

Neighbors Against the Burner



Should the “HERC” burn more garbage?



Neighbors Against the Burner
(<http://www.neighborsagainsttheburner.org/>)
Alan Muller/Tom Welna
July 21, 2009

Increase in burning sought:

- Present limit:
 - 1000 tons per day / 365,000 tons per year
- Increase requested to:
 - 1212 tons per day / 442,380 tons per year
- Theoretical increase is 21% (77,380 tons)
 - Covanta says actual increase would be less (10–12%) due to downtime for maintenance

Claims made for incineration can sound good, but do they stand up to examination?

- ❑ Avoid dumping (landfilling) garbage?
- ❑ “Convert” garbage into “green” electricity?
- ❑ “No significant pollution”
- ❑ Ash is harmless—can be recycled

What does the HERC actually do?

- ❑ Burns garbage
- ❑ Makes some electricity via steam turbine (**but most btus in garbage are derived from fossil fuel**)
- ❑ Can provide some steam for heating (recent modification)
- ❑ Makes health-damaging , life-threatening air pollution
- ❑ Contributes to global warming
- ❑ Diminishes incentives and financial resources for recycling and waste reduction

“Material (Mass) Balance”



- ❑ What goes in, comes out.
- ❑ Every atom of garbage fed to the burner comes out, as ash or stack gases.
- ❑ Nothing disappears, or is “converted into electricity.”

- Elements, such as Mercury or Arsenic, can't be destroyed—may form new combinations.
- Chemical compounds, such as dioxins, are created during the combustion process or in the air pollution control equipment.

What's in the garbage burned at the HERC?



Source:

“SOLID WASTE COMPOSITION STUDY
EXECUTIVE SUMMARY AND TEST REPORT
COVANTA HENNEPIN ENERGY RESOURCE COMPANY, L.P.
DATE: September 14, 2007”

Table 2.2
Weight Fractions of Each Individual Fraction Present in MSW

Fraction	Sample	Top Fines	Bottom Fines	Non-reparables	Total (lbs)	Wt%
Paper – Newsprint & Inserts	818.2				818.2	4.1%
Paper – Mail, Office & School	527.3				527.3	2.7%
Paper – Magazines & Catalogs	617.9				617.9	3.1%
Paper – Phone Books	746.8				746.8	3.8%
Paper – Other	891.6	0.0	41.1	0.0	932.7	4.7%
Cardboard – Corrugated / Boxes	724.4				724.4	3.6%
Cardboard – Box Boards	661.1				661.1	3.3%
Cardboard – Other	632.7	0.0	20.5	0.0	653.2	3.3%
Plastic – HDPE	843.6				843.6	4.2%
Plastic – PET	633.0				633.0	3.2%
Plastic – Other	1296.1	0.0	20.5	0.0	1316.6	6.6%
Organic Material	5611.3	0.0	20.5	14.6	5646.4	28.4%
Electronics – CRT	68.3				68.3	0.3%
Electronics – non-CRT	293.9				293.9	1.5%
Solid Wastes Containing Mercury	0.0	0.0	0.0	0.0	0.0	0.0%
Household Hazardous Waste	37.0				37.0	0.2%
Ferrous Metals	312.1	0.0	20.5	0.0	332.6	1.7%
Non-Ferrous Metals – Aluminum	346.2				346.2	1.7%
Non-Ferrous Metals – Other	447.7	0.0	20.5	0.0	468.2	2.4%
Glass	826.5	0.0	41.1	0.0	867.6	4.4%
Inorganic Material	3112.6	0.0	225.9	0.0	3338.5	16.8%
Major Appliances	0.0				0.0	0.0%
Total	19448.3	0.0	410.8	14.6	19873.7	100.0%

The Basic Chemical Composition of our Garbage

Table 2.7
Ultimate Analysis (As Incinerated)

