

Avogadro Advisor: Celebrating 5 Years

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EPA Issues Greenhouse Gas (GHG) Mandatory Reporting Rule (MMR): How Do I Get Started with Compliance Programs?

Authors: Bill Barnes and Hannah Azzalina

Back in our July issue of Avogadro Advisor, we provided some guidance on planning for voluntary and potential mandatory reporting of GHG emissions. Well reality has set in and welcome to the new decade of GHG MRR. We wanted to boil down the 700+ pages of the regulation into some quick guidelines and steps that you should be taking immediately to begin compliance with this rule which takes affect January 1, 2010. In this issue we will review applicability of the rule and discuss some of the potential ways to measure and report GHG emissions.

Our CEMS division has been working closely with some of our cement and power clients affected by the rule with installations and upgrades to provide CEMS reporting of CO₂. Many of you have CEMS or may be required to install or upgrade CEMS for GHG emissions monitoring. In our next issue, we will sit down with George Marshall and Mark Johnson, Managers in our CEMS division to answer a few burning questions that our clients have been asking and to get their feedback on practical solutions being installed and harmonizing federal and state differences in CEMS data acquisition and reporting requirements. If you have questions or concerns not addressed here, please contact Bill, George or Mark at Avogadro Environmental for further assistance.

In October 2009, the USEPA published a Final Rule in the Federal Register (40 CFR Part 98) that requires certain source categories of GHG emissions to begin monitoring and reporting emissions of GHG starting January 1, 2010. Depending on the source category this ranges from using best available monitoring methodologies already available on up to and including real-time measurement using Continuous

Emissions Monitoring Systems (CEMS). Under-

standing that not all sources required to use CEMS under the rule have sufficient systems in place, there are provisions that allow temporary use of emission factors and fuel measurement as surrogate approaches through the first quarter of 2010. Many stationary combustion sources must quickly make plans to install or upgrade CEMS to monitor CO₂ and possibly other GHG emissions.

Am I covered by the rule?

EPA has prepared a simple and easy to read series of fact sheets to help you understand what you need to do. The General Provisions Fact Sheet (EPA-430-F-09-006R) provides a road map to determine if you're covered. There are three basic categories:

Table 1 provides a listing of categories where GHG emissions reporting are required regardless of your PTE for GHG. This includes Avogadro Environmental client categories such as: electricity generation, ammonia manufacturing, cement production, petrochemical production, petroleum refineries, and specified municipal solid waste landfills.

Table 2 provides a listing of categories where GHG emissions reporting are required if you emit great than 25,000 metric tons or more of CO₂e in combined emissions from a variety of GHG emitting sources within your facility. This includes Avogadro Environmental client categories such as: ferro-alloy production, glass production, hydrogen production, iron and steel production, lead production, pulp and paper manufacturing, and zinc production

Table 3 provides a listing of stationary combustion sources that must be reported if you emit great than 25,000 metric tons or more of CO₂e in combined emissions from a variety of GHG emitting sources within your facility including: boilers, internal combustion engines, process heaters, and combustion turbines.

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On the Maybe List for 2010: Electronics Manufacturing, Ethanol Production, Fluorinated GHG Production, Food Processing, Magnesium Production, Oil and Natural Gas Systems, Sulfur Hexafluoride (SF6) from Electrical Equipment, Underground, Coal Mines, Industrial Landfills, Wastewater Treatment, and Suppliers of Coal.

What needs to be reported?

Your Annual GHG report must be submitted electronically to the EPA no later than March 31 of each calendar year for GHG emissions in the previous calendar year. EPA will notify the facility of any errors in the GHG report. Upon notification, the facility will have 45 days to report revisions.

