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EPA Shifts $PM_{2.5}$ PSD Permitting Policies

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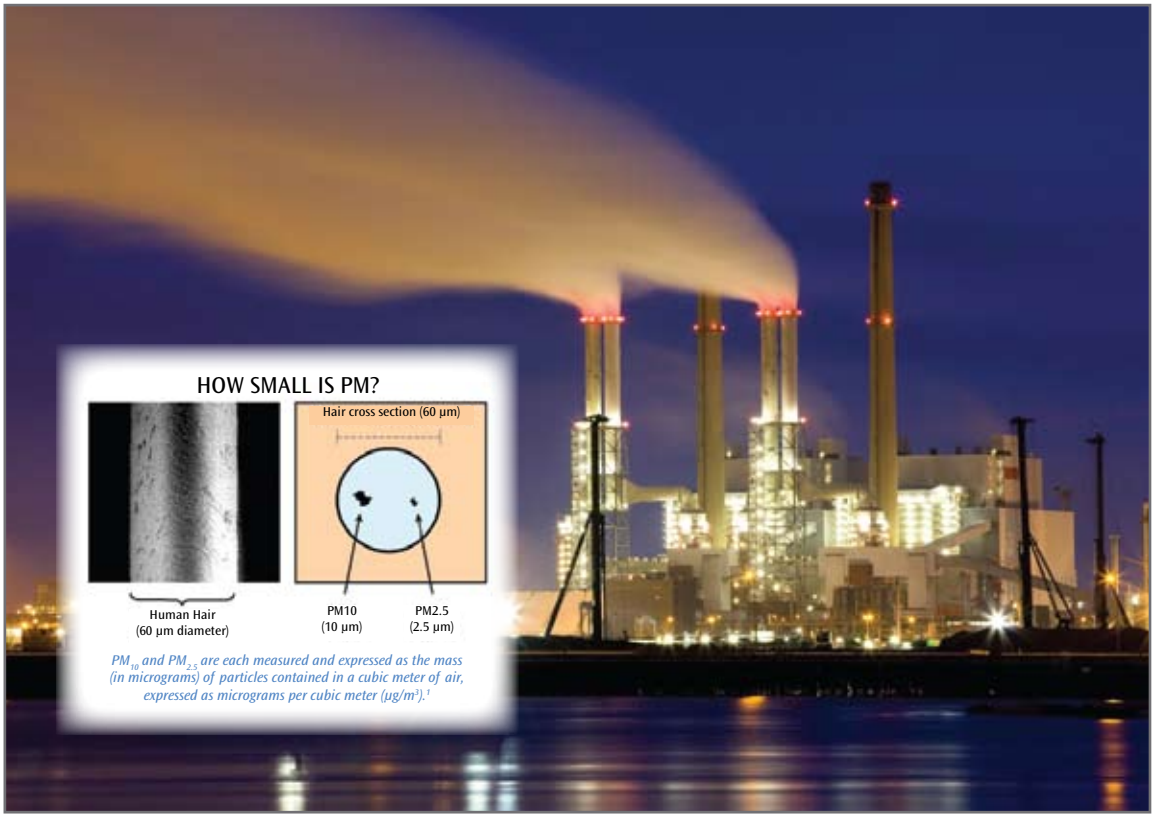
On August 12, 2009, EPA created a significant stir in the regulated community when it issued an order that signals a significant shift in how the agency intends particulate matter with a diameter less than 2.5 micrometers ($PM_{2.5}$) emissions to be regulated under the Prevention of Significant Deterioration (PSD) program. The order specifically applied to petitions filed by environmental groups requesting that EPA object to PSD/Title V permits issued by the Kentucky Division for Air Quality (KDAQ) to Louisville Gas and Electric Company (LG&E) for construction and operation of a new coal-fired electric generating unit (EGU) at the Trimble County Generating Station located in Bedford (Trimble County), Kentucky.

The order contains responses to 13 distinct items ranging in scope from failure to address greenhouse gases in the permit to the inadequacy of the public participation procedures. Of the issues raised by the petitioners, EPA only granted the petition and objected to the permit on two issues, one of which was the failure of the permit to adequately consider $PM_{2.5}$. EPA agreed with the petitioners that LG&E did not provide sufficient justification that it could meet its obligations for $PM_{2.5}$ under the PSD program by using particulate matter with a diameter less than 10 micrometers (PM_{10}) as a surrogate. This determination has far reaching implications for other PSD projects as it is not consistent with the way that EPA's PM_{10} surrogate policy has been applied for more than a decade.



[1]Source: California Environmental Protection Agency Air Resources Board website

History of the PM_{10} Surrogate Policy

The origin of the PM_{10} Surrogate Policy is a 1997 memorandum from John Seitz, who at the time served as the Director of the U.S. EPA Office of Air Quality Planning & Standards. In this memo, EPA's justification for using PM_{10} as a surrogate for $PM_{2.5}$ was that permitting authorities were not able to accurately calculate emissions of $PM_{2.5}$ and related precursors or to predict $PM_{2.5}$ ambient air quality impacts from projects. In May 2008, EPA issued a Federal Register notice for the final $PM_{2.5}$ NSR Implementation Rule, in which it declared that the difficulties discussed in the 1997 Surrogate Policy "have been largely resolved." However, rather than requiring states with SIP-approved PSD programs to immediately begin regulating $PM_{2.5}$, EPA established a transition period under which states with SIP-approved programs must submit revised PSD programs by May 16, 2011. In the meantime, the NSR Implementation Rule stated that "PSD program requirements [for $PM_{2.5}$] are currently met by implementing the transitional PSD program for $PM_{2.5}$ described in the preamble (a.k.a. the PM_{10} surrogate policy)".

Prior to issuance of the Trimble Order, EPA defended the use of PM_{10} as a surrogate for $PM_{2.5}$ without the additional justification they required in the Trimble Order. Therefore, the Trimble Order is a shift from EPA's long-defended policy that allowed use

of PM_{10} as a standard surrogate for $PM_{2.5}$ for the purpose of PSD review without detailed site-specific justification by the applicant.

