

Greenhouse Gas Permitting Issues and Approaches for Addressing Greenhouse Gas Emissions

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INTRODUCTION

Over the past five years, greenhouse gas (GHG) emissions reporting programs and permitting regulations have been in a state of flux. This has produced a variety of rules and regulations, which have been implemented, suspended, updated, and scrutinized by the courts. The current regulatory environment for air pollutants under the Clean Air Act (CAA) was developed primarily for pollutants with local/regional, short-term impacts, however the addition of GHG to the scope of gases regulated under the CAA, and the changing regulatory and legal framework for permitting GHG over the past five years, has resulted in serious challenges to industry.

This paper details various federal GHG regulations and legislation, both final and proposed, which could affect a large number of facilities and industries across the United States. In the last five years, GHGs have been regulated under the CAA in several new ways. After the U.S. Environmental Protection Agency's (EPA's) endangerment finding, groundwork was laid for extensive regulation and reporting of GHGs. The EPA created GHG regulations, such as EPA's mandatory reporting rule (MRR) and the Tailoring Rule, to address GHGs under the CAA. Subsequently, various legal and regulatory changes have occurred, such as the expiration of the biogenic emission deferral from permitting requirements and the U.S. Supreme Court's ruling on the Tailoring Rule, which essentially prevents EPA regulation of GHGs under Title V and Prevention of Significant Deterioration (PSD) unless the source or project is regulated as a major source for another regulated pollutant. Each of these changes creates confusion, uncertainty, and complex permitting issues for any source, which is considering projects with GHG emission increases. The potential effect of the Tailoring Rule and recent invalidation of much of that rule as related to the PSD and Title V programs has been substantial.

During this time, several regions, states, and local jurisdictions have developed their own GHG programs and regulations. The repercussions of the Supreme Court's decision vacating much of the Tailoring Rule on these state and local programs are still developing, including many which have to revise their regulations again to address the Supreme Court's decision.

This paper assesses which solid waste facilities have been affected and the permitting issues which have arisen from the regulation of GHGs under the CAA. This includes what facilities have received permits solely on potential GHG emissions; permitting changes for facilities

emitting biogenic GHGs; and what additional monitoring and recordkeeping programs will be necessary to comply. The effect of Supreme Court's ruling on the Tailoring Rule and the loss of biogenetic deferral will also be assessed for landfills and other solid waste facilities

GHG EMISSIONS INFLUENCE ON PSD/TITLE V PERMITTING

As stated above, through the EPA inclusion of GHG emission influence on PSD and/or Title V permit requirements the Tailoring Rule could apply to all major sources and landfills. For biogenic sources in particular, such as biogas and landfill gas (LFG)-derived emissions, the carbon dioxide (CO₂) emissions are considered biogenic, meaning they come from a biofuel and do not contribute to a net increase in atmospheric CO₂.

Under Step 1 of the Tailoring Rule, PSD applied to GHGs if the sources was already subject to PSD for another regulated NSR pollutant and the source has a GHG potential to emit (PTE) equal to or greater than 75,000 tons per year (tpy) of CO₂e. From January 2, 2011 to June 30, 2011, permits were issued under this guidance.

On July 1, 2011, the EPA issued a rule (40 Code of Federal Regulation (CFR) Parts 51, 52, 70, and 71, Federal Register Volume 76, No. 139, pages 43490 to 43508) to defer the inclusion of biogenic CO₂ in PSD and Title V programs under the Tailoring Rule.

Under Step 2 of the Tailoring Rule, PSD and title V applied to GHGs as stated above in Step 1 or if the source had a GHG PTE equal or greater than 100,000 tons per year CO₂e and 100/250 tpy mass basis, or increase of 75,000 tpy as a major modification.

On July 12, 2013, the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) vacated the Deferral Rule that had suspended regulation of "biogenic" GHG emissions under the CAA. However this legal finding vacating the deferral of biogenic GHG emissions did not take effect until the U.S Supreme Court Ruled on the GHG case. The case was heard in March 2014, and the ruling was issued in June 2014 limiting the ability to regulate GHGs under the CAA and striking down major provisions of the Tailoring Rule.

