



Biomass Workshop

Air Quality Permitting

5/1/08

Topics



- Permit requirements
- Emission estimates
- Design Considerations
- Land Use Approval

Permit Requirements



- Permit required if maximum projected emissions greater than 10 tons per year of any pollutant:
 - Particulate Matter (PM)
 - Sulfur dioxide (SO₂)
 - Nitrogen oxides (NO_x)
 - Carbon monoxide (CO)
 - Volatile organic compounds (VOC)

Permit Requirements



- Permit required if heat input equal to or greater than 10 million Btu per hour.
 - Manufacturer's specifications (boiler nameplate capacity)
- If neither of the above are true, a permit is not required, but a Notice of Intent to Construct is required.

Permit Requirements



- Boiler size estimates that will require a permit:
 - wood residue fuel = 3.8 million Btu/hr (approx. 770 lbs/hr @ 45% moisture)
 - pellet fuel = 4.9 million Btu/hr (approx. 680 lbs/hr @ 20% moisture)
 - clean, dry chips = 10 million Btu/hr (1530 lbs/hr @ 20% moisture)

Permit Requirements



- Types of Permits:
 - Simple Air Contaminant Discharge Permit (emissions less than significant emission rate)
 - \$9,840 (3 to 6 months to issue)
 - Standard Air Contaminant Discharge Permit (emissions equal to or greater than significant emission rate)
 - \$ 25,680 (4 to 8 months to issue)

• Dirty hog fuel makes it difficult to keep up with standards. The cleaner the chips the more likely the emission issues will decrease.

Permit Requirements



- Significant Emission Rates (tons/yr):
 - PM = 25
 - PM₁₀ = 15
 - SO₂ = 40
 - NO_x = 40
 - CO = 100
 - VOC = 40

Permit Requirements



- Notice of Intent to Construct
 - No fees
 - Project description (plot plans)
 - Boiler specifications
 - Emission estimates
 - 60 day approval period

Emission Estimates



- Best available data
 - Actual Stack Test Data
 - Emission factors
 - DEQ
 - AP-42 (EPA compilation of emission factors)
- Maximum projected emissions (hours of operation and highest operating rate)

Emission Estimates



- DEQ factors without controls (lb/1000 lb steam):
 - Particulate matter (PM) = 0.40
 - Sulfur dioxide (SO₂) = 0.014
 - Nitrogen oxides (NO_x) = 0.31
 - Carbon monoxide (CO) = 1.0 to 3
 - Volatile organic compounds (VOC) = 0.13

Design Concerns



- Quality of fuel
- Complete combustion
- Stack height/location (downwash effects)
 - GEP (approx. 2.5 times building height)
- Visible emissions (20% opacity limit)
- Hazardous Air Pollutants
 - Acrolein, formaldehyde, hydrogen chloride, polycyclic organic material, metals

•Stack issues – you don't want to have any direct impact on people and kids. If you don't have the correct methods the waste can spill over the stack. No visible emissions would be the best of both worlds (visibly for the public and for their concerns). Note – there are hazardous materials coming out of the stack besides the ones that are listed and documented. The better the combustion the lower the emissions.

Land Use Approval



- Land Use Compatibility Statement (LUCS)
 - required for a permit or notice of intent to construct
 - county or city planning department
 - must be included with applications

Contact DEQ



- Mark Fisher
 - Fisher.mark@deq.state.or.us
 - (541) 388-6146 x275
- Web pages:
 - Permitting:
<http://www.deq.state.or.us/aq/permit/acdp/acdp.htm>
 - EPA emission factors:
<http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s06.pdf>