PM_{10} as a Surrogate for $PM_{2.5}$ in BACT Analyses

In the Trimble Order, EPA states that case law on the topic of surrogates suggests that "any person attempting to show that PM_{10} is a reasonable surrogate for $PM_{2.5}$ would need to address the differences between PM_{10} and $PM_{2.5}$" and identifies an example two-step approach for conducting an evaluation of these differences (the cited case law is, however, based on litigation of regulations that predates the $PM_{2.5}$ NSR Implementation Rule and that is derived from other sections of the CAA and not the CAA section addressing PSD). Step 1 in EPA's example approach states that the permittee or permitting authority should establish a strong statistical relationship between PM_{10} and $PM_{2.5}$ emissions (both on a controlled and uncontrolled basis) from each subject unit, giving reasonable consideration to the likelihood that the $PM_{2.5}$ to PM_{10} ratio may vary over the anticipated range of operating conditions for the process and control equipment. In step 2, the permittee or permitting authority should demonstrate that the control technology selected as BACT for PM_{10} would offer an equivalent control effectiveness for $PM_{2.5}$ to the technology that would be selected if a separate $PM_{2.5}$ BACT analysis were conducted for each subject unit.

After presenting these methods for demonstrating the adequacy of PM_{10} as a surrogate for $PM_{2.5}$, EPA states that the two identified steps "are not intended to be the exclusive list of possible demonstrations that a source or permitting authority would make to show that PM_{10} is a reasonable surrogate for $PM_{2.5}$," and goes on to caution permitting authorities to consider the limitations of the PM_{10} surrogate policy on a case-by-case basis considering the case law and the information available in the permit record.

An even more restrictive approach concerning the surrogate policy was suggested by EPA Region 7 in a July 1, 2009 letter to the Kansas Department of Health and Environment. Commenting on a PSD permit application that was expected to be submitted by Sunflower Electric Power Corporation for its Holcomb Power Plant, EPA Region 7 recommended that part of the BACT analysis in the permit application include an evaluation of $PM_{2.5}$ emissions instead of relying on PM_{10} emissions as a surrogate. Even before the Trimble Order was issued, EPA Region 7 had in effect advised Kansas to abandon the surrogate policy altogether.

What About $PM_{2.5}$ Modeling?

The Trimble Order fails to clarify how the use of PM_{10} as a surrogate should be addressed with respect to PSD air quality modeling analyses, leaving many questions open about how this demonstration would be completed, or in the alternative, how a $PM_{2.5}$ modeling analysis would be conducted. At present, EPA has not promulgated final PSD Increments or Significant Impact Levels (SILs) for $PM_{2.5}$ nor is there consensus about how to address direct versus condensable $PM_{2.5}$ emissions and secondary atmospheric reactions that lead to $PM_{2.5}$ formation.

One approach that could be considered for certain projects is to model only direct total $PM_{2.5}$ emissions (i.e., filterable $PM_{2.5}$ and condensable PM) from project-related emissions increases and compare the concentrations with the proposed SILs for $PM_{2.5}$. If the resulting concentrations are less than the proposed SILs, then the applicant could argue that $PM_{2.5}$ impacts froma project would be insignificant and the surrogate policy is justified with respect to dispersion modeling. If the near-field modeling analysis also shows that PM_{10} impacts from a project are below the SILs for PM_{10}, the use of PM_{10} as a surrogate could be further justified because both PM_{10} and $PM_{2.5}$ concentrations would be shown to be insignificant for the project. However, the $PM_{2.5}$ SILs proposed by EPA in a September 21, 2007 Federal Register notice range from 1.2 $\mu g/m^3$ to 5.0 $\mu g/m^3$ for the 24-hour average standard and from 0.3 $\mu g/m^3$ to 1.0 $\mu g/m^3$ for the annual average standard. Therefore, even if this approach was attempted, it is not clear what concentration should be used to define a project's ambient impacts as insignificant.

Retroactive Application of the Updated Policy

Although the scope of the Trimble Order is limited to a single project in Kentucky, and a Title V Order is not the typical legal avenue for issuing NSR implementation guidance, EPA Region 4 issued guidance to State air agencies on September 1, 2009 encouraging them to review the Order and to ensure that the use of the PM_{10} surrogate policy is explicitly justified by the applicant or by the permitting authority in the Statement of Basis Report for PSD projects triggering review for $PM_{10}/PM_{2.5}$. A conference call between EPA and all 50 state agencies was also held on September 8, 2009 during which EPA expressed its opinion that the new procedure outlined in the Trimble Order should be followed.

Even more troubling is the fact that this policy is being applied retroactively to any pending PSD permit action, even if applications had already been submitted prior to the release of the Trimble Order.

Given the current lack of quality $PM_{2.5}$ emissions data and a final unbiased reference test method for condensable PM, conducting a scientific evaluation of the $PM_{2.5}$ to PM_{10} ratio for certain emission units under a range of operating conditions would be very difficult, making the implementation of EPA's guidance in the Trimble Order unworkable. In these circumstances, facilities may have no choice but to embark on full PSD review of $PM_{2.5}$ emissions including a BACT analysis and potentially a $PM_{2.5}$ air quality impact analysis.✥

LDAR Deficiencies Lead to Enhanced Requirements

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Leak detection and repair (LDAR) programs are required as part of the standards established in 40 Code of Federal Regulations (CFR) 60 (NSPS), 40 CFR 61 (NESHAP), 40 CFR 63 (MACT), and 40 CFR 264 (Hazardous Waste Handling). An LDAR program is a facility's system of procedures used to locate and repair leaking components (e.g., valves, pumps, connectors, compressors, and agitators) to minimize fugitive volatile organic compounds (VOC) and hazardous air pollutants (HAP) emissions. To verify minimization of VOC and HAP emissions, the U.S. EPA has been conducting audits and pursuing enforcement actions in the petroleum refining and chemical manufacturing industries since the late 1990's. Both large and small facilities have been reviewed under this coordinated U.S. EPA program.

EPA's Audit Program

Initially, EPA focused on petroleum refineries for its LDAR-related enforcement activities. Since 2005 and continuing into 2010, EPA has also concentrated enforcement efforts in the chemical industry (e.g., facilities subject to Hazardous Organic NESHAP and Pharmaceutical MACT standards).[1,2] EPA, and in particular Region V, has announced that it will focus on Miscellaneous Organic NESHAP (MON) subject facilities in the forthcoming years.[2] As part of the most recent LDAR enforcement initiative, Region V has completed 38 investigations, issued 22 violation notices, referred 9 cases to the Department of Justice, and settled 12.[3] As shown in recent notices of violations (NOVs) and/or findings of violations (FOVs), the compliance issues discovered by EPA at chemical manufacturing facilities encompass all facets of the LDAR standards.

