Clean Air Act 101:
*It All Starts Here*
Web Seminar

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Clean Air Act Structure

- Congress authorizes EPA to:
  - Set health-based national air standards
  - Set technology-based rules
  - Develop a Federal permitting program
- Directs states to implement fed. requirements
- Allows states to be more stringent
- EPA retains oversight enforcement authority

Health-Based National Standards

- National Ambient Air Quality Standards (NAAQS) (SO2, NO2, PM2.5, CO, Pb, O3 (VOC+NOx))
- Areas designated attainment/nonattainment
- States develop plans to achieve attainment that include:
  - Federal rules (fuels, vehicles, technology)
  - Additional state rules as needed
- Standards reviewed and revised
Technology-Based Rules

- By Source Category:
  - POTW, SSI, Boilers, GDF, Engines, etc. etc.
  - New, modified, or reconstructed sources
- By Pollutant Category
  - Hazardous air pollutants (MACT)
  - Criteria pollutants (NSPS, RACT)
  - Other regulated pollutants (BART/GHG)
- Existing Sources -- compliance schedule (3yr)
- New Sources – upon startup

Air Permitting

- Title V Federal Operating Permit
  - All applicable requirements for major facility
  - Add monitoring, testing, recordkeeping & reporting
  - Permit authority may be state, local or tribal
- State Operating Permit
  - Non-major facilities covered by state law
- Pre-construction permitting
  - Major source – major modification (PSD/NSR)
  - Minor source – state permits

Citizen Participation

- Public comment periods for rules and permits
- Administrative challenges to permits
- Petitions for Judicial Review of rules
- Law suits to force deadlines
- Nuisance Odor Complaints to Local Air Agency
- Nuisance Odor Law Suits (Private, Public)
- Citizen Suits to enforce the Act.
Sewage Sludge Incineration
Clean Air Act Rules

National Association of Clean Water Agencies
Clean Air Act Webinar
March 15, 2012

Overview of SSI Rule Developments

- **Main events (2011) –**
  - March – EPA promulgated the SSI rules
  - May – NACWA filed a petition for administrative reconsideration with EPA
  - May/June – NACWA filed a petition for review in the DC Circuit and intervened in other petitions
    - Hatfield Township Municipal Authority is a co-petitioner
    - Sierra Club also filed a petition for review
    - All petitions consolidated for briefing
  - Aug – EPA informally indicated that it would deny portions of the petition for reconsideration and would deny the request for administrative stay; EPA was still considering “technical” aspects
  - Feb (2012) – EPA informally indicated that it will deny both NACWA’s and Sierra Club’s petitions for reconsideration – final action expected by Mar 23

Petition for Reconsideration/Stay

- **CAA 307(d)(7)(B) –** EPA must reconsider a final action if:
  - It was impracticable to raise an objection to the action during the comment period, and
  - The objection is of central relevance to the outcome of the action

- **NACWA’s petition raised several such objections to the SSI rules**
  - New legal rationale for using CAA 129 instead of 112
  - Used data from an inadequate number of SSIs to set standards
  - Failed to use available data, including Part 503 data and some stack test data
  - Failed to consider other SSI subcategories, including stoker/grate design units
  - Failed to propose the new source standards that were promulgated for MHIs
  - Set numerical emission standards for dioxin/furans using data below the method detection limit, instead of work practice standards as proposed in Utility MACT
  - Adopted performance test specifications that were not proposed and some SSIs cannot achieve

- **NACWA also asked EPA to stay the effective date of the SSI rule**
  - Cited agency authority under CAA 307(d)(7)(B), 301(a), 129(a)(5) and APA 705
**DC Circuit Challenges on the Merits**

- Use of CAA 129 instead of CAA 112
  - CAA 112 governs standards for POTWs, including SSIs
  - CAA 129 governs standards for solid waste incineration units, which do not include SSIs

- Inadequate data and methodology
  - CAA requires existing source standards to be based on the best performing 18 MHIs and 8 FBIs; while EPA used as few as 4 MHIs and 6 FBIs
  - EPA did not adequately account for variability in sludge characteristics
  - EPA did not show that any control technology is demonstrated to achieve the standards

- Inadequate subcategorization
  - EPA did not respond to some comments and gave arbitrary responses to others

