

Appendix HRA

Health Risk Assessment

Cumulative Source HRA Results

How to Use the Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities (GDF)

This distance multiplier tool refines the screening values for cancer risk and chronic hazard index found in the District's Stationary Source Screening Analysis Tool to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions (GDF's).

1. Obtain the GDF cancer risk and/or chronic hazard index from the District's Stationary Source Screening Analysis tool for facilities where the Plant No. is preceded with a 'G'. If the distance to the nearest receptor is less than 20 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk and/or chronic hazard index estimate.
2. Determine the shortest distance from the GDF to the nearest receptor.
3. In the table below, enter the cancer risk and/or chronic hazard index found in step 1 for the GDF in the row which aligns with the shortest distance from each GDF to the nearest receptor (found in step 2). If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 300 meters, use the multiplier 0.015. The resulting product is the adjusted cancer risk in a million or the adjusted chronic hazard index for the GDF.

Note: These distance adjustment multipliers may be used only for the screening level health risk values indicated in the District's Stationary Source Screening Analysis tool for gasoline dispensing facilities. This distance multiplier tool may not be used to adjust values from an HRA if an HRA for the facility was conducted.

Distance meters	Distance feet	Distance adjustment multiplier	Enter Cancer Risk	Adjusted Cancer Risk	Enter Chronic Hazard Index	Adjusted Chronic Hazard Index
20	66	1.000		0		0
25	82	0.728		0		0
30	98	0.559		0		0
35	115	0.445		0		0
40	131	0.365		0		0
45	148	0.305		0		0
50	164	0.260		0		0
55	180	0.225		0		0
60	197	0.197		0		0
65	213	0.174		0		0
70	230	0.155		0		0
75	246	0.139		0		0
80	262	0.126		0		0
85	279	0.114		0		0
90	295	0.104		0		0
95	312	0.096		0		0
100	328	0.088		0		0
105	344	0.082		0		0
110	361	0.076		0		0
115	377	0.071		0		0
120	394	0.066		0		0
125	410	0.062		0		0
130	426	0.058		0		0
135	443	0.055		0		0
140	459	0.052		0		0
145	476	0.049		0		0
150	492	0.046		0		0
155	508	0.044		0		0
160	525	0.042		0		0
165	541	0.040		0		0
170	558	0.038		0		0
175	574	0.036		0		0
180	590	0.034		0		0
185	607	0.033		0		0
190	623	0.031		0		0
195	640	0.030		0		0
200	656	0.029		0		0
205	672	0.028		0		0
210	689	0.027		0		0

215	705	0.026		0		0
220	722	0.025		0		0
225	738	0.024		0		0
230	754	0.023		0		0
235	771	0.022		0		0
240	787	0.022		0		0
245	804	0.021		0		0
250	820	0.020		0		0
255	836	0.020	18.261	0.356161506	0.03	0.000585118
260	853	0.019	18.261	0.34509277	0.03	0.000566934
265	869	0.018		0		0
270	886	0.018		0		0
275	902	0.017		0		0
280	918	0.017		0		0
285	935	0.016		0		0
290	951	0.016		0		0
295	968	0.015		0		0
300	984	0.015		0		0

MEI = 845 feet away

AVG Cancer Risk (845 feet) 0.350627138 AVG Chronic Hazard Index (845 feet) 0.000576026

Note: Risk estimates were averaged because the distance from the MEI to the gas station was half way in between the tools provided distances

Cumulative Source HRA Results

Highway Screening Analysis Tool

Highway 101: Link 568 (6 ft)

Distance to MEI (feet)	PM2.5 Conc	Cancer Risk	Chronic HI	Acute HI
500	0.119	16.82	0.016	0.012
750	0.061	8.819	0.008	0.01
Interpolated				
580	0.10044	14.25968	0.01344	0.01136

Cumulative Source HRA Results

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

- County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.
- Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.
- Side of the Roadway: Identify on which side of the roadway the project is located.
- Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.
- Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

Notes and References listed below the Search Boxes

Search Parameters	Results
County	Santa Clara County
Roadway Direction	NORTH-SOUTH DIRECTIONAL ROADWAY
Side of the Roadway	PM2.5 annual average
Distance from Roadway	0.263 ($\mu\text{g}/\text{m}^3$)
Annual Average Daily Traffic (ADT)	Cancer Risk
	11.17 (per million)
	Old Oakland Road
	Data for Santa Clara County based on meteorological data collected from San Jose Airport in 1997

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4 air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Due to their format, the HRA modeling files are available electronically upon request. Please contact Kara Hawkins, City of San José Environmental Project Manager, at (408) 535-7852 for these files.