Common EPA Audit Findings: Method 21 Issues

For both petroleum refineries and chemical manufacturing facilities, EPA has cited inappropriate application of 40 CFR 60, Appendix A, Method 21 (Method 21). Method 21 requires a portable monitoring device for identifying components emitting VOC/HAP above the leak definitions (e.g., 10,000 ppmv or 500 ppmv). One of the primary methods by which the U.S. EPA assesses adherence to the Method 21 is "comparative monitoring." Often when conducting comparative monitoring, the EPA auditors will observe the facility LDAR technician while conducting parallel monitoring per Method 21, which includes observing all of the following facets of Method 21:

- Zero and leak definition calibration checks,
- Calibration adjustments,
- Instrument response time checks,
- Time spent monitoring per component, and
- Leak interface monitoring techniques for each component.

Upon completion of the monitoring, the EPA will compare its leak rates (e.g., percentage of leaking components to number of components monitored) with the facility technician's leak rates. On average, the leak rate determined by EPA is about 5% while the leak rate determined by facility technicians is about 1%.[2] Discrepancies between the leak rates can be due to any one of the above listed factors and increases the level of scrutiny with respect to facility leak rates previously reported. For example, according to EPA, being one centimeter away from the interface can cause the technician to miss a defined leak.[3]

Common EPA Audit Findings: Periodic Monitoring Issues

Method 21 is utilized at subject facilities to periodically monitor each regulated component. The frequency of such monitoring may vary from monthly to every eight years depending on the subpart and the component being monitored. If the component is found to be leaking, it is tagged and must be repaired within a specified period of time.

Please note that these are leak detection programs; therefore, leaks are expected to be discovered. Finding a leak is not always a violation; however, not conducting appropriate monitoring, recordkeeping, reporting, and repairs would be violations. Therefore, review of recordkeeping (e.g., repair timing records and leak rate calculations), reporting (e.g., delay of repair), and monitoring frequencies are key components to any EPA inspection. For example, violations listed in EPA NOVs and/or FOVs include the following:

- Not conducting monitoring of each regulated component every monitoring period,
- Classifying insulated valves as exempt from Method 21 monitoring,[4]
- Not maintaining required lists (e.g., difficult-to-monitor (DTM), unsafe-to-monitor (UTM), instrumentation systems, and pressure relief valves equipped with rupture disks)
- Not reporting delay of repair technical infeasibility information in the periodic reports, and
- Not maintaining complete leak repair records.

Common EPA Audit Findings: Leak Repair Issues

Once a defined leak is discovered, facilities are required to clearly identify the component as leaking (e.g., leak tag). The leak tag must remain on the component until repaired. For certain components such as valves in gas/vapor service or in light liquid service, the leak tag must remain on the component until the follow-up

[1] Loukeris, K. and Wilwerding, J. (2008) *LDAR: Enforcement and Compliance.* Presented at ISA's 8th LDAR Symposium, San Antonio, Texas. 1 April.

[2] MacDowell, W, Section Chief, Air Enforcement & Compliance Assurance Branch, USEPA Region V. (2009) *U.S. EPA Region V Enforcement Priorities for 2009/2010.* Presented at All-Ohio Fall 2009 Multi-Media Technical Conference, Columbus, Ohio. 8 October.

[3] Leak Detection And Repair - A Best Practices Guide (http://www.epa.gov/compliance/resources/publications/assistance/ldarguide.pdf)

[4] While there is an exemption from monitoring for insulated connectors, no such exemption exists for insulated valves.

monitoring (i.e., monitoring conducted within three months of repair) is completed.[5]

EPA has also noted failure to conduct the first attempt at repair within five days. First attempt at repair is generally defined in the MACT standards as follows:

> *To take action for the purpose of stopping or reducing leakage of organic material to the atmosphere, followed by monitoring as specified in §63.180(b) and (c), as appropriate, to verify whether the leak is repaired, unless the owner or operator determines by other means that the leak is not repaired.*[6]

EPA expects an action be undertaken to attempt to reduce the instrument reading below the leak definition. Two examples of first attempts at repair for leaking pumps include:

- Tightening of packing gland nuts, and
- Ensuring that the seal flush is operating at design pressure and temperature.

If the first attempt at repair does not reduce the instrument reading below the leak definition, the repair must be completed within 15 days of leak discovery, unless the delay of repair provisions can be applied. The definition of repair in the MACT standards, unless otherwise noted in the applicable section, includes conducting Method 21 to confirm the physical repair with an instrument reading below the leak definition. Therefore, the Method 21 reading confirming the physical repair must be completed within 15 days of leak discovery. EPA has cited facilities for not completing timely repairs in situations where physical repair was completed within 15 days, but confirmation monitoring was completed after the 15 day period.

As stated above, Method 21 monitoring must occur within the 15 day window for a component to be considered "repaired." However, if a potential leak is detected visually and confirmed to be a Method 21 leak, some LDAR regulations (e.g., MACT UU, Pharma MACT, NSPS VV, and NSPS VVa, HON "heavy liquid" components) allow for the potential leak to be considered repaired upon elimination of the visual indications.[7] Examples where Method 21 must always be conducted to confirm repairs of visual leaks include, but not limited to the following:

- Pumps in light liquid service subject to the HON,
- Agitators in light liquid service subject to the HON, and
- Agitators in gas/vapor service subject to the HON.

Facilities must be familiar with the LDAR requirements of their specific regulations. While the LDAR regulations all have similar requirements, unrecognized nuances in each regulation can result in potential violations.

Common EPA Audit Findings: Open-Ended Lines

Open-ended lines are another common issue and one of the easiest issues for EPA to find. Per 40 CFR 63.161, as well as other definition sections of LDAR regulations,

> *Open-ended valve or line means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.*

The only times facilities are allowed to have open-ended lines is when they are in use or due to safety concerns (e.g., containing materials that would autocatalytically polymerize, or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system).

Inspectors can easily identify this issue during audit walkthroughs since no Method 21 monitoring is required, just the human eye. Simply not having a plug, blind flange, cap, or a second valve is a violation and therefore, easily spotted by inspectors. Even if the open-ended line is sealed immediately upon discovery by the inspector, it would still be an open-ended line. Therefore, a potential violation could be cited.

Inspectors commonly find open-ended lines at sampling connection systems. Sampling connection systems have their own LDAR

(Continued on page 14)

[5] Another example where the tag must remain longer than leak repair dates are connectors subject to 40 CFR 63.174(c)(1)(i). Please refer to your applicable LDAR regulations for other examples.

[6] 40 CFR 63.161

[7] Please note the 15-day repair window is not applicable for potential leaks not confirmed to be Method 21 leaks. Please refer to specific LDAR regulation for repair timing for these cases.

Using Your EMS to Improve Energy Efficiency

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Why an EMS Approach?

