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INFORMATION TECHNOLOGY FOR EH&S MANAGEMENT

Permitting & Reporting Obligations for Greenhouse Gases

Challenges for Industry

Rich Pandullo – Director,
Sustainability &
Environmental Mgmt

CAPCA Fall 2009
Meeting

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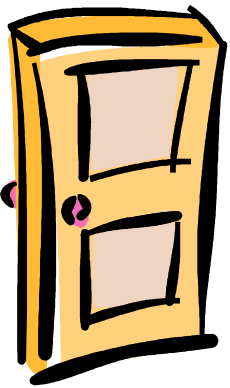
Discussion Topics

- **Important Points regarding Final Mandatory Reporting Rule**
- **Reminders on MRR Applicability & Inventory Scope**
- **Key Changes in the Final vs. Proposed MRR**
- **GHG Reporting Compliance Strategy**
- **What Lies Ahead?**

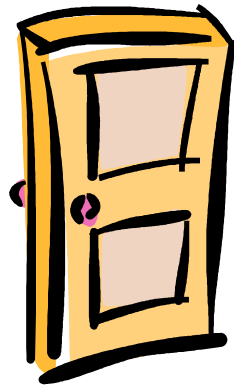
Important Points re: Final Rule

- Represents first major EPA regulatory action affecting GHG reporting for industrial sectors and will form basis for developing GHG policy
- Reporting is the first step toward regulation – transparency of emissions for industry
 - ◆ House cap and trade bill passed in late June
 - ◆ Senate cap and trade discussion draft released on September 30th
 - ◆ NSR/Title VGHG Tailoring Rule released September 30th
- Companies will have monitoring requirements beginning on January 1, 2010 (unless extension requests are filed)
 - ◆ < 3 months from now to assess and prepare
- Many industrial sources will be subject under Subpart C only (Stationary Fuel Combustion)

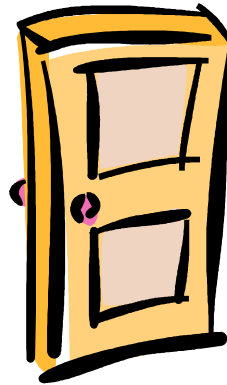
Four doors into the GHG reporting program...



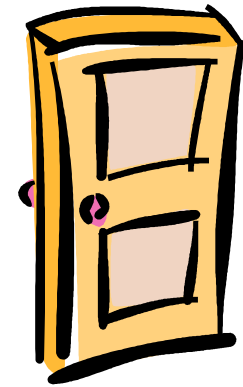
98.2(a)(1)



98.2(a)(2)



98.2(a)(3)



98.2(a)(4)

“Downstream”

“Upstream”

All-In Source Categories – Table 1

Will your facility contain any of the source categories listed in this table in any calendar year starting in 2010?

- | | |
|--|--|
| <ul style="list-style-type: none">✓ Electricity generation (units that report CO₂ emissions year-round through 40 CFR part 75).✓ Adipic Acid Production✓ Aluminum Production✓ Ammonia Manufacturing✓ Cement Production✓ HCFC-22 Production✓ HFC-23 Destruction Processes that are not located at an HCFC-22 production facility and that destroy more than 2.14 metric tons of HFC-23 per year.✓ Lime Manufacturing✓ Nitric Acid Production✓ Petrochemical Production✓ Petroleum Refineries✓ Phosphoric Acid Production✓ Silicon Carbide Production✓ Soda Ash Production✓ Titanium Dioxide Production | <ul style="list-style-type: none">✓ Municipal Solid Waste Landfills that generate CH₄ in amounts equivalent to 25,000 metric tons of CO₂e per year or more (Subpart HH).✓ Manure Management Systems that emit, in aggregate, CH₄ and N₂O in amounts equivalent to 25,000 metric tons of CO₂e per year or more (Subpart JJ).– Electric Power Systems that include electrical equipment with a total nameplate capacity that exceeds 17,820 pounds (7,838 kilograms) of SF₆ or PFCs.– Electronics Manufacturing Facilities with an annual production capacity that exceeds:<ul style="list-style-type: none">– Semiconductors: 1,080 square meters (m²) silicon.– Microelectromechanical system: 1,020 m².– Liquid crystal display (LCD): 235,700 m² LCD.– Underground Coal Mines that are subject to quarterly or more frequent sampling of ventilation systems by the Mine Safety & Health Administration <p><i>Items listed in grey and italics were RESERVED in the final rule.</i></p> |
|--|--|

Subparts with 25k Thresholds– Table 2

Will your facility emit 25,000 metric tons of carbon dioxide equivalent (CO₂e) in 2010 from any sources listed below (combustion + carbonate + Table 2 subparts)?

