

Appendix G
Air Quality Information

MEMO TO: Lowell Dewey

FROM: John Trendowski

RE: Buffalo Niagara Medical Campus
Potential Emissions Associated with Improvements

PROJECT: D01.003.001

DATE: September 29, 2008

As requested by Mark Colmerauer of American Consulting Professionals of New York and you, I performed a preliminary evaluation of the potential increase in emissions associated with the construction of building additions at the Buffalo General Hospital. Based on a review of the forwarded State Facility Air Permit, the hospital is currently permitted for two (2) 75 million Btu per hour (MMBtu/hr) boilers and one (1) 39.3 MMBtu/hr boiler. The entire facility has emission limits of 190,000 pounds per year for oxides of nitrogen and sulfur dioxide. It is my understanding that the heat needed for the improvements is approximately 38 MMBtu/hr and a new boiler is not required.

Based on the size of the boilers and an assumed 80% efficiency, the facility has the capability to provide approximately 150 MMBtu/hr of heat. The increase in heating demand associated with the addition is 25% (38/150) based on heat needed. It is assumed that the existing steam load can handle this increase.

Assuming the entire 38 MMBtu heat demand must be combusted using natural gas, Table 1 illustrates the potential increase in emissions per hour based on emission factors contained in AP-42, USEPA Compilation of Air Pollutant Emission Factors, dated March 1998. The estimated potential annual increase in emissions are conservatively based on operating at an additional 38 MMBtu per hour, 24 hours per day, 6 months of the year. Six months of boiler usage is typical for heating buildings in the Upstate New York area.

The most prevalent parameter is oxides of nitrogen which would be predicted to emit 16,644 pounds per year under these assumed conditions. This is approximately 9% of the emission cap of 190,000 pounds per year for oxides of nitrogen.

A copy of some typical environmental mitigation procedures associated with construction have been forwarded under separate cover.

Table 1
Buffalo General Hospital
Potential Emission Increases Associated with Natural Gas Combustion

Parameter	Emission Factor (lb/10 ⁶ scf)	Potential Increase in Emissions (lb/hr)	Potential Increase in Emissions (lb/yr)
Carbon Monoxide (2/98)	84	3.1920	13,981
Lead	0.0005	1.9E-05	0.083
Oxides of Nitrogen	100	3.8000	16,644
Particulate Matter (total)	7.6	0.2888	1,265
Sulfur Dioxide	0.6	0.0228	100
Volatile Organic Compounds	5.5	0.2090	915
Hazardous Air Pollutants:			
Arsenic	2.0E-04	7.6E-06	0.033
Benzene	2.1E-03	8.0E-05	0.350
Cadmium	1.1E-03	4.2E-05	0.183
Chromium	1.4E-03	5.3E-05	0.233
Cobalt	8.4E-05	3.2E-06	0.014
Dichlorobenzene	1.2E-03	4.6E-05	0.200
Formaldehyde	7.5E-02	2.9E-03	12.483
Hexane	1.8E+00	6.8E-02	299.592
Lead	5.0E-04	1.9E-05	0.083
Manganese	3.8E-04	1.4E-05	0.063
Naphthalene	6.1E-04	2.3E-05	0.102
Nickel	2.1E-03	8.0E-05	0.350
Polycyclic Organic Matter	5.2E-05	2.0E-06	0.009
Toluene	3.4E-03	1.3E-04	0.566

Notes:

1. Emission Factors are from USEPA Compilation of Air Pollutant Emission Factors Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated March 1998, unless otherwise noted.
2. Annual natural gas usage estimation of 38 Mmbtu/hr or 0.038 x 10⁶ scf.