

AB2588 Health Risk Assessment

8141 Gulana Avenue
Playa Del Rey, California 90293
Facility ID: 8582

Prepared for:
Southern California
Gas Company

June 2018

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DEFINITIONS

Acute Health Impacts

Non-cancer health impacts for short-term, one-hour peak exposures to potential facility emissions. The total sum of the ratio of concentrations of each toxic air contaminant to its acute reference exposure level (REL).

Chronic Health Impacts

Non-cancer health impacts for long-term exposure to potential facility emissions. The total sum of the ratio of concentrations of each toxic air contaminant to its chronic reference exposure level (REL).

8-Hour Chronic Health Impacts

The ratio of the predicted air toxic exposure to the air concentrations at or below which health impacts would not be expected with repeated daily 8-hour exposures over a significant fraction of a lifetime. The 8-hour non-cancer hazard index is considered a chronic risk as it uses an 8-hour concentration that represents the long-term average of repeated 8-hour daily averages that occur.

Cancer Risk

The health risk associated with long-term exposures resulting from emissions of carcinogenic agents.

ACRONYMS AND ABBREVIATIONS

AB 2588	Assembly Bill 2588
AE	Annual Emissions
AER	Annual Emissions Report
AERMOD	American Meteorological Society/Environmental Protection Agency regulatory air dispersion model
ARB	California Air Resources Board
BL	Breathing Loss
BPIP	Building Profile Input Program
CE	Control Efficiency
CSF	Cancer Slope Factor
DICE	Diesel Internal Combustion Engines
DPM	Diesel Particulate Matter
EF	Emission Factor
EPA	U.S. Environmental Protection Agency
HARP2	Hot Spots Analysis and Reporting Program 2
HI	Hazard Index
HRA	Health Risk Assessment
ICE	Internal Combustion Engine
lb	Pound
lb/lb-mol	Pound per Pound Mol
lb/MMscf	Pounds per Million Standard Cubic Feet
m	Meter
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
MHE	Maximum Hourly Emissions
MSDS	Material Safety Data Sheet
µg/m ³	Micrograms per Cubic Meter
NO _x	Oxides of Nitrogen
OEHHA	Office of Environmental Health Hazard Assessment
PF	Potency Factor
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 Microns in Diameter
PMI	Point of Maximum Impact
ppmv	Parts per Million by Volume
REL	Reference Exposure Level
RY	Reporting Year
SCAQMD	South Coast Air Quality Management District
scf/lb-mol	Standard Cubic Feet per Pound Mol
scfm	Standard Cubic Feet per Minute
SO _x	Oxides of Sulfur
TAC	Toxic Air Contaminant
URF	Unit Risk Factor
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
WL	Working Loss

As requested by the South Coast Air Quality Management District (SCAQMD), Southern California Gas Company/Playa Del Rey Storage Facility (SoCalGas) has prepared this updated Health Risk Assessment (HRA) for the facility located at 8141 Gulana Avenue, Playa Del Rey, California 90293 (SCAQMD ID: 8582). This HRA is based on the reporting year (RY) 2015 Annual Emission Report (AER) and follows the current OEHHA's *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015), and SCAQMD's *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act for AB2588* (SCAQMD 2016a).

This HRA report follows the outline specified in Appendix C of the SCAQMD supplemental risk assessment guidelines for preparing an HRA. The following section provides an executive summary of the operations at SoCalGas and the resulting potential human health risk from the release of toxic air contaminants (TAC). The SCAQMD HRA Summary Form is provided at the end of this Executive Summary section.

Site Description and Facility Operations

The SoCalGas facility is located at 8141 Gulana Avenue, Playa Del Rey, California 90293 (SCAQMD ID: 8582). The location of the facility is depicted in Figure 1. The facility is one of four natural gas storage field operated by The Gas Company in the Los Angeles area. The following is a list of the various operations and their potential emissions.

- Gasoline-fueled internal combustion engines used in junction with the air compressor units and natural gas-fueled engines that provides air compression that result in combustion product emissions.
- Stationary natural gas-fueled and diesel-fueled engines used for a variety of reasons, including natural gas compression and injection as well as emergency power which result in emissions of combustion byproducts. The 99 HP John Deere emergency diesel internal combustion engine is the only diesel-fueled stationary emergency ICE at the facility.
- Boilers and heaters fired with natural gas which results in combustion product emissions.

- Vapor incinerator used to combust process gas fired with natural gas which results in emissions of combustion byproducts.
- Fixed roof storage tanks which result in evaporative organic emissions due to working and breathing losses.
- Bulk loading of natural gas and natural gas venting which results in air toxic emissions of organics.
- Evaporative losses and leaks from various components (i.e., pressure release devices, flanges, valves, connectors, fittings, etc.) on equipment throughout the facility which result in emissions of organic compounds.
- Solvent cleaners and other organic solvents used for maintenance purposes which result in emissions of organic compounds.
- Wastewater sump which results in evaporative emissions of organics.

Table 1 provides a list of the TACs emitted from the facility, along with their maximum hourly and annual emissions. Table 2 details the TAC emissions, which includes Diesel Particulate Matter (DPM), from the emergency diesel internal combustion engine (DICE) located at the facility.

Air Dispersion Modeling and Exposure Assessment

Air dispersion modeling and health risk analysis were used to assess exposure to TAC emissions from the facility. Exposure calculations were performed using the most recent version of American Meteorological Society/Environmental Protection Agency regulatory air dispersion model (AERMOD version 16216r) for air dispersion modeling analysis to predict ground-level toxic air contaminants concentrations by source. Modeled results were used in conjunction with the chemical specific emission rates to estimate potential ambient air concentrations of each compound. A dose-response assessment was then performed using the Hot Spots Analysis and Reporting Program 2 (HARP2) model, version 17320, developed by the California Air Resources Board (ARB).

This HRA evaluates upper-level estimates of potential cancer, non-cancer chronic, and non-cancer acute health effects at the point of maximum impact (PMI), the maximally exposed individual resident (MEIR), the maximally exposed individual worker (MEIW), and sensitive receptors. The potential excess cancer burden was also evaluated.

As required in the OEHHA and SCAQMD guidance for preparing a Tier 1 risk assessment under AB2588, residential cancer risks assume a 30-year exposure and cancer burden assumes a 70-year exposure. The following pathways were considered for residential receptors: homegrown produce, dermal absorption, soil ingestion, and mother's milk. All cancer risks at residential receptors were estimated by applying the "RMP Using the Derived Method" risk calculation option. The "OEHHA Derived Method" risk calculation option was applied to estimate chronic non-cancer risks at residential receptors. The 8-hour chronic non-cancer risk was also evaluated for residential and worker receptors.

The worker cancer risks assumed a 25-year exposure and includes the dermal absorption and soil ingestion pathways. The "OEHHA Derived Method" risk calculation option was used for estimating cancer and non-cancer chronic risks at worker receptors. Regardless of the receptor type, the deposition velocity for the non-inhalation pathways was assumed to be 0.02 m/s. Furthermore, the default values were used for all pathways except for the dermal pathway, which was assumed as a "warm" climate.

Table 3 lists the substances with multi-pathway systems. Table 4 shows a list of target organ systems for non-cancer impact by different substances emitted from the facility. Table 5 provides a summary of the risk assumptions discussed above.

HRA Summary of Results

The summary results below were calculated using standard risk assessment techniques that are designed to provide the upper-level estimate of excess cancer risk, as well as potential chronic and acute non-cancer health effects from current operations.

Cancer Health Effects

Results of the cancer health effects assessment, which include impacts from the emergency diesel internal combustion engine (DICE), indicate that the potential cancer risk for all offsite residential and commercial receptors are less than 10 in one million (1.0E-05). Therefore, the cancer risks are less than the SCAQMD Rule 1402 significant threshold of 10 in one million and do not require additional facility action. Per SCAQMD's "Notice to Prepare a HRA" letter, this HRA also evaluated the maximum individual cancer risks excluding risks from DICE and are presented in Table 6. Considering that the potential cancer risks that included the risks from DICE are below the significance threshold, the cancer risks from the latter assessment were also below the notification levels.

Table 7 summarizes the results of this HRA for cancer risks. The cancer risks are estimated to be 15.6 in one million (1.6E-05) at the point of maximum impact (PMI), 9.2 in one million (9.2E-06) at the maximum exposed individual resident (MEIR), and 0.1 in one million (5.3E-08) at the maximum exposed individual worker (MEIW). The UTM coordinates for the PMI, MEIR, and MEIW are (367297m E, 3758930m N), (367400m E, 3758950m N), and (367290m E, 3758630m N), respectively. Source contribution to cancer risk at the PMI, MEIR, and MEIW are presented in Tables 20, 22, and 24. Chemical contributions to cancer risk at the PMI, MEIR, and MEIW by substance and exposure pathway are presented in Tables 21, 23, and 25. The primary substances contributing to the estimated cancer risks are 1,3-Butadiene, Benzene, Diesel Particulate Matter, Formaldehyde and Acetaldehyde. Detailed discussions regarding the cancer risks can be found in Section 4.1.1.

Since carcinogenic risk were above 1 in one million (see Figure 8), cancer burden for affected populations was estimated to be 0.02 as shown in Table 9. This is well below the SCAQMD Rule 1402 action risk level of 0.5.

Chronic Non-cancer Health Effects

Results of the chronic non-cancer health effects assessment, which include impacts from the emergency diesel internal combustion engine (DICE), indicate that all of the chronic HI values for each organ system are less than 1.0. Therefore, all calculated chronic non-cancer health effects are less than the SCAQMD Rule 1402 significant threshold of 1.0 and do not require additional facility action. Per SCAQMD's "Notice to Prepare a HRA" letter, this HRA also evaluated the maximum potential chronic HI excluding risks from DICE and are presented in Table 6. Considering that the potential chronic HIs that included the health impacts from DICE are below the significance threshold, the chronic HI values from the latter assessment were also below the notification levels.

Table 7 summarizes the results of this HRA for chronic non-cancer health hazards. The maximum potential chronic HI for an organ system is 0.05 at the PMI. It is located on the northwestern border of the property boundary. The maximum chronic HI for the MEIR is 0.02. The MEIR is located near the southeastern property boundary of the facility. The maximum chronic HI is 0.002 at the MEIW and is located west of the property boundary of the facility. The UTM coordinates for the PMI, MEIR, and MEIW are (367046m E, 3759154m N), (367400m E, 3758950m N), and (366450m E, 3758850m N), respectively. Source contribution to chronic HI at the PMI, MEIR, and MEIW are presented in Tables 26, 28, and 30. Chemical contributions to chronic HI at the PMI, MEIR, and MEIW by substance and exposure pathway are presented in Tables 27, 29, and 31. The primary

substances contributing to the estimated chronic HI are Benzene, Formaldehyde, Chlorine, and 1,3-Butadiene. The primary target organ impacted from chronic exposures is mostly the hematologic system. Detailed discussions regarding the chronic non-cancer health effects can be found in Section 4.1.2.

8-Hour Chronic Non-cancer Health Effects

Results of the 8-hour chronic non-cancer health effects assessment, which include impacts from the emergency diesel internal combustion engine (DICE), indicate that all of the 8-hour chronic HI values for each organ system are less than 1.0. Therefore, all calculated 8-hour chronic non-cancer health effects are less than the SCAQMD Rule 1402 significant threshold of 1.0 and do not require additional facility action. Per SCAQMD's "Notice to Prepare a HRA" letter, this HRA also evaluated the maximum potential 8-hour chronic HI excluding risks from DICE and are presented in Table 6. Considering that the potential 8-hour chronic HIs that included the health impacts from DICE are below the significance threshold, the 8-hour chronic HI values from the latter assessment were also below the notification levels.

Table 7 summarizes the results of this HRA for 8-hour chronic non-cancer health hazards. The maximum potential 8-hour chronic HI for an organ system is 0.05 at the PMI. It is located on the northwestern border of the property boundary. The maximum 8-hour chronic HI for the MEIR is 0.01. The MEIR is located near the southeastern property boundary of the facility. The maximum 8-hour chronic HI is 0.002 at the MEIW and is located west of the property boundary of the facility. The UTM coordinates for the PMI, MEIR, and MEIW are (367046m E, 3759154m N), (367400m E, 3758950m N), and (366450m E, 3758850m N), respectively. Source contribution to 8-hour chronic HI at the PMI, MEIR, and MEIW are presented in Tables 32, 34, and 36. Chemical contributions to 8-hour chronic HI at the PMI, MEIR, and MEIW by substance and exposure pathway are presented in Tables 33, 35, and 37. The primary substances contributing to the estimated 8-hour chronic HI are Benzene and Formaldehyde. The primary target organ impacted from 8-hour chronic exposures is mostly the hematologic system. Detailed discussions regarding the 8-hour chronic non-cancer health effects can be found in Section 4.1.3.

Acute Non-cancer Health Effects

Results of the acute non-cancer health effects assessment, which include impacts from the emergency diesel internal combustion engine (DICE),

indicate that all of the acute HI values for each organ system are less than 1.0 (public notification threshold) at any residential or commercial location.

However, the PMI does exceed this threshold within 150 meters of the northwestern boundary. The area with modeled impacts that exceed an acute hazard index of 1.0 is part of the Ballona Wetlands Ecological Reserve. This area is owned by the State of California and managed by the California Department of Fish and Game. The area requires approval for admission and access is via a dirt road with a swing gate. The terrain of the wetlands is challenging to navigate on the rare occasion when an approved visitor attempts to access the area. It should also be noted that acute PMI impacts that exceed the HI risk reduction plan threshold (3.0) encompass a very small area within this restricted wetlands region (less than 0.01 square kilometers) and extend only 40 meters from the property boundary. The acute HI isopleths are shown in Figure 9.

The primary contributor to the acute hazard index greater than 1.0 is the Natural Gas Venting. The modeling of the Natural Gas Venting assumed that these events occur every hour of the year. However, the releases only occur approximately every other week (26 times a year) for approximately 30 minutes per event. Therefore, the likeliness of a release occurring during the worst-case meteorological event that creates an acute hazard index greater than 1.0 is 26 hours out of a possible 8,760 hours per year (i.e., the probability would be less than 0.3 percent of the time). Combining this probability with the rare likelihood that a visitor is at that location simultaneously would result in an even lower probability of an actual exposure.

Per SCAQMD's "Notice to Prepare a HRA" letter, this HRA also evaluated the maximum potential acute HI excluding risks from DICE and are presented in Table 6. Table 7 summarizes the results of this HRA for acute non-cancer health hazards, which include DICE, and are discussed below.

The maximum acute HI is 7.28 at the PMI. It is located on the northwestern border of the property boundary. The maximum acute non-cancer HI is 0.68 at the MEIR and is near the west property boundary of the facility. The maximum acute HI is 0.33 at the MEIW and is located south of the property boundary of the facility. The UTM coordinates for the PMI, MEIR, and MEIW are (367046m E, 3759154m N), (366970m E, 3758890m N), and (367250m E, 3758610m N), respectively. Source contribution to acute HI at the PMI, MEIR, and MEIW are presented in Tables 38, 40, and 42. Chemical contributions to acute HI at the PMI, MEIR, and MEIW by substance and exposure pathway are presented in Tables 39, 41, and 43. The primary substances contributing to the estimated acute HI are Benzene and Formaldehyde. The primary target organ impacted from acute exposures is

mostly the hematologic system. Detailed discussions regarding the acute non-cancer health effects can be found in Section 4.1.3.

The locations of the cancer, chronic and acute non-cancer PMI, MEIR, and MEIW are shown on Figure 2. Sensitive receptors, defined as those who are especially susceptible to adverse health effects from exposure to TACs, such as children, the elderly, and the health impaired, were assessed in the HRA. These include schools, nursing homes, day care centers, hospitals, and any other location where sensitive individuals may reside or spend significant amounts of time. Results of cancer and non-cancer health effects assessment indicate that all cancer risks and non-cancer HIs at the sensitive receptors were well below the cancer risk threshold of 10 in one million ($1.0E-05$) and non-cancer HI threshold of 1.0 (See Table 8) . The locations of the sensitive receptors evaluated in the HRA are presented on Figure 7.



