



Mandatory Greenhouse Gas Reporting Rule: EPA's Response to Public Comments

Volume No.:45

**Subpart FF—Underground Coal
Mines**

June 2010

Subpart FF—Underground Coal Mines

**U. S. Environmental Protection Agency
Office of Atmosphere Programs
Climate Change Division
Washington, D.C.**

FOREWORD

This document provides EPA's responses to public comments on EPA's Proposed Mandatory Greenhouse Gas Reporting Rule. EPA published a Notice of Proposed Rulemaking in the Federal Register on April 10, 2009 (74 FR 16448). EPA received comments on this proposed rule via mail, e-mail, facsimile, and at two public hearings held in Washington, DC and Sacramento, California in April 2009. Copies of all comments submitted are available at the EPA Docket Center Public Reading Room. Comments letters and transcripts of the public hearings are also available electronically through <http://www.regulations.gov> by searching Docket ID *EPA-HQ-OAR-2008-0508*.

Due to the size and scope of this rulemaking, EPA prepared this document in multiple volumes, with each volume focusing on a different broad subject area of the rule. This volume of the document provides EPA's responses to significant public comments received for 40 CFR Part 98, Subpart FF—Underground Coal Mines.

Each volume provides the verbatim text of comments extracted from the original letter or public hearing transcript. For each comment, the name and affiliation of the commenter, the document control number (DCN) assigned to the comment letter, and the number of the comment excerpt is provided. In some cases the same comment excerpt was submitted by two or more commenters either by submittal of a form letter prepared by an organization or by the commenter incorporating by reference the comments in another comment letter. Rather than repeat these comment excerpts for each commenter, EPA has listed the comment excerpt only once and provided a list of all the commenters who submitted the same form letter or otherwise incorporated the comments by reference in table(s) at the end of each volume (as appropriate).

EPA's responses to comments are generally provided immediately following each comment excerpt. However, in instances where several commenters raised similar or related issues, EPA has grouped these comments together and provided a single response after the first comment excerpt in the group and referenced this response in the other comment excerpts. In some cases, EPA provided responses to specific comments or groups of similar comments in the preamble to the final rulemaking. Rather than repeating those responses in this document, EPA has referenced the preamble.

While every effort was made to include all significant comments related to 40 CFR Part 98, Subpart FF—Underground Coal Mines in this volume, some comments inevitably overlap multiple subject areas. For comments that overlapped two or more subject areas, EPA assigned the comment to a single subject category based on an assessment of the principle subject of the comment. For this reason, EPA encourages the public to read the other volumes of this document with subject areas that may be relevant to 40 CFR Part 98, Subpart FF—Underground Coal Mines.

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SUBPART FF—UNDERGROUND COAL MINES

1. DEFINITION OF SOURCE CATEGORY

Commenter Name: Craig Holt Segall

Commenter Affiliation: Sierra Club

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 50

Comment: Coal mines are a significant source of methane, emitting on the order of 58.5 MTCO₂e annually. Collecting and making public accurate information concerning methane emissions from mines is particularly important because at least one federal agency has taken the position that such data, when supplied by the mine, is proprietary, confidential, and cannot be publicly released. We agree with EPA that the use of the Mine Safety and Health Administration thresholds, which capture more facilities and a greater quantity of emissions than EPA's usual emissions thresholds, is an appropriate step. [footnote: 291 See U.S. Forest Service, Final Environmental Impact Statement, Deer Creek Shaft and E Seam Methane Drainage Wells Project (Aug. 2007) at 60 ("Quarterly reporting of methane emissions [from the West Elk underground coal mine] to BLM is considered confidential information and cannot be released by the Forest Service.") (available at www.fs.fed.us/r2/gmug/policy/minerals/deer_creek/Deer_Ck_Shaft_and_ESeam_MDW_Project_FEISr2.pdf) (Ex. 45).] EPA opted not to include abandoned coal mines in this reporting rule. While we understand that identifying the operators of these mines may be difficult, we do not support this wholesale exclusion, and particularly not with regard to mines that will become abandoned in the future. Abandoned – that is, closed – mines are a significant methane source, producing 5.4 MT CO₂e annually according to EPA. A 2004 EPA Coalbed Methane Outreach Program report likewise documents significant emissions from the relatively small subset of abandoned mines that are 'gassy. Although that report suggests such emissions may decline in the future, as older gassy mines will finish outgassing and newer mines tend to contain less methane, the problem will nonetheless remain for quite some time.[footnote: See EPA Coalbed Methane Outreach Program, Methane Emissions from Abandoned Coal Mines in the United States: Emission Inventory Methodology and 1990-2002 Emissions Estimates. (Apr. 2004) (Ex 46).] We therefore suggest EPA take two steps to monitor such sources: First, for existing abandoned mines whose operators can be identified from state or federal records, we recommend that EPA require the installation of appropriate monitoring equipment. While we recognize that not all such mine operators may be identifiable, those that are, and which remain in business, should be required to account for the continuing emissions associated with their past mining activities. Second, EPA should make clear that the abandoned mine exception does not apply prospectively. There is no reason to allow operating mines to escape monitoring simply because they are no longer producing. Consistent with the 'once-in, always-in' policy that motivates the reporting rule generally, EPA should require all covered coal mines to continue reporting, whether or not they have been closed or abandoned. This reporting should include the period of post-mining activities. Surface mining typically occurs on relatively un-gassy seams, but surface mines as a whole account for 24% of all coal mine emissions. Because emissions from surface mines – which occur along the entire seam surface, rather than from well-defined emissions