**DC Circuit Litigation Schedule (Est.)**

- Mar 2012 – EPA denies petitions for reconsideration; lawsuits challenging denial (if any) are consolidated with existing case
- June 2012 – Motions governing briefing format and schedule
- Briefing schedule (2012)
  - July – Petitioners’ opening briefs
  - Oct – EPA’s responses and NACWA’s intervenor brief in response to Sierra Club
  - Nov – Petitioners’ reply briefs
- Feb/Mar 2013 – Oral argument
- Spring/Summer 2013 – Decision

**SSI Rules Overview**

- Main topics covered –
  - New or existing sources
  - Important dates
  - Emission limits
  - Compliance demonstrations
  - Title V permits
  - Some others (reporting, operator training, siting analysis)
New / Existing SSIs

- 2 SSI rules – 1 for existing SSI and 1 for new SSI
- Existing SSI – SSI unit constructed or commenced construction prior to Oct 14, 2010
- New SSI – SSI commenced construction after Oct 14, 2010 or modification after Sept 21, 2011
  - Continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification
  - Modification – physical change that (1) results in an increase in emissions of one of the pollutants regulated by the SSI rules; or (2) contributes to a cumulative cost from all changes over the life of the SSI unit that exceeds 50% of the original cost of the SSI unit (updated to today’s dollars)
  - Routine maintenance/repairs are excluded from modification determinations

Important Dates

- May 20, 2011 – Same effective date for both SSI rules
- Mar 21, 2012 – State implementation plan (SIP) for existing source rule must be submitted to EPA
- Mar 21, 2013 – SIP must be approved or Federal plan goes into effect
- Existing SSI compliance dates – Will vary from state-to-state but will be no later than the earlier of –
  - 3 years from the effective date of applicable SIP
  - March 21, 2016
- New SSI compliance dates – Earlier of –
  - 60 days after reaching operating feed rate
  - 180 days after startup

Emission Limits

- Emission limits apply at all times sewage sludge is being combusted. All SSIs are subject to emission limits for the following pollutants –
  - HAP metals – mercury (Hg), cadmium (Cd) and lead (Pb)
  - hydrogen chloride (HCl)
  - dioxin/furans (D/F)
  - carbon monoxide (CO)
  - nitrogen oxides (NOx)
  - sulfur dioxide (SO2)
  - particulate matter (PM) and visible emissions (VE) from ash handling
- Emission limits differ based on classification as existing/new and on SSI combustion design –
  - Existing MHI
  - Existing FBI
  - New MHI
  - New FBI
### Emission Limits

<table>
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<tr>
<th>Pollutant</th>
<th>SS1</th>
<th>SS2</th>
<th>SS3</th>
<th>SS4</th>
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<td>0.0000125 mg/L</td>
</tr>
</tbody>
</table>

### Compliance Demonstrations

- **Annual stack testing** –
  - Permitted for all SSI and all pollutants except new SSI must use a CEMS for CO
  - Establish specified SSI and control equipment operating limits (e.g., minimum combustion chamber temperature, sludge feed rate) and use CPMS for continuous monitoring
  - Follow monitoring plan with routine inspection, calibration and maintenance on pollution control equipment and CPMS
  - Annual testing can be reduced to every 3 years if 2 consecutive tests show emissions less than 75% of the emission limit for each pollutant

- **CEMS/CAS** –
  - Permitted for all SSI and all pollutants
  - Parametric operating limits are not required

- **Monitoring plans** - routine inspection, calibration and maintenance on pollution control and monitoring equipment

  - Plans must be submitted to EPA and are subject to review/approval

### Title V Operating Permits

- **All POTW with SSI must submit an application for a Title V operating permit or permit amendment**

- **Existing SSI** – Submit application by the earlier of –
  - 12 months after the effective date of applicable SIP or Federal plan
  - Mar 21, 2014

- **New SSI** –
  - Mar 21, 2012 – Application deadline if SSI startup by Mar 21, 2011
  - 12 months after commencing operation – Application deadline if SSI startup after Mar 21, 2011

- **Existing Title V permits** – Submit application for amendment in accordance with the schedule in your permit
Some Other Requirements

- Periodic compliance reports –
  - Initial report 60 days following performance test
  - Annual reports following every 12 months
  - Semi-annual deviation reports (Feb 1 and July 1)

- Qualified operators –
  - Onsite or available within 1 hour
  - Initial training course and state examination
  - Annual refresher training

- Siting analysis (new SSIs only) –
  - Submit siting analysis prior to commencing construction of the SSI unit
  - Analysis must consider air pollution control alternatives and justify selection of incineration through site-specific risk assessment, considering costs, energy impacts and non-air environmental impacts