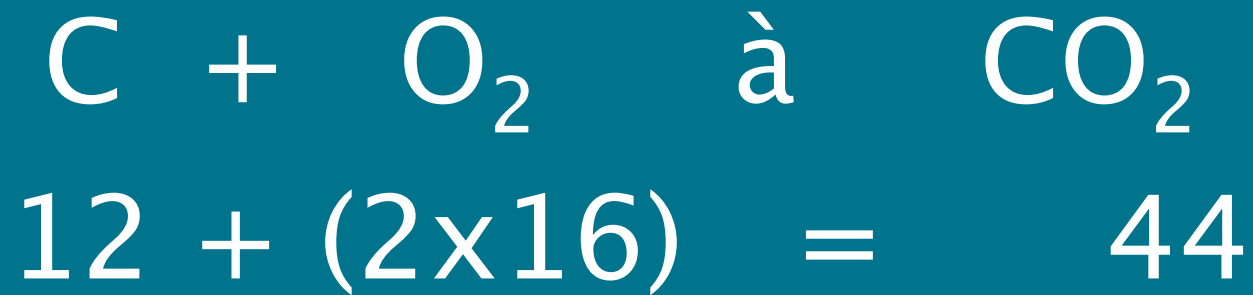
Analyte	Result as Incinerated
Total Moisture	26.43%
Ash ³	3.16%
Carbon	14.14%
Hydrogen	3.94%
Nitrogen	0.10%
Total Sulfur	0.02%
Chlorine	0.05%
Oxygen (by Difference) ⁴	25.22%
Non-Combustibles	26.94%
Total	100.00%

This is what burns:

- Hydrogen 4 %
- Carbon 14%
- Total 18%

- The other 82% is essentially “inert”

Combustion of carbon

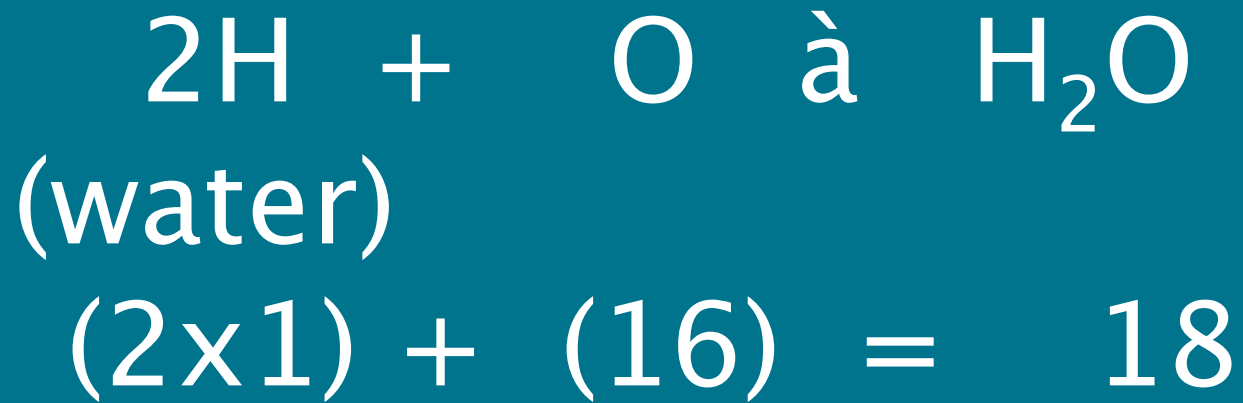


$$44 / 12 = 3.67$$

For every pound of carbon in the garbage that we burn (minus carbon left in the ash due to incomplete combustion), 3.67 pounds of carbon dioxide go up the smokestacks.



Combustion of hydrogen:



$$18 / 2 = 9$$

For every pound of hydrogen in the garbage that we burn (minus that left in the ash due to incomplete combustion), 9 pounds of water vapor go up the smokestacks.



HERC CO₂ emissions

- 365,000 tons of garbage burned
- times 14.14% carbon
- = 51,611 tons of carbon burned
- Minus residue in ash of +/- 6800 tons
- = 44811 tons of carbon burned
- times 3.67 = **164,456 tons (329 million lbs)**
of CO₂ up the stacks

Ash assumptions

- ❑ Ash weighs 25% of weight of garbage burned (Wenck, 2005)
- ❑ Ash contains 8% “combustibles” (Wenck, 2005)
- ❑ Some metals are separated from ash & recycled

HERC CO₂ emissions increase from proposed burning increase

- 77,380 tons more garbage burned per year
- times 14.14% carbon
- minus residue in ash of 13.2%
- times 3.67 = **34,855 tons (70 million lbs)**