With the Supreme Court ruling, there is some confusion in the regulation of biogenic GHGs since their ruling did not directly address those. On July 21, 2014, the biogenic deferral expired on its own, and it has not been reinstated. However, the Supreme Court ruling prevents any regulation of GHGs unless the source or project is major for other regulated pollutants. A facility cannot be major for GHGs alone. On July 24, 2014, EPA issued a memorandum recognizing its limitations under the Tailoring Rule and clarifying when Title V or PSD requirements for GHGs would be triggered. On November 19, 2014, the EPA issued its "Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources" (Framework). The Framework clearly defines biogenic CO₂ coming from municipal solid waste (MSW) as having a biogenic assessment factor (BAF) of zero, meaning CO₂ from LFG is fully biogenic, part of the natural carbon cycle, and should not be regulated under the CAA. As such, biogenic CO₂ should not be counted as part of the regulated GHG emissions from a LFG source.

All facilities which were solely given permits based on having GHG PTE equal or greater than 100,000 tons per year are no longer regulated as a major source. These permits must be rescinded, and EPA has indicated that there should be no enforcement of the GHG provisions of these permits. EPA is not precluding states and local jurisdictions from retaining permitting requirements for major sources of GHG emissions to the extent state law provides independent authority to do so, and the EPA has left it up to the states and local jurisdiction resolve these permit issues.

Methane (CH₄) and nitrous oxide (N₂O) are combustion byproducts and are GHGs. Even when resulting from the combustion of a biofuel, CH₄ and N₂O are considered anthropogenic. All GHG from combustion of fossil fuels, such as diesel, are anthropogenic and must be included in the GHG emission for Title V compliance. GHG sources at landfills are typically stationary sources associated with LFG destruction (e.g. flare and engines), LFG surface emissions, and tippers. Fugitive emissions are not considered to determine major source emission levels and are not counted under the CAA, although some states and local jurisdictions do count them. Not all GHG have equal impact on the climate, so emissions of CH₄ and N₂O have been converted into CO₂ equivalent (CO₂e), the EPA recommends using a global warming potential factor of 25 for CH₄ and 310 for N₂O. Therefore under the CAA, all Title V landfills must calculate the CH₄ and N₂O associated with combustion sources and include GHG in the permitting process for new major source sites and renewal permits. CH₄ emissions from LFG that are non-fugitive, defined by EPA as the portion of LFG that is “reasonably collectable” are also regulated.

PROPOSED NSPS MSW LANDFILL RULE

The EPA is currently working on updating the New Source Performance Standards (NSPS) for MSW Landfills, promulgated under 40 CFR 60, Subpart WWW. On July 17, 2014 the EPA published the proposed rule Standards of Performance for MSW Landfills under 40 CFR 60 Subpart XXX, as well as the advanced notice of proposed rulemaking for Emission Guidelines and Compliance Times for MSW landfills. The EPA is anticipating that the new NSPS rules for landfills will reduce CH₄ and air toxic emissions by requiring landfill operators to capture two-thirds by 2023. The EPA’s goal is to reduce fugitive CH₄ emissions from multiple sectors not only including landfills but also other industrial sectors such as the oil and gas industry (e.g. fugitive CH₄ emissions from pipe blowdowns, leaks, and pneumatic devices). On June 22, 2015 the EPA sent the proposed NSPS MSW landfill rules to the White House Office of Management and Budget for interagency review. In the United States, approximately 1,000 MSW landfills would be effected by the proposed rule.

The current NSPS MSW landfill rule, works on reducing total fugitive LFG emissions. In light of the President’s 2013 Climate Action Plan (including its follow-up Methane Strategy document published in 2014), the EPA is looking at the MSD Landfill NSPS as an opportunities to achieve additional reductions in GHG emissions, including methane emissions. In the advanced notice or proposed rulemaking, the EPA looked at whether to continue regulating LFG or solely methane from MSW landfills. According to the EPA’s “Compilation of Air Pollutant Emission Factors,” otherwise known as AP-42, LFG typically contains CH₄ and CO₂ as the primary constituents with small amounts of non-methane organic compounds (NMOC) which often contain various organic hazardous air pollutants. Table 1 below shows the LFG broken down by component.

