

Lake Superior Inventory

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HCB Information from Draft Lake Superior Report

“Emissions Inventory 2005 for Canadian Portion of Lake Superior Basin – Lake Superior Binational Program (Final Report)”, Prepared by Netta Benazon, Benazon Environmental Inc., March 2006

- **“...limited data available to assess hexachlorobenzene (HCB) emissions in the Lake Superior Basin....”**

- **“...was likely emitted from the former iron sintering facility in Wawa which shut down in 1998, from on-site residential combustion, landfill fires, and medical waste incinerators but no data is available to estimate quantities...”**

- **“...For remaining sources, emissions to environment declined from 224 grams in 1990 to 126 grams in 2005, corresponding to a 44% drop...”**
 - **“...decrease is largely associated with reductions in the pulp and paper sector, likely related to the conversion of the bleaching process from elemental chlorine to chlorine dioxide...”**

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- **“...Thunder Bay Generating Station is the highest source (92 grams), followed by PCP-treated railway ties (21 grams), and residential wood combustion (10 grams)...”**
- **“...With the conversion of the Thunder Bay Generating Station to natural gas, most or all of the current emissions from this source will be eliminated, bringing total HCB emissions in the Lake Superior Basin to 34 grams/year...This will result in an 85% reduction from 1990 levels...”**

THE GREAT LAKES BINATIONAL TOXICS STRATEGY

Table 3-2. Emissions from Residential Wood Combustion

Wood-burning Appliance	Ontario Wood Burned T/y	LSB Wood Burned T/y	Emission Factors						Emissions					
			Dioxins and Furans		HCB		Mercury		D/F		HCB		Mercury	
			Low ng I-TEQ/kg	High ng I-TEQ/kg	Low ng/kg	High ng/kg	Low kg/T	High kg/T	Low g I-TEQ	High g I-TEQ	Low g	High g	Low kg	High kg
Notes	a	b	c d e	c d e	f g	f g	h i j	h i j						
Quality Rating	L	L	M	M	L	L	P	P	L	L	L	L	P	P
1990														
Wood Stoves	897317	21538	0.25	1	13	13	0.000013	0.00005	0.005	0.022	0.28	0.28	0.28	1.08
Fireplaces	469815	11278	0.35	2.5	300	1000	0.000013	0.00005	0.004	0.028	3.38	11.28	0.15	0.58
Furnaces/Boilers	311811	7483	0.14	0.8	13	13	0.0000026		0.001	0.008	0.10	0.10	0.02	0.02
Total									0.010	0.056	3.76	11.65	0.45	1.66
2000/2005														
Wood Stoves	998585	18973	0.25	1	13	13	0.000013	0.00005	0.005	0.019	0.25	0.25	0.25	0.95
Fireplaces	522837	9934	0.35	2.5	300	1000	0.000013	0.00005	0.003	0.025	2.98	9.93	0.13	0.50
Furnaces/Boilers	347002	6593	0.14	0.8	13	13	0.0000026		0.001	0.005	0.09	0.09	0.02	0.02
Total									0.009	0.049	3.31	10.27	0.39	1.46

Blank = data not available

Rating = data quality; H=high; M=moderate; L=low; P=preliminary; U=unknown.

Notes

- Quantities burned were provided by (1). The quality of the data is considered to be Low based on information from (7). Values were provided for 1990 and 2003. 2000 and 2005 data was not available; therefore 2003 data were assumed for both years 2000 and 2005.
- Estimated using a population based ratio of 0.024 for 1990 and 0.018 for 2000/2005 (Table 2-1).
- Because of the variability and uncertainty associated with emissions factors from wood-burning appliances, low and high emission factors were provided.
- Dioxin and furan emission factors for fireplaces and woodstoves were obtained from (2) and (3).
- Dioxin and furan emission factors for wood burning furnaces were obtained from (4).
- Hexachlorobenzene emission factors for woodstoves and firesplaces were obtained from (2).
- No emissions factors were found for HCB from wood-burning furnaces/boilers so the woodstove emission factor was used as an approximation.
- Mercury emission factors for fireplaces and woodstoves were obtained from (5).
- Mercury emission factors for wood burning furnaces/boilers were obtained from (6).
- Values associated with considerable uncertainty due to limited testing.

References

- Dumitras (2005).
- Gullett et al. (2003).
- Environment Canada (2000).
- Pfeiffer et al. (2000).
- Sunderland and Chmura (2000).
- U.S. EPA (1997).
- Gulland (2006).