MORE CO₂ up the stacks annually

Incineration isn't "cool"



Incinerators contribute to
global warming

The ash problem

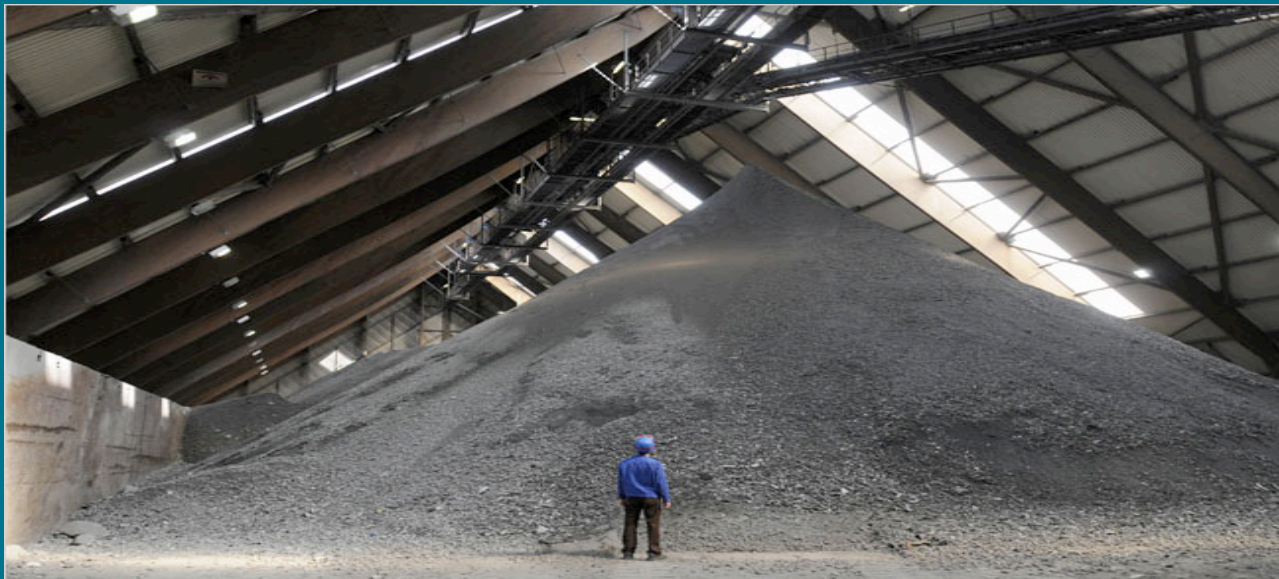
“HERC’s combustion of approximately 365,000 tons per year of mixed municipal solid waste results in a generation of approximately **90,000 to 95,000 tons per year of combined ash**. This combined ash is comprised of 85 percent bottom ash and 15 percent fly ash, by weight.” (Source: Request for Demonstration Approval: MWC Ash as Aggregate ..., Feb. 2005.)

The ash problem

- ❑ For every ton of garbage burned, there are 500 pounds of ash to deal with
- ❑ The ash contains many harmful, health-damaging and poison substances
- ❑ The ash is a fine powder that can be inhaled by workers and the public
- ❑ EPA requirements for ash management are inadequate

The ash problem

- When air pollution control is improved, more toxins such as Mercury tend to end up in the ash.
- (Again: Mass Balance—everything has to go somewhere.)



HERC ash has been exported to:

- Iowa
- Illinois (2 sites)
- North Dakota
- Wisconsin

Do we want more of this ash?

The requested increased burning could mean:

- 77,380 tons more garbage burned per year
- Times .25 = **19,345 tons (39 million pounds) per year more ash generated**

HERC ash:

- ❑ Attempts have been made to dispose of it by mixing into “blacktop”
- ❑ It’s now being dumped in Rosemount, MN
- ❑ Incinerator ash, like nuclear waste, is a problem best solved by not making it.