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HEALTH RISK ASSESSMENT SUMMARY FORM

(Required in Executive Summary of HRA)

Facility Name : Southern California Gas Company/Playa Del Rey Storage Facility (SoCalGas)
Facility Address: 8141 Gulana Avenue, Playa Del Rey, California 90293
Type of Business: Natural Gas Storage
SCAQMD ID No.: 8582

A. Cancer Risk

(One in a million means one chance in a million of getting cancer from being constantly exposed to a certain level of a chemical over a period of time)

- 1. Inventory Reporting Year : 2015
- 2. Maximum Cancer Risk to Receptors : *(Offsite and residence = 30-year exposure, worker = 25-year exposure)*
 - a. Offsite 15.6 in a million Location: See Table 7
 - b. Residence 9.2 in a million Location: See Table 7
 - c. Worker 0.1 in a million Location: See Table 7
- 3. Substances Accounting for 90% of Cancer Risk: See Table 7, 21, 23, 25
Processes Accounting for 90% of Cancer Risk: See Table 7, 20, 22, 24
- 4. Cancer Burden for a 70-yr exposure: *(Cancer Burden = [cancer risk] x [# of people exposed to specific cancer risk])*
 - a. Cancer Burden 0.02
 - b. Number of people exposed to >1 per million cancer risk for a 70-yr exposure 1,535
 - c. Maximum distance to edge of 70-year, 1 x 10⁻⁶ cancer risk isopleth (meters) 830

B. Hazard Indices

*[Long Term Effects (chronic) and Short Term Effects (acute)]
(non-carcinogenic impacts are estimated by comparing calculated concentration to identified Reference Exposure Levels, and expressing this comparison in terms of a "Hazard Index")*

- 1. Maximum Chronic Hazard Indices:
 - a. Residence HI: 0.02 Location: See Table 7 toxicological endpoint: hematologic system
 - b. Worker HI : 0.002 Location: See Table 7 toxicological endpoint: hematologic system
- 2. Substances Accounting for 90% of Chronic Hazard Index: See Table 7, 27, 29 and 31
- 3. Maximum 8-hour Chronic Hazard Index:
 - 8-Hour Chronic HI: 0.01 Location: See Table 7 toxicological endpoint: hematologic system
- 4. Substances Accounting for 90% of 8-hour Chronic Hazard Index: See Table 7, 33, 35 and 37
- 5. Maximum Acute Hazard Index:
 - PMI: 7.28 Location: See Table 7 toxicological endpoint: hematologic system
- 6. Substances Accounting for 90% of Acute Hazard Index: See Table 7, 39, 41 and 43

C. Public Notification and Risk Reduction

- 1. Public Notification Required? Yes No
 - a. If 'Yes', estimated population exposed to risks > 10 in a million for a 30-year exposure, or an HI >1
0
- 2. Risk Reduction Required? Yes No

The list of all potentially hazardous substances that are emitted from the facility have been identified in Table 1 based on the toxic air contaminants listed in Appendix A of The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (HRA). Table 3 details the TACs emitted by the Facility during RY 2015 and identifies which compounds have inhalation-only exposure or multi-pathway exposure. Table 4 shows a list of target organ systems for non-cancer impact by different substances emitted from the facility. Table 10 also summarizes the TACs and the associated carcinogenic slope factors (CSFs), chronic non-cancer Reference Exposure Level (RELs) and acute non-cancer RELs consistent with values provided in the OEHHA guidelines. A description of each activity that generates air toxic emissions is listed below.

- Gasoline-fueled internal combustion engines used in junction with the air compressor units and natural gas-fueled engines that provide air compressions, which result in combustion product emissions. The emissions are intermittent.
- Stationary natural gas-fueled and diesel-fueled engines used for a variety of reasons, including natural gas compression and injection as well as emergency power which result in emissions of combustion byproducts. The emissions are intermittent.
- Boilers and heaters fired with natural gas which results in combustion product emissions. The emissions are continuous.
- Vapor incinerator used to combust process gas fired with natural gas which results in emissions of combustion byproducts. The emissions are assumed to be continuous.
- Fixed roof storage tanks which result in evaporative organic emissions due to working and breathing losses. The emissions are continuous.
- Bulk loading of natural gas and natural gas venting which results in air toxic emissions of organics. Emissions are routine and continuous during loading.
- Evaporative losses and leaks from various components (i.e., pressure release devices, flanges, valves, connectors, fittings, etc.) on equipment throughout the facility that result in fugitive emissions of organic compounds. Fugitive emissions are continuous.

- Solvent cleaners and other organic solvents used for maintenance purposes that result in emissions of organic compounds. These fugitive emissions are continuous.
- Wastewater sump that results in evaporative emissions of organics. These fugitive emissions are continuous.

3.0 EXPOSURE ASSESSMENT

Exposure assessments estimate the extent of public exposure to emitted substances for potential cancer, chronic, acute, and repeated 8-hour exposures.

3.1 FACILITY DESCRIPTION AND EXPOSURE PATHWAYS

The facility name is Southern California Gas Company/Playa Del Rey Storage Facility (SoCalGas) and is located at 8141 Gulana Avenue, Playa Del Rey, California 90293 (SCAQMD ID: 8582). It is primarily surrounded by residential and commercial buildings. The facility geographical reference point used in HARP2 is 367160.26 East and 3758940.00 North in Universal Transverse Mercator (UTM) WGS84 coordinates. The facility is located in the northern region of the City of Playa del Rey, which is located in the northwestern corner of the Los Angeles Basin. The topography in the area is relatively rugged around the facility, with the northern portion of the facility located at the base of the bluff of the Del Rey Lagoon that extends to the Pacific Ocean and the southern portion of the facility located on top of the bluff with residence to the east, west, and south (See Figure 1). Figure 3, 4, and 5 show the location of the point sources, area sources, and volume sources, respectively. The building locations and dimensions are shown in Figure 6.

Based on SCAQMD guidelines, the inhalation pathway is addressed for all modeled sources and substances. Residential cancer and non-cancer risks for multi-pathway substances evaluated the following non-inhalation exposure pathways: dermal exposure, soil ingestion, plant ingestion, and mother's milk. Worker cancer and non-cancer risks for multi-pathway substances were modeled with the pathways of dermal exposure and soil ingestion. The OEHHA guidelines also lists other pathways, which include water ingestion, dairy and beef, and poultry and eggs. However, these pathways are not applicable exposure routes for the facility due to the surrounding land use. Table 3 lists the pathways evaluated for all emitted substances at the facility.

3.2 EMISSION INVENTORY

This HRA utilizes the emissions reported in the RY 2015 AER. As previously mentioned in the detailed Air Toxics Inventory Report (ATIR) submitted to SCAQMD, the emissions for formaldehyde for Main Unit 6, Main Unit 8, and Main Unit 9 have been reduced by 80% to reflect the

efficiency of the BASF Camet oxidation catalysts. Furthermore, pollutants from RAMCO Attack II and NexGen95 have been omitted because the Material Safety Data Sheet (MSDS) for both chemicals did not list any of the AB2588 TACs. These changes are accounted for in this HRA to accurately reflect the facility operations and emissions.

The processes at the facility were modeled according to the Tables 11, 12, and 13. The operating hours for each process are listed in Table 14. Table 1 provides the facility total annual and maximum hourly emissions by substance. Table 15 presents the total annual facility emissions and maximum hourly facility emissions by substance and by source. The following sections provide the methodologies used to estimate emissions from the emission sources.

3.2.1 *Internal Combustion Engines*

Emissions from engines that assist in natural gas and air compression, natural gas injection, and emergency generator power result from fuel combustion. Default SCAQMD emission factors were used to estimate toxic emissions from these equipment. None of the engines are connected to a SCR or SNCR and therefore, default values of ammonia were used. Maximum hourly emissions were estimated by multiplying the maximum hourly design rate at full load for each engine with the appropriate emission factor and dividing by the fuel appropriate higher heating value (HHV). Annual emissions were based on the fuel usage data from SCAQMD 2015 AER software. Diesel Particulate Matter (DPM) emissions from diesel-fueled engines, which include DICE, were incorporated in this HRA.

As mentioned in the detailed ATIR, the engines that are fired by natural gas do not contain any chlorine constituents. The natural gas, 2 stroke-lean burn reciprocating IC engines are equipped with oxidation catalysts that provide 80% control of formaldehyde.

3.2.2 *External Combustion Equipment*

Combustion emissions from heaters and a thermal oxidizer were calculated by multiplying the annual fuel usage with the fuel type appropriate emission factor. Fuel usage data were obtained from SCAQMD 2015 AER software. Emission factors were based on SCAQMD default emission factors. None of the engines are connected to a SCR or SNCR and therefore, default values of ammonia were used.

The air conditioning and heating unit emissions vent inside the compressor building. As such, the compressor building was divided into six square

portions where three of them are each 22.63% of the total building area (64 feet by 64 feet) and the other three are 10.7% each (44 feet by 44 feet). The total emissions reported in the SCAQMD 2015 AER software was then multiplied by their respective ratio to accurately represent the emissions from each volume source.

3.2.3 Bulk Loading

Bulk loading of crude oil can result in air toxic emissions. Loading losses are the primary source of evaporative emissions that occur as organic vapors in "empty" tank trucks are displaced to the atmosphere by the liquid being loaded into the tanks. The loading arm for crude oil is connected to a thermal oxidizer. Air emissions from bulk loading of crude oil were calculated using the total volume of crude oil loaded, VOC emission factor from source test, and default SCAQMD chemical speciation data (Appendix C).

The emission factors for loading from the source test were used to calculate total VOC emissions. The VOCs were speciated using the default chemical speciation for crude oil from the SCAQMD 2015 AER software. The following equation was used to calculate annual emissions from bulk loading:

$$AE_i = EF_{VOC} \times Q_A \times \frac{C_i}{100}$$

where:

AE_i = Annual emission of chemical i , pounds per year (lb/yr)

EF_{VOC} = VOC emission factor, pounds per thousand barrels (lb/Mgal)

Q_A = Annual loading rate, Mgal/yr

C_i = Wt. % of chemical i in crude oil stream

Maximum hourly emissions were estimated by multiplying the total VOC emission factor, the weight percentage of the speciated chemical, and the loading rate limit:

$$MHE_i = EF_{VOC} \times \frac{C_i}{100} \times PL \times \frac{12 \frac{months}{year}}{(8760 \frac{hours}{year} \times 1,000 \frac{gals}{Mgal})}$$

where:

MHE_i = Maximum hourly emission of chemical i , pounds (lb/hr)

EF_{VOC} = VOC emission factor, pounds per thousand gallons (lb/Mgal)

C_i = Wt. % of chemical i in crude oil stream

PL = Permit limit condition of loading rate of no more than 800,000 gals/month

3.2.4 *Fixed Roof Storage Tanks*

Storage tank emissions were calculated using the method outlined in EPA's AP-42 Chapter 7.1 using EPA's TANKS program. Total VOC emissions were calculated using AP-42 equations. Emissions of individual toxic chemicals were then calculated using the default chemical speciation for crude oil (RVP 5) from the SCAQMD 2015 AER software and EPA's TANKS program.

Emissions from fixed roof tanks were calculated using the following equations:

AE_i (lb/yr) = Total losses = Working losses (WL) + Breathing losses (BL)

$$WL_i = 0.001 \times M_v \times P \times Q \times K_n \times K_p \times \left(\frac{C_{vi}}{100}\right) \times \left\{1 - \left(\frac{CE}{100}\right)\right\}$$

$$BL_i = 365 \times V_v \times W_v \times K_e \times K_s \times OF \times \left(\frac{C_{vi}}{100}\right) \times \left\{1 - \left(\frac{CE}{100}\right)\right\}$$

where:

AE_i = Annual emission of chemical i , pounds per year (lb/yr)

M_v = Vapor molecular weight, lb/lb-mol

P = Vapor pressure, psia

Q = Yearly process rate, bbl/yr

K_n = Turnover factor, dimensionless

K_p = Product factor, dimensionless

V_v = Vapor space volume, ft³ (based on tank size)

W_v = Vapor density, lb/ft³ (based on material properties)

K_e = Vapor space expansion factor, dimensionless (based on daily temperature, pressure variations)

K_s = Vented vapor saturation factor, dimensionless (based on material pressure and tank size)

OF = Fraction of year tank is in use, fraction

C_{vi} = Chemical i vapor weight fraction based on Raoult's Law, wt. %

CE = Control efficiency of vapor recovery unit, %

Maximum hourly emissions were calculated by dividing the annual emission by the annual operating hours. A copy of the EPA's TANKS file can be found in Appendix C.

3.2.5 *Natural Gas Venting*

Natural gas venting occurs during the course of routine operation and maintenance of equipment. Emissions from this operation was calculated using emission factors for benzene derived from a laboratory analysis and Material Safety Data Sheet (MSDS) for natural gas. Annual emissions were based on the amount of natural gas fuel vented in 2015. Maximum hourly emissions were estimated by dividing the annual emissions by the annual operating hours. The supporting documentation mentioned above can be found in Appendix C.

3.2.6 *Wastewater Sump*

Emissions from sumps are the result of fugitive emissions and this annual activity occurs uniformly throughout the year. Default SCAQMD emission factor for clean-out sumps were used to estimate the emissions from the wastewater sump. Annual emissions were estimated by multiplying the surface area of the sump in square feet with SCAQMD's default emission factor and chemical speciation for crude oil. Maximum hourly emissions were determined by dividing the annual emissions by the annual operating hours.

3.2.7 *Organic Solvents*

SoCalGas uses several VOC-based solvents for cleaning and maintenance purposes. The emissions from VOC-based solvents were determined by multiplying the annual solvent usage by the TAC content of the solvent

which was based on the Material Safety Data Sheet (MSDS) of the material. Maximum hourly emissions were estimated by dividing the annual emissions by the annual operating hours. The emissions that were previously submitted in the detailed ATIR for the chemicals RAMCO Attack II and NexGen95 have been omitted. The MSDS for both chemicals did not list any of the AB2588 TACs.

3.2.8 *Fugitive Emissions*

Fugitive emissions occur due to leaks of organic compounds from various components (i.e., flanges, valves, connectors, pressure relief devices) on equipment throughout the facility. The annual emissions were calculated by multiplying the component counts with the default emission factors and crude oil speciation from the SCAQMD 2015 AER software. Fugitive emissions are continuous. Therefore, maximum hourly emissions were estimated by dividing the annual emissions by the 8,760 hours.

3.3 *AIR DISPERSION MODELING*

Air dispersion modeling is performed for the exposure assessment of the health risk assessment. This HRA utilizes the most recent version of AERMOD (version 16216r) to estimate ambient concentrations for the facility. Modeled results were then integrated into the latest version of HARP2 (dated 17320). The air dispersion analysis was performed in accordance with OEHHA Guidance, the SCAQMD Supplemental Guidelines, and SCAQMD Modeling Guidance for AERMOD.

3.3.1 *Model Selection and Model Options*

Emission sources were categorized into three basic types: point, area, or volume sources. Table 16 summarizes the dispersion modeling assumptions and receptor grid spacing methods.

3.3.2 *Meteorological Data*

SCAQMD has AERMOD-ready meteorological data, which are processed with the ADJ_U* option, from 24 stations in the South Coast Air Basin. These files were developed using the U.S. EPA's AERMET processor and pre-processors AERMINUTE Version 15181 and AERSURFACE Version 13016. The data set collected at Los Angeles International Airport meteorological station (KLAX) from 2010 to 2016 was selected as the most representative surface station for the facility. It is the closest meteorological station and is expected to record similar meteorological conditions to that of the facility.

3.3.3

Receptors

In order to identify the maximum impacted receptor locations, receptor networks were constructed which include property boundary line with a spacing of 10 meters, a fine grid containing receptors spaced 10 meters apart out to a 100-meter radius, and a course grid containing receptors spaced 50 meters apart out to a 250-meter radius followed by a receptor grid spaced 75 meters apart out to 750-meter radius. The locations of the off-site residential and worker receptor areas were identified based on Google Earth/Maps and the Department of City Planning's Zone Information and Map Access System (ZIMAS) for the City of Los Angeles. Discrete receptors were identified for the sensitive receptors and are shown in Figure 7.

3.3.4

Air Dispersion Modeling Results

The cancer point of maximum impact (PMI), maximally exposed individual resident (MEIR), and maximally exposed individual worker (MEIW) receptors' average annual and maximum one-hour concentrations are determined using HARP2. The annual average, maximum one-hour and chronic 8-hour concentrations for all toxics are summarized in Tables 17, 18, and 19.

Modeled health risks were estimated for the facility based on methods and tools outlined in the OEHHA Guidance. Potential facility emissions and air dispersion results were input into HARP2 in accordance to the SCAQMD Supplemental Guidelines. Table 5 summarizes the risk assumptions required by SCAQMD, and a description of the guidance can be found in the Executive Summary section in pages 2 and 3. Table 3 lists the substances with multi-pathway systems. Table 4 shows a list of target organ systems for non-cancer impact by different substances emitted from the facility.