- | | |
|--|--|
| <ul style="list-style-type: none">✓ Ferroalloy Production (Subpart K)✓ Glass Production (Subpart N)✓ Hydrogen Production (Subpart P)✓ Iron and Steel Production (Subpart Q)✓ Lead Production (Subpart R)✓ Pulp and Paper Manufacturing (Subpart AA)✓ Zinc Production (Subpart GG) | <ul style="list-style-type: none">– Electricity Generation– Electronics - Photovoltaic Manufacturing– Ethanol Production– Fluorinated Greenhouse Gas Production– Food Processing– Industrial Landfills– Magnesium Production– Oil and Natural Gas Systems– Industrial Wastewater |
|--|--|

↑
Items listed in grey and italics were RESERVED in the final rule.

Note: Biogenic emissions not included for applicability determination.

Does your facility emit 25,000 metric tons of carbon dioxide equivalent (CO₂e) from any stationary fuel combustion devices below?

Boilers

Simple and Combined-Cycle Combustion Turbines

Stationary Engines

Incinerators

Process Heaters

Devices that combust solid, liquid, or gaseous fuel, generally for the purposes of producing electricity, generating steam, or providing useful heat or energy for industrial, commercial, or institutional use, or reducing the volume of waste by removing combustible matter.

Note: If the maximum rated heat input capacity for all stationary fuel combustion equipment is less than 30 million British thermal units (Btu) per hour, then the facility is presumed to emit less than 25,000 metric tons of CO₂e and the facility does not have to calculate or report emissions.

Suppliers– Table 4 and 5

Is your facility a supplier of fossil fuels?

Fossil Fuels

Coal-to-liquid Products

Natural Gas and Natural Gas Liquids

Petroleum Products

Is your facility a supplier of industrial GHGs? Is your facility an importer/exporter of industrial GHGs equivalent to 25,000 metric tons of CO₂e or more when released?

Industrial GHGs

Fluorinated Gases

Nitrous Oxide

Carbon Dioxide

Trigger Levels for 25,000 metric tons....not that high

	Table C-1	Table C-3		kg CO ₂ e/MMBtu				MMBtu	Trigger size at 100% capacity factor (MMBtu/hr)
	kg CO ₂	kg CH ₄	kg N ₂ O	CO ₂	CH ₄	N ₂ O	Total	tonne CO ₂ e	
	MMBtu	MMBtu	MMBtu						
GWP	1	21	310						
Bit Coal	93.40	1.00E-02	1.50E-03	93.40	0.21	0.465	94.08	10.63	30.3
Sub-bit coal	97.02	1.00E-02	1.50E-03	97.02	0.21	0.465	97.70	10.24	29.2
Lignite coal	96.36	1.00E-02	1.50E-03	96.36	0.21	0.465	97.04	10.31	29.4
Natural gas	53.02	9.00E-04	1.00E-04	53.02	0.0189	0.031	53.07	18.84	53.8
Nos. 1-4 oil	73.10	3.00E-03	6.00E-04	73.10	0.063	0.186	73.35	13.63	38.9
Nos. 5-6 oil	78.74	3.00E-03	6.00E-04	78.74	0.063	0.186	78.99	12.66	36.1

Key Changes: Final Rule

- “Best Available Monitoring Method” flexibility
 - ◆ Allows use of **best available monitoring methods** in lieu of required monitoring methods for 1st Quarter 2010 (Jan-March)
 - Only allowed if not “reasonably feasible” to acquire, install, and operate a required piece of monitoring equipment by January 1, 2010
 - ◆ Must still use prescribed emissions calculation methodologies in each applicable subpart
 - Outline use of these methods in the report filing
 - ◆ **Best Methods** include interim monitoring methods currently used by the facility, supplier data, engineering calculations, other company records
 - ◆ May request extension to use best available method beyond March 31, 2010 – *but use of best available method will not be approved beyond December 31, 2010*

