

AIR PERMITTING: COMBUSTION OF BIOMASS

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Federal Regulations Affecting Biomass:

- Federal definitions of “biomass” and “solid waste”

- Maximum Achievable Control Technology (MACT)
 - 40 CFR Part 63
 - Controls Hazardous Air Pollutants (HAPs)
 - Co-benefit of controlling some criteria pollutants

- New Source Performance Standards (NSPS)
 - 40 CFR Part 60
 - Controls criteria pollutants

Federal: Fuel vs. Solid Waste

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First question: Is my biomass material a fuel or a solid waste?

- If biomass is defined as a fuel, then the unit is a boiler.

- If biomass is defined as a solid waste, then the unit is an incinerator.

- See [40 CFR Part 241](#) (Effective May 20, 2011)
(and as guidance in the [Federal Register](#))

Federal: Fuel vs. Solid Waste

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- Overall, if the biomass material meets the legitimacy criteria, it can be considered a fuel in combustion.
 - Must be managed as a valuable commodity.
 - Valuable commodity - Are managed in the same manner as materials that have been purchased or obtained at some cost, just as fuels or raw materials are.
 - Storage does not exceed reasonable time frames and is contained
 - Must have a meaningful heating value (generally 5,000 Btu/lb, as-fired, accounting for moisture).
 - Must contain contaminants at levels comparable in concentration to or lower than those in traditional fuels which the combustion unit is designed to burn.

Federal: Fuel vs. Solid Waste

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- For Warm Season Grasses and Sawdust:
 - Is considered “clean cellulosic biomass”, which means it is a “traditional fuel”. Therefore, these two biomass materials are considered a fuel, not a solid waste.

If Biomass Material is a Fuel

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If biomass is defined as a fuel, then the unit is a boiler:

□ New Boiler MACTs

□ One for major sources of HAPs

- MACT, Subpart DDDDD (5D)
- PTE greater than 10 tons/yr of an individual HAP and/or 25 tons/yr of combined HAPs
- Currently the regulation is stayed, meaning it is not in effect.

□ One for area sources of HAPs

- MACT, Subpart JJJJJ (6J)
- PTE less than 10 tons/yr of an individual HAP and/or 25 tons/yr of combined HAPs
- The regulation is final as of May 20, 2011

If Biomass Material is a Fuel

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- Major Source Boiler MACT
 - ▣ Not sure what standards will be since the MACT has been stayed.
- Area Source Boiler MACT
 - ▣ Must burn 15% or more of biomass annually to be considered in the biomass category.
 - ▣ Existing = on or before June 4, 2010; New = after June 4, 2010

Type of Biomass Boiler	Size (MMBtu/hr)	Standards	Compliance Dates
New	Between 10-30	0.07 lb PM/MMBtu	Upon startup
New	30 and greater	0.03 lb PM/MMBtu	Upon startup
Existing and new	All sizes	Conduct a tune-up of the boiler biennially	March 21, 2012
Existing	10 and greater	One-time energy assessment	March 21, 2014

If Biomass Material is a Solid Waste

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If biomass is defined as a solid waste, then the unit is an incinerator:

- Existing NSPS for Commercial and Industrial Solid Waste Incineration (CISWI) Units
 - ▣ NSPS, Subpart CCCC
 - ▣ Amended CISWI regulation proposed but has been stayed, meaning the amended CISWI regulation is not in effect and the existing CISWI regulation is in effect.
- Multiple NSPSs for Incinerators which may apply

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- Two construction permit options for biomass sources:
 - Normal Minor/Major NSR Process
 - New Biomass Pilot Test Facility General Permit

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- The Biomass GP is optional! A facility always has the option to go through the normal new source review (NSR) process.
- If a facility is using a biomass material where there are current, reliable emission factors or the facility already has stack test data for their qualified energy generator using that biomass material, the biomass general permit should not be used and the facility should go through the normal NSR process.

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- Biomass Pilot Test Facility General Permit
 - ▣ Only for new sources
 - ▣ Only for minor sources
 - ▣ Can't be subject to Section 129 of the Clean Air Act, i.e. can't be an incinerator
 - ▣ (i) Generate 5 MW or less of electricity, or that produces the equivalent amount of energy in the form of fuel, steam, or other energy product; (ii) that is generated or produced solely from biomass; and (iii) that is sold to an unrelated person or stationary source or used in a manufacturing process.

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- Encountered many challenges:
 - ▣ Lack of data from stack test results or emission factors for most of materials in definition
 - ▣ Emission factors are used to determine potential emissions and permit applicability
- Created a general permit to construct and test a biomass pilot test facility:
 - ▣ 18 months to construct
 - ▣ 15 months to perform all testing
 - Certified fuel test
 - Stack test
 - Visible emission evaluation
 - ▣ Based on test results, facility receives an exemption or has to submit a Form 7 application for a NSR permit

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□ Legislative definition of “Biomass”

Biomass means organic material that is available on a renewable or recurring basis, including:

1. Forest-related materials, including uncontaminated mill residues, logging residues, forest thinnings, slash, brush, low-commercial value materials or undesirable species, and woody material harvested for the purpose of forest fire fuel reduction or forest health and watershed improvement;
2. Agricultural-related materials, including orchard trees, vineyard, grain or crop residues, including straws, aquatic plants and agricultural processed co-products and waste products, including fats, oils, greases, whey, and lactose;
3. Animal waste, including manure and slaughterhouse and other animal processing waste;
4. Solid woody waste materials, including landscape trimmings, waste pallets, crates and manufacturing, construction, and demolition wood wastes, excluding pressure-treated, chemically treated or painted wood wastes and wood contaminated with plastic;
5. Crops and trees planted for the purpose of being used to produce energy;
6. Landfill gas, wastewater treatment gas, and biosolids, including organic waste byproducts generated during the wastewater treatment process; and
7. Municipal solid waste, excluding tires and medical and hazardous waste.

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Recent determinations by EPA related to biomass:

- What is Considered a Fuel:
 - ▣ Process Fats
(including both animal fats and vegetable oils)
 - ▣ Resinated Wood
- What is Considered a Solid Waste:
 - ▣ Municipal Solid Waste
 - ▣ Sewage Sludge
 - ▣ Animal waste (including manure, poultry litter, etc.)
 - Can be a fuel if it meets certain criteria

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□ General Permit:

- Approved by the Air Pollution Control Board on March 18, 2011
- Issued and final on May 25, 2011

□ Biomass Website:

http://www.deq.virginia.gov/air/permitting/documents/Biomass_Info.pdf

Questions?