The PMI, MEIR, and MEIW were identified for potential cancer risks and chronic and acute non-cancer health effects by calculating the maximum hourly and average annual concentration of the TACs at each of the receptors, assigning the TACs CSFs and/or non-cancer RELs, and applying the appropriate worker and residential exposure durations. Results of the cancer and chronic and acute non-cancer health effects assessment indicate that the potential cancer risk and non-cancer HI for all off-site residential and commercial receptors are less than 10 in one million (1.0E-05) and 1.0, respectively. Although, the maximum acute HI PMI does exceed both the public notification threshold (1.0) and the risk reduction plan threshold (3.0). The locations of the cancer and chronic and acute non-cancer risks at the PMI, MEIR, and MEIW are presented on Figure 2.

4.1.1

Cancer Risk

The PMI is located on the southern property boundary and estimated to be 15.6 in one million (1.6E-05). A summary of the HRA results for the PMI is presented in Table 7. The primary sources contributing to the estimated cancer risk at the PMI are the Air Compressor E-29, Emergency ICE 99HP, Organic Solvents & Fugitive Emissions, ICE Main Unit 6, ICE Main Unit 9, and ICE Main Unit 8. The primary chemical contribution to the estimated cancer risk at the PMI is 1,3-Butadiene with approximately 35% of the risk, followed by Benzene, Diesel Particulate Matter, Formaldehyde and Acetaldehyde with 33%, 14%, 10%, and 3%, respectively. Source contribution to cancer risk at the PMI is presented in Table 20. Chemical contributions to cancer risk at the PMI by substance and exposure pathway is presented in Table 21.

The potential cancer risk at the MEIR is at a residence near the southeastern property boundary and estimated to be 9.2 in one million (9.2E-06). A summary of the HRA results for the cancer MEIR is presented in Table 7. The primary sources contributing to the estimated cancer risk at

the MEIR are Air Compressor E-29, ICE Main Unit 6, ICE Main Unit 9, ICE Main Unit 8, Organic Solvents & Fugitive Emissions, and Emergency ICE 99HP. The primary chemical contribution to the estimated cancer risk at the MEIR is 1,3-Butadiene with approximately 39% of the risk, followed by Benzene, Formaldehyde, Diesel Particulate Matter, and Acetaldehyde with 31%, 13%, 9%, and 4%, respectively. Source contribution to cancer risk at the MEIR is presented in Table 22. Chemical contributions to cancer risk at the MEIR by substance and exposure pathway is presented in Table 23.

The potential cancer risk at the MEIW is located south of the property boundary and estimated to be 0.1 in one million (5.3E-08). A summary of the HRA results for the cancer MEIW is presented in Table 7. The primary sources contributing to the estimated cancer risk at the MEIW are Organic Solvents & Fugitive Emissions, Emergency ICE 99HP, Air Compressor E-29, ICE Main Unit 6, ICE Main Unit 9, and ICE Main Unit 8. The primary chemical contribution to the estimated cancer risk at the MEIW is Benzene with approximately 40% of the risk, followed by 1,3-Butadiene, Diesel Particulate Matter, Formaldehyde, and Acetaldehyde with 27%, 16%, 10%, and 3%, respectively. Source contribution to cancer risk at the MEIW is presented in Table 24. Chemical contributions to cancer risk at the MEIW by substance and exposure pathway is presented in Table 25.

Figure 8 graphically represents the isopleths for the cancer risks.

4.1.2 *Chronic Non-Cancer Health Effects*

The maximum potential chronic HI for an organ system is 0.05 at the PMI targeting mostly the hematologic system. It is located on the northwestern border of the property boundary. The chronic HI results for the PMI is presented in Table 7. The primary sources contributing to the estimated chronic HI at the PMI are the Organic Solvents & Fugitive Emissions, Natural Gas Venting, Air Compressor E-29, and TK-4A. The primary chemical contribution to the estimated chronic HI at the PMI is Benzene with approximately 95% of the chronic HI, followed by Formaldehyde with 1%. Source contribution to chronic HI at the PMI is presented in Table 26. Chemical contributions to chronic HI at the PMI by substance and exposure pathway is presented in Table 27.

The maximum potential chronic HI at the MEIR is at a residence near the southeastern property boundary and estimated to be 0.02. A summary of the HRA results for the chronic MEIR is presented in Table 7. The primary sources contributing to the estimated chronic HI at the MEIR are Air Compressor E-29, Organic Solvents & Fugitive Emissions, ICE Main Unit 6, ICE Main Unit 9, ICE Main Unit 8, and Air Compressor E-30. The primary chemical contribution to the estimated chronic HI at the MEIR is Benzene

with approximately 35% of the chronic HI, followed by Formaldehyde, Chlorine, and 1,3-Butadiene with 35%, 23%, 23%, and 11%, respectively. Source contribution to chronic HI at the MEIW is presented in Table 28. Chemical contributions to chronic HI at the MEIW by substance and exposure pathway is presented in Table 29.

The maximum chronic HI is 0.002 at the MEIW and is located west of the property boundary of the facility. A summary of the HRA results for the chronic MEIW is presented in Table 7. The primary sources contributing to the estimated chronic HI at the MEIW are Organic Solvents & Fugitive Emissions, Air Compressor E-29, Natural Gas Venting, ICE Main Unit 6, ICE Main Unit 9, ICE Main Unit 8. The primary chemical contribution to the estimated chronic HI at the MEIW is Benzene with approximately 79% of the chronic HI, followed by Formaldehyde, Chlorine, and 1,3-Butadiene with 7%, 7%, and 3%, respectively. Source contribution to chronic HI at the MEIW is presented in Table 30. Chemical contributions to chronic HI at the MEIW by substance and exposure pathway is presented in Table 31. The primary target organ impacted from chronic exposures is mostly the hematologic system.

Non-cancer chronic hazard index contours have not been mapped because they are below 0.5.

4.1.3 *8-Hour Chronic Non-Cancer Health Effects*

The maximum potential 8-hour chronic HI for an organ system is 0.05 at the PMI. It is located on the northwestern border of the property boundary. The 8-hour chronic HI results for the PMI is presented in Table 7. The primary sources contributing to the estimated 8-hour chronic HI at the PMI are the Organic Solvents & Fugitive Emissions and Natural Gas Venting. The primary chemical contribution to the estimated 8-hour chronic HI at the PMI is Benzene with approximately 99% of the 8-hour chronic HI, followed by Formaldehyde with 1%. Source contribution to 8-hour chronic HI at the PMI is presented in Table 32. Chemical contributions to 8-hour chronic HI at the PMI by substance and exposure pathway is presented in Table 33.

The maximum potential 8-hour chronic HI at the MEIR is at a residence near the southeastern property boundary and estimated to be 0.01. A summary of the HRA results for the 8-hour chronic MEIR is presented in Table 7. The primary sources contributing to the estimated 8-hour chronic HI at the MEIR are Organic Solvents & Fugitive Emissions, Air Compressor E-29, ICE Main Unit 6, ICE Main Unit 9, and ICE Main Unit 8. The primary chemical contribution to the estimated 8-hour chronic HI at the MEIR is Benzene with approximately 57% of the 8-hour chronic HI,

followed by Formaldehyde with 38%. Source contribution to 8-hour chronic HI at the MEIW is presented in Table 34. Chemical contributions to 8-hour chronic HI at the MEIW by substance and exposure pathway is presented in Table 35.

The maximum 8-hour chronic HI is 0.002 at the MEIW and is located west of the property boundary of the facility. A summary of the HRA results for the 8-hour chronic MEIW is presented in Table 7. The primary sources contributing to the estimated 8-hour chronic HI at the MEIW are Organic Solvents & Fugitive Emissions, Natural Gas Venting, Air Compressor E-29, ICE Main Unit 6, ICE Main Unit 9, and ICE Main Unit 8. The primary chemical contribution to the estimated 8-hour chronic HI at the MEIW is Benzene with approximately 91% of the 8-hour chronic HI, followed by Formaldehyde with 8%. Source contribution to 8-hour chronic HI at the MEIW is presented in Table 36. Chemical contributions to 8-hour chronic HI at the MEIW by substance and exposure pathway is presented in Table 37. The primary target organ impacted from chronic exposures is mostly the hematologic system.

Non-cancer 8-hour chronic hazard index contours have not been mapped because they are below 0.5.

4.1.4 *Acute Non-Cancer Health Effects*

The maximum acute HI is 7.28 at the PMI. It is located on the northwestern end of property boundary. The acute HI results for the PMI is presented in Table 7. The primary sources contributing to the estimated acute HI at the PMI are the Natural Gas Venting and Organic Solvents & Fugitive Emissions. The PMI falls below the acute hazard index public notification threshold of 1.0 within 150 meters of the northwestern boundary. The area with modeled impacts that exceed this threshold is part of the Ballona Wetlands Ecological Reserve. This area is owned by the State of California and managed by the California Department of Fish and Game. The area requires approval for admission and access is via a dirt road with a swing gate. The terrain of the wetlands is challenging to navigate on the rare occasion when an approved visitor attempts to access the area. It should also be noted that acute PMI impacts that exceed the HI risk reduction plan threshold (3.0) encompass a very small area within this restricted wetlands region (less than 0.01 square kilometers) and extend only 40 meters from the property boundary. The acute isopleths are shown in Figure 9.

As previously stated, the primary contributor to the acute hazard index greater than 1.0 is the Natural Gas Venting. The primary chemical contribution to the estimated acute HI at the PMI is Benzene with approximately 98% of the acute HI, followed by Formaldehyde with 1%.

Source contribution to acute HI at the PMI is presented in Table 38. Chemical contributions to acute HI at the PMI by substance and exposure pathway is presented in Table 39.

The modeling of the Natural Gas Venting assumed that these events occur every hour of the year. However, the releases only occur approximately 26 times a year at approximately 30 minutes per event. Therefore, the likeliness of a release occurring during the worst-case meteorological event that creates an acute hazard index greater than 1.0 is 26 hours out of a possible 8,760 hours per year (i.e., the probability would be less than 0.3 percent of the time). Combining this probability with the rare likelihood that a visitor is at that location simultaneously would result in an even lower probability of an actual exposure.

The maximum acute non-cancer HI is 0.68 at the MEIR and is near the western property boundary of the facility. A summary of the HRA results for the acute MEIR is presented in Table 7. The primary sources contributing to the estimated acute HI at the MEIR are Natural Gas Venting, Air Compressor E-29, Air Compressor E-30, Emergency ICE 110HP, Air Compressor 400, and Air Compressor 120. The primary chemical contribution to the estimated acute HI at the MEIR is Benzene with approximately 83% of the acute HI, followed by Formaldehyde with 16%. Source contribution to acute HI at the MEIR is presented in Table 40. Chemical contributions to acute HI at the MEIR by substance and exposure pathway is presented in Table 41.

The maximum acute HI is 0.33 at the MEIW and is located south of the property boundary of the facility. A summary of the HRA results for the acute MEIW is presented in Table 7. The primary sources contributing to the estimated acute HI at the MEIW are Natural Gas Venting, Air Compressor E-30, Air Compressor E-29, Air Compressor 120, Air Compressor 400, ICE Main Unit 6, and ICE Main Unit 9. The primary chemical contribution to the estimated acute HI at the MEIW is Benzene with approximately 74% of the acute HI, followed by Formaldehyde with 23%. Source contribution to acute HI at the MEIW is presented in Table 42. Chemical contributions to acute HI at the MEIW by substance and exposure pathway is presented in Table 43. The primary target organ impacted from all acute exposures is mostly the hematologic system.

Figure 9 shows the isopleths for the acute hazard indices.

4.1.5 *Cancer Burden and Zone of Impact*

The Zone of Impact (ZOI) for cancer risks is the area subject to an added cancer risk of more than 1 in one million (1.0×10^{-6}), and is used to identify

sensitive receptors and population-wide cancer burden. The 30-year cancer risk ZOI extends approximately 0.5 miles (730 meters) to the east from the property boundary. Figure 8 shows the 30-year lifetime cancer risk ZOI (i.e., 1 in one million).

Population cancer burden is another measure of cancer risk and represents a worst-case estimate of the increased number of cancer cases that might occur in the exposed population as a whole as a result of emissions from routine facility-wide operations. Burden is estimated by multiplying the cancer risk determined at a specific location by the population (i.e., census block) residing in that location and summing those results for all populated areas within the carcinogenic ZOI. The ZOI was determined using a 70-year residential exposure period. The 1 in one million (1.0×10^{-6}) cancer risk ZOI extends approximately 0.5 miles (830 meters) to the east from the eastern facility boundary.

From census data, the population within the ZOI is 1,535 people. The cancer burden is estimated to be 0.02, which is below the SCAQMD Rule 1402 action risk level of 0.5 and suggests that the emissions from routine facility-wide operations have minimal impacts on the exposed population. A summary of the cancer burden estimate is presented in Table 9. Isoleths of the cancer burden are not shown since the cancer burden does not exceed the ZOI isopleth threshold of 0.5.

The ZOI for non-cancer acute or chronic health hazard impacts is the area subject to an HI of 0.5 or greater. The ZOI for non-cancer acute health impacts extends approximately 0.1 miles (220 meters) to the north from the property boundary. Figure 9 shows the acute HI ZOI. The non-cancer chronic health impacts do not exceed the ZOI isopleth threshold of 0.5, and therefore, isopleths are not shown for these impacts.

4.1.6 9-Year Cancer Risk and Sensitive Receptors

The PMI and MEIR were assessed using a 9-year exposure as required by OEHHA guidelines. The cancer risk at the PMI with 9-year exposure is 11.3 in one million (1.13×10^{-5}). The cancer risk at the MEIR with 9-year exposure is 6.62 in one million (6.62×10^{-6}). Sensitive receptors defined as those who are especially susceptible to adverse health effects from exposure to TACs, such as children, the elderly, and the health impaired were included in the HRA. There are no sensitive receptors within the ZOI. However, they have been included in this HRA for informative purposes only. Table 8 lists the cancer, chronic non-cancer HI, and acute non-cancer HI values for the sensitive receptors. The locations of the sensitive receptors evaluated in the HRA are presented in Figure 7.

4.1.7 *Estimates of Population Exposure*

From census data, the estimated exposed population is 1,535 people within the 1 in one million cancer risk ZOI. The estimated exposed population is 192 people within the acute HI ZOI of 0.5. A summary of the exposed population estimate is presented in Table 44. The non-cancer chronic health impacts do not exceed the ZOI isopleth threshold of 0.5, and therefore, the exposed population has not been estimated for these impacts.

Predictions of potential health risks related to SoCalGas emissions contain uncertainties because of gaps in scientific knowledge in the practice of exposure and risk assessment, as well as the need to simplify some aspects of the process for a manageable computational effort. In general, there are model and data uncertainties with respect to the assumed emissions, dispersion modeling, characteristics of the potentially exposed populations, and toxicological factors.

Because risk assessments are so often performed to set some regulatory limit on exposure for the protection of public health, the assumptions of risk assessments tend to overestimate rather than underestimate risk. The methodologies used in this AB 2588 HRA followed the Tier 1 “point estimate” approach described in the OEHHA Guidelines and are based on a central tendency approach combined with 95 percent upper-confidence-limit exposure factors to arrive at single-point health risk estimates, believed to be conservative, upper-bound estimates. This health-protective “point estimate” assumption was used to provide a degree of maximum protection on environmental values. The resulting health risk predictions should be viewed as maximum estimates of the actual health risks. Although the assessment process includes assumptions that may individually either overestimate or underestimate impact, as described below, on balance, health risk impacts are likely overestimated by a substantial margin.

Emission estimates could be in error due to limits in scientific certainty. This bias could be toward underestimation or overestimation for any given source. Conservative (i.e., overpredictive) assumptions were applied where possible in the estimation of emissions. The chemicals evaluated in this HRA include common chemicals addressed in most risk assessments, and are likely representative of the highest emitted TACs at SoCalGas. While it is possible a chemical was not included in this HRA that could be a significant contributor to health risk, it is believed unlikely.

The emission estimation methodologies that were used could have errors leading to underestimation or overestimation of emissions for any given chemical. The emission estimates for the combustion sources are based on information contained in the 2015 ATIR submitted to SCAQMD, information supplied by SoCalGas, and in the Title V Operating Permit. These data were assumed to be representative of operations during the

2015 reporting year. The CATEF emission factors used in this HRA tend to overestimate rather than underestimate potential emissions.

5.2 *AIR DISPERSION MODELING*

In general, USEPA-approved dispersion models, such as the one used in this HRA, tend to over predict rather than under predict concentrations. For example, all chemical emissions are assumed not to be transformed in the atmosphere. For certain pollutants, conversion to less toxic forms may occur sufficiently fast to reduce concentrations from the conservative model predictions. In addition, the models use assumptions about plume dispersion that tend to over predict concentrations.