points – are more difficult to measure, EPA has excluded the category entirely. This exclusion should not continue indefinitely. As EPA acknowledges in the TSD for coal mines, the IPCC has developed monitoring methods for surface mines. EPA has also developed such methods, which are based upon basin-specific emission factors for coal produced from such mines. EPA has promoted an example surface mine where the operator has successfully captured methane emissions and converted it to energy to be sold. [footnote: See U.S. EPA, SURFACE COAL MINE METHANE RECOVERY PROJECT OPPORTUNITIES 11 (July 10, 2008) (EPA ID 430R08001), http://www.epa.gov/coalbed/docs/cmm_recovery_opps_surface.pdf (listing mines estimated to emit half of surface mine methane emissions in the U.S., discussing North Antelope Rochelle Mine as already having a methane capture operation in place) (Ex 48).] Where capture could work, estimation or measurement should at least be possible. While, as EPA observes, these methods presently may not be robust, they are likely better than simply excluding the sector. EPA should consider requiring these methods for surface mines and adjusting emissions figures appropriately to account for uncertainty. Whether or not EPA employs the existing rough methodologies, however, it should work aggressively to include this significant methane source. Emission factor approaches could, for instance, be refined by developing site-specific factors for each mine. Fenceline measurement techniques like DIAL and SOF could also be employed. We urge EPA to support work in this area and to regularly reevaluate opportunities to include accurate surface mine methane measurements in the rule.

Response: EPA agrees with the commenter that the use of the Mine Safety and Health Administration thresholds is appropriate.

For information on the treatment of confidential business information in the reporting rule, please see the preamble signed in 2009, and also “Mandatory Greenhouse Gas Reporting Rule: EPA’s Response to Public Comments, Legal Issues.”

EPA disagrees with the commenter on the inclusion of abandoned mines in the reporting rule. For more information, see today’s preamble section on Subpart FF.

With respect to the comment on the IPCC methodology, we agree with the commenter. Both the EPA and the IPCC have developed emissions estimation methodologies for abandoned underground mines for emissions inventory purposes (See the Technical Support Document for this sector in the Docket for this Rulemaking). The IPCC methodology is based on the elapsed time since abandonment, the mine's initial gassiness, and the extent to which the mines have become flooded. Similarly, the EPA methodology is based on the time since abandonment; gas content and adsorption characteristics of coal, CH₄ flow capacity of the mine; mine flooding; the presence of vent holes, and mine seals. Both methodologies are designed to estimate national emissions, and recommend default assumptions and approaches for calculating emission factors for abandoned underground and surface mines and the portion of mines that are gassy. The application of these current methodologies is not suitable for facility-level calculations.

With regard to the applicability of the “once in, always in” provision of the reporting rule to Subpart FF, see today’s preamble section on Subpart FF.

EPA disagrees with the commenter on the inclusion of surface mines in the reporting rule. The application of current methodologies is not suitable for facility-level calculations. Surface mining emissions estimates for the U.S. inventory are also developed by using basin-specific coal production multiplied by a basin-specific emission factor. Emission factors for surface mined coal were developed from the estimated in situ CH₄ content of the surface coal in each basin. For more information, see today's preamble section on Subpart FF.

Commenter Name: James A. Kiger

Commenter Affiliation: Oxbow Mining, LLC

Document Control Number: EPA-HQ-OAR-2008-0508-0810.1

Comment Excerpt Number: 2

Comment: Measurement Accuracy As noted in the proposed rules, accuracy of methane measurements may be variable based upon the technique that is used to obtain measurements. Even the most accurate instrumentation will have accuracy difficulties based upon varying conditions, especially in remote locations. Elevation, atmospheric pressure changes, daily temperature fluctuations all have influence upon electronic instrumentation which may cause calibration problems and therefore call into question the accuracy of the measurements. These influences also affect the accuracy of air quantity measurements by affecting the ambient air density. Therefore, as with surface mines, etc., due to the difficulties associated with obtaining accurate measurements, methane wells should also be exempt. Using variable and often inaccurate methane measurements as a foundation for future regulation will only cause future problems.

Response: EPA does not agree with the commenter that CH₄ degasification wells should be exempt. For more information, see today's preamble section on Subpart FF. For information on EPA's rationale for excluding surface mines, see today's preamble and response to comment EPA-HQ-OAR-2008-0508-0635, excerpt 50.

Commenter Name: Benjamin Brandes

Commenter Affiliation: National Mining Association (NMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0466.1

Comment Excerpt Number: 41

Comment: Many NMA members currently recover liberated CH₄ for various purposes, including destruction. CH₄ that has been recovered is no longer an emission as it is not vented into the atmosphere. NMA recommends that EPA contemplate not including recovered CH₄ in the reporting requirements. This is practical in light of EPA's proposed requirements for reporting CO₂ emissions produced during CH₄ destruction processes.

Response: EPA agrees that CH₄ that has been recovered and combusted is not an emission. The threshold for coal mine methane is an actual emissions threshold. Therefore, emissions from coal mines with CH₄ recovery are likely to be lower than from mines that do not have CH₄ recovery,

and if emissions are below the threshold as a result of this recovery, such mines will not be required to report. For more information, see today's preamble section on Subpart FF.

Commenter Name: D. Lawrence Zink

Commenter Affiliation: Montana Sulphur & Chemical Company Inc. (MSCC)