HERC air emissions

- Reported average emissions of regulated air pollutants are about 1.4 million pounds per year
- Regulated air pollutants DO NOT include some of the deadliest substances such as dioxins and ultrafine particles

(Data from MPCA online emissions inventory data 1990 to 2007; Data have some omissions and possible errors)

Emissions allowed by permit:

About 2.9 million pounds per year
(Reported “actual” emissions are less)

Approximate average emissions (examples, pounds per year):

□ NO _x	960,000
□ SO ₂	42,000
□ Particulate Matter	57,000
□ VOC	12,000
□ Mercury	20
□ Arsenic	15

HERC dioxin emissions

In 2002, the HERC self-reported emitting 51.89% of all 2,3,7,8-Tetrachlorodibenzo-P-Dioxin -- the most toxic of this family of chemicals -- reported emitted in Minnesota.

Air pollution and health...

(The “industrial” position)

“As long as a facility has a permit and complies with it, there won’t be health effects”

“Rely on the environmental regulatory system”

Does HERC really have an air permit?

- ❑ Sort of
- ❑ **Permit expired May 14, 2003**
- ❑ MPCA has an application for reissuance in hand but has not been processing it
- ❑ Covanta admits NO_x must be reduced “to get a new permit”

Violation History

- ❑ **Fined \$22,000** in 2001—excess hydrochloric acid emissions
- ❑ **Fined \$15,000** in 2002—excessive mercury emissions
- ❑ MPCA issued a **Letter of Warning** in January 2003
- ❑ **Fined \$4200** in 2004—operators lack required certification, etc.

Is HERC “state of the art?”

- Present (expired) HERC permit limits are more lax than federal EPA guidance for a new incinerator, for:
 - Hydrochloric acid (HCl)
 - Particulate Matter
 - Mercury
 - Dioxins/Furans
 - Cadmium
 - Lead

Air pollution and health... (reality)

The higher our levels of air pollution, the more death and disease we experience

Air Pollution lowers children's IQs

“At age 5, before starting school, the children were given IQ tests. Those exposed to the most pollution before birth scored on average four to five points lower than children with less exposure.”

(J. Am. Academy of Pediatrics, July, 2009)

(<http://www.google.com/hostednews/ap/article/>

[ALeqM5j9P3TvW2sr9YkDb0wggex3iDO8SQD99HVF100](http://www.google.com/hostednews/ap/article/ALeqM5j9P3TvW2sr9YkDb0wggex3iDO8SQD99HVF100))

How is Minnesota doing?



“Air quality in Minneapolis, MN is 11 on a scale of 1 to 100 (higher is cleaner).”

Based on ozone alert days and number of pollutants in the air, as reported by the EPA. (http://www.bestplaces.net/City/Minneapolis_MN-HEALTH-52743000040.aspx)

How is Hennepin County doing?

The EPA says **air pollution is responsible for an additional 40 to 50 cancer deaths annually in Hennepin and Ramsey counties.** Those are deaths that wouldn't have happened without the pollution.

(http://minnesota.publicradio.org/display/web/2009/06/24/epa_report/)

How is Minneapolis doing?

Air Pollution Blamed for 3% of Deaths in the United States
(73,440 in 2005, Census Bureau)

The study looked at 5 major US cities that carry out daily measurements of PM10 concentration in the atmosphere, Minneapolis, Minnesota; Chicago, Illinois; Detroit, Michigan; Pittsburgh, Pennsylvania; and Seattle, Washington. Led by Joel Schwartz, professor at the Harvard School of Public Health in Boston, the team of scientists estimated the number of deaths potentially related to air pollution on a day-to-day basis.

According to the study, Minneapolis carries the highest risk factor: for every 10-mcg increment in the dust particles per cubic meter, the rate of daily mortality increases there by 1.3%. In Pittsburgh and Detroit, for the same concentration of pollutants, excess mortality is only 0.80% and 0.77%, again for every 10-mcg increment in pollution.

(<http://www.medscape.com/viewarticle/412202>)

How bad is it?

New research finds rates of heart attacks, strokes and other serious disease increase exponentially after exposure to even slightly higher amounts of particulate matter. By Janet Wilson, Los Angeles Times Staff Writer

May 22, 2008

"Our report concludes **these particles are 70% more dangerous than previously thought**, based on several major studies that have occurred in the last five years," said Bart Croes, chief researcher for the California Air Resources Board."