5.3 *EXPOSURE ASSESSMENT*

The most important uncertainties concern the definitions of exposed populations and their exposure characteristics. The choice of a 30-year exposure period at residential exposure locations for lifetime risk estimates is very conservative in the sense that no person will likely spend 24 hours a day, 350 days a year, for over 30 years, at exactly the point of highest toxicity-weighted annual-average air concentrations. The greatest true exposure is likely to be at least two times, and perhaps more than 10 times lower than that calculated by this assumption. The average period of U.S. residency at any one location is about 9 years, and the 90th percentile of residency (typically used by the USEPA in “reasonable maximum exposure” estimates) is about 30 years. In addition, the exposure assessment considered all feasible environmental exposure pathways, including inhalation, soil ingestion, dermal absorption, crop consumption, and mother’s milk.

For selected non-residential receptors included in the analysis for which a 30-year exposure assumption is not representative, a 25-year working lifetime was assumed. For short-term exposure, there is also likely over prediction, because the analysis assumed that all campus operations involving the use of chemicals of short-term concern will occur at maximum hourly emission rates all at the same time.

5.4 *TOXICITY ASSESSMENT*

All estimates of cancer and non-cancer toxicity for this HRA came from toxicologists with the State of California, and are among the most conservative compilations of toxicity information available. Toxicity

estimates are derived either from observations in humans or from projection of information derived from experiments with laboratory animals. Human data are obviously more relevant for HRAs, but are often uncertain because of the difficulty of estimating exposures associated with the specific health effect of interest or due to insufficient numbers of people studied.

Cancer risk coefficients from human data are typically considered best estimates and are applied without safety factors. As discussed previously, cancer risk is typically considered proportional to pollutant concentration at any level of exposure (i.e., a linear, no-threshold model), which is conservative at low environmental doses. For non-cancer effects, the lowest exposure known to cause effects in humans is usually divided by uncertainty or safety factors to account for variations in susceptibility and other factors. When toxicity estimates come from animal data, they usually involve extra safety factors to account for possibly greater sensitivity in humans, and the less-than-human-lifetime observations in animals. Overall, the toxicity assumptions and criteria used in this HRA are biased toward overestimating risk.

5.5

SUMMARY

Although this HRA includes both component features that overestimate and underestimate impacts, on balance, maximum individual health risks are likely overestimated.

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Appendix A

Tables

Table 1: Facility-Wide Total Emission Rates by Substance
SoCalGas Playa del Rey

CAS	Compound	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
50000	Formaldehyde	7.12E+02	1.02E-02	1.64E-01	2.07E-02
67561	Methanol	1.60E+02	2.31E-03	3.68E-02	4.64E-03
71432	Benzene	2.56E+02	3.69E-03	6.10E-01	7.69E-02
75070	Acetaldehyde	4.97E+02	7.15E-03	1.15E-01	1.45E-02
91203	Naphthalene	6.29E+00	9.05E-05	1.43E-03	1.80E-04
100414	Ethyl benzene	7.81E+01	1.12E-03	4.95E-03	6.23E-04
106934	Ethylene dibromide (EDB)	4.70E+00	6.76E-05	1.09E-03	1.37E-04
106990	1,3-Butadiene	5.33E+01	7.66E-04	1.22E-02	1.53E-03
108883	Toluene	2.49E+02	3.58E-03	1.43E-02	1.80E-03
7664417	Ammonia	2.39E+02	3.43E-03	4.66E-02	5.87E-03
50328	Benzo[a]pyrene	3.63E-04	5.22E-09	8.44E-08	1.06E-08
56553	Benz[a]anthracene	2.15E-02	3.09E-07	4.99E-06	6.29E-07
83329	Acenaphthene	8.51E-02	1.22E-06	1.98E-05	2.49E-06
85018	Phenanthrene	2.26E-01	3.25E-06	5.24E-05	6.61E-06
86737	Fluorene	1.08E-01	1.55E-06	2.51E-05	3.16E-06
91576	2-Methyl naphthalene	1.37E+00	1.97E-05	3.18E-04	4.01E-05
95636	1,2,4-Trimethylbenzene	6.51E+01	9.36E-04	4.08E-03	5.14E-04
110543	Hexane	1.15E+02	1.65E-03	6.61E-03	8.33E-04
120127	Anthracene	4.59E-02	6.60E-07	1.07E-05	1.34E-06
129000	Pyrene	3.73E-02	5.37E-07	8.68E-06	1.09E-06
191242	Benzo[g,h,i]perylene	1.59E-03	2.28E-08	3.68E-07	4.64E-08
192972	Benzo[e]pyrene	1.50E-03	2.15E-08	3.48E-07	4.38E-08
193395	Indeno[1,2,3-cd]pyrene	6.35E-04	9.13E-09	1.48E-07	1.86E-08
198550	Perylene	3.18E-04	4.57E-09	7.38E-08	9.30E-09
205992	Benzo[b]fluoranthene	5.44E-04	7.83E-09	1.26E-07	1.59E-08

Table 1: Facility-Wide Total Emission Rates by Substance
SoCalGas Playa del Rey

CAS	Compound	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
206440	Fluoranthene	2.31E-02	3.32E-07	5.36E-06	6.76E-07
207089	Benzo[k]fluoranthene	2.72E-04	3.92E-09	6.33E-08	7.97E-09
208968	Acenaphthylene	2.03E-01	2.92E-06	4.71E-05	5.93E-06
218019	Chrysene	4.30E-02	6.18E-07	9.98E-06	1.26E-06
9901	Diesel engine exhaust, particulate matter (Diesel PM)	1.94E+00	2.79E-05	1.67E-01	2.10E-02
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	3.27E-03	4.70E-08	1.80E-04	2.27E-05
7439921	Lead	4.80E-04	6.90E-09	4.14E-05	5.21E-06
7440020	Nickel	2.75E-03	3.96E-08	1.94E-05	2.45E-06
18540299	Chromium, hexavalent (& compounds)	5.78E-06	8.31E-11	4.99E-07	6.28E-08
7440382	Arsenic	9.25E-05	1.33E-09	7.98E-06	1.01E-06
7440439	Cadmium	8.67E-05	1.25E-09	7.48E-06	9.42E-07
108383	m-Xylene	2.47E+02	3.56E-03	1.73E-02	2.18E-03
7782505	Chlorine	3.54E-01	5.09E-06	3.06E-04	3.85E-05
75092	Methylene chloride (Dichloromethane)	9.55E+00	1.37E-04	1.09E-03	1.37E-04

**Table 2: Emissions from Emergency Diesel Internal Combustion Engines (DICE)
SoCalGas Playa del Rey**

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
7	Emergency ICE 99HP Diesel	9901	Diesel exhaust particulates	1.94E+00	2.79E-05	1.67E-01	2.10E-02
7	Emergency ICE 99HP Diesel	7664417	Ammonia	4.62E-02	6.65E-07	3.99E-03	5.03E-04
7	Emergency ICE 99HP Diesel	1151	PAHs, total, w/o individ. components reported [PAH, POM]	2.09E-03	3.01E-08	1.80E-04	2.27E-05
7	Emergency ICE 99HP Diesel	91203	Naphthalene [PAH, POM]	1.14E-03	1.64E-08	9.82E-05	1.24E-05
7	Emergency ICE 99HP Diesel	7439921	Lead compounds (inorganic)	4.80E-04	6.90E-09	4.14E-05	5.21E-06
7	Emergency ICE 99HP Diesel	7440020	Nickel	2.25E-04	3.24E-09	1.94E-05	2.45E-06
7	Emergency ICE 99HP Diesel	18540299	Chromium, hexavalent (and compounds)	5.78E-06	8.31E-11	4.99E-07	6.28E-08
7	Emergency ICE 99HP Diesel	7440382	Arsenic and Compounds (inorganic)	9.25E-05	1.33E-09	7.98E-06	1.01E-06
7	Emergency ICE 99HP Diesel	7440439	Cadmium	8.67E-05	1.25E-09	7.48E-06	9.42E-07
7	Emergency ICE 99HP Diesel	50000	Formaldehyde	9.98E-02	1.44E-06	8.61E-03	1.08E-03
7	Emergency ICE 99HP Diesel	71432	Benzene	1.08E-02	1.55E-07	9.29E-04	1.17E-04
7	Emergency ICE 99HP Diesel	106990	Butadiene [1,3]	1.26E-02	1.81E-07	1.08E-03	1.37E-04
7	Emergency ICE 99HP Diesel	75070	Acetaldehyde	4.53E-02	6.51E-07	3.91E-03	4.92E-04
7	Emergency ICE 99HP Diesel	100414	Ethyl benzene	6.30E-04	9.06E-09	5.43E-05	6.85E-06
7	Emergency ICE 99HP Diesel	110543	Hexane	1.55E-03	2.24E-08	1.34E-04	1.69E-05
7	Emergency ICE 99HP Diesel	108883	Toluene	6.09E-03	8.76E-08	5.25E-04	6.62E-05

Table 3: List of AB2588 Substances and Toxic Pathways
SoCalGas Playa del Rey

CAS	Compound	Inhalation	Multipathway	Inhalation	Dermal	Soil Ingestion	Homegrown Produce	Mother's Milk
50000	Formaldehyde	X	---	Resident & Worker	---	---	---	---
67561	Methanol	X	---	Resident & Worker	---	---	---	---
71432	Benzene	X	---	Resident & Worker	---	---	---	---
75070	Acetaldehyde	X	---	Resident & Worker	---	---	---	---
91203	Naphthalene	X	---	Resident & Worker	---	---	---	---
100414	Ethyl benzene	X	---	Resident & Worker	---	---	---	---
106934	Ethylene dibromide [EDB]	X	---	Resident & Worker	---	---	---	---
106990	1,3-Butadiene	X	---	Resident & Worker	---	---	---	---
108883	Toluene	X	---	Resident & Worker	---	---	---	---
7664417	Ammonia	X	---	Resident & Worker	---	---	---	---
50328	Benzo[a]pyrene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
56553	Benz[a]anthracene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
83329	Acenaphthene	X	---	Resident & Worker	---	---	---	---
85018	Phenanthrene	X	---	Resident & Worker	---	---	---	---
86737	Fluorene	X	---	Resident & Worker	---	---	---	---
91576	2-Methyl naphthalene	X	---	Resident & Worker	---	---	---	---
95636	1,2,4-Trimethylbenzene	X	---	Resident & Worker	---	---	---	---
110543	Hexane	X	---	Resident & Worker	---	---	---	---
120127	Anthracene	X	---	Resident & Worker	---	---	---	---
129000	Pyrene	X	---	Resident & Worker	---	---	---	---
191242	Benzo[g,h,i]perylene	X	---	Resident & Worker	---	---	---	---
192972	Benzo[e]pyrene	X	---	Resident & Worker	---	---	---	---
193395	Indeno[1,2,3-cd]pyrene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
198550	Perylene	X	---	Resident & Worker	---	---	---	---
205992	Benzo[b]fluoranthene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
206440	Fluoranthene	X	---	Resident & Worker	---	---	---	---
207089	Benzo[k]fluoranthene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
208968	Acenaphthylene	X	---	Resident & Worker	---	---	---	---
218019	Chrysene	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident

Table 3: List of AB2588 Substances and Toxic Pathways
SoCalGas Playa del Rey

CAS	Compound	Inhalation	Multipathway	Inhalation	Dermal	Soil Ingestion	Homegrown Produce	Mother's Milk
9901	Diesel engine exhaust, particulate matter (Diesel PM)	X	---	Resident & Worker	---	---	---	---
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
7439921	Lead	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
7440020	Nickel	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
18540299	Chromium, hexavalent (& compounds)	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
7440382	Arsenic	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
7440439	Cadmium	X	X	Resident & Worker	Resident & Worker	Resident & Worker	Resident	Resident
108383	m-Xylene	X	---	Resident & Worker	---	---	---	---
7782505	Chlorine	X	---	Resident & Worker	---	---	---	---
75092	Methylene chloride (Dichloromethane)	X	---	Resident & Worker	---	---	---	---

**Table 4: Target Organs for Non-Cancer Health Effects
SoCalGas Playa del Rey**

CAS	Compound	Chronic Hazard Target Organs	Acute Hazard Target Organs
50000	Formaldehyde	Respiratory System	Eyes
67561	Methanol	Reproductive/Developmental	Central Nervous System
71432	Benzene	Hematologic System	Immune System, Reproductive/Developmental, Hematologic System
75070	Acetaldehyde	Respiratory System	Respiratory System, Eyes
91203	Naphthalene	Respiratory System	---
100414	Ethyl benzene	Kidney, Alimentary System, Reproductive/Developmental, Endocrine System	---
106934	Ethylene dibromide (EDB)	Reproductive/Developmental	---
106990	1,3-Butadiene	Reproductive/Developmental	Reproductive/Developmental
108883	Toluene	Central Nervous System, Reproductive/Developmental, Respiratory System	Central Nervous System, Reproductive/Developmental, Respiratory System, Eyes
764417	Ammonia	Respiratory System	Respiratory System, Eyes
50328	Benzo[a]pyrene	---	---
56553	Benz[a]anthracene	---	---
83329	Acenaphthene	---	---
85018	Phenanthrene	---	---
86737	Fluorene	---	---
91576	2-Methyl naphthalene	---	---
95636	1,2,4-Trimethylbenzene	---	---
110543	Hexane	Central Nervous System	---
120127	Anthracene	---	---
129000	Pyrene	---	---
191242	Benzo[g,h,i]perylene	---	---
192972	Benzo[e]pyrene	---	---
193395	Indeno[1,2,3-cd]pyrene	---	---
198550	Perylene	---	---

**Table 4: Target Organs for Non-Cancer Health Effects
SoCalGas Playa del Rey**

CAS	Compound	Chronic Hazard Target Organs	Acute Hazard Target Organs
205992	Benzo[b]fluoranthene	---	---
206440	Fluoranthene	---	---
207089	Benzo[k]fluoranthene	---	---
208968	Acenaphthylene	---	---
218019	Chrysene	---	---
9901	Diesel engine exhaust, particulate matter (Diesel PM)	Respiratory System	---
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	---	---
7439921	Lead	---	---
7440020	Nickel	Respiratory System, Hematologic System, Reproductive/Developmental	Immune System,
18540299	Chromium, hexavalent (& compounds)	Respiratory System, Hematologic System	---
7440382	Arsenic	Cardiovascular System, Central Nervous System, Skin, Respiratory System, Reproductive/Developmental	Cardiovascular System, Central Nervous System, Reproductive/Developmental
7440439	Cadmium	Kidney, Respiratory System	---
108383	m-Xylene	Central Nervous System, Respiratory System, Eyes	Central Nervous System, Respiratory System, Eyes
7782505	Chlorine	Respiratory System	Respiratory System, Eyes
75092	Methylene chloride [Dichloromethane]	Cardiovascular System, Central Nervous System	Cardiovascular System, Central Nervous System

**Table 5: Summary of SCAQMD Health Risk Assessment Guidance
SoCalGas Playa del Rey**

Parameter	Assumption
<i>Multi-Pathway</i>	
• Inhalation	Required for residential & worker receptors
• Dermal	Required for residential & worker receptors
• Soil	Required for residential & worker receptors
• Homegrown Produce	Required for residential receptors
• Mother's Milk	Required for residential receptors
• Deposition Velocity	0.02 m/s
• MP Exposure Assumptions	Use HARP2 defaults except for dermal pathway which uses 'warm' climate
<i>Residential Cancer Risk Assumptions</i>	
• Exposure Duration	30 years for individual receptors 70 years for cancer burden
• Analysis Option	RMP Using the Derived Method
<i>Worker Cancer Risk Assumptions</i>	
• Exposure Duration	25 years
• Meteorological Data	OEHHA Derived Method
<i>Residential and Worker Non-Cancer Risk Assumptions</i>	
• Meteorological Data	OEHHA Derived Method

**Table 6: AB2588 HRA Results Summary Excluding Risks from DICE
SoCalGas Playa del Rey**

AERMET KLAX (2012-2016)

	X-UTM (m)	Y-UTM (m)	HRA Result
Cancer 30-years			
PMI	367305	3758935	13.0 in one million
MEIR (Residence)	367400	3759000	8.1 in one million
Cancer 25-years			
MEIW (Worker)	367290	3758630	0.04 in one million
Cancer 9-years			
PMI	367305	3758935	9.4 in one million
MEIR (Residence)	367400	3759000	5.9 in one million
MEIW (Worker)	367290	3758630	3.8 in one million
Chronic			
PMI	367046	3759154	0.05
MEIR (Residence)	367400	3758950	0.02
MEIW (Worker)	366450	3758850	0.002
8-Hour Chronic			
PMI	367046	3759154	0.05
MEIR (Residence)	367400	3758950	0.01
MEIW (Worker)	366450	3758850	0.002
Acute			
PMI	367046	3759154	7.3
MEIR (Residence)	366970	3758890	0.7
MEIW (Worker)	367250	3758610	0.3