The GHG report must include the following information:

- Facility name and address
- Year and months covered by the report
- Date of submittal
- **Facilities:** Annual emissions (excluding biogenic CO₂) aggregated for all GHG from all applicable source categories
- **Facilities:** Annual emissions of biogenic CO₂ aggregated for all applicable source categories
- **Facilities:** Annual biogenic CO₂, CO₂ (excluding biogenic CO₂) CH₄ N₂O and each fluorinated GHG emissions from each applicable source category
- **Facilities:** Emissions and other data for individual units, processes, activities, operations and any other data specified in Data Reporting Requirements
- **Suppliers:** Annual quantities that would be emitted from combustion or usage
- **Suppliers:** Total quantity of GHG aggregated for all GHG from all applicable supply categories.
- **Suppliers:** Quantity of each GHG from each applicable supply category.
- **Suppliers:** Any other data specified in Data Reporting Requirements.
- If the emission calculations are change, a written explanation explaining why the calculations were changed.
- Description of best available monitoring method.
- Report each data element for which a mission data procedure was used
- Signed certification by the designated representative

What about 2010?

From January 1st through March 31st 2010, owners and operators may use best available monitoring methods for any parameter that cannot reasonably be measured according to the monitoring

and QA/QC requirements of a relevant GHG reporting rule subpart. However starting April 1, 2010 the owner/operators must discontinue their best available monitoring methods and begin following all applicable monitoring and QA/QC requirements of the GHG reporting rule. Extensions may be requested. All requests must be submitted to EPA no later than 30 days after the GHG reporting rule goes into effect.

For existing facilities in operation on January 1, 2010: Facilities containing only general stationary fuel combustion sources may submit an abbreviated emissions report. The abbreviated emissions report must be submitted by March 1, 2011.

All affected sources are required to develop and implement a GHG monitoring plan.

The GHG monitoring Plan may rely on references to existing corporate documents. The written GHG Monitoring Plan must include the following:

1. Identification of personnel/positions responsible for collection of emissions data.
2. Explanation of processes and methods used to collect the necessary data for the GHG calculations.

Description of the procedures and methods that are used for quality assurance, maintenance and repair of all continuous monitoring systems, flow meters and other instrumentation used to provide data for the GHG reports.

This plan should be in place on the effective date of the rule, January 1, 2010.

An Example: Stationary Combustion Sources

Subpart C of the rule, for emissions from Stationary Combustion Facilities, illustrates the range of methods considered acceptable for different source categories to demonstrate GHG measurement and reporting.

Stationary Combustion Sources must calculate CO₂ emissions using one of four methodological tiers, subject to certain restrictions based on unit size and fuel burned:

Tier 1 uses an emission factor that is multiplied by annual fuel use and a default heating value for that fuel.

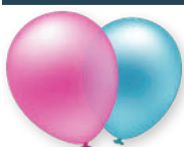
Tier 2 uses an emission factor that is multiplied by annual fuel use and a measured heating value of that fuel. Units that combust MSW or other solid fuels and generate steam must use steam production (in place of fuel use) and an emission factor.

Tier 3 uses a calculation based on annual fuel use and measured carbon content of that fuel. For this tier, calculate emissions only for fuels that contribute 10 percent or more of the annual heat input to the unit.

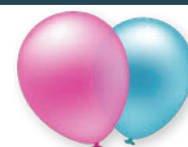
Tier 4 requires a continuous emissions monitoring system (CEMS).

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Celebrating the 5th Anniversary of the Avogadro Advisor



Author: Heidi Fleming

The October 2009 issue marked the 5th Anniversary of our quarterly newsletter, the *Avogadro Advisor*. Over the past five years, the *Avogadro Advisor* has provided informative and enjoyable articles for a growing readership, which now includes over 1,200 of our clients and colleagues.

Over the years we have provided important information on the latest environmental regulations, including the spill prevention control and countermeasure (SPCC) rule, mercury regulations and testing, solid waste regulations, combustion engine standards, OSHA standards, and the move to electronic compliance reporting and permit application submittals.

The *Avogadro Advisor* also keeps our readers up to date on current environmental issues such as environmental management systems, new emission control technologies, climate change and greenhouse gas reporting.