Key Changes: Final Rule

- **Monitoring Plan** (formerly QAPP) clarifications
 - ◆ May reference existing procedures (facility SOPs, Part 60/75 QA procedures, etc.)
 - ◆ No deadline for submittal of **Monitoring Plan**, however must have in place for EPA if you are audited
 - ◆ Must be revised as necessary to improve monitoring strategy and to accommodate changes to production processes, monitoring instrumentation, QA procedures, etc.
 - ◆ Required content of **Monitoring Plan**:
 - ✓ Identification of persons responsible for collecting emissions data
 - ✓ Explanation of the processes and methods used to collect the GHG data
 - ✓ Description of procedures used for QA, maintenance, and repair of CEMS, flow meters, and other instrumentation used to provide data for GHG reporting

Key Changes: Final Rule

■ Measurement Device Calibration

- 1) EPA added a 5% accuracy requirement for flow meters and other devices that measure data used to calculate GHG emissions (belt scales, etc.) – prior to April 1, 2010
- 2) Fuel billing meters exempted from calibration requirements
- 3) Guidance in the rule is provided for initial quality assurance (e.g., calculating calibration error) for orifice, nozzle, and venturi flow meters
- 4) Flexibility added for facilities that operate continuously to delay calibration to the next scheduled outage

Key Changes: Final Rule

- Recordkeeping Requirements
 - ◆ Reduced timeline for records to be kept from five to three years
- Report Revision
 - ◆ If reporter discovers an error in an annual GHG report (or if EPA notifies reporter of an error), must submit a revised GHG report within 45 days

Key Changes: Final Rule

- Title V clarifications
 - ◆ Rule does not constitute an "applicable requirement" in 40 CFR 70.2/71.2 [since this was promulgated under CAA sections 114(a)(1) and 208]
- SSM Clarification
 - ◆ Calculation methodologies typically address normal operating conditions and SSM scenarios where significant GHG emissions occur (e.g., HCFC-22 production)
 - ◆ SSM emissions not specifically addressed in rule, but these emissions would be captured by CEMS and certain mass balance methodologies

Reporting Rule Compliance Strategy

- Step 1: Check emissions data/gaps
 - ◆ Estimate 2010 actual emissions if you are on the cusp
 - ◆ If you need to report, must develop a plan:
 - What Tiers will I be using and for which equipment?
 - Which equipment should I aggregate? Which ones qualify for common pipe configuration?
 - What fuel and equipment records do I need to keep?
 - How will I calculate emissions (internal spreadsheet, EMIS, etc.) and to what frequency?

Note: Even though this is facility based reporting, it is prudent to manage this from a corporate level to evaluate consistency across the organization with respect to calculations, Tier determinations, etc.

Compliance Strategies

- Step 2 - Determine monitoring requirements/gaps
 - What do I need to install?
 - What is the cost?
 - Can I install the equipment by April 1, 2010?
 - Time sensitive: Do I need to file an extension?
 - If so, prepare extension letter and backup information required for the letter to submit to EPA within 30 days of effective date of the rule.

- Step 3 - Develop template monitoring plan
 - Evaluate using a template across corporate facilities, where appropriate, to ensure consistency and save time/\$

Compliance Strategies

- Step 4: Check calibration requirements/gaps
 - Plan for initial calibration (by April 1, 2010) and recurring calibration of flow meters, scales, etc. used to gather GHG data (fuel billing meters excluded)
 - Evaluate compliance with 5% accuracy requirements in the rule
 - Establish calibration procedures where required (based on applicable flow meter test method in rule, manufacturer's procedure or industry standard)



What Lies Ahead?

Cap and Trade Legislation
Clean Air Act Treatment of GHG

Questions to Consider for Cap & Trade

- Will your facility be classified as a covered entity?
- What will allowances likely cost your facility? When will allowance purchases occur?
- Can you meet the declining cap via facility GHG reductions or will you need to rely on offsets?
- What is the timing for compliance? (When will your facility need to achieve reductions and/or purchase offsets?)
- If you are not a covered entity, can you generate offsets to sell in the compliance market?

Are You a Covered Entity?

Senate Bill

- Covered in 2012:
 - ◆ All electric power generators (utilities);
 - ◆ Natural gas liquid-, petroleum-, and coal-based liquid fuel producers/importers (upstream) whose products when combusted emit over 25,000 tons annually;
 - ◆ Producers and importers of fluorinated gases (upstream) except HFCs and potentially PFCs; and
 - ◆ Certified geologic storage sites.
- In 2014 and in 2016, respectively, additional sources are added under the cap, including:
 - ◆ Industrial sources that annually emit 25,000 tons or more and
 - ◆ Natural gas Local Distribution Companies (LDCs) (midstream) that deliver more than 460,000,000 cubic feet of gas annually.