Table 7: AB2588 HRA Results Summary - Primary Sources and Chemical Contribution
SoCalGas Playa del Rey

AERMET KLAX (2012-2016)

	X-UTM (m)	Y-UTM (m)	HRA Result	Significance Threshold	Primary Sources Contribution	Primary Chemical Contribution
Cancer 30-years						
PMI	367297	3758930	15.6 in one million	---	Air Compressor E-29 (29.29%) Emergency ICE 99HP (15.09%) Organic Solvents & Fugitive Emissions (14.26%) ICE Main Unit 6 (13.95%) ICE Main Unit 9 (10.69%) ICE Main Unit 8 (10.14%)	1,3-Butadiene (35.21%) Benzene (33.32%) Diesel Particulate Matter (13.72%) Formaldehyde (10.24%) Acetaldehyde (2.91%)
MEIR (Residence)	367400	3758950	9.2 in one million	10 in one million	Air Compressor E-29 (25.87%) ICE Main Unit 6 (19.36%) ICE Main Unit 9 (14.27%) ICE Main Unit 8 (13.71%) Organic Solvents & Fugitive Emissions (10.84%) Emergency ICE 99HP (9.74%)	1,3-Butadiene (39.10%) Benzene (31.14%) Formaldehyde (12.94%) Diesel Particulate Matter (8.85%) Acetaldehyde (3.82%)
Cancer 25-years						
MEIW (Worker)	367290	3758630	0.1 in one million	10 in one million	Organic Solvents & Fugitive Emissions (23.35%) Emergency ICE 99HP (16.88%) Air Compressor E-29 (16.38%) ICE Main Unit 6 (14.92%) ICE Main Unit 9 (10.26%) ICE Main Unit 8 (10.05%)	Benzene (39.82%) 1,3-Butadiene (27.64%) Diesel Particulate Matter (16.30%) Formaldehyde (9.75%) Acetaldehyde (2.85%)
Cancer 9-years						
PMI	367297	3758930	11.2 in one million	---	Air Compressor E-29 (29.12%) Emergency ICE 99HP (15.51%) Organic Solvents & Fugitive Emissions (14.17%) ICE Main Unit 6 (13.89%) ICE Main Unit 9 (10.65%) ICE Main Unit 8 (10.10%)	1,3-Butadiene (35.00%) Benzene (33.13%) Diesel Particulate Matter (13.64%) Formaldehyde (10.29%) Acetaldehyde (2.89%)
MEIR (Residence)	367400	3758950	6.6 in one million	10 in one million	Air Compressor E-29 (25.76%) ICE Main Unit 6 (19.31%) ICE Main Unit 9 (14.24%) ICE Main Unit 8 (13.67%) Organic Solvents & Fugitive Emissions (10.79%) Emergency ICE 99HP (10.03%)	1,3-Butadiene (38.93%) Benzene (31.01%) Formaldehyde (12.88%) Diesel Particulate Matter (8.82%) Acetaldehyde (3.80%)
Chronic						
PMI	367046	3759154	0.05	---	Organic Solvents & Fugitive Emissions (70.72%) Natural Gas Venting (20.45%) Air Compressor E-29 (1.36%) TK-4A (0.87%)	Benzene (94.63%) Formaldehyde (1.22%) Chlorine (1.20%) Toluene (1.16%)
MEIR (Residence)	367400	3758950	0.02	1.00	Air Compressor E-29 (38.55%) Organic Solvents & Fugitive Emissions (18.07%) ICE Main Unit 6 (13.06%) ICE Main Unit 9 (9.63%) ICE Main Unit 8 (9.25%) Air Compressor E-30 (7.77%)	Benzene (35.30%) Formaldehyde (23.27%) Chlorine (22.96%) 1,3-Butadiene (11.08%)
MEIW (Worker)	366450	3758850	0.002	1.00	Organic Solvents & Fugitive Emissions (72.05%) Air Compressor E-29 (8.14%) Natural Gas Venting (3.66%) ICE Main Unit 6 (2.54%) ICE Main Unit 9 (2.14%) ICE Main Unit 8 (1.89%)	Benzene (78.98%) Formaldehyde (6.99%) Chlorine (6.52%) 1,3-Butadiene (3.19%)

Table 7: AB2588 HRA Results Summary - Primary Sources and Chemical Contribution
SoCalGas Playa del Rey

AERMET KLAX (2012-2016)

	X-UTM (m)	Y-UTM (m)	HRA Result	Significance Threshold	Primary Sources Contribution	Primary Chemical Contribution
8-Hour Chronic						
PMI	367046	3759154	0.05	---	Organic Solvents & Fugitive Emissions (71.52%) Natural Gas Venting (20.68%)	Benzene (98.55%) Formaldehyde (1.27%)
MEIR (Residence)	367400	3758950	0.01	1.00	Organic Solvents & Fugitive Emissions (25.79%) Air Compressor E-29 (23.70%) ICE Main Unit 6 (17.79%) ICE Main Unit 9 (13.12%) ICE Main Unit 8 (12.60%)	Benzene (56.91%) Formaldehyde (37.52%)
MEIW (Worker)	366450	3758850	0.002	1.00	Organic Solvents & Fugitive Emissions (77.26%) Natural Gas Venting (3.93%) Air Compressor E-29 (3.76%) ICE Main Unit 6 (2.60%) ICE Main Unit 9 (2.19%) ICE Main Unit 8 (1.94%)	Benzene (90.81%) Formaldehyde (8.04%)
Acute						
PMI	367046	3759154	7.28	---	Natural Gas Venting (97.79%) Organic Solvents & Fugitive Emissions (0.36%)	Benzene (98.44%) Formaldehyde (1.40%)
MEIR (Residence)	366970	3758890	0.68	1.00	Natural Gas Venting (77.23%) Air Compressor E-29 (3.38%) Air Compressor E-30 (3.38%) Emergency ICE 110HP (2.85%) Air Compressor 400 (2.42%) Air Compressor 120 (2.26%)	Benzene (82.71%) Formaldehyde (15.52%)
MEIW (Worker)	367250	3758610	0.33	1.00	Natural Gas Venting (63.42%) Air Compressor E-30 (7.26%) Air Compressor E-29 (6.82%) Air Compressor 120 (3.83%) Air Compressor 400 (3.75%) ICE Main Unit 6 (3.14%) ICE Main Unit 9 (2.93%)	Benzene (74.12%) Formaldehyde (22.84%)

Table 7: AB2588 HRA Results Summary - Primary Sources and Chemical Contribution
SoCalGas Playa del Rey

AERMET KLAX (2012-2016)

	X-UTM (m)	Y-UTM (m)	HRA Result	Significance Threshold	Primary Sources Contribution	Primary Chemical Contribution
8-Hour Chronic						
PMI	367046	3759154	0.05	---	Organic Solvents & Fugitive Emissions (71.52%) Natural Gas Venting (20.68%)	Benzene (98.55%) Formaldehyde (1.27%)
MEIR (Residence)	367400	3758950	0.01	1 in one million	Organic Solvents & Fugitive Emissions (25.79%) Air Compressor E-29 (23.70%) ICE Main Unit 6 (17.79%) ICE Main Unit 9 (13.12%) ICE Main Unit 8 (12.60%)	Benzene (56.91%) Formaldehyde (37.52%)
MEIW (Worker)	366450	3758850	0.002	1 in one million	Organic Solvents & Fugitive Emissions (77.26%) Natural Gas Venting (3.93%) Air Compressor E-29 (3.76%) ICE Main Unit 6 (2.60%) ICE Main Unit 9 (2.19%) ICE Main Unit 8 (1.94%)	Benzene (90.81%) Formaldehyde (8.04%)
Acute						
PMI	367046	3759154	7.28	---	Natural Gas Venting (97.79%) Organic Solvents & Fugitive Emissions (0.36%)	Benzene (98.44%) Formaldehyde (1.40%)
MEIR (Residence)	366970	3758890	0.68	1 in one million	Natural Gas Venting (77.23%) Air Compressor E-29 (3.38%) Air Compressor E-30 (3.38%) Emergency ICE 110HP (2.85%) Air Compressor 400 (2.42%) Air Compressor 120 (2.26%)	Benzene (82.71%) Formaldehyde (15.52%)
MEIW (Worker)	367250	3758610	0.33	1 in one million	Natural Gas Venting (63.42%) Air Compressor E-30 (7.26%) Air Compressor E-29 (6.82%) Air Compressor 120 (3.83%) Air Compressor 400 (3.75%) ICE Main Unit 6 (3.14%) ICE Main Unit 9 (2.93%)	Benzene (74.12%) Formaldehyde (22.84%)

**Table 8: AB2588 HRA Results Summary - Sensitive Receptors
SoCalGas Playa del Rey**

Sensitive Receptor	X-UTM (m)	Y-UTM (m)	Elevation (m)	9-year Cancer Risk (in one million)	Chronic HI	Acute HI
Playa Vista Elementary School	368394	3759532	4.98	0.39	0.0016	0.05
Westside Neighborhood School	368604	3760580	3.79	0.06	0.0002	0.03
Saint Bernard High School	367615	3758022	34.93	0.09	0.0003	0.11
Westchester Enriched Sciences Magnets	367945	3758434	44.1	0.09	0.0003	0.12
Loyola Marymount University	369057	3759767	43.92	0.24	0.0007	0.06
Marina del Rey Hospital	367047	3761082	3.79	0.04	0.0001	0.03
Playa Vista Medical Center	368598	3760147	2.41	0.11	0.0004	0.03
Sunrise of Playa Vista (Senior Center)	368070	3760143	2.27	0.08	0.0003	0.05

Table 9: Summary of Cancer Burden Estimates
SoCalGas Playa del Rey

Census Tract	Maximum Cancer Risk	Receptor	Census Tract Population ¹	Estimated Percentage of Census Tract Within ZOI ²	Zone of Impact Population	Cancer Burden ³
2766.01	1.08E-05	(367400m E, 3758950m N)	3838	0.40	1535	0.02

(1) Population from 2010 Census data

(2) Percentage of risk in census tract estimated from 2010 Census data

(3) Cancer Burden = (Maximum Cancer Risk) x (Zone of Impact Population)

Table 10: Toxicity Values for Compounds Included in HRA - CSFs and RELs
SoCalGas Playa del Rey

CAS	Compound	Inhalation Cancer SF (mg/kg-d) ⁻¹	Oral Cancer SF (mg/kg-d) ⁻¹	Inhalation Chronic REL (ug/m ³)	Oral Chronic REL (mg/kg-d)	Inhalation 8-Hour Chronic REL (ug/m ³)	Acute REL (ug/m ³)
50000	Formaldehyde	0.021	---	9	---	9	55
67561	Methanol	---	---	4000	---	---	28000
71432	Benzene	0.1	---	3	---	3	27
75070	Acetaldehyde	0.01	---	140	---	300	470
91203	Naphthalene	0.12	---	9	---	---	---
100414	Ethyl benzene	0.0087	---	2000	---	---	---
106934	Ethylene dibromide [EDB]	0.25	---	0.8	---	---	---
106990	1,3-Butadiene	0.6	---	2	---	9	660
108883	Toluene	---	---	300	---	---	37000
7664417	Ammonia	---	---	200	---	---	3200
50328	Benzo[a]pyrene	3.9	12	---	---	---	---
56553	Benz[a]anthracene	0.39	1.2	---	---	---	---
83329	Acenaphthene	---	---	---	---	---	---
85018	Phenanthrene	---	---	---	---	---	---
86737	Fluorene	---	---	---	---	---	---
91576	2-Methyl naphthalene	---	---	---	---	---	---
95636	1,2,4-Trimethylbenzene	---	---	---	---	---	---
110543	Hexane	---	---	7000	---	---	---
120127	Anthracene	---	---	---	---	---	---
129000	Pyrene	---	---	---	---	---	---
191242	Benzo[g,h,i]perylene	---	---	---	---	---	---

Table 10: Toxicity Values for Compounds Included in HRA - CSFs and RELs
SoCalGas Playa del Rey

CAS	Compound	Inhalation Cancer SF (mg/kg-d) ⁻¹	Oral Cancer SF (mg/kg-d) ⁻¹	Inhalation Chronic REL (ug/m ³)	Oral Chronic REL (mg/kg-d)	Inhalation 8-Hour Chronic REL (ug/m ³)	Acute REL (ug/m ³)
192972	Benzo[e]pyrene	---	---	---	---	---	---
193395	Indeno[1,2,3-cd]pyrene	0.39	1.2	---	---	---	---
198550	Perylene	---	---	---	---	---	---
205992	Benzo[b]fluoranthene	0.39	1.2	---	---	---	---
206440	Fluoranthene	---	---	---	---	---	---
207089	Benzo[k]fluoranthene	0.39	1.2	---	---	---	---
208968	Acenaphthylene	---	---	---	---	---	---
218019	Chrysene	0.039	0.12	---	---	---	---
9901	Diesel engine exhaust, particulate matter (Diesel PM)	1.1	---	5	---	---	---
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	3.9	12	---	---	---	---
7439921	Lead	0.042	0.0085	---	---	---	---
7440020	Nickel	0.91	---	0.014	0.011	0.06	0.2
18540299	Chromium, hexavalent (& compounds)	510	0.5	0.2	0.02	---	---
7440382	Arsenic	12	1.5	0.015	0.0000035	0.015	0.2
7440439	Cadmium	15	---	0.02	0.0005	---	---
108383	m-Xylene	---	---	700	---	---	22000
7782505	Chlorine	---	---	0.2	---	---	210
75092	Methylene chloride [Dichloromethane]	0.0035	---	400	---	---	14000

Table 11: Modeled Parameters - Point Sources
SoCalGas Playa del Rey

Stack ID	Stack Name	UTM Easting (m) ¹	UTM Northing (m) ¹	Source Type	Elevation (m)	Stack Height (m)	Stack Diameter (m)	Temperature (K)	Exit Velocity (m/s)
1	Emergency ICE 348HP NG	367187.27	3759126.00	POINT	3.10	2.49	0.15	727.59	52.78
2	Emergency ICE 110HP NG	367149.27	3758971.00	POINT	41.07	3.66	0.15	783.15	20.70
3	Emergency ICE Fire Pump 93HP NG	367081.27	3759101.00	POINT	3.02	5.18	0.15	833.15	18.03
4	ICE Main Unit 6 2000HP NG	367126.27	3758956.00	POINT	40.06	7.32	0.61	607.04	28.80
5	ICE Main Unit 8 2000HP NG	367129.27	3758953.00	POINT	40.17	7.32	0.61	601.48	28.22
6	ICE Main Unit 9 2000HP NG	367132.27	3758951.00	POINT	40.31	7.32	0.61	605.93	27.66
7	Emergency ICE 99HP Diesel	367198.27	3758925.00	POINT	42.88	2.13	0.08	800.37	56.61
8	Glycol Reboiler	366982.27	3759028.00	POINT	3.47	6.10	0.58	457.25	3.21
9	Thermal Oxidizer ²	367163.27	3759198.00	POINT	2.27	6.10	0.30	1033.15	4.57
10	Loading Arm	367131.27	3759117.00	POINT	3.10	6.10	0.15	273.00	0.01
17	Dehy Hot Oil Heater ²	366979.27	3759025.00	POINT	3.49	4.65	0.61	499.82	4.78
28	Air Compressor 400	367124.09	3758972.05	POINT	39.92	0.69	0.08	810.93	24.70
29	Air Compressor 120	367121.10	3758973.29	POINT	39.75	0.69	0.08	810.93	24.70
30	ICE Air Compressor 12HP Gasoline E29	367159.87	3758913.86	POINT	41.44	0.15	0.05	288.71	7.79
31	ICE Air Compressor 12HP Gasoline E30	367162.11	3758916.28	POINT	41.56	0.15	0.05	288.71	7.79
32	Natural Gas Venting	367072.27	3759121.00	POINT	2.40	3.05	0.91	299.82	0.18

(1) UTM Coordinates in WGS84 projection

(2) Sources have raincaps. According to AERMOD Guideline from December 2016, actual stack parameters should be used for capped releases as if the release were a non-capped vertical point source. The AERMOD model performs the necessary adjustments internally to account for plume rise and stack-tip downwash.