Clean Air Act Rules:
Boilers and Engines

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Boilers and Engines

- Existing sources:
  - Major Source Boiler MACT
  - Area Source Boiler MACT
  - NOx RACT Requirements
  - Stationary Engine MACT

- New Sources:
  - Best performing similar source - MACT
  - Major Source PSD = Best Available Control Technology
  - Major Source NSR = Lowest Achievable Emission Reduction
  - Minor Source New Source Performance Standard
Hazardous Air Pollutants: Boilers

- Important Applicability Issues
  - Boilers combusting fuel vs Incinerators burning waste
  - Major Source v. Area Source
    - Potential emissions $\geq 10$ tpy of any hazardous air pollutant (HAP) or
    - Potential emissions $\geq 25$ tpy of any combination of HAP
  - New v. existing boilers (June 4, 2010)
  - Subcategorized by fuel — encourages natural gas fuel
  - Final Rules published March 21, 2011
    - Reconsidered Proposed Rules published December 2011
    - Reconsidered Final Rules expected June 2012

Hazardous Air Pollutants: Area Source Boilers
(40 CFR Part 63 Subpart JJJJJJ)

- Area Source Boiler Applicability
  - Does not apply to gas-fired boilers, hot water heaters, waste heat boilers
  - Gas-fired boilers = no solid fuel, liquid fuel only during curtailment or testing
  - Hot water heater
    - gas or liquid-fired with capacity $\leq 120$ gallons heating water
    - Withdrawn for external use at pressures not exceeding 160 psig
    - Water temperature does not exceed 210F
    - also includes hot water boilers $< 1.6$ mmBtu/hr that are not generating steam
  - Waste-heat boilers = device converting normally unused energy into heat

- Expected compliance dates based on proposed reconsidered rule:
  - New liquid and solid fuel-fired units: upon startup
  - Existing liquid and solid fuel-fired units:
    - Tune-ups: March 21, 2013 (2014 for smallest boilers)

Hazardous Air Pollutants: Area Source Boilers
(40 CFR Part 63 Subpart JJJJJJ)

- Area Source Requirements
  - Emission Limits
    - Existing Coal $\geq 10$ mmBtu/hr (Hg, CO)
    - New Coal $\geq 10$ mmBtu/hr (PM, Hg, CO)
    - New Oil and Biomass $\geq 10$ mmBtu/hr (PM)
    - All units $< 10$ mmBtu/hr = no numeric emission limits
  - Operating Limits (if emission limits apply)
    - Oxygen level (30-day average, lowest 1-hour average during testing)
    - Operating load (110% of load during testing)
    - ESPs and Baghouses (no alarm system) = 10% opacity
    - Scrubbers = flow and pressure (30-day average, lowest 1-hour average during testing)
    - Sorbent Injection rate (30-day average, lowest 2-hour average during testing)
  - Tune-up
    - Initial: All existing Coal, Oil, and Biomass
    - Biennial:
      - All new and existing Oil and Biomass $\geq 10$ mmBtu/hr
      - All new and existing Coal, Oil, and Biomass $< 10$ mmBtu/hr
      - Exception: Oil-fired $\geq 5$ mmBtu/hr every 5 years
    - Energy Assessment for Existing Coal, Oil, and Biomass $\geq 10$ mmBtu/hr
Hazardous Air Pollutants: Major Source Boilers (40 CFR 63 Subpart DDDDD)

- Applicability – located at a major source (>10/25 tpy HAP)
  - New and existing boilers (all fuels)
  - Applies to gas-fired boilers (but just a tune-up work practice for most)
  - Does not apply to units:
    - regulated by another subpart (recovery boilers, electric generating units, incinerators)
    - units acting as a control device for a unit in another subpart
    - hot water heaters
- Limited use units, some gas-fired units, and smaller units have minimal requirements
  - Limited use: > 10 mmBtu/hr limited to 876 hours per year
  - Gas 1 units: no solid fuel, liquid fuel only during curtailment or testing
  - Smaller units: < 10 mmBtu/hr
- Expected compliance dates (proposed)
  - New units installed after June 4, 2010: upon startup
  - Existing units: summer 2015 (with potential 1-year extension)

Hazardous Air Pollutants: Major Source Boilers (40 CFR Part 63 Subpart DDDDD)