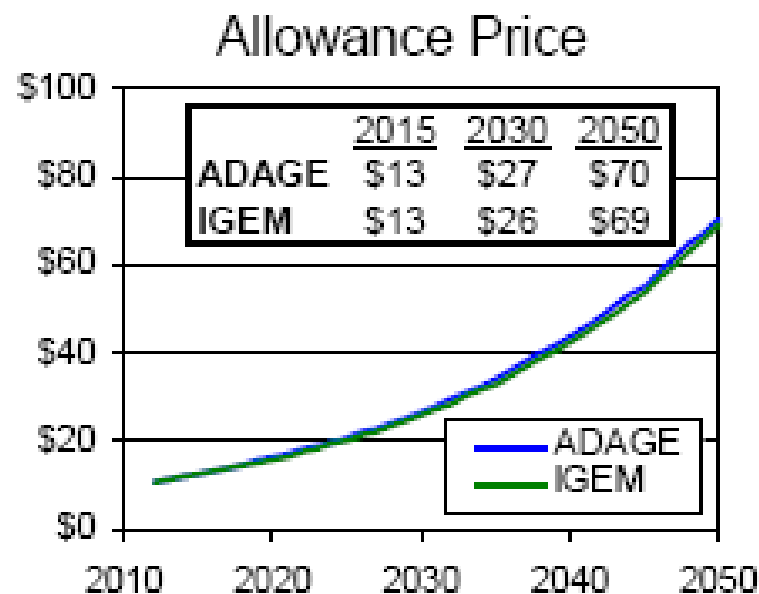
Emissions Reporting

- All covered entities plus other types of entities are required to report emissions by 2011 for all prior years beginning with 2007.
- Quarterly reporting is required beginning in 2011.
- Affected sources would purchase allowances for emissions exceeding their caps through quarterly auctions starting in March 2011.



What might allowances cost?

- Allowance price ranges from \$13-\$24/tCO₂e in 2015 and from \$16-\$30/tCO₂e in 2020
- Total Abatement cost ranges from:
 - ◆ \$17-\$19/tCO₂e in 2015,
 - ◆ \$28-\$30/tCO₂e in 2020,
 - ◆ \$52-\$58/tCO₂e in 2030,
 - ◆ \$97-\$112/tCO₂e in 2040,
 - ◆ \$193-\$213/tCO₂e in 2050



CAA Developments for GHG

- On September 30, 2009, EPA announced a proposal that would regulate large facilities (> 25,000 tpy GHG emitters).
 - ◆ Proposes new major source thresholds to “**tailor**” the NSR/PSD and TV permit programs to better suit the magnitude of GHG emissions compared with traditionally regulated pollutants.
 - ◆ Regulate 6 GHG pollutants (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆)
 - ◆ Total CO₂e would determine permit applicability

GHG Applicability

- EPA is proposing a TV major source applicability threshold of 25,000 tpy CO₂e for existing industrial facilities.
- EPA is proposing a PSD major source applicability threshold of 25,000 tpy CO₂e, with a significance level between 10,000 and 25,000 tpy CO₂e
 - ◆ If major source is making modifications that result in emissions increasing above significance level, must obtain PSD permit
 - ◆ EPA is taking comments on setting a single value for this significance level

Impacts of Rule

- *Existing* facilities with GHG emissions >25,000 tpy would not need to immediately revise current operating permits until renewal time.
 - ◆ This is because there are generally not emission control requirements existing at this time for GHG emissions (i.e., no NSPS, NESHAP, or BACT)
 - ◆ Existing facilities would address GHG estimates upon renewal (may use EPA MRR data to meet this requirement)
- *New or modified* facilities with GHG emissions that trigger PSD permitting requirements would need to submit permit applications for BACT and energy efficiency measures to minimize GHG emissions.

Impacts of Rule (cont'd)

- Estimated that 400 new sources and modifications would undergo PSD review each year.
 - ◆ > 100 of these would be subject to new PSD requirements
- Approximately 14,000 large sources would need to obtain operating permits
 - ◆ ~ 3,000 of these sources would be newly subject to CAA operating permit requirements.
 - ◆ Majority of these sources are expected to be municipal solid waste landfills.

Questions?

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