Table 12: Modeled Parameters - Area Sources
SoCalGas Playa del Rey

Stack ID	Stack Name	UTM Easting (m) ¹	UTM Northing (m) ¹	Source Type	Initial Vertical Dimension (m)	Easterly Length of Area Release (m)	Northerly Length of Area Release (m)	Angle	Elevation (m)	Release Height (m)	Number of Vertices	Easting X1 (m)	Northing Y1 (m)
34	Sump	367160.80	3758957.34	AREA	0.00	2.04	2.04	40	41.44	0.00	---	---	---
33	Organic Solvents/Fugitive Emissions	---	---	AREAPOLY	0.00	---	---	---	4.40	0.00	23	366988.99	3759010.08

(1) UTM Coordinates in WGS84 projection

Table 12: Modeled Parameters - Area Sources
SoCalGas Playa del Rey

Stack ID	Stack Name	UTM Easting (m) ¹	UTM Northing (m) ¹	Source Type	Easting X2 (m)	Northing Y2 (m)	Easting X3 (m)	Northing Y3 (m)	Easting X4 (m)	Northing Y4 (m)	Easting X5 (m)	Northing Y5 (m)	Easting X6 (m)	Northing Y6 (m)	Easting X7 (m)	Northing Y7 (m)	Easting X8 (m)	Northing Y8 (m)	Easting X9 (m)	Northing Y9 (m)	Easting X10 (m)	Northing Y10 (m)	Easting X11 (m)	Northing Y11 (m)	Easting X12 (m)	Northing Y12 (m)
34	Sump	367160.80	3758957.34	AREA	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
33	Organic Solvents/Fugitive Emissions	---	---	AREAPOLY	366967.96	3759039.7	367028.89	3759091.5	367009.48	3759117.4	367100.07	3759193.4	367290.96	3759200.4	367342.19	3759103.9	367265.08	3759073.7	367209.54	3759107.1	367221.4	3759013.3	367262.92	3758944.8	367250.52	3758929.2

(1) UTM Coordinates in WGS84 projection

Table 12: Modeled Parameters - Area Sources
SoCalGas Playa del Rey

Stack ID	Stack Name	UTM Easting (m) ¹	UTM Northing (m) ¹	Source Type	Easting X13 (m)	Northing Y13 (m)	Easting X14 (m)	Northing Y14 (m)	Easting X15 (m)	Northing Y15 (m)	Easting X16 (m)	Northing Y16 (m)	Easting X17 (m)	Northing Y17 (m)	Easting X18 (m)	Northing Y18 (m)	Easting X19 (m)	Northing Y19 (m)	Easting X20 (m)	Northing Y20 (m)	Easting X21 (m)	Northing Y21 (m)	Easting X22 (m)	Northing Y22 (m)	Easting X23 (m)	Northing Y23 (m)
34	Sump	367160.80	3758957.34	AREA	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
33	Organic Solvents/Fugitive Emissions	---	---	AREAPOLY	367269.93	3758911.4	367241.35	3758877.4	367212.23	3758902.8	367183.65	3758868.8	367111.93	3758913.6	367078.5	3758919.5	367048.84	3758914.6	367052.08	3758962.1	367066.1	3758990.7	367113.01	3759035.4	367098.99	3759095.8

(1) UTM Coordinates in WGS84 projection

Table 13: Modeled Parameters - Volume Sources
SoCalGas Playa del Rey

Stack ID	Stack Name	UTM Easting (m) ¹	UTM Northing (m) ¹	Source Type	Initial Lateral Dimension (m)	Initial Vertical Dimension (m)	Elevation (m)	Release Height (m)
11	Building AC & Heat V1	367180.46	3758871.65	VOLUME	4.54	1.70	41.74	1.83
12	Building AC & Heat V2	367192.84	3758886.16	VOLUME	4.54	1.70	42.27	1.83
13	Building AC & Heat V3	367205.39	3758900.66	VOLUME	4.54	1.70	42.80	1.83
14	Building AC & Heat V4	367219.29	3758897.28	VOLUME	3.12	1.70	43.05	1.83
15	Building AC & Heat V5	367228.94	3758889.10	VOLUME	3.12	1.70	42.95	1.83
16	Building AC & Heat V6	367238.42	3758880.83	VOLUME	3.12	1.70	42.89	1.83
18	TK-3	367148.27	3759146.00	VOLUME	2.11	2.27	2.28	9.07
19	TK-4A	367135.27	3759146.00	VOLUME	2.11	2.27	2.29	9.07
20	TK-4B	367132.27	3759131.00	VOLUME	2.11	2.27	2.70	9.07
21	TK-4C	367144.27	3759130.00	VOLUME	2.11	2.27	2.80	9.07
22	TK-6	367137.27	3759160.00	VOLUME	0.65	2.27	2.27	2.79
23	TK-5	367160.27	3759147.00	VOLUME	1.10	2.27	2.34	4.72
24	TK-1B	367158.27	3759134.00	VOLUME	1.28	3.40	2.66	5.49
25	TK-1A	367153.27	3759129.00	VOLUME	1.28	3.40	2.87	5.49
26	TK-2	367133.27	3759167.00	VOLUME	1.52	2.27	2.27	6.55
27	TK-12	367187.27	3759178.00	VOLUME	2.10	2.28	2.43	9.04

(1) UTM Coordinates in WGS84 projection

Table 14: Source Operating Hours
SoCalGas Playa del Rey

Stack ID	Stack Name	Hours/Day	Days/Week	Weeks/Year
1	Emergency ICE 348HP NG	1	1	1
2	Emergency ICE 110HP NG	1	1	1
3	Emergency ICE Fire Pump 93HP NG	1	1	1
4	ICE Main Unit 6 2000HP NG	6	2	12
5	ICE Main Unit 8 2000HP NG	4	1	8
6	ICE Main Unit 9 2000HP NG	4	2	9
7	Emergency ICE 99HP Diesel	1	1	1
8	Glycol Reboiler	24	7	52
9	Thermal Oxidizer	24	7	52
10	Loading Arm	24	7	52
11	Building AC & Heat V1	24	7	52
12	Building AC & Heat V2	24	7	52
13	Building AC & Heat V3	24	7	52
14	Building AC & Heat V4	24	7	52
15	Building AC & Heat V5	24	7	52
16	Building AC & Heat V6	24	7	52
17	Dehy Hot Oil Heater	24	7	52
18	TK-3	24	7	52
19	TK-4A	24	7	52
20	TK-4B	24	7	52
21	TK-4C	24	7	52
22	TK-6	24	7	52
23	TK-5	24	7	52
24	TK-1B	24	7	52
25	TK-1A	24	7	52
26	TK-2	24	7	52
27	TK-12	24	7	52
28	Air Compressor 400	1	1	1
29	Air Compressor 120	1	1	1
30	ICE Air Compressor 12HP Gasoline E29	2	1	4
31	ICE Air Compressor 12HP Gasoline E30	1	1	1
32	Natural Gas Venting	0.5	1	26
33	Organic Solvents/Fugitive Emissions	24	7	52
34	Sump	24	7	52

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
1	Emergency ICE 348HP NG	50000	Formaldehyde	1.55E+00	2.23E-05	5.77E-02	7.27E-03
1	Emergency ICE 348HP NG	67561	Methanol	2.31E-01	3.32E-06	8.61E-03	1.08E-03
1	Emergency ICE 348HP NG	71432	Benzene	1.19E-01	1.72E-06	4.45E-03	5.60E-04
1	Emergency ICE 348HP NG	75070	Acetaldehyde	2.11E-01	3.03E-06	7.85E-03	9.89E-04
1	Emergency ICE 348HP NG	91203	Naphthalene [PAH, POM]	7.33E-03	1.05E-07	2.73E-04	3.44E-05
1	Emergency ICE 348HP NG	100414	Ethyl benzene	1.87E-03	2.69E-08	6.98E-05	8.79E-06
1	Emergency ICE 348HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.61E-03	2.31E-08	5.99E-05	7.55E-06
1	Emergency ICE 348HP NG	106990	Butadiene [1,3]	5.00E-02	7.20E-07	1.87E-03	2.35E-04
1	Emergency ICE 348HP NG	108883	Toluene	4.21E-02	6.06E-07	1.57E-03	1.98E-04
1	Emergency ICE 348HP NG	7664417	Ammonia	2.37E-01	3.41E-06	8.83E-03	1.11E-03
2	Emergency ICE 110HP NG	50000	Formaldehyde	1.55E-01	2.23E-06	1.91E-02	2.41E-03
2	Emergency ICE 110HP NG	67561	Methanol	2.31E-02	3.32E-07	2.86E-03	3.60E-04
2	Emergency ICE 110HP NG	71432	Benzene	1.19E-02	1.72E-07	1.47E-03	1.86E-04
2	Emergency ICE 110HP NG	75070	Acetaldehyde	2.11E-02	3.03E-07	2.60E-03	3.28E-04
2	Emergency ICE 110HP NG	91203	Naphthalene [PAH, POM]	7.33E-04	1.05E-08	9.06E-05	1.14E-05
2	Emergency ICE 110HP NG	100414	Ethyl benzene	1.87E-04	2.69E-09	2.31E-05	2.92E-06
2	Emergency ICE 110HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.61E-04	2.31E-09	1.99E-05	2.50E-06
2	Emergency ICE 110HP NG	106990	Butadiene [1,3]	5.00E-03	7.20E-08	6.19E-04	7.80E-05
2	Emergency ICE 110HP NG	108883	Toluene	4.21E-03	6.06E-08	5.21E-04	6.56E-05
2	Emergency ICE 110HP NG	7664417	Ammonia	2.37E-02	3.41E-07	2.93E-03	3.69E-04
3	Emergency ICE Fire Pump 93HP NG	50000	Formaldehyde	1.11E-01	1.59E-06	1.41E-02	1.78E-03
3	Emergency ICE Fire Pump 93HP NG	67561	Methanol	1.65E-02	2.38E-07	2.11E-03	2.66E-04
3	Emergency ICE Fire Pump 93HP NG	71432	Benzene	8.54E-03	1.23E-07	1.09E-03	1.37E-04
3	Emergency ICE Fire Pump 93HP NG	75070	Acetaldehyde	1.51E-02	2.17E-07	1.92E-03	2.42E-04
3	Emergency ICE Fire Pump 93HP NG	91203	Naphthalene [PAH, POM]	5.25E-04	7.55E-09	6.69E-05	8.43E-06
3	Emergency ICE Fire Pump 93HP NG	100414	Ethyl benzene	1.34E-04	1.93E-09	1.71E-05	2.15E-06
3	Emergency ICE Fire Pump 93HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.15E-04	1.66E-09	1.47E-05	1.85E-06

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
3	Emergency ICE Fire Pump 93HP NG	106990	Butadiene [1,3]	3.58E-03	5.16E-08	4.57E-04	5.76E-05
3	Emergency ICE Fire Pump 93HP NG	108883	Toluene	3.02E-03	4.34E-08	3.85E-04	4.85E-05
3	Emergency ICE Fire Pump 93HP NG	7664417	Ammonia	1.70E-02	2.44E-07	2.16E-03	2.73E-04
4	ICE Main Unit 6 2000HP NG	50000	Formaldehyde	2.88E+02	4.15E-03	1.64E-01	2.07E-02
4	ICE Main Unit 6 2000HP NG	50328	Benzo[a]pyrene [PAH, POM]	1.48E-04	2.13E-09	8.44E-08	1.06E-08
4	ICE Main Unit 6 2000HP NG	56553	Benz[a]anthracene [PAH, POM]	8.77E-03	1.26E-07	4.99E-06	6.29E-07
4	ICE Main Unit 6 2000HP NG	67561	Methanol	6.48E+01	9.32E-04	3.68E-02	4.64E-03
4	ICE Main Unit 6 2000HP NG	71432	Benzene	5.07E+01	7.29E-04	2.88E-02	3.63E-03
4	ICE Main Unit 6 2000HP NG	75070	Acetaldehyde	2.03E+02	2.91E-03	1.15E-01	1.45E-02
4	ICE Main Unit 6 2000HP NG	83329	Acenaphthene [PAH, POM]	3.47E-02	5.00E-07	1.98E-05	2.49E-06
4	ICE Main Unit 6 2000HP NG	85018	Phenanthrene [PAH, POM]	9.22E-02	1.33E-06	5.24E-05	6.61E-06
4	ICE Main Unit 6 2000HP NG	86737	Fluorene [PAH, POM]	4.41E-02	6.35E-07	2.51E-05	3.16E-06
4	ICE Main Unit 6 2000HP NG	91203	Naphthalene [PAH, POM]	2.51E+00	3.62E-05	1.43E-03	1.80E-04
4	ICE Main Unit 6 2000HP NG	91576	2-Methyl naphthalene [PAH, POM]	5.59E-01	8.04E-06	3.18E-04	4.01E-05
4	ICE Main Unit 6 2000HP NG	95636	1,2,4-Trimethylbenzene	2.90E+00	4.17E-05	1.65E-03	2.08E-04
4	ICE Main Unit 6 2000HP NG	100414	Ethyl benzene	2.82E+00	4.06E-05	1.60E-03	2.02E-04
4	ICE Main Unit 6 2000HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.92E+00	2.76E-05	1.09E-03	1.37E-04
4	ICE Main Unit 6 2000HP NG	106990	Butadiene [1,3]	2.14E+01	3.08E-04	1.22E-02	1.53E-03
4	ICE Main Unit 6 2000HP NG	108883	Toluene	2.51E+01	3.62E-04	1.43E-02	1.80E-03
4	ICE Main Unit 6 2000HP NG	110543	Hexane	1.16E+01	1.67E-04	6.61E-03	8.33E-04
4	ICE Main Unit 6 2000HP NG	120127	Anthracene [PAH, POM]	1.88E-02	2.70E-07	1.07E-05	1.34E-06
4	ICE Main Unit 6 2000HP NG	129000	Pyrene [PAH, POM]	1.53E-02	2.19E-07	8.68E-06	1.09E-06
4	ICE Main Unit 6 2000HP NG	191242	Benzo[g,h,i]perylene [PAH, POM]	6.48E-04	9.32E-09	3.68E-07	4.64E-08
4	ICE Main Unit 6 2000HP NG	192972	Benzo[e]pyrene [PAH, POM]	6.11E-04	8.79E-09	3.48E-07	4.38E-08
4	ICE Main Unit 6 2000HP NG	193395	Indeno[1,2,3-cd]pyrene [PAH, POM]	2.59E-04	3.73E-09	1.48E-07	1.86E-08
4	ICE Main Unit 6 2000HP NG	198550	Perylene [PAH, POM]	1.30E-04	1.87E-09	7.38E-08	9.30E-09
4	ICE Main Unit 6 2000HP NG	205992	Benzo[b]fluoranthene [PAH, POM]	2.22E-04	3.20E-09	1.26E-07	1.59E-08

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
4	ICE Main Unit 6 2000HP NG	206440	Fluoranthene [PAH, POM]	9.43E-03	1.36E-07	5.36E-06	6.76E-07
4	ICE Main Unit 6 2000HP NG	207089	Benzo[k]fluoranthene [PAH, POM]	1.11E-04	1.60E-09	6.33E-08	7.97E-09
4	ICE Main Unit 6 2000HP NG	208968	Acenaphthylene [PAH, POM]	8.28E-02	1.19E-06	4.71E-05	5.93E-06
4	ICE Main Unit 6 2000HP NG	218019	Chrysene [PAH, POM]	1.75E-02	2.52E-07	9.98E-06	1.26E-06
4	ICE Main Unit 6 2000HP NG	7664417	Ammonia	8.19E+01	1.18E-03	4.66E-02	5.87E-03
5	ICE Main Unit 8 2000HP NG	50000	Formaldehyde	2.02E+02	2.90E-03	1.54E-01	1.94E-02
5	ICE Main Unit 8 2000HP NG	50328	Benzo[a]pyrene [PAH, POM]	1.04E-04	1.49E-09	7.91E-08	9.97E-09
5	ICE Main Unit 8 2000HP NG	56553	Benz[a]anthracene [PAH, POM]	6.14E-03	8.83E-08	4.68E-06	5.90E-07
5	ICE Main Unit 8 2000HP NG	67561	Methanol	4.53E+01	6.52E-04	3.45E-02	4.35E-03
5	ICE Main Unit 8 2000HP NG	71432	Benzene	3.54E+01	5.10E-04	2.70E-02	3.41E-03
5	ICE Main Unit 8 2000HP NG	75070	Acetaldehyde	1.42E+02	2.04E-03	1.08E-01	1.36E-02
5	ICE Main Unit 8 2000HP NG	83329	Acenaphthene [PAH, POM]	2.43E-02	3.50E-07	1.85E-05	2.33E-06
5	ICE Main Unit 8 2000HP NG	85018	Phenanthrene [PAH, POM]	6.45E-02	9.28E-07	4.92E-05	6.20E-06
5	ICE Main Unit 8 2000HP NG	86737	Fluorene [PAH, POM]	3.09E-02	4.44E-07	2.35E-05	2.97E-06
5	ICE Main Unit 8 2000HP NG	91203	Naphthalene [PAH, POM]	1.76E+00	2.53E-05	1.34E-03	1.69E-04
5	ICE Main Unit 8 2000HP NG	91576	2-Methyl naphthalene [PAH, POM]	3.91E-01	5.62E-06	2.98E-04	3.76E-05
5	ICE Main Unit 8 2000HP NG	95636	1,2,4-Trimethylbenzene	2.03E+00	2.92E-05	1.55E-03	1.95E-04
5	ICE Main Unit 8 2000HP NG	100414	Ethyl benzene	1.97E+00	2.84E-05	1.50E-03	1.90E-04
5	ICE Main Unit 8 2000HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.34E+00	1.93E-05	1.02E-03	1.29E-04
5	ICE Main Unit 8 2000HP NG	106990	Butadiene [1,3]	1.50E+01	2.15E-04	1.14E-02	1.44E-03
5	ICE Main Unit 8 2000HP NG	108883	Toluene	1.76E+01	2.53E-04	1.34E-02	1.69E-03
5	ICE Main Unit 8 2000HP NG	110543	Hexane	8.13E+00	1.17E-04	6.20E-03	7.81E-04
5	ICE Main Unit 8 2000HP NG	120127	Anthracene [PAH, POM]	1.31E-02	1.89E-07	1.00E-05	1.26E-06
5	ICE Main Unit 8 2000HP NG	129000	Pyrene [PAH, POM]	1.07E-02	1.53E-07	8.14E-06	1.03E-06
5	ICE Main Unit 8 2000HP NG	191242	Benzo[g,h,i]perylene [PAH, POM]	4.53E-04	6.52E-09	3.45E-07	4.35E-08
5	ICE Main Unit 8 2000HP NG	192972	Benzo[e]pyrene [PAH, POM]	4.28E-04	6.15E-09	3.26E-07	4.11E-08
5	ICE Main Unit 8 2000HP NG	193395	Indeno[1,2,3-cd]pyrene [PAH, POM]	1.81E-04	2.61E-09	1.38E-07	1.74E-08

