

# Air Permitting for Michigan Bioenergy Projects

## Considerations and Requirements

### MWEA “Biosolids and Energy”

March 3, 2009

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# Why focus on air quality?

- Most WWTP operations do not need air permits
- Significant technology and design consideration
- Can require significant lead time prior to construction
- “Green energy” does not mean emission-free



# Background

- Federal Clean Air Act and Michigan Air rules define a “Stationary Source” as all buildings, structures, facilities, or installations which emit or have the potential to emit 1 or more air contaminants...
- Potential to Emit defined as Maximum rated capacity; 8,760 hour/year.

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# Background (continued)

Air contaminant categories:

- Criteria Pollutant (VOC, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM, Lead)
- Hazardous Air Pollutant (187)
- Toxic Air Contaminant (Michigan)



# Current Regulatory Status- Permitting Considerations

- Most industrial/manufacturing and some municipal processes and/or equipment requires an air permit unless specifically exempted or it does not have the potential to emit (PTE) an air contaminant.

# Potential Projects and Air Permits

## Subject to case-by-case review...

- Biosolids incineration: yes
- Piping biogas for offsite use: no
- Use of biogas in a flare/boiler: yes, if  $\text{SO}_2 > 1 \text{ lb/hr}$
- Use of landfill gas in combustion unit: possible



# Potential Projects and Air Permits (cont'd)

## Subject to case-by-case review...

- Sludge Dryers/other heat treatment: yes
- Odor control equipment: yes
- Landfills and associated flares: no
- In general, emergency generation treated differently than peak sharing or generating power to feed into grid

# Potential Projects and Air Permits (cont'd)

- Generators

Use of biogas in one generator:	No if heat input rating < 10E6 MMBtu, based on state exemption	Yes if heat input >10E6 MMBtu, “significant” actual use
Use of biogas in 2 or more generators	Possible, depending on size of generators	



# Air Permitting Flow Path

- Estimate emissions
- Determine applicable requirements
- Air toxics analysis & dispersion modeling
- Control Technology Analysis
- Permit application, review and negotiation
- Plan 3-6 months to prepare application
- Plan for MDEQ 6-12 months to review



# Estimating Emissions

- Know your sulfur or sulfate content!
- NO<sub>x</sub> varies on fuel source, actual operation
- Published emission factors for combustion
- Mass balance for metals and chlorinated compounds

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# Air Permits

- Air Permit in Michigan= Permit to Install or PTI
- Michigan usually considers federal rules in its permits
- PTI exemptions exist for defined low emission sources
- Other state or federal rules can apply, even if PTI not required

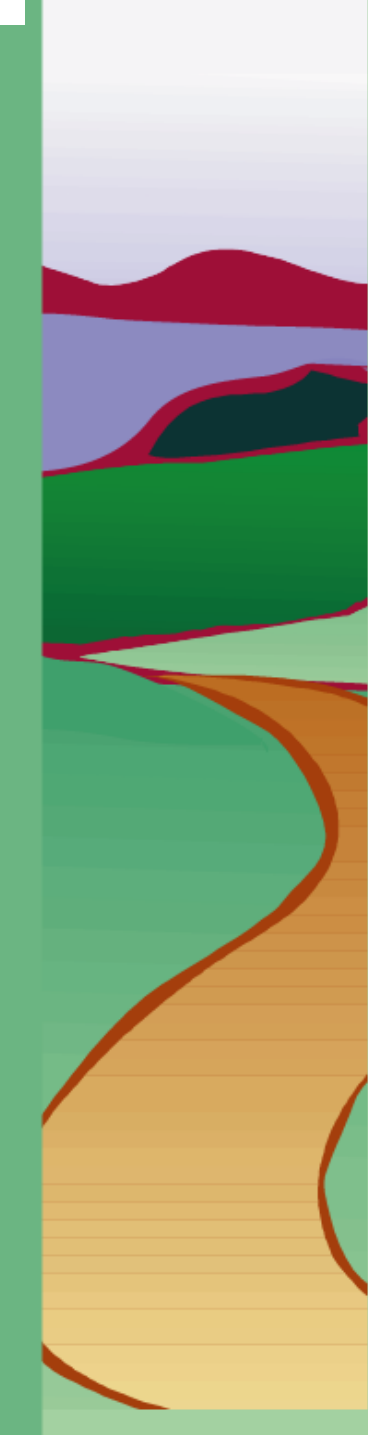
# Significant Emissions of Criteria Pollutants (Michigan)

