

Bay Area Air Quality Management District
Risk Screening Assessment, A# 6831
Safeway Store #2657, G# 10893
January 13, 2003

This document describes the basis for the health risk screening assessment prepared for Safeway Store #2657, northeast corner of Laurel Road and O'Hara Avenue, Oakley, California. This facility wishes to operate a new retail gasoline dispensing facility at this location. In order to do this, the facility must get 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.

Benzene, a toxic air contaminant and a carcinogen, will be emitted during the operation of the gasoline dispensing facility. BAAQMD staff evaluates the possible impact of the increase in benzene emissions. The benzene impact is expressed in terms of the increased risk of contracting cancer by individuals who live or work near the facility.

The estimated increase in benzene emissions that can be expected from this source is 152 pounds per year. Ambient air concentrations of benzene were predicted using the ISCST3 air dispersion computer model. This model uses information about the facility and the emission rates of toxic air contaminants to estimate what concentrations would be expected in the air at various locations around the site. The estimated concentrations of benzene are used to calculate the possible cancer and noncancer health risk that might be expected to arise from this exposure.

The potential cancer risk was calculated using standard risk assessment methodology. For residents, they include the assumptions that exposures are continuous for 24 hours per day, 7 days per week for 70-years. For off-site workers, exposures are assumed to occur for 8 hours per day, 240 days per year over a 46-year period. For students, the assumptions include higher breathing rates for children and that exposures are for 10 hours per day, 36 weeks per year over a 9-year period. The cancer risk is based 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 would result in an increased maximum cancer risk of 5 chances in a million and a hazard index of 0.003 for residences near the facility. For the off-site worker, the increased maximum cancer risk is 10 chances in a million and the hazard index is 0.04. For the students who attend Laurel Elementary, the increased maximum cancer risk is 0.05 chances in a million and the hazard index is 0.0006. 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	5 chances in a million	0.003
Off-site worker	10 chances in a million	0.04
Laurel Elementary	0.05 chances in a million	0.0006