Bay Area Air Quality Management District
Risk Screening Assessment, A#7934
2200 Pacific Homeowners Association, P#15551
November 5, 2003

This document describes the basis for the health risk screening assessment prepared for 2200 Pacific Homeowners Association, located at 2200 Pacific Avenue in San Francisco, California. This facility would like to operate a natural gas-fired cogenerator. In order to do this, the facility must obtain a permit from the Bay Area Air Quality Management District (BAAQMD). The BAAQMD, as a routine part of the evaluation of a permit application, prepared this screening risk assessment.

Acetaldehyde, acrolein, benzene, 1,3-butadiene, carbon tetrachloride, chlorobenzene, chloroform, ethylbenzene, 1,1-dichloroethane, ethylene dibromide, formaldehyde, methanol, methylene chloride, styrene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, toluene, vinyl chloride, xylene, and polycyclic aromatic hydrocarbons, which are considered toxic air contaminants (TAC), will be emitted during the operation of the natural gas-fired cogenerator. BAAQMD staff evaluated the possible impact of these TAC emissions that will occur during routine operation of the natural gas-fired cogenerator. The TAC impact is expressed in terms of the increased risk of contracting cancer by individuals who live or work near the proposed cogenerator.

The estimated increase in each of the TAC emissions, in pounds per year, that can be expected from this source are summarized in the following table:

Toxic Air Contaminant	Annual Average Emissions, lb/yr
1,1,2,2-Tetrachloroethane	0.0177
1,1,2-Trichloroethane	0.0107
1,1-Dichloroethane	0.0079
1,3-Butadiene	0.463
Acetaldehyde	1.95
Acrolein	1.84
Benzene	1.1
Carbon Tertachloride	0.0124
Chlorobenzene	0.00901
Chloroform	0.00957
Ethylbenzene	0.0173
Ethylene Dibromide	0.0149
Formaldehyde	14.3
Methanol	2.14
Methylene Chloride	0.0288
Naphthalene	0.0678
Benzo(a)anthracene	0.000201
Benzo(a)pyrene	0.0000788
Benzo(b)fluoranthene	0.000162
Benzo(k)fluoranthene	0.0000706
Chrysene	0.000212
Dibenz(a,h)anthracene	0.00000856
Indeno(1,2,3-cd)pyrene	0.000116
Styrene	0.00832
Toluene	0.39
Vinyl Chloride	0.00502
Xylene	0.136

Ambient air concentrations of the TAC were predicted using the ISC-Prime air dispersion computer model. This model uses information about the facility and the emission rates of toxic air contaminants to estimate concentrations that would be expected in the air at various locations around the site. The estimated concentrations of TAC are used to calculate the possible cancer and noncancer health risk that might be expected to arise from these exposures.

The potential cancer risks were calculated using standard risk assessment methodology. For residents, it was assumed that exposures would be continuous for 24 hours per day, 7 days per week for 70-years. For students, exposure was assumed to occur 180 days per year over a 9-year period. Students were also assumed to have a higher breathing rate than residents. The cancer risk is based in part on the "best estimates" of plausible cancer potencies as determined by the California Office of Environmental Health Hazard Assessment (OEHHA). The actual cancer risk, which cannot be determined, may approach zero. This type of analysis is considered to be health-protective.

The potential for noncancer health effects is evaluated by comparing the long-term exposure level to a Reference Exposure Level (REL). A REL is a concentration level at or below which no adverse health effects are anticipated. RELs are designed to protect sensitive individuals within the population. Comparisons to RELs are made by determining the hazard index, which is the ratio of the estimated exposure level to the REL.

The proposed operation of the cogenerator would result in a maximum increased cancer risk of 0.16 chances in a million and a hazard index of 0.03 for nearby residences. For the students at Hamlin School, the increased maximum cancer risk is 0.0048 chances in a million and the hazard index is 0.02. For the students at Newcomer School, and Convent of the Sacred Heart Elementary School, the increased maximum cancer risk is 0.0033 chances in a million and the hazard index is 0.01. For the students at the Convent of the Sacred Heart High School, the increased maximum cancer risk is 0.0031 chances in a million and the hazard index is 0.01. For the students at the Stuart Hall for Boys School, the increased maximum cancer risk is 0.003 chances in a million and the hazard index is 0.01. These health risk values, presented in the table below, meet the criteria for acceptable levels established in the BAAQMD's Risk Management Policy.

Health Risk Results		
Receptor	Increased Maximum Cancer Risk	Hazard Index
Residential	0.16 chances in a million	0.03
Hamlin School	0.0048 chances in a million	0.02
Newcomer School	0.0033 chances in a million	0.01
Convent of the Sacred Heart Elementary School	0.0033 chances in a million	0.01
Convent of the Sacred Heart High School	0.0031 chances in a million	0.01
Stuart Hall for Boys School	0.003 chances in a million	0.01

School addresses:

Hamlin School
2120 Broadway Street
San Francisco, CA

Newcomer High School
2340 Jackson Street
San Francisco, CA

Convent of the Sacred Heart High School
2222 Broadway Street
San Francisco, CA

Stuart Hall for Boys
2252 Broadway Street
San Francisco, CA

Convent of the Sacred Heart Elementary School
2200 Broadway Street
San Francisco, CA