With increased pressure to address energy and climate change issues, many organizations are leveraging their environmental management system (EMS) as an important mechanism for implementing energy efficiency initiatives. This phenomenon is not entirely new. The EMS approach has frequently been used across a broad array of sectors to facilitate energy improvements. But new drivers related to energy reduction and greenhouse gas management are causing an even stronger focus on energy efficiency in the context of an EMS.

When companies begin examining how to improve energy efficiency, they quickly realize that some energy solutions are technological or design-oriented, while others are related to behavioral or operational issues. Fortunately, an EMS can be adapted to address both categories of energy solutions. For example, consider the following EMS implementation elements and the connection to energy:

Aspects & Impacts Evaluation – This evaluation represents the foundation of an EMS implementation effort. During this step, the organization typically considers all interactions with the environment - including resource consumption such as energy. If implemented properly, the aspects/impacts evaluation should include a detailed examination of energy trends across the entire organization. A reasonable approach would be to gather and analyze a sufficient amount of data to allow for effective management of energy, much like what is done with air emissions, water discharges, and waste generation.

Objectives, Targets, Programs – During this EMS implementation step, the organization establishes goals and targets based on identifying the most significant environmental interactions. This planning step includes developing environmental programs to meet the desired goals and targets. At this stage, the organization can determine the necessary personnel and capital expenditure requirements associated with design and/or technological modifications necessary to improve energy efficiency. Given the close connection between energy and GHG reduction, integrated planning during this part of EMS implementation is crucial.

Training & Awareness – This area of an EMS is intended to ensure that employees are capable of carrying out their environmental responsibilities. It is once again important to note that environmental responsibilities extend beyond discharges and releases to resource consumption as well. When organizations perform an energy audit, they often find that inefficiencies are the result of inadequate training on equipment operation and/or insufficient understanding of how to minimize energy use in the process. The training needs analyses and resultant programs developed under an EMS should absolutely address energy efficiency.

Operational Controls – Under this area of an EMS, the organization establishes procedures deemed necessary to control important processes and activities related to its significant environmental aspects. With proper consideration of energy consumption patterns and optimal operating parameters for minimizing energy use, an organization can develop a set of energy management procedures that will enhance energy efficiency. Often this step is taken after the organization conducts an energy audit.

Monitoring & Measuring – During this EMS implementation step, the organization establishes performance metrics and identifies preventive maintenance activities. As with any environmental goal, achievement of energy efficiency goals requires some reasonable metrics. Also, energy inefficiencies with equipment are often the result of inadequate preventive maintenance programs. Thus, comprehensive monitoring & measuring parameters can contribute to improved energy efficiency.

Management Review – Under this EMS element, the organization reviews how well the system is enabling it to improve performance and meet environmental goals. Typically, this step involves examining internal assessment and/or audits, progress toward achieving objectives and targets, concerns raised by stakeholders, and new regulatory developments. Since energy efficiency is closely tied to other strategic issues (emerging greenhouse gas regulations, and shareholder demands regarding climate change transparency), the Management Review process offers an excellent opportunity for discussing integrated solutions. Management review of energy practices can spark discussion leading to the creation of new goals regarding energy efficiency and greenhouse gas mitigation.

Available Management System Tools

Newer management system tools – including Lean Manufacturing and Six Sigma – allow for a structured approach to achieve energy efficiency improvements. These methods can easily be implemented via an EMS. Indeed, many companies have used these methods to reduce energy and costs. For example:[http://www.epa.gov/lean/][1]

- Eastman Kodak (New York) conducted energy kaizen events under a Lean program that significantly reduced energy consumption and resulted in overall savings of $15 million at the facility over a seven-year period.

[1] Source: U.S. Environmental Protection Agency website

Integrating Energy Efficiency Efforts Through an EMIS

Activity/Step	Description	Phase	EMS Connection
Conduct observation of energy use	Walk through and observe processes as they are actually run, paying close attention to motors/machines, compressed air, and lighting.	Energy Assessment	Initial aspects evaluation and/or periodic aspects update.
Measure energy use	Conduct an energy audit to understand how energy is used, and possibly wasted, at a facility. Measure the energy used by production and support processes.	Energy Assessment	Initial aspects evaluation and/or periodic aspects update.
Construct value stream mapping for energy use	Create a visual representation of energy and material flows in creating a product or delivering a service.	Energy Assessment	Special initiative addressed in environmental programs.
Implement analytical tools to identify energy reduction opportunities	Use Six Sigma or similar analyses to identify energy variation and eliminate energy waste.	Energy Assessment	Special initiative addressed in environmental programs.
Conduct a kaizen energy evaluation	Implement rapid process improvement events (typically 3 to 5 days).	Energy Assessment	Special initiative addressed in environmental programs.
Implement Total Productive Maintenance	Focus on maximizing the effectiveness of manufacturing equipment.	Energy Reduction	Preventive maintenance piece of monitoring and measuring efforts.
Replace oversized and inefficient equipment	Modify process designs to install the right-sized equipment for each manufacturing cell.	Energy Reduction	Special initiative addressed in environmental programs.
Improve plant design for better work flow	Improve facility design to arrange eqiupment and workstations in a sequence that supports smooth flow of materials.	Energy Reduction	Special initiative addressed in environmental programs.
Improve operational control	Implement standard work instructions for energy use, visual controls and mistake proofing.	Energy Reduction	Addressed in operational control.

- General Electric (Ohio) achieved an annual cost savings of over $1 million due to reduced fuel consumption realized through Lean implementation.
- Naugatuck Glass (Connecticut) used Lean methods to cut product lead time and improve quality, while also reducing energy use by about 20 percent.
- Lasco Bathware (Washington) achieved process efficiency improvements through a Lean project that avoided the need for extra oven drying capacity, saving over 12 million ft^3 of natural gas and nearly $100,000 annually.
- Steelcase (California) used Lean methods to improve operational efficiency and reduce energy costs by about 90 percent.
- Toyota, the innovator of Lean production processes, has reduced average facility energy consumption per vehicle by 30 percent over the past decade, with a corresponding GHG emissions reduction. In 2006 alone, Toyota used Lean methods to reduce per vehicle energy use by 7 percent while increasing production by 4 percent.

Integrating the Lean Approach for Energy Improvements

An EPA-sponsored industry work group has developed and published an approach for integrating Lean manufacturing and energy efficiency efforts (US EPA, October 2007. *The Lean and Energy Toolkit*). The Toolkit lays out this approach in nine overall steps broken into two main phases: (1) energy assessment strategies, and (2) energy reduction tools and strategies. The adjacent chart gives a brief description of each step and how it could fit easily into a well-designed EMS.