Document Control Number: EPA-HQ-OAR-2008-0508-0505.1

Comment Excerpt Number: 19

Comment: How is land management dealt with? Major sources of CO₂e arise cumulatively from these activities on lands owned by public and private entities. How can fair or effective climate change policy be developed by looking at only a small portion of the emissions? For example: 1. Controlled production and burning of vegetation/wastes on lands managed by numerous entities public and private, producing large volumes of anthropogenic CO₂, methane and soot from actively managed or cropped lands. 2. Land management practices, including wilderness and parkland, allowing and promoting the propagation of range and forest fire fuels and the inevitable resultant fires -- producing large volumes of anthropogenic CO₂ and soot. 3. Coal seam fires and methane releases allowed on and under lands not presently engaged in coal mining or CBM development. 4. Coal seam fires and methane releases on and under lands engaged in mining of coal or CBM development. 5. Wetlands management and policy affecting both public and private lands, and tidal areas, actively encouraging the preservation and/or expansion of the generation and release of methane and CO₂ gases. If the premise is accepted that the effects of these gases is global, enduring, and 'climatic' rather than local, then it makes no sense from a health and welfare perspective to distinguish between large, concentrated, sources, vs. numerous small sources or large diffuse sources. A pound of CO₂ or methane emitted from a campfire, ranch, or swamp is as potent (or impotent) as a pound emitted from the largest cement kiln or forest fire. Better to account for these emissions from major commercial carbon-based fuels one time at the commercial source(s) (or point of importation) of those fuels, and to account for non-commercial and non-fuel emissions by special type (wetland, landfill, sewage plant, septic tank, coal seam, cement kiln, head of livestock, etc.), and to account for sequestration, heat-efficiency, conservation, and reduction successes through direct incentives for "above average" performance that will encourage both innovation and voluntary reporting.

Response: See the section of the preamble signed in 2009 containing responses on source categories to report. Reporting is not required for coal seam fires; no methodology is provided in the rule. Coal seam fires, whether associated with coal seams not presently being mined, or those that are being mined, are not normal industrial operations. Moreover, simple, accurate and cost effective ground-based approaches that mine operators could easily implement to estimate emissions from coal fires have not been developed. (See USGS Fact Sheet entitled "Emissions from Coal Fires and Their Impact on the Environment," USGS Fact Sheet 2009-3084, September 2009 (<http://pubs.usgs.gov/fs/2009/3084/pdf/fs2009-3084.pdf>).

Regarding reporting of emissions from mines no longer actively mining, see today's preamble section on Subpart FF.

For information on the rationale for excluding certain biological process emissions sources and sinks from the rule, and the rationale for thresholds selected for the rule, see the preamble signed in 2009, and response to comment EPA-HQ-OAR-2008-0508-0956.1, excerpt number 5

Commenter Name: Benjamin Brandes

Commenter Affiliation: National Mining Association (NMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0466.1

Comment Excerpt Number: 11

Comment: The proposed reporting rule would require facilities to monitor and report emissions every year once a facility produces emissions over the applicable threshold. NMA believes that the lack of flexibility exhibited by the "once-in, always-in" requirement of the proposed reporting rule will eliminate incentives for mining operations to reduce GHG emissions. Additionally, such a provision will be inappropriately burdensome for mining operations that dramatically reduce, postpone or eliminate production activities from year to year following spikes in production or one-time activities that are especially typical in certain aspects of mining. This also penalizes proactive companies that take measures to reduce emissions but are still required to report. For instance, NMA recommends that reporting should not be required in years when production decreases dramatically, mills or beneficiation circuits shut down, or other factors cause emissions to drop below the ultimate reporting threshold (i.e. 25,000 - 100,000 mt CO₂e per year). This would be accomplished for coal suppliers by applying the final reporting threshold to surface and underground coal mining operations. NMA supports EPA specifically recognizing that requiring continued monitoring from closed underground coal mines is inappropriate. NMA believes, however, that applying continued reporting requirements to other, non-coal mining operations is similarly inappropriate, and should be made consistent with EPA's approach for underground coal mines. Perpetual reporting can lead to irreconcilably misleading comparisons that will not be useful in informing policy decisions, will be overly confusing, and will only result in unnecessary burdens on regulated entities. For reasons stated above, NMA also believes that the proposed 25,000 tons CO₂e emissions threshold is fairly arbitrary. Once a facility exceeds the threshold, for instance, it will be required to report every subsequent year, regardless of emissions reductions. A facility that emits 24,500 mt CO₂e per year, however, could presumably do so annually without ever being required to report. To the extent that EPA finalizes a regulation that only requires reporting from facilities that emit in excess of 25,000 mt CO₂e per year, NMA believes that a better approach would be to release facilities from reporting requirements if they demonstrate that emissions fell under the threshold for a certain period of time. Given that this regulation, if promulgated, may be of limited duration and that EPA may reevaluate the need for this regulatory program after legislative policy decisions are made, NMA recommends that if a facility reports below the threshold for two consecutive years, it should no longer be subject to reporting obligations.

Response: See Section II.H of the preamble signed in 2009 for the response on reporting frequency and provisions to cease reporting. The final rule does not contain the "once in, always in" requirement; see the preamble section (from 2009), "Summary of Comments and Responses on Frequency of Reporting and Provisions to Cease Reporting." Regarding reporting by closed mines, see the response to comment EPA-HQ-OAR-2008-0508-0635, excerpt number 50.

The rule does not require reporting of emissions from surface mines, as discussed in today's preamble section on Subpart FF.

For information on the rationale for thresholds selected for the rule, see today's preamble, and response to comment EPA-HQ-OAR-2008-0508-0956.1, excerpt number 5.

2. REPORTING THRESHOLD

Commenter Name: Kathy G. Beckett

Commenter Affiliation: West Virginia Chamber of Commerce

Document Control Number: EPA-HQ-OAR-2008-0508-0956.1

Comment Excerpt Number: 5

Comment: As justification for not setting a threshold for coal suppliers, EPA provides that mines producing less than 100,000 tons per year can conduct proximate analyses and simplified procedures for calculating and reporting imputed emissions. Surface and underground coal mining subject to 40 CFR Part 98, Subparts FF, KK, and LL should be subject to the reporting threshold that is ultimately established for other industries unless EPA is able to provide valid reasons for doing otherwise. Further, establishing the threshold at 100,000 mtCO₂e/yr instead of the proposed 25,000 level would ensure accurate reporting while sparing small mines and manufacturers from the burdens of compliance.

Response: For information on the reporting threshold, see today's preamble for Subpart FF and the preamble signed in 2009.