Through our newsletter we have been able to introduce the Avogadro staff to our clientele and to make our services known to the public, which includes providing valuable coupons and helpful tips regarding stack testing preparation and safety to our

readers. The *Avogadro Advisor* has also played a role in spreading the word about the Lehigh Valley Environmental Innovations Conference (LVEIC), where Avogadro is a founding partner.

The *Avogadro Advisor* provides human interest stories including ways to go green and how to choose organic foods; in addition to health and safety tips for the workplace and home life including recognizing stroke symptoms, preventing backovers, choosing appropriate PPE and emergency planning.

Each *Avogadro Advisor* also includes a section on important date reminders for compliance reporting needs for the upcoming quarter.

Avogadro would like to thank all of you for subscribing and hopes to continue to provide a quality newsletter for many years to come.

All issues of the *Avogadro Advisor* are available on our website at <http://avogadro.net/newsletter.html>. If you do not receive the newsletter and would like to subscribe, please send an email to newsletter@avogadro.net.

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Combustion units that have certain types of existing CEMS in place and meet specific criteria are required to use the Tier 4 methodology. This might require certain upgrades to the existing CEMS in order to comply with the Tier 4 methodology. Those upgrades will depend on the fuel burned and the CEMS currently installed on a unit.

Combustion units that are subject to the reporting requirements under EPA's Acid Rain Program will continue to measure CO₂ mass emissions using the 40 CFR part 75 methods and must report CO₂ emissions by converting the cumulative fourth quarter CO₂ emissions from short tons to metric tons.

As an alternative to any of the four tier calculation methodologies, units that report to EPA year-round heat input data under 40 CFR Part 75, can calculate annual CO₂ emissions using Part 75 methods.

Employees Of The Quarter



Erik Stecker
Technician I

Eric Stecker has taken the initiative to learn to run the trailer and has lately been completing RATA and PST test programs on his own. The reporting staff has been pleased with the quality of work which returns with each project. Eric takes impeccable notes and he takes the time to ensure that all required data is included with each project before turning it over, both which aid in reporting efficiency. He also noticed an error in our NOx converter check spreadsheet, which was consequently corrected.

We're proud of Eric and his quality of work.



Ed Anderson
Technician I

Ed Anderson has been working a large number of hours, he recently learned Method 18 sampling procedures and always maintains a positive attitude and always offers suggestions and feedback for ways to improve our operations.

Ed, your dedication and hard work is greatly appreciated.



Preparing for Winter: Cost-Effective Heating Solutions

Author: Hannah Azzalina

With fuel, electric and heating costs on the rise, it is important to conserve as much energy as possible. Here are some preparation tips and reminders on how to cost-effectively heat your home this winter.

Dealing with Drafts

According to the U.S. Department of Energy, drafts caused by small leaks can waste 5% to 30% of your energy use. The main sources of drafts are windows, doors and places where two different building materials meet, such as corners, around chimneys, where pipes or wires exit and along the foundation.

There are many way to detect drafts:

- 1) Move a lit match along doors and windows. If the flame or smoke wavers, you have a draft.
- 2) Have someone outside of your house blow a hair dryer around each window and door while you hold a lighted candle inside. If the candle flickers or goes out, you have a draft.

Once you identify the drafty areas in your home you need to take measures to eliminate them.

An easy way to eliminate drafts around doors is to use bath towels as draft snakes. Simply place a rolled bath towel under your drafty doors and you will dramatically reduces drafts in your household.

There is always the option of installing storm windows. Storm windows can seal drafts and reduce air flow during the cold, windy winter months, increasing energy efficiency by 45%. Window plastic, when properly installed, is invisible and serves as an additional buffer against drafts.

Caulking and weather-stripping are also effective options when trying to seal gaps around windows and doors.

Service Your Furnace

It is important to have your furnace inspected by a qualified technician every year before winter sets in. A technician can properly adjust your furnace if needed. A properly adjusted and operating furnace can save you up to 5% in heating costs.