Getting Started

How does an organization get started? It is critical to have detailed, accurate energy data that can be analyzed and tracked to ensure improved energy efficiency. Thus, most organizations will need to begin with a comprehensive energy audit, which may require establishing a special energy program under the EMS. Once the energy audit has been completed and improvement opportunities identified, the energy management programs can be implemented and maintained continuously via various elements of the EMS – especially updated aspects evaluations, improved training and awareness programs, comprehensive operational controls, performance metrics monitoring, and management review.

Trinity recently held several webinars on this topic – including a Six Sigma approach to energy efficiency and energy efficiency auditing. For more information on these topics, please contact Rich Pandullo at (919) 462-9693 or *rpandullo@trinityconsultants.com.*

The Tailoring of Greenhouse Gases to the Clean Air Act – Challenges for PSD and Title V Permitting Ahead?

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In anticipation of the promulgation of Clean Air Act (CAA) regulations to control greenhouse gas (GHG) emissions, EPA published the proposed PSD and Title V GHG Tailoring Rule. The proposed GHG Tailoring Rule was published in the Federal Register on October 27, 2009 and has a 60-day public comment period; thus comments are due by December 28, 2009. The proposed GHG Tailoring Rule attempts to reduce the number of sources that would exceed major source thresholds of GHG emissions under the PSD and Title V permitting programs. The potential impacts of this ruling are far-reaching and could significantly change the scope of NSR and Title V permitting actions in the near future.

This article examines the nuances of the proposed rule along with the actions EPA has identified as critical to avoid a potential permitting "train wreck." Potential implementation issues associated with the proposed GHG Tailoring Rule are also discussed.

Key Objectives of GHG Tailoring

In March 2010, EPA expects to promulgate a light duty vehicle rule regulating GHGs from mobile sources. As stated by EPA, the anticipated promulgation of the light duty vehicle GHG rule will lead to GHGs being classified as regulated pollutants under the Clean Air Act. Following the definition of "regulated pollutant" as described in the PSD Interpretive Memorandum,[1] GHGs would immediately become subject to the PSD and Title V permitting programs once a regulation requiring the control of GHGs is promulgated – this requirement to control will be contained in the light duty vehicle regulation. Upon promulgation of GHG control requirements, GHGs become regulated pollutants, and the major source threshold for GHGs would by default be set at 250/100 tons per year (tpy) for PSD and 100 tpy for Title V.

EPA has estimated that the influx of permits resulting from the regulation of GHGs at current PSD and Title V major source threshold levels would be on the magnitude of tens of thousands of PSD permits and millions of Title V permits. Specifically, EPA estimates that if a 250 tpy threshold for GHGs was applied for PSD permitting, over 40,000 new and modified facilities would be subject to PSD review each year, as compared with the 280 PSD permits currently issued each year. The increase in Title V permits resulting from a GHG major source threshold of 100 tpy is estimated to be even more significant with an estimated increase in the volume of permits "greater than" or "in excess of" 400 times the current levels. EPA estimates that more than six million GHG sources that have not previously triggered Title V permitting for regulated pollutants would require permitting if the current major source threshold was applied to GHGs. As stated in the rule preamble, these significant increases in the number of PSD and Title V permits would result in administrative burdens that would exceed the current capacities of these programs, strain state and federal agencies, and apply significant permitting burdens on industrial, commercial, and residential sources. EPA is relying on the legal doctrines of "absurd results" and "administrative necessity" to support the tailoring approach, which would ensure that permitting requirements are not unnecessarily triggered for the smallest sources when the light duty vehicle GHG rule is promulgated.

An additional burden specific to the PSD permitting program is the determination and application of Best Available Control Technology (BACT) for GHG sources upon triggering a major modification. The introduction of BACT for GHGs will require that both permit applicants and regulatory agencies immediately examine the effectiveness and associated cost of potential GHG control technologies to understand what limitations are reasonable for a variety of

[1] EPA memorandum titled "EPA's Interpretation of Regulations that Determine Pollutants Covered by Federal Prevention of Significant Deterioration (PSD) Permit Program" from Stephen L. Johnson, then-Administrator of U.S. EPA, dated December 18, 2008.

GHG source types. EPA has formed a BACT workgroup that is currently developing guidance for permitting agencies regarding what will potentially constitute BACT for modified sources – the initial draft guidance is expected to be issued by the end of 2009. From a Title V perspective, additional measurement and monitoring methodologies would need to be included as Title V permit requirements to demonstrate compliance with resultant GHG limits.

The following section outlines the main objectives EPA has included in their proposed rule.

An Overview of the GHG Tailoring Rule

Since GHGs are emitted at comparatively higher rates than existing regulated pollutants, EPA is proposing higher major source and major modification thresholds for GHGs as part of a phased program under the GHG Tailoring Rule. However, it is important to understand that the higher thresholds proposed within EPA's rule are presented only as temporary adjustments of the major source and major modification thresholds for GHGs, and the Agency does not rule out the potential return to the 250/100 tpy thresholds in the future. EPA has also noted that it is not addressing minor source NSR nor nonattainment permitting through the GHG Tailoring Rule.

The proposed GHG Tailoring Rule includes two separate phases. Under the currently proposed rule, Phase I would last six years and would include the following objectives:

- Set temporary first-phase applicability thresholds for PSD and Title V at 25,000 tpy CO_2 equivalent (CO_2e) for GHGs
- Set temporary first-phase significance level for PSD at a value between 10,000 and 25,000 tpy CO_2e for GHGs
- Undertake efforts to streamline the permitting processes under the PSD and Title V programs
- Commit to conducting an assessment of the streamlining efforts within five years in support of Phase II rulemaking within six years

Since the outcome and objectives of Phase II are highly dependent upon the results of the Phase I assessment, EPA does not go into great detail about Pase II. Instead, the proposed rule focuses on the objectives of the first phase, documents referenced and analyses supporting the chosen objectives, and provides additional details on how EPA envisions meeting the objectives.

The proposed GHG applicability thresholds for PSD and Title V of 25,000 tpy were determined to be the most stringent thresholds that would not result in programs that are impossible to administer. In addition, the threshold (measured in units of short tons, not metric tons) is close to the threshold set for the EPA Mandatory Reporting of Greenhouse Gases Rule, which became effective December 29, 2009. Similar to how EPA evaluated thresholds contained in the reporting rule, the proposed GHG Tailoring Rule thresholds were determined by evaluating the administrative burdens and associated costs of thresholds ranging from 1,000 to 100,000 tpy for the major source threshold. A similar approach was used in determining the targeted range of 10,000 to 25,000 tpy for the PSD significance level.