3. SELECTION OF PROPOSED GHG EMISSIONS CALCULATION AND MONITORING METHODS

Commenter Name: Jeff A. Myrom

Commenter Affiliation: MidAmerican Energy Holdings Company

Document Control Number: EPA-HQ-OAR-2008-0508-0581.1

Comment Excerpt Number: 43

Comment: MidAmerican submits that CEMS should be allowed as a reporting methodology, but not required. EPA should also be aware that some mines have such low methane emissions that methane emission comprise close to one-millionth of the ventilation air emitted.

Response: For background information on CEMS requirements and changes in monitoring from the proposed rule for this source, see today's preamble section on Subpart FF.

Ventilation systems at active underground coal mines exceeding the proposed threshold (i.e., where MSHA is already conducting quarterly or more frequent sampling), must only report emissions annually, based on the results of this periodic sampling. Where they are currently used for ventilations systems, CEMS are allowed, but not required. Mines with rates of methane emissions below the defined threshold, as determined by MSHA for mine safety reasons, would not have to report.

EPA has changed the monitoring requirements for methane liberation from degasification systems. EPA has reevaluated costs associated with required CEMS use for this methane liberation, and has changed the monitoring method to require weekly or more frequent sampling, or CEMS.

The basis for this change was twofold. First, EPA reassessed the number of degasification wells and vent holes that would likely be associated with mines required to report under the rule. Originally, it was estimated that approximately 200 remote gob gas vent wells/holes do not currently monitor degasified gas volumes produced. However, based on the comments received, EPA revised its estimate. EPA now estimates that 500 degasification wells are venting methane to the atmosphere, and it was also assumed that these wells also had an average 3 year life, resulting in an average of 167 new wells that are brought on line each year (as a comparable number are retired). This resulted in a substantially larger number of degasification wells that would be required to install CEMS systems in compliance with the originally proposed requirements, with an associated greater incremental cost burden.

Second, again based on comments received, EPA determined that implementing CEMS on some degasification wells could be quite costly, and in many cases, would be difficult and/or impractical due to remote location, unavailability of power, inaccessibility, susceptibility to vandalism, and the relatively short longevity of many degasification and vent holes. As a result, EPA included consideration of the costs associated with weekly or more frequent sampling, as an alternative to the installation of CEMS, to potentially address this potential burden. . However, it was assumed that gob gas vent hole wells are much less likely to be currently monitored. Therefore, it was determined that these wells would need to incur incremental costs for either installing CEMS meters, or for planning and implementing a sampling program. In this regard, the costs associated with planning and implementing a weekly sampling program were determined to be less burdensome than the costs associated with installing and maintaining CEMS.

For degasification systems where gas is sold, used onsite, or otherwise destroyed, EPA determined that such meters are already installed on most of these systems.

For information on the rationale for thresholds selected for the rule, see the preamble signed in 2009, and response to comment EPA-HQ-OAR-2008-0508-0956.1, excerpt number 5

Commenter Name: Jeff A. Myrom
Commenter Affiliation: MidAmerican Energy Holdings Company
Document Control Number: EPA-HQ-OAR-2008-0508-0581.1
Comment Excerpt Number: 42

Comment: EPA requests comment on whether relying on MSHA sampling procedures, which were developed to ensure adherence to safety standards, is appropriate and sufficiently accurate for a GHG emissions reporting program. The EPA are interested in viewpoints on whether quarterly sampling is sufficient to account for potential fluctuations in emissions over smaller time increments (e.g., daily) from the mine (page 16554). The procedures and quarterly sampling are sufficient as an option for GHG emissions reporting from degasification of underground coal mines if such data can be received from MSHA. However, EPA should be aware that MSHA does not normally report such data back to mines unless requested; thus, data certification from the mines may not be appropriate if the data is provided by an external agency that collects the data. EPA should also be aware that some mines have such low methane emissions that degasification wells, let alone flares, are not needed.

Response: EPA disagrees that quarterly sampling is sufficient as an option for GHG emissions reporting from degasification of underground coal mines. See response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43. MSHA's requirement for quarterly sampling is for ventilations systems, and does not include degasification systems. EPA is aware that MSHA does not normally report sampling data from ventilation systems; for more information, see today's preamble.

Under the rule, coal mine facilities required to report would report data directly to EPA. Please see the preamble signed in 2009 for more information on reporting and certification requirements.

For information on the monitoring requirements for degasification systems, see today's preamble section on Subpart FF, and the response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

EPA realizes that some mines have low methane emissions. Those with emissions below the defined reporting threshold are not required to report. For information on the rationale for thresholds selected for the rule, see today's preamble and response to comment EPA-HQ-OAR-2008-0508-0956.1, excerpt number 5.

Commenter Name: Benjamin Brandes
Commenter Affiliation: National Mining Association (NMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0466.1
Comment Excerpt Number: 40

Comment: Many NMA members have no need to employ degasification systems at their underground mines. The entirety of liberated CH₄ at those operations passes through the

ventilation system. Many of the mines that do employ degasification systems estimate that the vast majority of CH₄ (in the case of one company less than 30 percent of the total liberated CH₄ from the mine passed through the degasification system) is liberated through the ventilation system. NMA believes that, from an industry-wide standpoint, the amount of CH₄ that is ultimately liberated to the atmosphere through degasification systems is negligible, particularly when taken in consideration with the costs and burdens associated with requiring underground mines to install continuous monitoring systems on all degasification orifices. NMA believes that monitoring and reporting of emissions from ventilation systems in accordance with current MSHA procedures is sufficient to provide EPA detailed CO₂ equivalency data in furtherance of its stated policy objectives. Alternatively, NMA recommends that monthly or quarterly measurements of CH₄ emissions and air flow rates, depending upon accessibility should be substituted for continuous monitoring of degasification wells and vent holes. Electronic flow meters and gas analyses need the attention of trained technicians for maintenance and calibration. Periodic monitoring, conversely, can be done with portable, hand-held flow meters and CH₄ analyzers. Further, detailed chromatography analyses can be run on quarterly samples. This would be much more accurate and cost effective than requiring mines to purchase chromatographs for every orifice and hiring personnel to operate, monitor and calibrate such equipment.