It is also important to keep your furnace clean and lubricated. Remember to replace or clean

furnace filters once a month during the heating season. Dirty filters restrict airflow and increase energy demands.

You may want to invest in a permanent filter. A permanent filter reduces waste and hassle and can capture almost twice as much debris than disposable fiberglass filters. If you are considering permanent filters it is best to purchase Electrostatic filter or HEPA filters. However, beware of less effective imitators.

Finally, if your furnace is old and not functioning up to par it is best to replace it.

Reverse Your Ceiling Fans

Ceiling fans typically run counter-clockwise, producing cool air. However, many ceiling fans give you the option of running the blades clockwise, circulating the warm air pooled at your ceiling back into your living space. Running your fans in reverse can actually cut your heating costs as much as 10%.

Adjust Your Water Heater

To reduce your heating costs you always have the option of lowering the temperature of your water heater. When installed, many water heaters are usually set at 140 degrees F. Lowering the temperature of your water heater to 120 degrees F can reduce your water heating costs up to 10%.

Increase Insulation

Adding insulation in your home is another simple way to conserve energy and reduce heating costs. It is best to add insulation in places where cool air accumulates such as in between walls, along your attic floor and on your basement ceiling. Insulation will act as a barrier against these pools of cool air and prevent it from entering into your living space.

You can even go a step further and insulate your pipes and hot water heater. If your pipes and water heater are warm to the touch, heat can escape form these units and you will be paying for this lost heat. Insulation will prevent such leaks and in turn lower heating costs.

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Preparing Your Car for Winter

Change your wiper blades and check the level and condition of the anti-freeze in your vehicle

Inspect your tires.

Keep a full gas tank.

Have a snow brush and ice scraper in your vehicle.

Clean snow and ice off of the roof and windows of your vehicle

Carry an emergency kit and blankets

Keep abrasive material such as sand, salt or non-clumping cat litter, and a small shovel in your vehicle

Have chains and remember, chains must be installed on the "drive" wheels of the vehicle.



Your Guide to Treecycling

Author: Hannah Azzalina

You know that holidays are coming to a close when Christmas trees are stripped of their colorful ornaments and end up on the side walk with the weekly garbage. However, this year instead of tossing your tree out with the garbage, consider treecycling.

Treecycling is an eco-friendly way of disposing of your Christmas tree. It offers the option of recycling your Christmas tree into an environmentally friendly community program, instead of sending it to a landfill.

Recycled Christmas trees are processed and used for the following community projects:

- Mulch for gardening and landscaping
- Chipping for playground material, hiking trails, paths and walkways
- Beachfront erosion prevention
- Lake and river shoreline stabilization

- Fish habitat
- River delta sedimentation management

Many communities are now offering seasonal treecycling programs. Furthermore, in some areas community groups will pick up your tree for a small donation and take it to the recycling facility for you.

There are a few preparations you need to make to your Christmas tree before recycling it.

- 1) Be sure all lights, tinsel and ornaments have been removed from the tree.
- 2) To ensure that the tree is kept in its natural state, do not place the tree in a plastic bag.
- 3) Treecycling collection drop off dates vary by community, so be sure to check the drop off dates for you local treecycling program.

To find a tree cycling program near you please visit earth911.com.



Did You Know:

Between 30 and 35 million real Christmas trees are sold every year in the United States.

Of these trees, 93% of them are recycled through more than 4,000 treecycling programs.

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Turn Down Your Thermostat

Probably the easiest way to conserve energy is to turn down the thermostat when leaving the building. There is no reason to pay for heat that no one is using and for every degree you lower the thermostat, you'll save between 1 and 3% in heating costs. If you have trouble remembering to turn down the heat it may be wise to purchase a programmable thermostat.