- Major source requirements (proposed on reconsideration)
  - Emission limits:
    - All units (except limited use) ≥ 10 mmBtu/hr: Hg, HCl, PM, CO
    - Limited use: none
    - Units < 10 mmBtu/hr: none
  - Operating limits (if emission limits apply):
    - PM CPMS for coal > 250 mmBtu/hr
    - Oxygen level (10-day rolling average, lowest 1-hour average during testing)
    - Operating load (limited to 10% of load during testing)
    - Dry ESPs and Baghouses (no alarm system) = 10% opacity (daily block ave.)
    - Wet Scrubbers = flow, pressure, pH (30-day average, lowest 1-hour average during testing)
    - Sorbent Injection rate (30-day average, lowest 2-hour average during testing)
  - Tune-ups:
    - Annual for new and existing ≥ 10 mmBtu/hr
    - Biennial for limited use (Every 5 years for gas-fired units < 5 mmBtu/hr)
  - Energy Assessment for Existing units only

Other Boiler Regulations

- New Source Performance Standards (NSPS)
  - Subpart Dc: small industrial, commercial, or institutional boilers
    - Applies to boilers between 2.9 - 9 MW (10-100 mmBtu/hr) constructed after June 9, 1989
    - Different requirements apply for units constructed after February 26, 2005
  - Emission limits
    - SO2 (coal and oil) = CEM or fuel test
    - PM (coal, oil, and wood) = COM or VE test
    - Daily or monthly fuel use records (even for natural gas)
  - Reasonably Available Control Technology (RACT)
    - Applies to boilers in ozone nonattainment areas that must reduce NOx
    - States apply presumptive NOx limit to boilers above state-designated size
Hazardous Air Pollutants: Engines
(40 CFR Part 63 Subpart ZZZZ)

• General
  – Stationary reciprocating internal combustion engines (RICE)
  – Major Source v. Area Source
  – New v. Existing RICE
  – Area sources and Emergency RICE at Major Sources: 6/12/2006
    – New engines at area sources are subject to NSPS only
  – Major sources: 12/19/2002 or 6/12/2006 (depending on engine type)

• Applicability
  – Spark ignition (natural gas, dual fuel)
  – Compression ignition (diesel)
  – Special requirements for Emergency RICE:
    • Emergency use (no limit)
    • No more than 100 hours per year for maintenance and testing
    • No more than 50 hours per year for non-emergency use (counts toward 100
      hours for maintenance and testing) – cannot be used for peak shaving
    • Up to 15 hours can be used as part of demand response program

Hazardous Air Pollutants:
Existing Emergency Engines

• Requirements for Existing Emergency CI and SI RICE of any size at
  area sources, and engines ≤ 500 HP at major sources (6/12/2006)
  – Periodic oil and filter changes, inspections of belts, hoses, plugs (SI), air cleaner
    (CI)
  – Non-resettable hour meter
  – Maintain according to manufacturer’s instructions
  – Minimize startup/shutdown emissions (30 minutes) for CI

• Requirements for Existing Emergency CI and SI RICE > 500 HP at
  major sources (12/19/2002)
  – None

Hazardous Air Pollutants and New Source Performance
Standards: New Emergency Engines

• Requirements for New Emergency CI or SI RICE of any size at area
  sources, and engines ≤ 500 HP at major sources (6/12/2006) = follow
  NSPS
  – 40 CFR 60 Subpart III = CI RICE
    • Applies to engines constructed (ordered) after 7/1/2005 and manufactured after
      4/1/2006; also applies to engines reconstructed or modified after 7/1/2005
    • Requirements depend on manufacture date, displacement, and power
      – Displacement ≥ 30 L = NOx and PM emission testing
      – Displacement < 30 L = compliant engine or testing
    – Diesel requirements
    – Non-resettable hour meter
  – 40 CFR 60 Subpart JJJJ = SI RICE

• Requirements for New Emergency CI and SI RICE > 500 HP at major
  sources (12/19/2002)
  – No NESHAP requirements, but may have NSPS applicability
Hydrogen Sulfide Regulation

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Petition to List H2S as a Hazardous Air Pollutant

- CAA 112 – program for regulating emissions of hazardous air pollutants (HAP) from listed source categories
- CAA 112(d) – Requires EPA to promulgate emission standards reflecting maximum achievable control technology (MACT)
- Hydrogen sulfide (H2S) – erroneously included in the initial 112(b)(1) list of HAP
- Congress removed H2S from the list the following year
- H2S remains subject to regulation under CAA 112(r) accidental release provisions

