this trend may also be supported by field test data. Specifically, commenters refer to the field test data from the Cimarron Parshall facility, which included varying conditions for inlet pressure, and consequently inlet fuel rate. The average emission factor for the lowest fuel inlet pressure tested (1 oz.) was 646 lbs. THC/MMscf, while than the average emission factor from the higher pressures (4 oz. and 10 oz.) was 4.4 lbs. THC/MMscf.[2]

b. Commenters request explanation of why the proposed emission factors for chemical plants and natural gas production facilities should be based on gas volume (lbs. THC/MMscf) rather than on a heat rate basis (lbs. THC/MMBtu). THC emission

[1] EPA (U.S. Environmental Protection Agency). 2013. *Recommended Procedures for Development of Emissions Factors and Use of the WebFIRE Database.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. August 2013 (Draft Final).

[2] Source Emissions Test Report: Flare Stack Inlet and Outlet NMOC Emissions. Cimarron Energy, Inc. Parshall, North Dakota. Air Pollution Testing, Inc. June 14-15, 2011.

factors also may deviate further from VOC emission rates at lower heating values due to high methane and ethane concentrations.

Section 13.5 of AP-42 ("Industrial Flares") expresses existing VOC and THC emission factors from flares in terms of lbs/MMBtu, calculating the emission factor on a heat rate basis. By contrast, EPA's proposed emission factors for enclosed ground flares at chemical plants and natural gas production facilities are instead expressed on a gas volume basis (THC/MMscf). Commenters request that EPA provide further explanation of its reasoning for why heat rates were not considered in the development of the new emission factors. Based on a review of the field test data, heating value appears to be closely related to the destruction and removal efficiency (DRE) and the resulting emission factors for each test, and the two lowest recorded heating values, ETC Debeque and ETC Rifle Bolton,[3] correspond to two of the three highest average field tested emission factors by facility. Heat rates vary greatly by facility, and may better predict emission rates that the current volume-based methodology.

It may also be important to consider heat values when considering how closely THC emission factors mirror VOC emissions. Gas streams that are predominantly natural gas, and have relatively high methane content, will have relatively low heat values, as the average gross heating value of natural gas is approximately 1020 Btu/scf.[4] High methane and ethane content streams will have a higher gap between THC and VOC concentration, as VOC is typically calculated by subtracting methane and ethane emissions from THC measured from EPA Method 25A. Heat value data from the field testing can be supplemented with additional data sources on gas composition and heat value information from permit applications for similar sources, such as storage tank or glycol dehydrators, sent to ground flares at natural gas production facilities. For example, West Virginia's New Source Review (NSR) database includes heat value data within natural gas production facility permit applications, and could be used to estimate the heat value and gas composition from multiple sources.[5]

c. EPA has not adequately explained why the test data it reviewed for ground flares at chemical plants and natural gas production facilities cannot be used to determine an appropriate emission factor for VOCs rather than THC.

The draft report presents two approaches to measuring VOC emissions: measuring THC emissions with EPA Method 25A and subtracting off methane and ethane emissions, or measuring individual compounds and combining the concentrations. The draft report also states that there are no available VOC data with which to review the existing VOC emissions factor or to develop a new VOC emissions factor at a natural gas production site. However, field tests from multiple facilities included within EPA's analysis conducted EPA Method 18 to determine methane and ethane concentrations to calculate non-methane, non-ethane hydrocarbon

[3] Source Emissions Testing Report: Four (4) TCI Enclosed Flares - NMOC Control Efficiencies. ETC Canyon Pipeline, LLC Various Sites. Western Colorado. Air Pollution Testing, Inc. October 4-8, 2010.
[4] EPA (U.S. Environmental Protection Agency). 1998. AP-42 Section 1.4 Natural Gas Combustion. July 1998.
[5] West Virginia Department of Environmental Protection. 2017. NSR Permits for Review. http://www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx

(NMEHC) as a reasonable proxy for VOC emissions,[6,7,8] indicating that there are available VOC data from the field tests. However, tests runs from these facilities result in negative net NMEHC values, indicating that this methodology may not be effective in approximating the VOC concentrations. In contrast, the Cimarron Parshall testing used the same methods (EPA Method 18 and 25A), but instead used a methane separator, and tested for non-methane hydrocarbons (NMHC) with Method 25A.[9] This methodology is able to alleviate the netting issues we saw within the other field tests, and results in positive values for the VOC approximation. Commenters ask that EPA provide additional explanation of whether field tests present valid VOC data, and provide feedback on the more effective and accurate measurement methods for further field tests and VOC calculations.

d. EPA acknowledges the lack of background information to indicate the source of data or methods used to derive EPA WebFIRE emission factor for natural gas production flares of 5.6 lbs. VOC/MMscf. EPA has not explained why this emission factor can reasonably predict emissions from elevated flares at natural gas production facilities.

Within the draft report, EPA acknowledges the lack of information and background on this emissions factor for natural gas production flares. The oil and gas flare factor included in WebFIRE estimates that 5.6 pounds of VOCs are released from flares for every million cubic feet of gas produced.[10] This factor appears to have been first published in the Agency's Criteria Pollutant Emission Factors for the 1985 NAPAP Emission Inventory.[11] EPA republished these same factors in the 1990 revision of this document, but it does not appear that the Agency reviewed the basis for these factors at that time.[12] While the draft report emphasizes that the current "U" or unrated factor indicates there is not enough information to rate the factor, EPA should provide additional explanation of how this factor can be considered representative or useful for modern gas production sites. The age of the factor indicates it may be derived from conventional oil wells, and it may not be appropriate to apply to modern facilities utilizing hydraulic fracturing for shale gas production.

e. EPA should explain why flare performance based on the combustion of pure propylene is moderately representative of THC emissions that could be expected

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[6] Source Emissions Test Report: (1) Dehydration System VOC DRE. Enterprise Products Jackrabbit Compressor Station. Garfield County, Colorado. Air Pollution Testing, Inc. December 18-19, 2013.
[7] APT Testing Report: 30" Enclosed Flare. Cimarron Energy Gas Processing Plant. Greeley, Colorado. Air Pollution Testing, Inc. June 7, 2006.
[8] Source Emissions Test Report: Combustor Unit VOC & HAP DRE. Questar Gas Management Wonsits Valley Compressor Station. Uintah County, Utah. Air Pollution Testing, Inc. April 8, 2009.
[9] Source Emissions Test Report: Flare Stack Inlet and Outlet NMOC Emissions. Cimarron Energy, Inc. Parshall, North Dakota. Air Pollution Testing, Inc. June 14-15, 2011.
[10] U.S. EPA, Technology Transfer Network Clearinghouse for Inventories & Emissions Factors, http://cfpub.epa.gov/webfire/index.cfm?action=fire.SearchEmissionFactors, (Search "EPA Emission Factors" using simple search for "31000205").
[11] U.S. EPA, Criteria Pollutant Emission Factors for the 1985 NAPAP Emissions Inventory, EPA/600/7-87/015, 107 (May 1987).
[12] U.S. EPA, AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants, EPA 450/4-90-003, 153 (Mar. 1990).

from ground flares at chemical plants burning gases that may vary widely in composition or heat value.

The Draft Report notes that EPA uses manufacturing test data from enclosed ground flares burning pure propylene, and applies the same chemical manufacturing SCCs that are applied to the original flare factors in AP-42 Table 13.5-1, based on a mix of 80-20 propylene to propane. EPA should provide additional explanation on how manufacturer test data based on pure propylene is moderately representative of the 5 SCC codes included in chemical manufacturing facilities.

Conclusion

Thank you for considering these comments. We look forward to your response, and continued communication on these emission factors.

Respectfully Submitted,

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