Response: For information on the rationale for reporting of degasification system methane, see today's preamble section on Subpart FF, and response to comment EPA-HQ-OAR-2008-0508-0466.1, excerpt 41.

EPA agrees with the commenter that the monitoring requirements for ventilation systems are sufficient for obtaining data for this rule.

For information on the monitoring requirement for degasification systems, see today's preamble section on Subpart FF, and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Benjamin Brandes

Commenter Affiliation: National Mining Association (NMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0466.1

Comment Excerpt Number: 38

Comment: EPA proposes to require all underground mining operations to install continuous monitors on all wells and vent holes associated with the facility's degasification system. Continuous monitoring of CH₄ emissions and air flow rates for all degasification wells and degasification vent holes is not feasible for several reasons. The remote location, unavailability of power, inaccessibility, susceptibility to vandalism, and the relatively short longevity of many degasification and vent holes renders continuous monitoring impractical.

Response: See today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Benjamin Brandes
Commenter Affiliation: National Mining Association (NMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0466.1
Comment Excerpt Number: 37

Comment: NMA endorses EPA’s decision to rely on MSHA sampling procedures for monitoring and reporting ventilation emissions. NMA further believes that monitoring requirements for ventilation systems will capture the lion’s share of CH₄ emissions data from underground coal mines. CH₄ emissions from portals, shafts, and other openings not already included in an air quality permit for criteria pollutants should be excluded from the GHG inventory for underground mines. Emissions of this nature should be considered fugitive and not subject to regulation or quantification under this proposed rulemaking. We encourage EPA to establish, in conjunction with MSHA, a mechanism to ensure the timely and efficient transfer of the quarterly sampling results.

Response: EPA agrees with the commenter on the use of MSHA sampling procedures for monitoring ventilation methane. To the extent that “portals, shafts, and other openings not already included in an air quality permit for criteria pollutants” correspond to ventilation shafts where MSHA sampling takes place, or to degasification vent holes, their CH₄ emissions are covered.

EPA is not at this time establishing a mechanism with MSHA to ensure the timely and efficient transfer of the quarterly sampling results from MSHA to the operators required to report. Owners and operators are responsible for reporting emissions data to EPA.

For information on the monitoring requirements, see response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Craig Holt Segall
Commenter Affiliation: Sierra Club
Document Control Number: EPA-HQ-OAR-2008-0508-0635
Comment Excerpt Number: 51

Comment: We generally agree with EPA’s approach to underground coal mine methane monitoring, but urge EPA to move towards more accurate direct measurement methods. As EPA observes, “[m]any mines sample GH₄ daily from ventilation systems” using handheld analyzers, and many other mines already use GEMS for this purpose. Yet, EPA opted instead to require only quarterly monitoring for methane emissions from ventilation systems, rather than daily, and did not even require mines with GEMS to use them to monitor emissions from ventilation systems. EPA should not take this lax course. As EPA writes, GEMS use “could increase the accuracy of . . . [methane] emissions calculations because it takes into consideration any variability in emissions from mining operations that may not be represented in the quarterly sampling.” EPA’s failure to require GEMS for underground coal mine ventilation systems is all the more puzzling given that EPA is very properly proposing to require GEMS for methane degasification wells from such mines – a proposal we strongly support. Simply put, EPA should

require GEMS use for ventilation systems at underground mines, extending an already widely-followed practice.

Response: For information on the monitoring requirement, see today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Joseph D'Amico

Commenter Affiliation: Foundation Coal

Document Control Number: EPA-HQ-OAR-2008-0508-0212.1j

Comment Excerpt Number: 4

Comment: Just be careful when you look at your option one, option two, option three for the continuous emission monitoring systems. If we had flow rates of 1 million, 2 million, 5 million cubic feet a day, oh, sure, you would load it up with instruments, but when you get flow rates that have zero in most cases or barometric pressure makes it go the other way -- so that is the point. That's all. Keep track of that, and I think you will be better off. You will be better served. As I said, wrong information is worse than no information, and that will make you do things.

Response: See today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Joseph D'Amico

Commenter Affiliation: Foundation Coal

Document Control Number: EPA-HQ-OAR-2008-0508-0212.1j

Comment Excerpt Number: 2

Comment: Because all underground coal mines are tied to MSHA anyway when it comes to reporting, it is always done anyhow with MSHA, but I see here on page 548, there is proposed monitoring systems, and you have option one and option two and option three. Option one is the default. You say, well, there's so many tons of coal being mined, and you can make an association by the gas content, how much methane would have been emitted. You go to option two, and it is periodic sampling of methane, and that is basically what MSHA does to keep the mine safe. Then there is option three, use of CEMS. That is continuous emissions monitoring systems. Now, remember, we are the people out there who are drilling wells with compressors and wellheads, bring all that to a gathering system and then to a gas processing plant. So we have to know what the gas quality is at each and every one of those wells. We try, as hard as we may, to put instrumentation at wellheads that will live in remote locations, and you find yourself going back to the other method, which is the periodic sampling, where you take the sample, you bring it back to a lab, you have a gas chromatograph analysis, and now you know what you have got, because if you try to put instruments in remote locations, you are going to get information -- the wrong information is worse than no information. You are better off knowing what you are dealing with. As far as flow meters, we generally put electronic mass flow meters that are very calibratable. We need to know what that is. That is fine, but that is only at, say, a portion of the wells. You could have hundreds of wells -- not necessarily wells. They could be bore holes,

vents, all kinds of things that we currently monitor for MSHA, and that is where we start. When you look out on the horizon, you start with that information that we are reporting to MSHA, and then you may see some wells are flowing -- most are not -- and it changes with time. So you keep track of that.

Response: See today's preamble section on Subpart FF and responses to comments EPA-HQ-OAR-2008-0508-0581.1, excerpt 43, and EPA-HQ-OAR-2008-0508-0635, excerpt 51.