Another key objective of Phase I is to undertake efforts to streamline the administrative processes of the PSD and Title V programs. These streamlining techniques would assist in alleviating a portion of the increased burden resulting from the addition of GHGs as a regulated pollutant. Streamlining

Endangerment Finding Clears Path for GHG Regulation

On Dec. 7, U.S. EPA Administrator Lisa Jackson signed two important findings, clearing the way for EPA to regulate greenhouse gases under the Clean Air Act. The "Endangerment Finding" clarifies EPA's belief that current and projected concentrations of six key greenhouse gases in the atmosphere pose a threat to human health and welfare. Further, the "Cause or Contribute Finding," associates the emissions of the six named GHGs from motor vehicles with the threat to public health and welfare. These actions enable EPA to move forward with the Sept. 15, 2009 proposed GHG emissions standards for light duty vehicles, which will initiate the treatment of GHGs as "regulated pollutants" under the Clean Air Act.

These latest actions close out consideration by EPA of the public comments period that was opened following the proposed endangerment and cause or contribute findings signed on April 17, 2009. This course was set in motion in 2007 by *Massachusetts v. EPA*, whereby the Supreme Court found that GHGs are air pollutants that are covered by the Clean Air Act. The Court charged EPA with determining whether GHGs from motor vehicles negatively contribute to public health. In July 2008, EPA issued an Advance Notice of Proposed Rulemaking to initiate consideration of addressing climate change via the Clean Air Act. It received over 200,000 comments in response.

Although the recent findings do not directly trigger air permitting requirements under the PSD or Title V programs, the finalization of the proposed light-duty vehicle emissions standards will have that effect.

Trinity Consultants is supporting many companies in preparing for these new requirements. For assistance with how these rules may affect your organization, please contact Trinity's Climate Change Team at *ghg@trinityconsultants.com*.

techniques are described as a supplemental resource to reduce administrative burdens during Phase I and beyond. EPA has indentified the following potential streamlining techniques and processes to be examined and potentially implemented during Phase I:

- Redefining "Potential to Emit" – to be closer to actual emissions, where possible
- Establishing "Presumptive BACT" – essentially making BACT determinations based on categories of equipment versus a case-by-case or unit-by-unit basis
- Utilizing General Permits and Permits-by-Rule – essentially a permitting process through which the regulator drafts the permit one time and applies similar requirements to each covered source under the general permit
- Employing electronic permitting – e-permitting systems will allow for more effective and efficient source permitting using electronic forms and software
- Implementing "lean" techniques for permit process improvement – implementation of lean manufacturing techniques to the permitting process to reduce wasted time and shorten the permitting process

EPA estimates that each of these techniques, or similar processes, would typically require three to four years to fully develop and implement.

The final objective of Phase I is to complete a full assessment of the interim major source thresholds and streamlining techniques that were implemented during the first phase. The timeline proposed for completion of the assessment is within five years of the effective date of the final GHG Tailoring Rule. The assessment is a vital element of Phase I since the results will serve as the basis for further rulemaking that may take place as part of Phase II. EPA also anticipates that during the five-year evaluation period, additional activities associated with PSD and Title V applicability for GHGs will be conducted and will aid in completing the assessment of the GHG tailoring approach. These activities may include, but are not limited to, the following:

- Determination of additional regulatory staffing needs and addition of new staff members
- Collection of more detailed GHG emissions information as part the GHG mandatory reporting rule
- Development of control technology and costs background information for specific GHG emission source categories

Implementation Issues & Remaining Questions

If finalized, the GHG Tailoring Rule would result in federally enforceable major source and major modification GHG threshold levels for the PSD and Title V programs that are significantly higher than the existing thresholds. However, for those states that may have PSD and Title V thresholds specifically listed at current levels of 250/100 tpy within state regulations, the GHG Tailoring Rule would not immediately remove those lower thresholds from State law. In other words, the GHG Tailoring Rule may not be self-executing for some states; rather, it could require additional state legislation to remove these limitations. As a result, facilities may face the potential for stalled projects and significant program backlogs if similar action is not taken in a sufficient timeframe at the state level to increase the major source thresholds for GHG. Without updates at the state level, facilities would not be allowed to legally begin construction of or operate a site exceeding the 250/100 tpy GHG thresholds without proper authorization. As stated in the proposed rule, states are not required to use those thresholds proposed in the GHG Tailoring Rule and may implement GHG threshold levels between 250 and 25,000 tpy but would be required to submit a revision to their current State Implementation Plan (SIP) requesting approval of thresholds lower than the federal level. Independent of the ultimate decisions made by individual states, legitimate concerns remain as to whether states will have sufficient time to change the major source applicability thresholds for GHG through legislative action and avoid negative impacts on the PSD and Title V programs.

Another implementation issue revolves around pollutant categorization and treatment of biomass. The proposed rule defines GHGs as the sum of the six primary GHGs – including CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, represented as CO_2e in short tons (versus metric tons). The GHG Tailoring Rule provides supporting information on choosing this specific definition; however, it does not distinguish biomass emissions from other GHG emissions when comparing against the major source thresholds. Without a distinction, one would assume that any biomass emissions should be included in the total emissions for evaluation with PSD and Title V thresholds. Questions related to biomass are anticipated during the comment period on the proposed rule, as this may be of significant concern to facilities that fire biomass. The issue of dissonance between the EPA Mandatory Reporting of Greenhouse Gases Rule (codified as 40 CFR Part 98) listing thresholds in metric tons versus short tons in the GHG Tailoring Rule is also a streamlining issue that EPA will need to address.

Additional implementation issues include complications around netting for PSD on the basis of CO_2e, which would involve multi-pollutant netting since six GHGs would potentially be regulated for the purpose of the tailoring rule. Regarding additional requirements that are currently present under PSD requirements, EPA does address the ambient impacts analysis and asserts that currently there are no National Ambient Air Quality Standards (NAAQS) or PSD Increment values set for GHG, so if PSD were triggered for GHGs, the ambient impact analysis would not be required. However, if PSD were triggered for a GHG emissions source, all other regulated pollutants from the source that are emitted in significant amounts would be subject to PSD requirements and the ambient impacts analysis.

