June 12, 2000

Resolution of "Natural Gas" and "Pipeline Natural Gas" Definition Issues

Question: The definition of "natural gas" in §72.2 of the May 26, 1999 revisions to 40 CFR Parts 72 and 75 states that in order for a gaseous fuel to qualify as natural gas, the fuel must either be $\geq$ 70% methane by volume or must have a gross calorific value (GCV) between 950 and 1100 Btu/scf. The definitions of "natural gas" and "pipeline natural gas" in § 72.2 also limit the hydrogen sulfide (H_2S) content of these fuels to $\leq$1.0 gr/100 scf (for natural gas) and $\leq$ 0.3 gr/100 scf (for pipeline natural gas). Further, the "natural gas" definition specifies that H_2S must constitute more than 50% (by weight) of the total sulfur in the fuel, and the "pipeline natural gas" definition specifies that H_2S must constitute at least 50% (by weight) of the total sulfur in the fuel. What must I do to demonstrate that the gaseous fuel combusted at my unit complies with these requirements?

Answer: Sections 2.3.1.4 and 2.3.2.4 in Appendix D of revised Part 75 provide that compliance with the specifications for grains of H_2S in the revised definitions must be documented through one of five identified sources of information. These sources are: a fuel purchase or pipeline transportation contract; vendor certification based on fuel sampling; one year of monthly sampling; one year of sampling of each shipment or lot if the fuel is delivered in shipments or lots; or a 720-hour demonstration. Further, although the revised rule does not expressly identify a particular method for demonstrating compliance with the specifications for GCV in gaseous fuel, Sections 2.3.4.1 and 2.3.4.2 of Appendix D require monthly sampling of the GCV of natural gas or pipeline natural gas, which sampling should be used to demonstrate compliance with the GCV specifications in the definitions. In short, demonstration of compliance with the H_2S grains and GCV specifications in the revised definitions should be made using the methods identified in Appendix D.

With respect to the requirements in the revised definitions that H_2S constitute more than or at least 50% of total sulfur, revised Part 75 does not identify a particular method for demonstrating compliance. The preamble to the May 26, 1999 final rule states that "[t]he Agency believes that, in general, any 'natural gas' with $\leq$ 1.0 grain of H_2S/ 100 scf will also meet the requirement that hydrogen sulfide must account for $\geq$ 50% of the total sulfur in the fuel. However, the Agency reserves the right to request that the owner or operator provide data to demonstrate compliance with this latter requirement" (64 Fed. Reg. 28564, 28579 (1999)). Questions have been raised by a utility group concerning the method of demonstrating compliance with the requirements that H_2S constitute more than or at least 50% of total sulfur. In addition, one member of that group submitted a petition on June 6, 2000 under §§75.66(a) and (l) requesting that EPA allow the use of alternatives to the requirements that H_2S constitute more than or at least 50% of total sulfur. Questions have also been raised concerning the deadline for demonstrating compliance with those requirements, as well as with the H_2S grains and GCV requirements in the revised definitions.

In October 1999, EPA issued guidelines for implementing the revisions to Part 75. See Acid Rain Program Policy Manual, Question 1.12 at pages 1-4 through 1-14 (October 14, 1999). These guidelines state that the revised "natural gas" and "pipeline natural gas" definitions should be used when the owner or operator begins reporting quarterly emission data in Electronic Data Report (EDR) version 2.1. The guidelines further provide that EDR version 2.1 may be used starting with first quarter 2000 and must be used for second quarter 2000 and thereafter. Id. at pages 1-5 and 1-13; see also 64 Fed. Reg. 28564 (making June 25, 1999 the effective date of the part 75 revisions). Consistent with the guidelines, the owner or operator should have documentation of compliance with the revised "natural gas" and "pipeline natural gas" definitions on or before the deadline (i.e., July 30, 2000) for submission of emission data for the second quarter of 2000.

