



**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, PM_{2.5}, CO, Pb, O₃ (VOC+NO_x))
- 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
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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
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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.
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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 MHLs and 8 FBIs; while EPA used as few as 4 MHLs 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

Pollutant	NEW		EXISTING	
	MH	FBI	MH	FBI
PM	60 mg/dscm	90 mg/dscm	80 mg/dscm	18 mg/dscm
HCl	1.2 ppm	0.24 ppm	1.2 ppm	0.51 ppm
CO	52 ppm	27 ppm	300 ppm	64 ppm
DT (total dust) or DF (TKQ)	0.041 ng/dscm or 0.0022 ng/dscm	0.013 ng/dscm or 0.0004 ng/dscm	5.0 ng/dscm or 0.32 ng/dscm	1.2 ng/dscm or 0.10 ng/dscm
Hg	0.15 mg/dscm	0.0010 mg/dscm	0.25 mg/dscm	0.037 mg/dscm
NOx	210 ppm	30 ppm	220 ppm	150 ppm
SO ₂	20 ppm	5.3 ppm	20 ppm	15 ppm
Cl ₂	0.0024 mg/dscm	0.0011 mg/dscm	0.095 mg/dscm	0.0010 mg/dscm
Pb	0.0035 mg/dscm	0.00062 mg/dscm	0.30 mg/dscm	0.0074 mg/dscm
Fugitive – Ash Handling ¹	No VI observed for > 5% of hour	No VI observed for > 5% of hour	No VI observed for > 5% of hour	No VI observed for > 5% of hour

¹The SSI rule requires that fugitive ash handling equipment meet new fugitive visible emissions (VI) for more than 5% of one hour using Method 22. The method requires observations of the presence or absence of VI for one hour. Compliance is demonstrated if no more than 5% of these observations (3 minutes in the aggregate) indicate the presence of VI from the fugitive ash handling system. The SSI rule requires three one-hour observation periods.

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 ≥ 10 tpy of any hazardous air pollutant (HAP) or
 - Potential emissions ≥ 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 JJJJJ)

- 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 ≤ 120 gallons heating water
 - Withdrawn for external use at pressures not exceeding 160 psig
 - Water temperature does not exceed 210°F
 - 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)
 - Energy assessment & Emission limits: March 21, 2014

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

- Area Source Requirements
 - Emission Limits
 - Existing Coal ≥ 10 mmBtu/hr (Hg, CO)
 - New Coal ≥ 10 mmBtu/hr (PM, Hg, CO)
 - New Oil and Biomass ≥ 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 ≥ 10 mmBtu/hr
 - All new and existing Coal, Oil, and Biomass < 10 mmBtu/hr
 - » Exception: Oil-fired ≤ 5 mmBtu/hr every 5 years
 - Energy Assessment for Existing Coal, Oil, and Biomass ≥ 10 mmBtu/hr

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

- Applicability – located at a major source ($\geq 10/25$ 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 110% 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 - 29 MW (10-100 mmBtu/hr) constructed after June 9, 1989
 - Different requirements apply for units constructed after February 28, 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 NO_x
 - States apply presumptive NO_x 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 IIII = CI RICE
 - Applies to engines constructed (ordered) after 7/11/2005 and manufactured after 4/1/2006; also applies to engines reconstructed or modified after 7/11/2005
 - 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
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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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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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