As previously mentioned, BACT determination is another significant issue that EPA will need to tackle through this streamlining process. Attempting to define what consti-

tutes BACT may result in energy efficiency or work practice standards, which may differ from the prior approach of designating an emission rate (associated with a control technology) as BACT. Currently, trade associations are also forming BACT workgroups to inform EPA on the potential limitations of combustion technologies to achieve significant GHG reductions.

Additional issues that have been identified by specific industry sectors for consideration by EPA include:

- When does a pollutant become "subject to regulation?" The light-duty vehicle rule may be finalized as early as the spring of 2010. Will GHGs (individually or as a group) become subject to regulation then or upon the compliance date, i.e. model year 2012?
- The discrepancy between the three named GHGs covered in the light-duty vehicle rule (CO_2, methane, and nitrous oxide) compared to the six GHGs that are proposed for regulation under the GHG Tailoring Rule
- Whether the Clean Air Act requires the establishment of a NAAQS for GHGs in order to independently trigger PSD for increases in GHG emissions. Absent a NAAQS, the application of BACT under the PSD rules would be required for GHGs only when a criteria (NAAQS) pollutant first triggers PSD (for a given project) and there is a significant net emissions increase in GHGs.
- Whether Congress intended the PSD program to protect only locations directly impacted by the emissions from regulated sources. This would imply site specific assessments of air quality which are routinely addressed in PSD permit applications. EPA has not documented any impacts from GHGs that can be attributed directly to local sources of GHGs.

(Continued on page 14)

STAFF SPOTLIGHT

Atmospheric Chemist Addresses California Air Quality Issues

With over a decade of experience addressing West Coast air quality issues, Dr. Charles Lee, Managing Consultant in Trinity's Irvine, California office, is a valuable resource on air quality, greenhouse gas (GHG), and risk related issues such as permitting requirements, air quality monitoring, source testing, auditing, GHG verifications, and health risk assessments. Dr. Lee is particularly experienced in the issues faced by the petroleum refining and chemical industries including compliance with the South Coast AQMD's Regional Clean Air Incentive Market (RECLAIM) program. He is also active in tracking recent regulatory developments on condensable particulate matter (CPM), particulate matter less than 2.5 microns ($PM_{2.5}$) New Source Review (NSR), and the implications for industry. With his in-depth knowledge and expertise, Dr. Lee has provided consulting services to assist industrial clients with $PM_{2.5}$ NSR implementation regulations, CPM test methods, and compliance.

Dr. Lee is an accredited lead verifier by the California Air Resources Board (ARB) to perform verification of GHG reporting under the California Global Warming Solutions Act of 2006 (AB 32) in all industry sectors including petroleum refinery, cement, electricity power, and general industry sectors. Dr. Lee is also an accredited verifier for California Climate Action Registry (CCAR). As an experienced environmental auditor with significant expertise regarding emissions calculations and verification, data reviews, sampling plans, and inventory programs, Dr. Lee performs GHG verification assessments efficiently while providing keen insight into potential improvement opportunities. His credentials are very valuable for industries looking for mandatory or voluntary verification of GHG emissions for different reporting and offset reduction projects. Dr. Lee also provides verification services to verify GHG emissions for Environmental Protection Agency (EPA)'s mandatory reporting GHG rule.

Dr. Lee graduated from the University of California, Irvine with a B.S. in chemistry and received his doctorate in physical/atmospheric chemistry from the University of California, San Diego. He also completed graduate work at Scripps Institute of Oceanography, conducting research in collaboration with the Center for Cloud, Chemistry, and Climate. Contact Dr. Lee at (949) 296-4100 or at *clee@trinityconsultants.com*.

EH&S Employment Opportunities in a Down Market

While national unemployment remains stubbornly high, around 10% at this writing, there are interesting employment opportunities for EH&S professionals who are flexible, have critical skills, and who stand out. According to Christina Ridge, VP of On Demand Environmental, a division of Trinity Consultants that provides EH&S staffing services, "it's a challenging, yet interesting time in the marketplace. There are definitely great jobs available in great companies for EH&S professionals that have the needed skill sets. Equally exciting, though, is the growing number of contract positions that offer a unique opportunity for employer and candidate to 'try before you buy'."

Becoming a MVC - Most Valuable Candidate

In this "employer's market," hiring companies are taking their time to find just the right candidate before extending an offer. Although employers frequently emphasized hiring the most well-rounded candidate in the past, companies are currently focused more sharply on specific skills, with new and developing regulatory requirements becoming a more important issue. For instance, beginning in 2010, many companies will be required to submit annual reports on their greenhouse (GHG) emissions. Consequently, many of the current openings include responsibility for quantifying emissions, managing emissions data, and preparing the related regulatory reports.

What does this mean for candidates? For maximum results, candidates should consider the following steps for increasing their appeal:

- Study the specific requirements in current job postings to understand the skills that are in highest demand in the marketplace
- Invest in developing any lacking expertise in those areas through a combination of self-study, internal or external training, and volunteering for those responsibilities with the current employer
- Tailor cover letters and resumes to address the skills required for each specific position
- When communicating about experience, focus on specific achievements related to those skills rather than more general language related to areas of responsibility
- Partner with a staffing organization that can present your unique qualifications to potential employers rather than allowing your resume to get lost in a stack of a hundred others

Flexibility Buys Opportunities

With all-in costs of a permanent employee reaching easily 130 percent of salary alone, and with ongoing market pressures, companies are increasingly exploring alternative staffing options for the short-term. Contract, temporary, and/or part-time positions allow both the employer and the candidate to keep their options open. From the company's perspective, using a contractor saves money on the front end (compressed recruiting efforts), during the contract (no benefits), and on the back end (no severance). However, contract work can also benefit the candidate in a number of ways, including:

- The opportunity to earn income and learn new skills while continuing to seek permanent employment
- The chance to see the inside of an organization before accepting permanent employment
- The ability to explore new industry sectors
- The chance to earn a competitive wage without management responsibilities

- The option to work when you want to — ideal for students, retirees, and others who don't need full-time employment
- The perfect opportunity to prove your worth to a potential long-term employer

Candidates should also remain flexible with respect to job responsibilities, pay rate, and job location to maximize their options. Accepting a position with less than ideal conditions initially often leads to better opportunities later on.

The Power of a Staffing Partner

Whatever your current employment status and employment goals, a staffing partner can assist you with a job search. A staffing company, such as On Demand Environmental can provide the following benefits to job searchers:

- They know where the open positions are
- They have pre-established relationships at hiring companies that can accelerate the process
- They can help customize your resume based on their understanding of the position and hiring manager's criteria
- They can coach you to overcome any perceived weaknesses and prep you for interviews

On Demand Environmental specializes in matching qualified EH&S professionals to openings in industry, facilitating contract, contract-to-hire, and direct hire employment opportunities. Learn more about On Demand Environmental and view available job opportunities at *ondemandenv.com*.

