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BIO-SOLIDS INCINERATION AND THE CLEAN AIR ACT: Current and Future Regulations

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Biosolids Incineration Today

- Increasing cost/risk for land application
- Increasing fuel costs for transportation
- High temperature biosolids disposal option
- PLUS
 - Steam/heat
 - Cogeneration
 - Renewable energy credits

The History of Bio-Solids Incinerator Regulation -- Federal

1974 CAA New Source Performance Standard for
Sewage Treatment Plants (Part 60, Subpart O)

- Particulate Matter 1.30 lb/ton of dry sludge
- 20% Opacity limit
- Monitoring, recordkeeping, reporting and testing

1993 CWA Standards for Use or Disposal of Sewage
Sludge (Part 503, Subpart E: “incineration”)

- Beryllium 10 grams/24 hr (Part 61, Subpart C)
- Mercury 3200 grams/24 hr (Part 61, Subpart E)
- Lead site specific limit based on NAAQS modeling
 - new lead NAAQS (eff. 2009) is .15 (was 1.5)
- Arsenic, Cadmium, Chromium, Nickel site-specific, risk-based limits
- Hydrocarbons or CO <100 ppm
- Monitoring, recordkeeping, reporting and testing

New Bio-Solids Incinerators

- Location – Size -- Attainment Status
 - State regulations vary and can be more stringent than federal
 - Major versus minor source
 - Nonattainment areas do not consider your cost of control
- Source-specific permit requirements that impose state-of-the-art control technologies:
 - New/modified + Major + Nonattainment = LAER
 - New/Modified + Major + Attainment = BACT
 - New + Major HAP Source = MACT
 - Existing Source + Nonattainment = RACT
 - New/Modified + Non-Major = State BAT or Rule

Potential Federal Bio-Solids Incinerator Regulations

EPA is at a crossroad:

- Option 1: regulate bio-solids incineration under Clean Air Act § 112 as a HAP source.
- Option 2: regulate bio-solids incineration as solid waste incineration under Clean Air Act § 129.

Major Differences Between § 112 and § 129

- Section 129 does not differentiate between major sources and smaller non-major sources.
- Section 129 regulates more pollutants.
- Section 129 limits are less flexible.
- Section 129 imposes more stringent control technology.

Major vs. Non-Major Sources

- Section 112 distinguishes “major” sources from non-major “area” sources.
 - Major = >10 tpy of any HAP; >25 tpy of all HAP.
 - Most bio-solids incinerator facilities are below these thresholds.
- Section 112 Area Sources have more flexibility in how they achieve emission reductions.
- Section 129 does not have a major source threshold.
 - EPA may categorize based on size, type or class of incinerator when determining emission limits.

Clean Air Act §§ 112 and 129

Differences Regulated Pollutants

§112

Includes (among 189 listed pollutants)

- Lead Compounds
- Cadmium Compounds
- Mercury Compounds
- Hydrogen Chloride
- Chromium Compounds
- Nickel Compounds
- Arsenic Compounds
- Beryllium Compounds

Emissions limitations may be determined by surrogates (i.e., CO emissions limits used to control all organic emissions).

§129

11 listed pollutants

- Lead
- Cadmium
- Mercury
- Hydrogen Chloride
- Opacity
- Particulate matter
- Sulfur Dioxide
- Oxides of nitrogen
- Carbon monoxide
- Dioxins
- Dibenzofurans

Flexible Limits

- Section 129 limits are less flexible:
 - numerical emission limitations
 - Post-combustion surrogates
 - Operating parameters
- Section 112 Area Source Standards:
 - May use management practices in lieu of limits
 - e.g., mercury source reduction practices

Clean Air Act §§ 112 and 129

Differences in Required Control Technology

- New Sources:
 - Section 129 and 112 Major Source = Best Controlled Similar Source.
 - Section 112 Area Source = Generally Available Control Technologies or Work Practices.
- Existing Sources:
 - Section 129 and 112 Major Source = Average Numeric Emission Limitation achieved by top performing 12%.
 - Section 112 Area Source = Generally Available Control Technologies or Work Practices.

Bio-Solids Incinerators are not § 129 Solid Waste Incineration Units

Section 129 applies to “Solid Waste Incineration Units”

“... combusts any ***solid waste*** material from commercial or industrial establishments or the general public (including single and multiple residences, hotels, and motels).”

- (1) Bio-solids are not ***solid waste***.
- (2) Bio-solids are not from the general public.
- (3) Bio-solids are not from a commercial or industrial establishment.

Waste Water Treatment Plant Incinerators and “Solid Waste”

- Section 129 definition of solid waste borrows from SWDA:
(42 U.S.C. § 6903(26A))
- Expressly excludes solid or dissolved material in domestic sewage:
 - If the dissolved material is not solid waste during transport through the sewer system, the material that arrives at the treatment plant cannot be a “solid waste material” from the general public or from a commercial or industrial establishment.
 - The public wastewater treatment plant is also not a commercial or industrial establishment or the general public.
 - Therefore, incinerators used to combust biosolids generated from a Clean Water Agency wastewater treatment process are not “Solid Waste Incineration Units” regulated by CAA § 129.

What to watch --

- U.S. EPA is currently revising the definition of “solid waste” in the Commercial, Industrial Solid Waste Incinerator (CISWI) rulemaking.
- This definition will impact the Other Solid Waste Incinerator (OSWI) categories, which is where U.S. EPA evaluated bio-solids incinerators previously for CAA § 129 regulation.



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