In view of the lack of specificity in revised Part 75 concerning the method of compliance with the requirements in the revised definitions that H_2S constitute more than or at least 50% of total sulfur, EPA intends to apply the rule, and is approving generic alternatives to the H_2S-percent-of-total-sulfur requirements in the rule, in order to allow all owners and operators to demonstrate compliance and report data as follows. On or before the July 30, 2000 deadline for submitting second quarter 2000 emission data, the owner or operator of a unit should take at least one sample of the gaseous fuel currently combusted in the unit and analyze the sample for total sulfur content. If a sample is taken before the addition of an odorant, then the total sulfur value used should be increased to account for the sulfur in the odorant. Sample analysis results provided by the fuel supplier that are representative of the unit's currently combusted fuel may be used. Where the owner or operator has results from analysis of more than one sample of the currently combusted fuel, the owner or operator may use the average of the results of analysis of those samples. The results of analysis of a sample or samples taken before the issuance of today's guidance and representative of the unit's currently combusted fuel may be used in lieu of taking a new sample or samples. A new sample or samples should be used whenever the sample or samples on which the owner or operator is relying to demonstrate compliance with the H_2S-percent-of-total-sulfur requirements in the rule are no longer representative of the unit's currently combusted fuel. The owner or operator should keep -- on site and in a format suitable for inspection -- the results of all fuel sample analyses used in the demonstration of compliance.

If the results of the fuel sample analysis show that the total sulfur content of the gaseous fuel is less than twice the applicable grains of H_2S limit (i.e., less than 2.0 gr sulfur/100 scf for natural gas or less than 0.6 gr sulfur/100 scf for pipeline natural gas) and if the fuel satisfies the H_2S grains requirement, then the fuel meets both the H_2S-grains and H_2S-percent-of-total-sulfur requirements in the applicable revised definition. In that case, the fuel is classified as "natural gas" or "pipeline natural gas" respectively so long as the fuel meets the other requirements in the revised definition. In taking this approach to the H_2S-percent-of-total-sulfur requirements, EPA is approving, as discussed herein, the June 6, 2000 petition and is allowing the submitting company and all other owners and operators to apply to any Acid Rain unit the approved alternatives to the H_2S-percent-of-total-sulfur requirements in the rule.

EPA is approving the generic alternatives to the H_2S-percent-of-total-sulfur requirements in the "natural gas" and "pipeline natural gas" definitions for the following reasons. First, the respective definitions already allow gaseous fuel with a total sulfur content of less than 2.0 gr/ 100 scf to be classified as "natural gas" or with total sulfur content of less than 0.6 gr/ 100 scf to be classified as "pipeline natural gas." For example, a gaseous fuel with 0.3 gr/ 100 scf of H_2S and a total sulfur content of less than 0.6 gr/ 100 scf meets both the H_2S grains and H_2S-percent-of-total-sulfur requirements in the "pipeline natural gas" definition. Second, the definitions can result, under some circumstances, in anomalies in the classification of gaseous fuels. For example, a gaseous fuel with low H_2S and total sulfur content, e.g., 0.1 gr/100scf of H_2S and 0.3 gr/100 scf of total sulfur, would not meet the H_2S-percent-of-total-sulfur requirement in the definition and so would not qualify as pipeline natural gas. Third, for purposes of determining SO_2 emissions from combusting natural gas or pipeline natural gas, it makes no difference whether the sulfur originated in the fuel as H_2S or in some other form.

Consequently, EPA maintains that no useful purpose would be served by requiring fuel with total sulfur less than twice the applicable grains of the H_2S limit to also meet requirements that H_2S constitute more than or at least 50% of total sulfur. In approving alternatives to the revised definitions with respect to the latter requirements, EPA is exercising its authority under §§75.66(a) and (l) to approve an alternative to the rule where the alternative is consistent with the purpose of requirement in the rule and with the purposes of Part 75 and section 412 of the Act and any adverse effect of the alternative is <u>de</u> <u>minimis</u>. EPA finds that, in this case, the alternatives will result in a <u>de</u>

minimis or no increase in reported SO_2 emissions and thus will have a de minimis or no effect on the number of allowances needed for compliance and on the environment. Although the petition under §§75.66(a) and (l) was submitted by one company, a number of owners and operators have raised the same, generic issues, and therefore EPA sees no purpose in requiring, in this case, that each owner or operator submit a separate petition.