Petition to List H2S as a Hazardous Air Pollutant

- HAP list –
  - EPA has an obligation to review the 112(b)(1) list periodically and to make changes as necessary
  - 112(b)(3) allows petitions to add/remove substances from the list
- In 22 years EPA has –
  - delisted two chemicals and removed a third from a group of listed chemicals
  - has not added any chemical to the list
- Mar 2009 – Sierra Club petitions EPA to add H2S to the list, claiming –
  - new scientific evidence shows central nervous system toxicity at relatively low ambient concentrations
  - H2S is defined as "toxic" in other regulatory programs (e.g., EPCRA)
Petition to List H2S as a Hazardous Air Pollutant

- June 2011 – Sierra Club notice of intent to sue; 180-day statutory wait period expired Dec 2011
- Lawsuit likely to settle with court-supervised schedule for EPA to act on the petition
- EPA seems likely to deny the petition based on Congressional intent not to require MACT for H2S
- Potential fallout –
  - If EPA denies the petition, litigation likely to follow
  - If EPA grants the petition or loses in court, agency would initiate rulemaking to amend HAP list
  - EPA would likely evaluate MACT for H2S as part of periodic review of existing rules
  - SSIs are not currently regulated under CAA 112

Toxics Release Inventory (TRI) Reporting

- 1993 – H2S placed on the TRI list of chemicals reportable under EPCRA section 313 – however, EPA administratively stayed H2S reporting in response to industry petitions
- Nov 2011 – EPA lifted the administrative stay – covered facilities are required to submit TRI reports for H2S beginning with the 2012 reporting year (reports due in 2013)
- EPA has issued guidance on reporting –
  - Reporting thresholds – 25,000 pounds for manufacturing and processing and 10,000 pounds for otherwise use
  - De minimis – H2S exempt in a mixture at a concentration lower than 1.0% (not an OSHA-defined carcinogen)
- Query – Possible interpretation that H2S emissions from POTW are not “manufacture, process or otherwise use”? – Is there an analogy to EPA’s guidance for remediation systems?

Biogenic Greenhouse Gas Regulation

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March 15, 2012
Greenhouse Gases: Monitoring/Reporting

- **Applicability:**
  - Stationary fuel combustion sources
  - Municipal solid waste landfills
  - Industrial WWT and landfills
- **Threshold:** 25,000 metric tons per year
- **Compliance:**
  - Biogenic emissions reported separately
  - Next reports due March 31, 2012 (April 2)
  - Full reports are required (no abbreviated reports for stationary fuel combustion units)

Greenhouse Gases: Permitting

- **Traditional Permitting:**
  - Newly constructed sources with a potential to emit (PTE) at least 100 tpy of any air pollutant must obtain a Title V permit to operate
  - Existing sources with a PTE of 100/250 tpy that make certain changes resulting in significant net emission increases must obtain a Prevention of Significant Deterioration (PSD) permit and apply Best Available Control Technology (BACT)

- **GHG Permitting:**
  - EPA determined these thresholds were unworkable for GHGs and adjusted the thresholds with the Tailoring Rule
    - July 1, 2011 – June 20, 2013:
      - New construction projects emitting GHGs of 100,000 tpy must obtain Title V operating permit
      - Modifications resulting in GHG emissions increase of 75,000 tpy must obtain a PSD permit and employ BACT
    - July 1, 2013 forward:
      - EPA has proposed retaining the current thresholds
      - Sources emitting <50,000 tpy of GHG will not trigger permitting until at least April 30, 2016
  - EPA authority for GHG regulation and Tailoring Rule challenged in D.C. Circuit (Coalition for Responsible Regulation v. EPA, Oral Arguments February 2012)

Greenhouse Gases: Permitting for Biogenic Sources

- **PSD and Title V GHG permitting for biogenic GHG emissions deferred until July 2014**
- **Biogenic GHG Emissions:**
  - GHGs directly resulting from the combustion or decomposition of non-fossilized biodegradable organic material
    - Decomposition of waste in landfills, wastewater treatment or manure management and combustion of the resulting biogas
    - Combustion of municipal solid waste or biosolids
  - Deferral for biogenic GHGs does not relieve sources of traditional permitting obligations for other pollutants
    - For co-fired units, non-biogenic portion must be evaluated for permitting applicability
Questions and Answers

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