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
5	ICE Main Unit 8 2000HP NG	198550	Perylene [PAH, POM]	9.08E-05	1.31E-09	6.92E-08	8.72E-09
5	ICE Main Unit 8 2000HP NG	205992	Benzo[b]fluoranthene [PAH, POM]	1.55E-04	2.24E-09	1.19E-07	1.49E-08
5	ICE Main Unit 8 2000HP NG	206440	Fluoranthene [PAH, POM]	6.60E-03	9.49E-08	5.03E-06	6.34E-07
5	ICE Main Unit 8 2000HP NG	207089	Benzo[k]fluoranthene [PAH, POM]	7.78E-05	1.12E-09	5.93E-08	7.48E-09
5	ICE Main Unit 8 2000HP NG	208968	Acenaphthylene [PAH, POM]	5.79E-02	8.33E-07	4.42E-05	5.56E-06
5	ICE Main Unit 8 2000HP NG	218019	Chrysene [PAH, POM]	1.23E-02	1.77E-07	9.36E-06	1.18E-06
5	ICE Main Unit 8 2000HP NG	7664417	Ammonia	5.73E+01	8.24E-04	4.37E-02	5.51E-03
6	ICE Main Unit 9 2000HP NG	50000	Formaldehyde	2.16E+02	3.11E-03	1.61E-01	2.03E-02
6	ICE Main Unit 9 2000HP NG	50328	Benzo[a]pyrene [PAH, POM]	1.11E-04	1.60E-09	8.31E-08	1.05E-08
6	ICE Main Unit 9 2000HP NG	56553	Benz[a]anthracene [PAH, POM]	6.57E-03	9.46E-08	4.92E-06	6.19E-07
6	ICE Main Unit 9 2000HP NG	67561	Methanol	4.85E+01	6.98E-04	3.63E-02	4.57E-03
6	ICE Main Unit 9 2000HP NG	71432	Benzene	3.80E+01	5.46E-04	2.84E-02	3.58E-03
6	ICE Main Unit 9 2000HP NG	75070	Acetaldehyde	1.52E+02	2.18E-03	1.14E-01	1.43E-02
6	ICE Main Unit 9 2000HP NG	83329	Acenaphthene [PAH, POM]	2.60E-02	3.74E-07	1.95E-05	2.45E-06
6	ICE Main Unit 9 2000HP NG	85018	Phenanthrene [PAH, POM]	6.91E-02	9.93E-07	5.16E-05	6.51E-06
6	ICE Main Unit 9 2000HP NG	86737	Fluorene [PAH, POM]	3.31E-02	4.76E-07	2.47E-05	3.11E-06
6	ICE Main Unit 9 2000HP NG	91203	Naphthalene [PAH, POM]	1.88E+00	2.71E-05	1.41E-03	1.77E-04
6	ICE Main Unit 9 2000HP NG	91576	2-Methyl naphthalene [PAH, POM]	4.19E-01	6.02E-06	3.13E-04	3.94E-05
6	ICE Main Unit 9 2000HP NG	95636	1,2,4-Trimethylbenzene	2.17E+00	3.12E-05	1.62E-03	2.05E-04
6	ICE Main Unit 9 2000HP NG	100414	Ethyl benzene	2.11E+00	3.04E-05	1.58E-03	1.99E-04
6	ICE Main Unit 9 2000HP NG	106934	Ethylene dibromide {1,2-Dibromoethane}	1.44E+00	2.07E-05	1.07E-03	1.35E-04
6	ICE Main Unit 9 2000HP NG	106990	Butadiene [1,3]	1.60E+01	2.31E-04	1.20E-02	1.51E-03
6	ICE Main Unit 9 2000HP NG	108883	Toluene	1.88E+01	2.71E-04	1.41E-02	1.77E-03
6	ICE Main Unit 9 2000HP NG	110543	Hexane	8.71E+00	1.25E-04	6.51E-03	8.20E-04
6	ICE Main Unit 9 2000HP NG	120127	Anthracene [PAH, POM]	1.40E-02	2.02E-07	1.05E-05	1.32E-06
6	ICE Main Unit 9 2000HP NG	129000	Pyrene [PAH, POM]	1.14E-02	1.64E-07	8.54E-06	1.08E-06
6	ICE Main Unit 9 2000HP NG	191242	Benzo[g,h,i]perylene [PAH, POM]	4.85E-04	6.98E-09	3.63E-07	4.57E-08

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
6	ICE Main Unit 9 2000HP NG	192972	Benzo[e]pyrene [PAH, POM]	4.58E-04	6.58E-09	3.42E-07	4.31E-08
6	ICE Main Unit 9 2000HP NG	193395	Indeno[1,2,3-cd]pyrene [PAH, POM]	1.94E-04	2.79E-09	1.45E-07	1.83E-08
6	ICE Main Unit 9 2000HP NG	198550	Perylene [PAH, POM]	9.72E-05	1.40E-09	7.27E-08	9.16E-09
6	ICE Main Unit 9 2000HP NG	205992	Benzo[b]fluoranthene [PAH, POM]	1.66E-04	2.39E-09	1.24E-07	1.57E-08
6	ICE Main Unit 9 2000HP NG	206440	Fluoranthene [PAH, POM]	7.06E-03	1.02E-07	5.28E-06	6.65E-07
6	ICE Main Unit 9 2000HP NG	207089	Benzo[k]fluoranthene [PAH, POM]	8.33E-05	1.20E-09	6.23E-08	7.85E-09
6	ICE Main Unit 9 2000HP NG	208968	Acenaphthylene [PAH, POM]	6.20E-02	8.92E-07	4.64E-05	5.84E-06
6	ICE Main Unit 9 2000HP NG	218019	Chrysene [PAH, POM]	1.31E-02	1.89E-07	9.83E-06	1.24E-06
6	ICE Main Unit 9 2000HP NG	7664417	Ammonia	6.14E+01	8.83E-04	4.59E-02	5.78E-03
7	Emergency ICE 99HP Diesel	9901	Diesel exhaust particulates	1.94E+00	2.79E-05	1.67E-01	2.10E-02
7	Emergency ICE 99HP Diesel	7664417	Ammonia	4.62E-02	6.65E-07	3.99E-03	5.03E-04
7	Emergency ICE 99HP Diesel	1151	PAHs, total, w/o individ. components reported [PAH, POM]	2.09E-03	3.01E-08	1.80E-04	2.27E-05
7	Emergency ICE 99HP Diesel	91203	Naphthalene [PAH, POM]	1.14E-03	1.64E-08	9.82E-05	1.24E-05
7	Emergency ICE 99HP Diesel	7439921	Lead compounds (inorganic)	4.80E-04	6.90E-09	4.14E-05	5.21E-06
7	Emergency ICE 99HP Diesel	7440020	Nickel	2.25E-04	3.24E-09	1.94E-05	2.45E-06
7	Emergency ICE 99HP Diesel	18540299	Chromium, hexavalent (and compounds)	5.78E-06	8.31E-11	4.99E-07	6.28E-08
7	Emergency ICE 99HP Diesel	7440382	Arsenic and Compounds (inorganic)	9.25E-05	1.33E-09	7.98E-06	1.01E-06
7	Emergency ICE 99HP Diesel	7440439	Cadmium	8.67E-05	1.25E-09	7.48E-06	9.42E-07
7	Emergency ICE 99HP Diesel	50000	Formaldehyde	9.98E-02	1.44E-06	8.61E-03	1.08E-03
7	Emergency ICE 99HP Diesel	71432	Benzene	1.08E-02	1.55E-07	9.29E-04	1.17E-04
7	Emergency ICE 99HP Diesel	106990	Butadiene [1,3]	1.26E-02	1.81E-07	1.08E-03	1.37E-04
7	Emergency ICE 99HP Diesel	75070	Acetaldehyde	4.53E-02	6.51E-07	3.91E-03	4.92E-04
7	Emergency ICE 99HP Diesel	100414	Ethyl benzene	6.30E-04	9.06E-09	5.43E-05	6.85E-06
7	Emergency ICE 99HP Diesel	110543	Hexane	1.55E-03	2.24E-08	1.34E-04	1.69E-05
7	Emergency ICE 99HP Diesel	108883	Toluene	6.09E-03	8.76E-08	5.25E-04	6.62E-05
8	Glycol Reboiler	1151	PAHs, total, w/o individ. components reported [PAH, POM]	7.70E-04	1.11E-08	5.06E-07	6.37E-08
8	Glycol Reboiler	50000	Formaldehyde	1.31E-01	1.88E-06	8.60E-05	1.08E-05

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
8	Glycol Reboiler	71432	Benzene	6.16E-02	8.86E-07	4.05E-05	5.10E-06
8	Glycol Reboiler	75070	Acetaldehyde	3.31E-02	4.76E-07	2.18E-05	2.74E-06
8	Glycol Reboiler	91203	Naphthalene [PAH, POM]	2.31E-03	3.32E-08	1.52E-06	1.91E-07
8	Glycol Reboiler	100414	Ethyl benzene	7.31E-02	1.05E-06	4.81E-05	6.05E-06
8	Glycol Reboiler	108883	Toluene	2.82E-01	4.05E-06	1.85E-04	2.33E-05
8	Glycol Reboiler	110543	Hexane	4.85E-02	6.98E-07	3.19E-05	4.02E-06
8	Glycol Reboiler	7664417	Ammonia	2.46E+01	3.54E-04	1.62E-02	2.04E-03
9	Thermal Oxidizer	1151	PAHs, total, w/o individ. components reported [PAH, POM]	2.23E-05	3.21E-10	9.73E-08	1.23E-08
9	Thermal Oxidizer	50000	Formaldehyde	3.80E-03	5.46E-08	1.65E-05	2.08E-06
9	Thermal Oxidizer	71432	Benzene	1.79E-03	2.57E-08	7.78E-06	9.81E-07
9	Thermal Oxidizer	75070	Acetaldehyde	9.60E-04	1.38E-08	4.18E-06	5.27E-07
9	Thermal Oxidizer	91203	Naphthalene [PAH, POM]	6.70E-05	9.64E-10	2.92E-07	3.68E-08
9	Thermal Oxidizer	100414	Ethyl benzene	2.12E-03	3.05E-08	9.24E-06	1.16E-06
9	Thermal Oxidizer	108883	Toluene	8.17E-03	1.18E-07	3.56E-05	4.49E-06
9	Thermal Oxidizer	110543	Hexane	1.41E-03	2.02E-08	6.13E-06	7.72E-07
9	Thermal Oxidizer	7664417	Ammonia	7.15E-01	1.03E-05	3.11E-03	3.92E-04
10	Loading Arm	71432	Benzene	3.90E-02	5.61E-07	2.17E-05	2.73E-06
10	Loading Arm	95636	1,2,4-Trimethylbenzene	2.15E-02	3.09E-07	1.19E-05	1.50E-06
10	Loading Arm	100414	Ethyl benzene	2.60E-02	3.74E-07	1.45E-05	1.82E-06
10	Loading Arm	108383	m-Xylene	9.11E-02	1.31E-06	5.06E-05	6.38E-06
10	Loading Arm	108883	Toluene	6.50E-02	9.36E-07	3.62E-05	4.56E-06
10	Loading Arm	110543	Hexane	2.60E-02	3.74E-07	1.45E-05	1.82E-06
11	Building AC & Heat V1	1151	PAHs, total, w/o individ. components reported [PAH, POM]	7.43E-06	1.07E-10	1.10E-08	1.39E-09
11	Building AC & Heat V1	50000	Formaldehyde	1.26E-03	1.82E-08	1.87E-06	2.36E-07
11	Building AC & Heat V1	71432	Benzene	5.94E-04	8.55E-09	8.81E-07	1.11E-07
11	Building AC & Heat V1	75070	Acetaldehyde	3.19E-04	4.59E-09	4.73E-07	5.96E-08
11	Building AC & Heat V1	91203	Naphthalene [PAH, POM]	2.23E-05	3.21E-10	3.30E-08	4.16E-09

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
11	Building AC & Heat V1	100414	Ethyl benzene	7.06E-04	1.02E-08	1.05E-06	1.32E-07
11	Building AC & Heat V1	108883	Toluene	2.72E-03	3.91E-08	4.03E-06	5.08E-07
11	Building AC & Heat V1	110543	Hexane	4.68E-04	6.73E-09	6.93E-07	8.74E-08
11	Building AC & Heat V1	7664417	Ammonia	2.38E-01	3.42E-06	3.52E-04	4.44E-05
12	Building AC & Heat V2	1151	PAHs, total, w/o individ. components reported [PAH, POM]	7.43E-06	1.07E-10	1.10E-08	1.39E-09
12	Building AC & Heat V2	50000	Formaldehyde	1.26E-03	1.82E-08	1.87E-06	2.36E-07
12	Building AC & Heat V2	71432	Benzene	5.94E-04	8.55E-09	8.81E-07	1.11E-07
12	Building AC & Heat V2	75070	Acetaldehyde	3.19E-04	4.59E-09	4.73E-07	5.96E-08
12	Building AC & Heat V2	91203	Naphthalene [PAH, POM]	2.23E-05	3.21E-10	3.30E-08	4.16E-09
12	Building AC & Heat V2	100414	Ethyl benzene	7.06E-04	1.02E-08	1.05E-06	1.32E-07
12	Building AC & Heat V2	108883	Toluene	2.72E-03	3.91E-08	4.03E-06	5.08E-07
12	Building AC & Heat V2	110543	Hexane	4.68E-04	6.73E-09	6.93E-07	8.74E-08
12	Building AC & Heat V2	7664417	Ammonia	2.38E-01	3.42E-06	3.52E-04	4.44E-05
13	Building AC & Heat V3	1151	PAHs, total, w/o individ. components reported [PAH, POM]	7.43E-06	1.07E-10	1.10E-08	1.39E-09
13	Building AC & Heat V3	50000	Formaldehyde	1.26E-03	1.82E-08	1.87E-06	2.36E-07
13	Building AC & Heat V3	71432	Benzene	5.94E-04	8.55E-09	8.81E-07	1.11E-07
13	Building AC & Heat V3	75070	Acetaldehyde	3.19E-04	4.59E-09	4.73E-07	5.96E-08
13	Building AC & Heat V3	91203	Naphthalene [PAH, POM]	2.23E-05	3.21E-10	3.30E-08	4.16E-09
13	Building AC & Heat V3	100414	Ethyl benzene	7.06E-04	1.02E-08	1.05E-06	1.32E-07
13	Building AC & Heat V3	108883	Toluene	2.72E-03	3.91E-08	4.03E-06	5.08E-07
13	Building AC & Heat V3	110543	Hexane	4.68E-04	6.73E-09	6.93E-07	8.74E-08
13	Building AC & Heat V3	7664417	Ammonia	2.38E-01	3.42E-06	3.52E-04	4.44E-05
14	Building AC & Heat V4	1151	PAHs, total, w/o individ. components reported [PAH, POM]	3.51E-06	5.05E-11	5.20E-09	6.56E-10
14	Building AC & Heat V4	50000	Formaldehyde	5.97E-04	8.59E-09	8.85E-07	1.11E-07
14	Building AC & Heat V4	71432	Benzene	2.81E-04	4.04E-09	4.16E-07	5.25E-08
14	Building AC & Heat V4	75070	Acetaldehyde	1.51E-04	2.17E-09	2.24E-07	2.82E-08
14	Building AC & Heat V4	91203	Naphthalene [PAH, POM]	1.05E-05	1.52E-10	1.56E-08	1.97E-09