These are some basic suggestions to lower heating costs. You can always turn to alternative sources of energy such as solar panels, geothermal heating and cooling and small wind turbines. Try conducting an energy audit or using an energy monitor to detect where you are using the most energy in your living space. Once your problem areas are identified, take measures to reduce energy use.

And remember, if all else fails, you can always put on another sweater.

Humbug: Changes in Air Permit Fees

PADEP Propose Increases in Title V Air Fees

In October 2009, PADEP published a proposed rulemaking that would significantly increase air emission fees, permit review fees and establish new fees.

The increases in air emission fees will nearly double from the current \$37 per ton to \$70 per ton for each pollutant that a facility emits. This change will increase the annual emission fees at many Title V facilities.

In addition, permit review fees will also increase and new fees for the review of routine monitoring reports and testing and auditing activities will be established. Please note that the fees would be effective for the 2009 calendar year.

NJDEP Publishes Changes to Air Permit Fee Schedule

On November 16, 2009 the New Jersey Department of Environmental Protection made administrative changes to the air permit fee schedule.

Affected are rules at N.J.A.C. 7:27-8 "Permits And Certificates for Minor Facilities (and Major Facilities Without an Operating Permit)", N.J.A.C. 7:27-20 "Used Oil Combustion", and N.J.A.C. 7:27-22 "Operating Permits".

The notice of changes was published in the November 16, 2009 New Jersey Register. Please note that the new fee schedule will take effect January 1, 2010.



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IMPORTANT DATES

January 30: EEMPR for 4th Quarter due

January 30: Semi-Annual **Title V Compliance Certification** due in NJ, VA, and CT

February 1: **OSHA 300 Log Annual Summary** must be posted through April 30th

February 1: Annual and Semi-Annual **Title V Compliance Certification** due in DE

March 1: **Tier I/II Report** due (or CRTK in NJ due)

March 1: **Annual Air Emission Statements** due in PA and CT



Organic Beer: A Contemporary Twist on an Old Tradition

Author: Hannah Azzalina

Organic beer is commonly thought of as a contemporary beverage; however, all beer was organic until the dawn of the 19th century. The 19th introduced chemical fertilizers and pesticides into the barley production and have remained a part of current barely production.

Beer, lager and ale are made by extracting sugars from barley malt. The sugars extracted from the malt are then fermented with yeast. It is the fermentation process that converts the sugars into alcohol or in this case beer. However, when extracting the sugars from the barley malt you are also extracting the chemical pesticides used in the barely production. Therefore when you take a swig of your beer, you are also taking a swig of hazardous chemicals.

In 1980 a brew master at Pinkus-Mueller brewery in Muenster, Germany became concerned when the chemical fertilizers used in barely production began causing a decrease in the quality of malting barley. In that same year, with hopes to produce a better quality of beer, Pinkus-Mueller brewed the first contemporary

organic beer.

It wasn't until the 1990s that organic beer made its debut in the US. Upon its introduction into American society; the U.S. Department of Agriculture determined that organic beer must be made with ingredients free of synthetic pesticides, fertilizers and processes. Therefore the barley used when brewing organic beer is grown without the use of chemicals and pesticides. The absence of pesticides in the sugars extracted from the barely results in a purer healthier, more flavorful beer.

Currently, organic beer has established a 20 million dollar market in the US. Even the nation's largest beer maker, Anheuser-Busch, brews two organic beers: the Green Valley Brewing Co. Wild Hop lager and Crooked Creek Brewing Co. Stone Mill pale ale.

And if you are interested in switching over to organic beers, other popular brews include: Hopworks Urban Brewery India Pale Ale, Bison Brewing Company Reunion Ale and Lamar Street Organic Pale Ale.

How to Throw a Green Super Bowl Party

Use eco-disposable party supplies such as biodegradable crepe paper streamers

Serve the organic beers mentioned in this edition of the *Avogadro Advisor*

Send out e-vite invitations

As a party favor give your guests: a reusable water bottle filled with tap water—a perfect cure for a post-super bowl hangover