Upcoming Trade Shows

- **Gatekeeper's 6th Annual Regulatory Roundup**
  Jan 26-27 Scottsdale, AZ
- **13th Annual Electrical Utilities & Environmental Conference (EUEC)**
  February 1-3 Phoenix, AZ
- **MEC: 19th Annual Business & Industry Sustainability & Environmental Health & Safety Symposium**
  March 24-25 Cincinatti, OH

Upcoming Seminars

- **EH&S Information Management Workshop & Expo**
  February 9-10 Dallas, TX

Sample EH&S Job Postings

Location	Job Title	Job Type	Post Date	Industry
Alvin, TX	Environmental Specialist	Contract	11/30/09	Chemical
Salisbury, MD	EHS Coordinator	Contract to Hire	11/30/09	General Manufacturing
Longview, TX	Wetland Scientist	Contract	11/30/09	Consulting
Freeport, TX	Senior EHS Specialist *(Air focused)*	Direct Hire	11/18/09	Chemical
San Diego, TX	Manager, Environmental Health, & Safety Audit	Direct Hire	11/18/09	General Manufacturing
Geismar, LA	EHS Specialist	Direct Hire	11/18/09	Chemical
Toomsboro, GA	Environmental Engineer	Contract	11/13/09	Aggregates
Dallas/ Ft Worth, TX	Regional EHS Manager	Direct Hire	10/07/09	Chemical
Southern CO	Environmental Specialist	Direct Hire	10/02/09	Aggregates
Fayetteville, NC	EHS Site Leader	Direct Hire	09/02/09	Chemical

LDAR Deficiencies Lead to Enhanced Requirements *(Continued from page 4)*

requirements regarding maintenance of closed-purge/closed-loop systems. Additionally, the sampling connection systems must be configured and/or operated in a manner that does not result in an open-ended line. For instance, the two final valves should be at least within arms' reach to allow facility personnel to close the valve contacting the process fluid and then close the second valve.

Common EPA Audit Findings: Component Identification/Percent Leaker Calculations

Facilities are required to identify LDAR-subject components. While physically tagging subject components is not required, components must be distinguishable from those not subject to LDAR regulations. The result is an accurate count of LDAR components. Not having an accurate component count affects New Source Review (NSR) applicability for construction/modification projects as well as percent leaker calculations. For example, the percent leaker calculations can be skewed if non-LDAR subject equipment (e.g., equipment in vacuum service) is included in the program.

Each standard specifies the equations to be used for the percent leaker calculations for each component type. The percent leaker calculations are utilized to determine monitoring frequency and if a quality improvement program is triggered. The percent leaker calculations under the MACT standards are not intended to include equipment that is designated as:

- UTM or DTM even if UTM and DTM components are monitored during the monitoring period,
- Heavy liquid components, and
- Valves and connectors part of an instrumentation system.

EPA has cited facilities for not performing percent leaker calculations appropriately.

Enhanced LDAR

As a result of recent LDAR audits and the associated issues, EPA is initiating enhanced LDAR programs as part of the most recent consent decrees.[8] The enhanced LDAR programs for chemical facilities are more stringent than the enhanced LDAR required for the refining industry. Starting in 2000, refineries were required by consent decrees to implement enhanced LDAR programs. Enhanced LDAR programs include many elements. Three main elements of the refinery enhanced LDAR are as follows:

- Leak definitions were lowered from NSPS VV levels (e.g., 10,000 ppm) to HON levels (e.g., 500 ppm),
- Initial attempts at repair were required at concentrations as low as 200 ppm (not a "leak" but a lowered action level), and
- Periodic internal/third party audits were required.[9]

The chemical industry consent decrees are also requiring enhanced LDAR standards, similar to refinery enhanced LDAR with variations as well as additional requirements. The chemical industry enhanced LDAR programs also lowered the leak definitions, required periodic audits, and required replacement or repacking at lower concentrations during maintenance turnarounds. Other elements of the chemical industry enhanced LDAR requirements include:

- Certain technologies are required for repair of leaking valves and connectors,
- Closure devices associated with open-ended lines must be monitored via Method 21 on a periodic basis,
- More stringent delay of repair provisions, and
- Frequent periodic monitoring of certain valves, connectors, pumps, and agitators.

In the next issue of *Environmental Quarterly,* we will explore the elements of enhanced LDAR in detail.✥

[8] Please note not all chemical facilities that received LDAR-related consent decrees have been required to initiate enhanced LDAR programs.

[9] The frequency of third party audits is dependent on each individual consent decree. It could be annual, biennial, every (5) years, etc.

Tailoring of GHG to Clean Air Act – Challenges Ahead? *(Continued from page 10)*

Finally, it is noteworthy that there may be some significant legal challenges to this rule due to the complexities of trying to redefine thresholds within the Clean Air Act. As with any proposed rule, it is important to understand the potential implications of the rule when it becomes final and track the progress of the rule.

What Should Organizations Do?

Even at this preliminary stage of rulemaking, it is clear that there will be significant permitting issues that many facilities will need to address in the immediate future regarding GHGs. Trinity has begun work with a number of organizations to confirm facility GHG inventories, anticipate which facilities would be potentially impacted by new GHG thresholds under Title V and/or PSD, and evaluate where limitations could potentially be taken to mitigate the potential impacts of this proposed rule. If you have any questions related to these specific implementation challenges or how the proposed GHG Tailoring Rule may affect your organization, contact our Climate Change Services Group at *ghg@trinityconsultants.com*.✥

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Chemical Manufacturing Area Source NESHAP
February 9 Philadelphia, PA

Implementing Sustainable Development Programs
February 18 Atlanta, GA

NSR/PSD Compliance Workshop
February 24-25 Charlotte, NC

Managing Title V Permits
February 26 Charlotte, NC

Clean Air Act Workshop for Natural Gas Production and Transmission Industry
February 25 Houston, TX

Clean Water Act Permitting & Compliance
March 2 Dallas, TX

Introduction to Waste Management Regulations
March 3 Dallas, TX

Introduction to Air Quality Regulations
March 4-5 Dallas, TX

SPCC One Plan Workshop
January 28 Atlanta, GA

***BREEZE* AERMOD Online Training**
February 16-17

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February 25 Seattle, WA

NSR for Pulp & Paper Mills
March 4 Atlanta, GA

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March 11 Charlotte, NC

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