4. DETAILED GHG EMISSION CALCULATION PROCEDURES/EQUATIONS IN THE RULE

Commenter Name: Joseph A. D'Amico

Commenter Affiliation: Foundation Coal Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0421.2

Comment Excerpt Number: 7

Comment: Additional explanation is needed surrounding the definition of "in operation." Variables V and C to Equation FF-2 require the degasification system to report for any time it is "in operation." Please advise as to your reporting requirements on preparatory and testing operations, required to ensure safety and accurate functionality. For example: 1. When the lines are pigged, the small amount of gas released should not have to be measured as fugitive emissions because it may only occur once a year for only a short time (minutes). 2. Additionally, any time any of the lines are vented, the small amount of gas should not have to be measured as fugitive emissions because it may be a rare occurrence. 3. Lastly, advise as to if the waste gas stream from a CH₄ recovery system would have to be continuously monitored for quality and quantity.

Response: EPA's intent is for the sampling of emissions under normal operations. Therefore, emissions during pigging or when lines are vented would not be considered part of normal operations.

EPA is requiring continuous monitoring of degasification methane that is combusted, for both quality and quantity. Uncombusted CH₄ from this gas stream is not directly monitored, but a destruction efficiency factor is included in the calculations to account for this CH₄ emission.

5. MONITORING AND QA/QC REQUIREMENTS

Commenter Name: James A. Kiger

Commenter Affiliation: Oxbow Mining, LLC

Document Control Number: EPA-HQ-OAR-2008-0508-0810.1

Comment Excerpt Number: 3

Comment: 1. Due to the remote nature of the borehole sites, power is not available to run the instrumentation. 2. MSHA methods of measuring methane gas liberation have questionable accuracy. Air quantity readings taken by Inspectors are quite often inaccurate, especially in high velocity mine areas. MSHA methods and their accuracies suit the purposes for which they are presently used, but do not provide accuracy needed for gathering of scientific data or for regulatory purposes. 3. Access to the exhausters, particularly during winter months, will make effective operation, maintenance and trouble shooting of the exhauster monitoring equipment very difficult. Our area is affected by deep snows with very steep terrain during the winter months. Quite often the access to the remote wells is very limited and delayed. 4. The air flow volume determination will be adversely affected by the variable density of the associated gasses mixed in when there are low methane concentrations. Methane concentrations can vary from 25% to 90% and be mixed with a variety of other gasses.

Response: See today's preamble section on Subpart FF and response to comments EPA-HQ-OAR-2008-0508-0581.1, excerpt 43, and EPA-HQ-OAR-2008-0508-0635, excerpt 51.

Commenter Name: Joseph A. D'Amico
Commenter Affiliation: Foundation Coal Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0421.1
Comment Excerpt Number: 4

Comment: Section 98.324, Monitoring and QA/QC "Requires the use of gas chromatography." As long as quarterly samples are allowable, a gas sample can be sent to a laboratory for a detailed chromatography analysis. This would be much more accurate and more cost effective than purchasing many chromatographs, hiring and training technicians to run/monitor/calibrate them. A portable CH₄ gas analyzer that has been calibrated could also be used.

Response: The requirement for use of gas chromatography can be met by sending a sample to a laboratory.

Commenter Name: Joseph A. D'Amico
Commenter Affiliation: Foundation Coal Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0421.1
Comment Excerpt Number: 2

Comment: "Degasification" – EPA proposes continuous monitoring for CH₄ content and flow rates for all degasification wells and/or vent holes. Having done this for the purpose of recovering de-gas methane for many years, the following is a list of reasons why it should not be mandated as "Continuous" but instead "Periodic – Quarterly" as per MSHA. 1. Very remote well sites are difficult to get to. 2. No electricity is available. 3. Electronic flow meters and electronic gas analyses need the attention of a trained technician for maintenance and calibration. 4. There is a large difference in price and accuracy of CH₄ gas analyzers. 5. A better plan would be to follow MSHA's periodic or quarterly flow and CH₄ content testing. a. Portable, hand-held flow meter and CH₄ analyzers can be used quarterly. b. The data from continuous monitors in remote

areas may be no better than the MSHA periodic data and the added cost of equipment and personnel does not warrant it.

Response: See today's preamble section on Subpart FF and response to comments EPA-HQ-OAR-2008-0508-0581.1, excerpt 43, and EPA-HQ-OAR-2008-0508-0635, excerpt 51.

Commenter Name: Joseph A. D'Amico

Commenter Affiliation: Foundation Coal Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0421.2

Comment Excerpt Number: 1

Comment: "Degasification" – EPA proposes continuous monitoring for CH₄ content and flow rates for all degasification wells and/or vent holes. Monitoring should not be mandated as "Continuous" but instead "Periodic – Quarterly" as per MSHA. Buildings to house the monitoring equipment and electric lines required to operate the equipment require permits that may take 6 to 12 months to obtain.

Response: See today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Fredrick Palmer and Dianna Tickner

Commenter Affiliation: Peabody Energy

Document Control Number: EPA-HQ-OAR-2008-0508-0552.1

Comment Excerpt Number: 5

Comment: First, EPA requests comments on the commencement date for reporting. 74 Fed. Reg. at 16471/1. Peabody recommends the second option set forth by EPA. Peabody does not believe that the 2010 date for commencement of reporting is realistic. Even on the most expeditious path imaginable, assuming EPA gives due regard to the comments it receives from the very large number of entities and sectors to which the proposed regulation applies, the rule cannot be made final until the last quarter of 2009. We cannot be ready, therefore, to make the investments in equipment, labor and training that will be necessary to comply with the rule by January 1, 2010. Moreover, there is likely to be a considerable shortage of laboratory capacity to undertake daily ultimate analysis for all or many coal mines exceeding a 100,000-ton per year production level. Peabody suggests a January 1, 2011 start date. This is consistent with the fact that, at least for coal suppliers, EPA already has the data and tools it needs to analyze CO₂ regulatory scenarios, and therefore there is no pressing need for the new data EPA seeks. EPA states that the disadvantage of its second option is that it delays receipt by EPA of "critical data, even basic data, necessary to inform future policy and regulatory development." *Id.* That is not the case with coal supplier reporting.