- If actual emissions exceed:

Pollutant	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM	PM-10	VOCs	Lead
Emission (ton/yr)	100	40	40	25	15	40	0.6

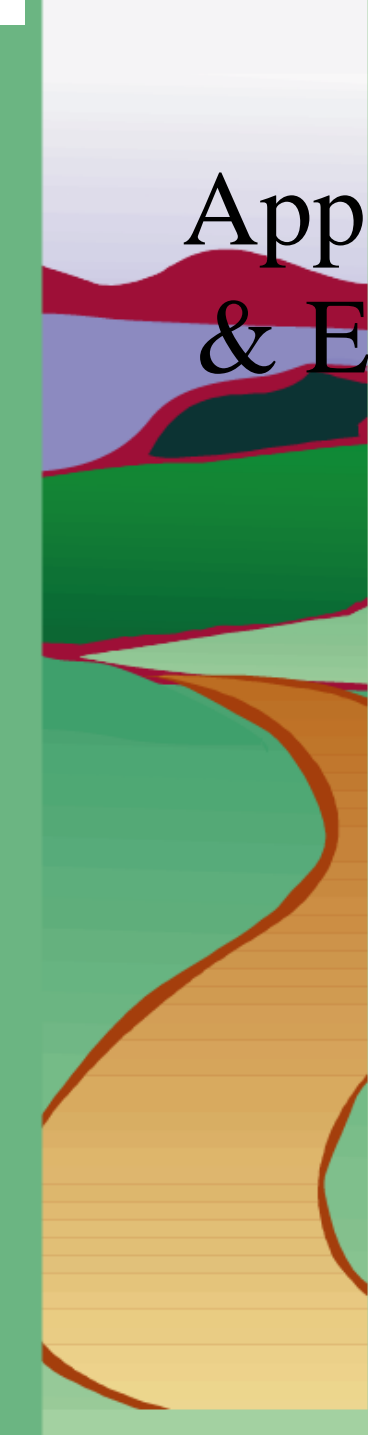
Then, air permit required for “exempt” sources

- For Example: A 2 MW diesel fired generator which operates over 400 hrs per year will exceed this level: not exempt



# Applicable Requirements for Permit & Exempt Sources: New Source Performance Standards

- Federal NSPS regulations 40 CFR 60 may apply regardless of permitting status or location
- Based on Process and Installation Date.
- Define Notifications, Equipment Standards, Fuel Specs, Emissions Standards, Reporting & Record-Keeping.
- Potentially pertinent standards include:
  - Steam Generating Boilers >10 MMBtu/hr
  - Stationary Gas Turbines
  - Sewage Treatment Plants (Sludge Incinerators)
  - Fuel Tanks >12,000 gallons



# Applicable Requirements for Permit & Exempt Sources: additional rules

- Incineration regulated by Part 503 of the Federal water rules, setting metals standards and requiring continuous emission monitoring
- Mercury and Beryllium NESHAP
- Michigan Rule 407: Wayne County sources <300 ppmV
- Michigan Part 8 rules: may apply to NO<sub>x</sub> emissions for sources > 250 MMBtu



# Major Sources (Federal)

- Potential emissions of >100 tons per year of criteria pollutants.
- Potential emissions of > 10 tons per year of any individual hazardous air pollutant (HAP).
- Potential emissions of > 25 tons per year of any combination of HAPs.
- Not all air permitted sources are major, but *all major sources must have an air permit.*

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# Applicable Requirements for Major Permitted Sources

- MACT standards apply to major sources which have the potential to emit 10 tons or more of any one HAP or 25 tons or more of total HAPs. (smaller “area” sources can be regulated)
- Renewable Operating Permits (Title V) require semi-annual certification



# How to find more information

- MDEQ Clean Air Assistance Program – fact sheet on anaerobic digesters
- WEFTEC
- Air & Waste Management Association
- Michigan Department of Agriculture – more on digesters



# Climate Change

- Bioenergy projects can improve carbon footprint



# Recommendations

- Evaluate emissions during design phase
- Create documentation if an air permit not required
- Public communication and involvement
- Provide ample time to prepare permit application and await permit issuance



# Questions and Answers