Table 1. LFG Breakdown by Components

LFG Components	Approximate LFG Composition (%)
Methane (CH ₄)	50-55
Carbon Dioxide (CO ₂)	45-50
Nonmethane Organic Compounds (NMOCs)	<1
Hazardous Air Pollutants (HAPs)	<0.5

The Intergovernmental Panel on Climate Change (IPCC) came out with the Fourth Assessment Report which reported the global warming potential (GWP) of CH₄ as 25 times more potent a GHG than CO₂ over a 100-year period. Based on the CH₄ makeup of LFG and with the amplified GHG effect, the EPA wrote the proposed rule to limit CH₄ emissions to supplement and expand on the existing NSPS rule, which was designed for NMOC reductions. If the proposed rule is implemented, it is unclear what the impact it would have on the major source threshold of 250/100 tons per year. If implemented, CH₄ would be a regulated pollutant and as part of stationary source regulation, facilities would have to conduct a New Source Review (NSR) applicability, renew and potentially conduct PSD permitting for CH₄. As the Supreme Court decided that the EPA could not tailor GHG emissions definition of a major source, CH₄ emissions wouldn't be able to be tailored either. The proposed regulation could be interpreted to mean that any increase in CH₄ emission is major and that any source of CH₄ emissions is major source, which may seem extreme by such an interpretation is yet another layer of confusion in the regulation of GHGs under the CAA.

SUMMARY

With the instability of GHG regulations over the past few years, facilities have been struggling to keep up with the ever changing framework. Under the CAA, GHG emission reporting and regulations have been implemented, suspended, and revoked, while at the state and local jurisdictional level GHG rules and requirements have been following federal directions. The constant change for existing permitted facilities has been challenging and for new facilities which have briefly been required to determine if they are affected or not has been even more challenging. On top of all of the GHG regulation and permitting issues, biogenic facilities such as landfills, have had an even more difficult time with the biogenic deferral and how it effects their existing facilities.

The proposed NSPS MSW landfill rule is also going to significantly modify the operations and GHG emission reductions at landfills. If the proposed rule is adopted, it will switch the focus from NMOC reductions to limiting CH₄, a major source of GHGs, it is expected that approximately 1,000 landfills will be effected. As the Supreme Court decided that GHG emissions definition of a major source could not be tailored, CH₄ emissions would not be able to tailor be tailored either. As one of the main reportable GHG, any increase CH₄ emissions would be considered major under Title V and PSD forcing facilities to undergo NSR for facilities. The proposed rule only adds confusion to the regulating GHGs for landfills. Only the test of time, will show how GHGs are end added to the current regulatory framework under the CAA.

REFERENCES

Code of Federal Regulations Title 40 Part 60, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills; Proposed Rule

Code of Federal Regulations Title 40 Part 60 Subpart XXX, Standards of Performance for Municipal Solid Waste Landfills; Proposed Rule

Code of Federal Regulations Title 40 Part 60 Subpart WWW

Intergovernmental Panel on Climate Change, 2007. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.

USEPA, 1997. Compilation of Air Pollution Emission Factors, Report Number AP-42, 5th Ed. Supplement C, Office of Air Quality Planning and Statistics, U.S. Environmental Protection Agency, Washington, D.C.

US Court of Appeals for the District of Columbia, Center for Biological Diversity, et al., v. Environmental Protection Agency and Lisa Perez Jackson, American Forest & Paper Association, Inc., et al., Docket No. 11-1101, decided July 12, 2013

US Supreme Court of the United States, Utility Air Regulatory Group v. Environmental Protection Agency et al, No. 12-1146, decided June 23, 2014

USEPA, 2014. Prevention of Significant Deterioration Permitting for Greenhouse Gases: Providing Option for Rescission of EPA-Issued Tailoring Rule Step 2 Prevention of Significant Deterioration Permits, Washington, D.C.

USEPA, 2014. Addressing Biogenic Carbon Dioxide Emissions from Stationary Sources, Washington, D.C.

USEPA, 2014. No Action Assurance Regarding EPA-Issued Step 2 Prevention of Significant Deterioration Permits and Related Title V Requirements Following Utility Air Regulatory Group v. Environmental Protection Agency, Washington, D.C.