Response: See today's preamble section II B Changes to the Reporting Schedule.

Commenter Name: Benjamin Brandes
Commenter Affiliation: National Mining Association (NMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0466.1
Comment Excerpt Number: 2

Comment: EPA proposes to require facilities impacted by this rulemaking to begin monitoring requirements January 1, 2010, and to file initial reports by March 31, 2011. Assuming that EPA finalizes a reporting rule, it would be optimistic to think that at this late date, impacted entities would become aware of the final regulations to which they would be subject prior to the end of 2009. NMA trusts that EPA will devote adequate time and attention to the comprehensive comments it will receive on this proposal, and adjust the rule accordingly to ensure a fair and productive program. NMA does not believe that the 2010 commencement date identified in the proposal is realistic. NMA recognizes that for a portion of regulated entities that would become subject to a finalized proposal, electric generating units subject to the Acid Rain Program for instance, existing monitoring and reporting procedures are already in place, and compliance with a reporting rule for those entities will be relatively straightforward. Many NMA members that will become subject to new regulation, however, will have a much steeper climb in order to comply. Given that affected entities will need time to read and understand a final rule, identify questions and obtain clarifications, conduct training and implement appropriate monitoring programs or install data collection equipment, NMA does not believe that a January 1, 2010, start date will offer sufficient time to prepare for the collection of meaningful data. NMA recommends that EPA consider requiring regulated entities to begin monitoring January 1, 2011, at the earliest.

Response: See today's preamble section II B Changes to the Reporting Schedule.

Commenter Name: Robert E. Murray
Commenter Affiliation: Murray Energy Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-1577
Comment Excerpt Number: 10

Comment: This Rule was supposed to be out in September, 2008, yet came out in May 2009. This 8-month gap shows the complexity of developing such a Proposed Rule. It will require at least the time it took to create the rule as it will to implement it. If EPA had released this Rule on time, then perhaps the required monitoring requirements could be realized by the start date of January 1, 2010, but as no rule has been finalized as of June 9, 2009, this start date is completely unreasonable. As mentioned in the previous section, Murray Energy must custom-order the appropriate equipment and hire talented individuals to monitor the mines. The technology barely exists in commercialized form and the talent is limited to scholars and scientists, so Murray Energy recommends that the start date be pushed back two (2) years to ensure that we can purchase and correctly install the proper monitoring equipment, as well as hire adequately-trained individuals. We do not allow untrained miners into underground coal beds, and this philosophy of properly training individuals extends to non-mining personnel as well. As a result of our recommended two-year delay in monitoring requirements, we further urge that the date to file initial reports be pushed back two years to March 31, 2012.

Response: See today's preamble section II B Changes to the Reporting Schedule.

6. DATA REPORTING REQUIREMENTS

Commenter Name: Joseph A. D'Amico

Commenter Affiliation: Foundation Coal Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0421.1

Comment Excerpt Number: 1

Comment: “Destroyed CH₄ includes flaring thermal oxidation, on-site energy and CH₄ conveyed through pipelines (including natural gas pipelines for offsite combustion.” Coal mine methane (“CMM”) that has been recovered, purified and conveyed through pipelines should have its own category. This is by far the best GHG reduction and energy recovery utilization. a) Methane that has been recovered is no longer an emission as it is not vented to the atmosphere, but conveyed through a pipeline for direct use, thereby displacing geological natural gas that would have been consumed. Therefore, recovered methane should not be included in a coal mine's total emission calculation. b) Recovered CMM that is put into a pipeline is 2.5 times more beneficial in reducing GHG emissions than generating electric power. Natural gas engine fired power generation is 30-35% efficient while a natural gas fired furnace is 80% efficient. c) Recovered CMM that is put into a pipeline may not necessarily be combusted as significant portions may go to chemical plants where the CH₄ is used to make plastics and other materials (~100% Efficiency). Thermal destruction of CH₄ is the last thing that should be done, not the first. Energy recovery should be first. If we degas properly, there will not be enough methane left in the ventilation air to thermally oxidize. We have already witness this at our Western Pennsylvania coal mines. a) Thermal destruction of methane using a flare or ventilated air methane (VAM) has a 0% thermal efficiency. b) Recovered methane can have energy efficiency of 35% - 80%, depending on utilization.

Response: All recovery of CH₄, including through pipeline projects, at coal mines meeting the threshold is accounted for under the reporting rule. It is reported, but it is not included in the mines' emissions totals. For more information, see today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0466.1, excerpt 41.

7. COST DATA

Commenter Name: Benjamin Brandes

Commenter Affiliation: National Mining Association (NMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0466.1

Comment Excerpt Number: 39

Comment: The costs of installing continuous monitoring equipment on all degasification wells and vents (some mines potentially require over 100 boreholes) will present significant costs to NMA members.

Response: See today's preamble section on Subpart FF and response to comment EPA-HQ-OAR-2008-0508-0581.1, excerpt 43.

Commenter Name: Joseph D'Amico

Commenter Affiliation: Foundation Coal

Document Control Number: EPA-HQ-OAR-2008-0508-0212.1j

Comment Excerpt Number: 3

Comment: Once you see some that are start flowing, then you go out and you start putting some instruments on it. Well, then it comes into what type of instrument. A continuous emission monitoring system? I will tell you this, your cost estimates are off by a factor of a thousand when you start getting into mass flow meters, electronic analyzers, and chromatographs, for every one of those. Think about it, 100 times 10-, 20,000, and then the people to maintain it and run it. You are better off doing just what we are doing now and following the MSHA regulations, and you can see what is going on and make it happen. At the same time, we get a triple advantage.