However, if the results of fuel sample analysis shows that the total sulfur content of the gaseous fuel equals or exceeds 2.0 gr/ 100 scf (for natural gas) or 0.6 gr/100 scf (for pipeline natural gas), then the fuel should be re-classified as follows:

(1) If a fuel does not qualify as pipeline natural gas because the total sulfur content equals or exceeds 0.6 gr/ 100 scf but the fuel can still qualify as natural gas based on, among other things, its total sulfur content being less than 2.0 gr/100 scf, then the fuel should be classified as "natural gas." The owner or operator should use Equation D-1h in section 2.3.2.1 of Appendix D to calculate the appropriate default SO_2 emission rate for the fuel. You should determine a new default SO_2 emission rate whenever: the samples on which you are relying to demonstrate compliance with the H_2S grains requirements in the rule are no longer representative of the unit's currently combusted fuel; or, if a purchase or pipeline transportation contract value is used in Equation D-1h to calculate a default rate, whenever the contract value changes. You should use the default SO_2 emission rate calculated under Equation D-1h to report emission data starting with second quarter 2000, which data must be submitted by July 30, 2000.

(2) If a fuel does not qualify as natural gas because the total sulfur content equals or exceeds 2.0 gr/ 100 scf, then the fuel should be reclassified as "gaseous fuel" and the provisions in section 2.3.3 of Appendix D apply. Section 2.3.3 requires periodic sampling of the total sulfur content of the gas, at the frequency specified in Table D-5 of Appendix D. As an alternative to implementing the provisions of section 2.3.3, the owner or operator may petition the Administrator under §§75.66(a) and (l) to implement the following procedure: use the equation below to calculate a default SO_2 emission rate based on the results of the total sulfur sampling; sample the fuel periodically for total sulfur at a frequency less than the daily or hourly sampling specified in Table D-5 of Appendix D; and recalculate the default SO_2 emission rate as necessary based on the results of periodic fuel sample analysis.

$$E = [2.0 / 7000] \times [10^6] \times [S_{tot} / GCV]$$

Where:

E	=	Default SO_2 emission rate (lb/mmBtu)
S_{tot}	=	Highest total sulfur content of the gaseous fuel, based on results of fuel sample analysis (gr/100scf)
GCV	=	Lowest gross calorific value for the fuel, based on all historical data from the previous 12 months (Btu/100scf)
7000	=	Conversion of grains/100scf to lb/100scf
2.0	=	Ratio of lb SO_2 / lb S
10^6	=	Conversion factor (Btu/ mmBtu)

As soon as practicable after determining that the results of fuel sample analysis show total sulfur content equal to or exceeding 2.0 gr/ 100 scf, you should either begin implementing section 2.3.3 of Appendix D or submit a petition to the Administrator, as described above. If you elect to implement section 2.3.3 of Appendix D, we suggest that you contact EPA to discuss the particulars. Whether you elect to implement section 2.3.3 or to submit a petition, you should use a default SO_2 emission rate calculated using the results of fuel sample analysis and the equation in this paragraph (2) to report emission data starting with second quarter 2000, which data must be submitted by July 30, 2000. If you elect to implement section 2.3.3 or if you elect to submit a petition and the Administrator denies your petition, you should continue using this default SO_2 emission rate, adjusted as necessary based on the results of subsequent fuel sample analysis, until an appropriate SO_2 emission rate value can be determined in accordance with section 2.3.3. If you elect to submit a petition and the Administrator approves your petition, you should continue using this default SO_2 emission rate, adjusted as necessary based on the results of subsequent fuel sample analysis and consistent with the Administrator's approval.