(http://www.chesapeakeclimate.org/news/news_detail.cfm?id=598)

Minneapolis Planning Commission has rejected increased burning

- ❑ Purpose of the increased burning is unclear
- ❑ Application fails to meet legal criteria of "1. Will not be detrimental to or endanger the public health, safety, comfort or general welfare."
- ❑ Can any purpose justify sacrificing health of residents?

Minnesota Waste Hierarchy

Minnesota law describes a hierarchy for various solid waste management practices. To the extent practicable, **solid waste is to be managed as high on the hierarchy as possible.** The waste management practices listed in the statute, in order of preference, are:

- ❑ Waste reduction and reuse
- ❑ Waste recycling
- ❑ Composting of yard waste and food waste
- ❑ Resource recovery through composting or incineration
- ❑ Landfill disposal

How is Hennepin County doing?

Hennepin County has a lower recycling rate than the Metro area and statewide:

base recycling rate

Hennepin County	37.4%
Metro	41.33%
statewide	42.11%

with source reduction & recycling credits

Hennepin County	45.4%
Metro	49.3%
statewide	49.5%

(source: 2007 "SCORE" report)

How is Hennepin County doing?

- Hennepin County has lower recycling rates than 36 other Minnesota counties:

Anoka, Becker, Benton, Blue Earth, Brown, Cass, Clay, Cottonwood, Crow Wing, Dakota, Faribault, Freeborn, Jackson, Lyon, Martin, Nicollet, Nobles, Otter Tail, Pipestone, Ramsey, Redwood, Rice, Rock, Roseau, Scott, Sibley, Stearns, St. Louis, Steele, Todd, Wadena, Waseca, and Washington

(Page A-9, 2007 SCORE report)

This hierarchy does NOT mean

- That burning more is progress because it sits above dumping

It means

- Waste Reduction & Recycling are the top objectives and should receive the most resources

How is Hennepin County doing?

- From the Hennepin County **Solid Waste Master Plan 2005–2024**:
- At page 28, figure IV.14 "Solid Waste Expenses 2004 Budget:"

70%	Solid waste disposal
8%	Source Reduction and Recycling

How is Hennepin County doing?

- ❑ The Master Plan states: "Unfortunately tons of recycling collected has been stagnant in the past six years." (page 43)
- ❑ Is this surprising??

“The editorial argues that the Minneapolis City Council should vote in favor of burning more garbage because the increased sale of energy will earn income for Hennepin County, money that can be spent on recycling and composting programs. This rationale is not unlike claiming it makes sense to sell drugs to an addict in order to raise money to fund recovery programs. The more garbage we enable HERC to burn, the less incentive we have to reduce, reuse, recycle and compost.”

– SARAH SPONHEIM, MINNEAPOLIS Letter to the Editor, StarTrib, 7/21/09

Incineration is a waste of energy!

- 3–4 times more energy can be saved by a combination of reuse, recycling and composting compared to incineration

(Contact: Dr. Jeffrey Morris, jeff.morris@zerowaste.com)

Energy Comparison: Recycling versus incineration (ICF consulting, 2005)

material	Energy savings from recycling GJ/tonne	Energy output from incineration GJ/tonne	Energy savings recycling versus incineration
Newsprint	6.33	2.62	2.4 times
Fine paper	15.87	2.23	7.1 times
Cardboard	8.56	2.31	3.7 times
Other paper	9.49	2.25	4.2 times
HDPE	64.27	6.30	10.2 times
PET	85.16	3.22	26.4 times
Other plastic	52.09	4.76	10.9 times

The Truth is...

“Waste –to –Energy”
is really a
Waste of Energy

What does expansion of garbage burning in downtown Minneapolis do for our community?

- ❑ It contributes to global warming
- ❑ It wastes energy resources
- ❑ It diminishes public health
- ❑ It drains precious resources from cleaner, 21st century alternatives
- ❑ It does not solve our solid waste problem

For more information on health effects:

- “Incineration vs. Alternatives” presentation by Dr. Paul Connett

(http://www.neighborsagainsttheburner.org/files/Incineration_vs_alternatives.ppt)

Health conditions in Minneapolis neighborhoods

Presentations by Rep. Karen Clark