Response: See today's preamble section on Subpart FF.

Commenter Name: Robert E. Murray

Commenter Affiliation: Murray Energy Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-1577

Comment Excerpt Number: 7

Comment: EPA omits the time and expenses it will take Murray Energy to purchase and install greenhouse gas emissions monitoring equipment. This equipment is extremely expensive and always made-to-order. Purchasing mine safety equipment to measure air quality and flow is always done on a custom basis for each mine, and EPA assumes that our current equipment suppliers can and will produce this equipment. This is highly unlikely. Murray Energy spends a considerable amount of money to protect our most valuable asset: our employees. We comply with all Mine Safety & Health Administration requirements. We go above and beyond necessary safety precautions using innovative technologies and employ a full-time staff to continuously train our underground employees as to how to react and respond in a mine fire or explosion. This training involves hands-on fire-fighting techniques in simulated disaster situations using high-tech equipment, such as our Fire Brigade truck. Adding additional technology requires massive investment plus more full-time staff to train others to operate this technology, yet still EPA believes our First Year Capital Costs are \$0.

Response: See today's preamble section on Subpart FF.

Commenter Name: Robert E. Murray
Commenter Affiliation: Murray Energy Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-1577
Comment Excerpt Number: 9

Comment: The added cost of compliance on a yearly basis was erroneous in EPA's calculations, as well. EPA estimates this will cost the entire industry \$11 million. Murray Energy operates 8 of the estimated 1,200+ mines covered by this rule, and our compliance costs (wages, insurance, training, routine maintenance, installation of equipment at expanded mines, legal fees, certifications, etc.) could cost our company \$11 million alone. EPA's arbitrary threshold for CO₂e disadvantages companies such as Murray Energy, which must seek legal clarification as to how to report because of the Rule's lack of information.

Response: See today's preamble section on Subpart FF for information on changes to requirements and associated costs.

Based on the reporting threshold, EPA determined that ventilation emissions were reported and electronically accounted by MSHA for in 128 mines in 2006. Of these 114 mines exceeded the MSHA threshold of mines liberating more than 100,000 cubic feet of per day from ventilation systems, which is equivalent to about 15,000 metric tons CO₂e per year.

Cost estimates for reporting ventilation system emissions were based on the assumption that coal mine operators would be required to duplicate the MSHA process of collecting air samples and ventilation rates, submitting the samples to a lab for analysis, and developing estimates of emissions on their own. This process would require mine operators to purchase sampling equipment, train personnel in their use, develop emissions estimates based on the data collected, and report the results. If this option is pursued, the operator would have to incur the capital and O&M costs involved in purchasing and maintaining the air sampling equipment, and in sending air samples to an independent lab for analysis.

More detail on EPA's estimates for these costs can be found in the Regulatory Impact Analyses performed for this rulemaking, found in the docket (see docket EPA-HQ-OAR-2009-0508). A copy of this document is also available on our website (see http://www.epa.gov/climatechange/emissions/downloads09/GHG_RIA.pdf).

Commenter Name: Benjamin Brandes
Commenter Affiliation: National Mining Association (NMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0466.1
Comment Excerpt Number: 1

Comment: NMA supports EPA's stated goal of promulgating reporting requirements that utilize existing GHG emission estimating and reporting methodologies in order to reduce the compliance burden on regulated entities. 74 Fed. Reg. 16,456. NMA is concerned, however, that EPA has ignored information that is already available, opting instead to propose reporting

requirements that, in many cases, will impart unnecessary burdens on mining operations and other industries.

Response: EPA does not agree with the commenter that the rule imposes unnecessary burdens on mining operations and other industries. See response to comment EPA-HQ-OAR-2008-0508-1577, excerpt 9.

8. OTHER SUBPART FF COMMENTS

Commenter Name: Joseph D'Amico

Commenter Affiliation: Foundation Coal

Document Control Number: EPA-HQ-OAR-2008-0508-0212.1j

Comment Excerpt Number: 1

Comment: As you know, when you are mining coal, you have to de-gas to make the mine safe. In the past, in the past 100 years basically, we were venting that methane to the sky. So we look at that as a waste gas opportunity. Within the last 15 years and the last 6 years for short at Foundation Coal, we have been recovering a lot of the underground methane at some of our East Coast mines, especially to there up in Southwest Pennsylvania. That is still the beginning. There is a long way to go. From a purely science and technology applications point of view and economics -- let's talk about the economics -- it is not a home run for economic success. It is something we said we should be going after this because it is a source of energy, and most recently, of course, it is a greenhouse gas that we can also have a double advantage by doing this. The reason it is not an economic advantage, you are literally drilling gas wells in front of a long wall mining machine. That is as if you and I drilled the gas well on a railroad track and had the train come and take it out. So you won't find that many people around ready to write checks and invest in that kind of a business, but because of its double advantage of making the mine safe -- triple advantage actually, getting an American source of energy that would have been wasted and it's good for the environment because you are capturing and utilizing greenhouse gas. It depends on what you do with it. In our case, we are recovering it. It is not pure methane. You have to treat it, process it, compress it, make it pure, and because you are on the East Coast, you have enough pipelines close by. You can put it into the pipeline for use on the East Coast. This is all a good thing to do.

Response: EPA agrees with the commenter that methane recovery at mines has many environmental benefits. The methodologies provided in the rule may encourage the development of methane recovery projects at mines potentially affected by the rule. Facilities that calculate and report emissions under the proposed rule would be able to recognize the offsets potential of their mines, and could be at an advantage over facilities that are not reporting under the proposed rule, in that they would already have stringent monitoring and data systems in place to calculate baselines and emissions reductions. Further, the accurate reporting of emissions from mines will improve the confidence of offset buyers and the environmental community in the ability of these project activities to produce accurately monitored and verifiable emissions reductions.