

### Description

- This document was created late in 2007 in response to a proposal for a wood burning incinerator in Minneapolis, Minnesota. (I served as a consultant to community organizations.)
- The emissions information comes from a draft permit for the facility developed by Minnesota regulators, who had every intention of issuing a permit until community opposition prevailed. The project has since been chased out of other locations in Minnesota.
- Some of the information is Minnesota-specific but most applies to wood burners generally.
- Note that this document does not address climate change aspects. However, it is well-established that wood burners are not "carbon neutral and in fact emit more, not less, carbon than fossil fuels.
- For more information see another presentation: ecopolluter1.pdf, also posted at greendel.org

### "ECO" burner emissions of Criteria pollutants

- |                           |                          |
|---------------------------|--------------------------|
| • NOx                     | • 160 tons (320,000 lbs) |
| • SO2                     | • 40 tons (80,000 lbs)   |
| • Ozone (O3)              | • (not emitted directly) |
| • CO                      | • 160 tons (320,000 lbs) |
| • Lead                    | • 150 lbs (also a "HAP") |
| • Particles (dust)        | • 36 tons (72,000 lbs)   |
| – PM-10                   | • -- 65 tons (130,000)   |
| – PM 2.5 (the latest one) | • (included in above?)   |

### "Eco" "Hazardous Air Pollutants"

- |                     |              |
|---------------------|--------------|
| • Hydrogen Chloride | • 61,000 lbs |
| • Formaldehyde      | • 13,800 lbs |
| • Benzene           | • 13,200 lbs |
| • Manganese (metal) | • 4,800 lbs  |
| • Chlorine          | • 2,400 lbs  |
| • Sulfuric Acid     | • 1200 lbs   |
| • Arsenic           | • 69 lbs     |
| • Beryllium         | • 3.4 lbs    |

### "Eco" "Hazardous Air Pollutants" Cont.

- |                      |             |
|----------------------|-------------|
| • Cadmium            | • 13 pounds |
| • Carbon Tet         | • 143 lbs   |
| • Chlorobenzene      | • 104 lbs   |
| • Chromium           | • 9 lbs     |
| • Lead               | • 150 lbs   |
| • Mercury            | • 5.5 lbs   |
| • Methylene Chloride | • 902 lbs   |
| • Nickel             | • 11 lbs    |

### "Eco" "Hazardous Air Pollutants" Cont.

- |   |                           |
|---|---------------------------|
| • Phenol  | • 159 lbs                 |
| • Styrene   | • 5840 lbs                |
| • Vinyl Chloride                                  | • 58 lbs                  |
| • 2,3,7,8 ... dioxin (what are "total dioxins??") | • 0.02 grams ???          |
| • Various others ...                              | • Varies ...              |
| • Total "HAPs"                                    | • 55.6 tons (111,200 lbs) |

### In addition there are "VOCs"

- VOCs ("Volatile Organic Compounds") are officially neither "criteria" or "hazardous" pollutants.
- "Midtown" says it would put out 27 tons of VOCs (54,000 pounds) per year.

## In addition there will be emitted

...

- 110,000 thousand pounds per year of ammonia

(This is actually a consequence of the measures taken to control “NOx” and is mostly counted with the “PM-2.5)

## Pollution from truck traffic is greatly underestimated

- The average number of trucks per day is 28 (maximum per day 44)
- These emit toxic Diesel pollutants and also raise dust
- MPCA only counts trucks while driving on the site—about 800 ft per trip.

## Total emissions over one million pounds per year

- Why so much?
- Wood is actually a “dirty” fuel:

	Carbon dioxide	Sulfur dioxide	NOx	PM	Mercury
Natural Gas	1192	0.005	1.2	0.07	$1 \times 10^{-8}$
RDF	5870	1.0	9.6	0.22	$6923 \times 10^{-8}$
Biomass	3910	0.6	8.1	1.36	$1316 \times 10^{-8}$

Leaflet from Xcel Energy