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
14	Building AC & Heat V4	100414	Ethyl benzene	3.34E-04	4.80E-09	4.94E-07	6.23E-08
14	Building AC & Heat V4	108883	Toluene	1.29E-03	1.85E-08	1.90E-06	2.40E-07
14	Building AC & Heat V4	110543	Hexane	2.21E-04	3.18E-09	3.28E-07	4.13E-08
14	Building AC & Heat V4	7664417	Ammonia	1.12E-01	1.62E-06	1.67E-04	2.10E-05
15	Building AC & Heat V5	1151	PAHs, total, w/o individ. components reported [PAH, POM]	3.51E-06	5.05E-11	5.20E-09	6.56E-10
15	Building AC & Heat V5	50000	Formaldehyde	5.97E-04	8.59E-09	8.85E-07	1.11E-07
15	Building AC & Heat V5	71432	Benzene	2.81E-04	4.04E-09	4.16E-07	5.25E-08
15	Building AC & Heat V5	75070	Acetaldehyde	1.51E-04	2.17E-09	2.24E-07	2.82E-08
15	Building AC & Heat V5	91203	Naphthalene [PAH, POM]	1.05E-05	1.52E-10	1.56E-08	1.97E-09
15	Building AC & Heat V5	100414	Ethyl benzene	3.34E-04	4.80E-09	4.94E-07	6.23E-08
15	Building AC & Heat V5	108883	Toluene	1.29E-03	1.85E-08	1.90E-06	2.40E-07
15	Building AC & Heat V5	110543	Hexane	2.21E-04	3.18E-09	3.28E-07	4.13E-08
15	Building AC & Heat V5	7664417	Ammonia	1.12E-01	1.62E-06	1.67E-04	2.10E-05
16	Building AC & Heat V6	1151	PAHs, total, w/o individ. components reported [PAH, POM]	3.51E-06	5.05E-11	5.20E-09	6.56E-10
16	Building AC & Heat V6	50000	Formaldehyde	5.97E-04	8.59E-09	8.85E-07	1.11E-07
16	Building AC & Heat V6	71432	Benzene	2.81E-04	4.04E-09	4.16E-07	5.25E-08
16	Building AC & Heat V6	75070	Acetaldehyde	1.51E-04	2.17E-09	2.24E-07	2.82E-08
16	Building AC & Heat V6	91203	Naphthalene [PAH, POM]	1.05E-05	1.52E-10	1.56E-08	1.97E-09
16	Building AC & Heat V6	100414	Ethyl benzene	3.34E-04	4.80E-09	4.94E-07	6.23E-08
16	Building AC & Heat V6	108883	Toluene	1.29E-03	1.85E-08	1.90E-06	2.40E-07
16	Building AC & Heat V6	110543	Hexane	2.21E-04	3.18E-09	3.28E-07	4.13E-08
16	Building AC & Heat V6	7664417	Ammonia	1.12E-01	1.62E-06	1.67E-04	2.10E-05
17	Dehy Hot Oil Heater	1151	PAHs, total, w/o individ. components reported [PAH, POM]	3.51E-04	5.05E-09	1.46E-07	1.84E-08
17	Dehy Hot Oil Heater	50000	Formaldehyde	5.97E-02	8.59E-07	2.48E-05	3.13E-06
17	Dehy Hot Oil Heater	71432	Benzene	2.81E-02	4.04E-07	1.17E-05	1.47E-06
17	Dehy Hot Oil Heater	75070	Acetaldehyde	1.51E-02	2.17E-07	6.27E-06	7.91E-07
17	Dehy Hot Oil Heater	91203	Naphthalene [PAH, POM]	1.05E-03	1.52E-08	4.38E-07	5.52E-08

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
17	Dehy Hot Oil Heater	100414	Ethyl benzene	3.34E-02	4.80E-07	1.39E-05	1.75E-06
17	Dehy Hot Oil Heater	108883	Toluene	1.29E-01	1.85E-06	5.34E-05	6.73E-06
17	Dehy Hot Oil Heater	110543	Hexane	2.21E-02	3.18E-07	9.19E-06	1.16E-06
17	Dehy Hot Oil Heater	7664417	Ammonia	1.12E+01	1.62E-04	4.67E-03	5.88E-04
18	TK-3	71432	Benzene	1.02E+00	1.47E-05	1.17E-04	1.47E-05
18	TK-3	95636	1,2,4-Trimethylbenzene	1.00E-02	1.44E-07	1.14E-06	1.44E-07
18	TK-3	100414	Ethyl benzene	6.51E-02	9.37E-07	7.44E-06	9.37E-07
18	TK-3	108383	m-Xylene	1.91E-01	2.75E-06	2.18E-05	2.75E-06
18	TK-3	108883	Toluene	4.89E-01	7.03E-06	5.58E-05	7.03E-06
18	TK-3	110543	Hexane	1.11E+00	1.59E-05	1.26E-04	1.59E-05
19	TK-4A	71432	Benzene	2.00E+00	2.87E-05	2.28E-04	2.87E-05
19	TK-4A	95636	1,2,4-Trimethylbenzene	2.00E-02	2.88E-07	2.28E-06	2.88E-07
19	TK-4A	100414	Ethyl benzene	1.28E-01	1.83E-06	1.46E-05	1.83E-06
19	TK-4A	108383	m-Xylene	3.74E-01	5.38E-06	4.27E-05	5.38E-06
19	TK-4A	108883	Toluene	9.57E-01	1.38E-05	1.09E-04	1.38E-05
19	TK-4A	110543	Hexane	2.16E+00	3.11E-05	2.47E-04	3.11E-05
20	TK-4B	71432	Benzene	2.00E+00	2.87E-05	2.28E-04	2.87E-05
20	TK-4B	95636	1,2,4-Trimethylbenzene	2.00E-02	2.88E-07	2.28E-06	2.88E-07
20	TK-4B	100414	Ethyl benzene	1.28E-01	1.83E-06	1.46E-05	1.83E-06
20	TK-4B	108383	m-Xylene	3.74E-01	5.38E-06	4.27E-05	5.38E-06
20	TK-4B	108883	Toluene	9.57E-01	1.38E-05	1.09E-04	1.38E-05
20	TK-4B	110543	Hexane	2.16E+00	3.11E-05	2.47E-04	3.11E-05
21	TK-4C	71432	Benzene	2.00E+00	2.87E-05	2.28E-04	2.87E-05
21	TK-4C	95636	1,2,4-Trimethylbenzene	2.00E-02	2.88E-07	2.28E-06	2.88E-07
21	TK-4C	100414	Ethyl benzene	1.28E-01	1.83E-06	1.46E-05	1.83E-06
21	TK-4C	108383	m-Xylene	3.74E-01	5.38E-06	4.27E-05	5.38E-06
21	TK-4C	108883	Toluene	9.57E-01	1.38E-05	1.09E-04	1.38E-05

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
21	TK-4C	110543	Hexane	2.16E+00	3.11E-05	2.47E-04	3.11E-05
22	TK-6	71432	Benzene	1.55E-01	2.22E-06	1.76E-05	2.22E-06
22	TK-6	95636	1,2,4-Trimethylbenzene	1.00E-03	1.44E-08	1.14E-07	1.44E-08
22	TK-6	100414	Ethyl benzene	9.50E-03	1.37E-07	1.08E-06	1.37E-07
22	TK-6	108383	m-Xylene	2.85E-02	4.10E-07	3.25E-06	4.10E-07
22	TK-6	108883	Toluene	7.35E-02	1.06E-06	8.39E-06	1.06E-06
22	TK-6	110543	Hexane	1.68E-01	2.41E-06	1.91E-05	2.41E-06
23	TK-5	71432	Benzene	3.39E-01	4.88E-06	3.87E-05	4.88E-06
23	TK-5	95636	1,2,4-Trimethylbenzene	3.00E-03	4.31E-08	3.42E-07	4.31E-08
23	TK-5	100414	Ethyl benzene	2.15E-02	3.09E-07	2.45E-06	3.09E-07
23	TK-5	108383	m-Xylene	6.30E-02	9.06E-07	7.19E-06	9.06E-07
23	TK-5	108883	Toluene	1.62E-01	2.33E-06	1.85E-05	2.33E-06
23	TK-5	110543	Hexane	3.67E-01	5.28E-06	4.19E-05	5.28E-06
24	TK-1B	71432	Benzene	1.91E+00	2.75E-05	2.18E-04	2.75E-05
24	TK-1B	95636	1,2,4-Trimethylbenzene	1.95E-02	2.80E-07	2.23E-06	2.80E-07
24	TK-1B	100414	Ethyl benzene	1.22E-01	1.75E-06	1.39E-05	1.75E-06
24	TK-1B	108383	m-Xylene	3.58E-01	5.14E-06	4.08E-05	5.14E-06
24	TK-1B	108883	Toluene	9.15E-01	1.32E-05	1.04E-04	1.32E-05
24	TK-1B	110543	Hexane	2.07E+00	2.97E-05	2.36E-04	2.97E-05
25	TK-1A	71432	Benzene	1.91E+00	2.75E-05	2.18E-04	2.75E-05
25	TK-1A	95636	1,2,4-Trimethylbenzene	1.95E-02	2.80E-07	2.23E-06	2.80E-07
25	TK-1A	100414	Ethyl benzene	1.22E-01	1.75E-06	1.39E-05	1.75E-06
25	TK-1A	108383	m-Xylene	3.58E-01	5.14E-06	4.08E-05	5.14E-06
25	TK-1A	108883	Toluene	9.15E-01	1.32E-05	1.04E-04	1.32E-05
25	TK-1A	110543	Hexane	2.07E+00	2.97E-05	2.36E-04	2.97E-05
26	TK-2	71432	Benzene	5.39E-01	7.75E-06	6.15E-05	7.75E-06
26	TK-2	95636	1,2,4-Trimethylbenzene	5.02E-03	7.22E-08	5.73E-07	7.22E-08

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
26	TK-2	100414	Ethyl benzene	3.41E-02	4.91E-07	3.90E-06	4.91E-07
26	TK-2	108383	m-Xylene	1.01E-01	1.45E-06	1.15E-05	1.45E-06
26	TK-2	108883	Toluene	2.58E-01	3.71E-06	2.95E-05	3.71E-06
26	TK-2	110543	Hexane	5.83E-01	8.39E-06	6.66E-05	8.39E-06
27	TK-12	71432	Benzene	3.31E+00	4.77E-05	3.78E-04	4.77E-05
27	TK-12	95636	1,2,4-Trimethylbenzene	3.35E-02	4.82E-07	3.82E-06	4.82E-07
27	TK-12	100414	Ethyl benzene	2.12E-01	3.05E-06	2.42E-05	3.05E-06
27	TK-12	108383	m-Xylene	6.21E-01	8.92E-06	7.08E-05	8.92E-06
27	TK-12	108883	Toluene	1.59E+00	2.28E-05	1.81E-04	2.28E-05
27	TK-12	110543	Hexane	3.59E+00	5.16E-05	4.10E-04	5.16E-05
28	Air Compressor 400	50000	Formaldehyde	1.76E-01	2.53E-06	6.98E-03	8.79E-04
28	Air Compressor 400	67561	Methanol	2.62E-02	3.77E-07	1.04E-03	1.31E-04
28	Air Compressor 400	71432	Benzene	1.35E-02	1.95E-07	5.38E-04	6.78E-05
28	Air Compressor 400	75070	Acetaldehyde	2.39E-02	3.44E-07	9.50E-04	1.20E-04
28	Air Compressor 400	91203	Naphthalene [PAH, POM]	8.32E-04	1.20E-08	3.30E-05	4.16E-06
28	Air Compressor 400	100414	Ethyl benzene	2.12E-04	3.06E-09	8.44E-06	1.06E-06
28	Air Compressor 400	106934	Ethylene dibromide {1,2-Dibromoethane}	1.82E-04	2.62E-09	7.25E-06	9.13E-07
28	Air Compressor 400	106990	Butadiene [1,3]	5.68E-03	8.17E-08	2.26E-04	2.84E-05
28	Air Compressor 400	108883	Toluene	4.78E-03	6.88E-08	1.90E-04	2.39E-05
28	Air Compressor 400	7664417	Ammonia	2.69E-02	3.87E-07	1.07E-03	1.35E-04
29	Air Compressor 120	50000	Formaldehyde	9.76E-01	1.40E-05	6.98E-03	8.79E-04
29	Air Compressor 120	67561	Methanol	1.46E-01	2.10E-06	1.04E-03	1.31E-04
29	Air Compressor 120	71432	Benzene	7.53E-02	1.08E-06	5.38E-04	6.78E-05
29	Air Compressor 120	75070	Acetaldehyde	1.33E-01	1.91E-06	9.50E-04	1.20E-04
29	Air Compressor 120	91203	Naphthalene [PAH, POM]	4.63E-03	6.65E-08	3.30E-05	4.16E-06
29	Air Compressor 120	100414	Ethyl benzene	1.18E-03	1.70E-08	8.44E-06	1.06E-06
29	Air Compressor 120	106934	Ethylene dibromide {1,2-Dibromoethane}	1.01E-03	1.46E-08	7.25E-06	9.13E-07

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
29	Air Compressor 120	106990	Butadiene [1,3]	3.16E-02	4.54E-07	2.26E-04	2.84E-05
29	Air Compressor 120	108883	Toluene	2.66E-02	3.82E-07	1.90E-04	2.39E-05
29	Air Compressor 120	7664417	Ammonia	1.49E-01	2.15E-06	1.07E-03	1.35E-04
30	ICE Air Compressor 12HP Gasoline E29	50000	Formaldehyde	2.27E+00	3.27E-05	2.32E-03	2.92E-04
30	ICE Air Compressor 12HP Gasoline E29	67561	Methanol	5.10E-01	7.33E-06	5.20E-04	6.56E-05
30	ICE Air Compressor 12HP Gasoline E29	71432	Benzene	2.50E+00	3.60E-05	2.56E-03	3.22E-04
30	ICE Air Compressor 12HP Gasoline E29	75070	Acetaldehyde	5.46E-01	7.85E-06	5.58E-04	7.03E-05
30	ICE Air Compressor 12HP Gasoline E29	91203	Naphthalene [PAH, POM]	9.46E-02	1.36E-06	9.67E-05	1.22E-05
30	ICE Air Compressor 12HP Gasoline E29	95636	1,2,4-Trimethylbenzene	9.17E-01	1.32E-05	9.37E-04	1.18E-04
30	ICE Air Compressor 12HP Gasoline E29	100414	Ethyl benzene	1.09E+00	1.57E-05	1.12E-03	1.41E-04
30	ICE Air Compressor 12HP Gasoline E29	106990	Butadiene [1,3]	6.04E-01	8.69E-06	6.17E-04	7.78E-05
30	ICE Air Compressor 12HP Gasoline E29	108383	m-Xylene	3.24E+00	4.66E-05	3.31E-03	4.17E-04
30	ICE Air Compressor 12HP Gasoline E29	108883	Toluene	4.94E+00	7.11E-05	5.05E-03	6.36E-04
30	ICE Air Compressor 12HP Gasoline E29	110543	Hexane	9.54E-01	1.37E-05	9.74E-04	1.23E-04
30	ICE Air Compressor 12HP Gasoline E29	7440020	Nickel	2.14E-03	3.08E-08	2.18E-06	2.75E-07
30	ICE Air Compressor 12HP Gasoline E29	7782505	Chlorine	2.99E-01	4.31E-06	3.06E-04	3.85E-05
31	ICE Air Compressor 12HP Gasoline E30	50000	Formaldehyde	4.11E-01	5.91E-06	2.32E-03	2.92E-04
31	ICE Air Compressor 12HP Gasoline E30	67561	Methanol	9.22E-02	1.33E-06	5.20E-04	6.56E-05
31	ICE Air Compressor 12HP Gasoline E30	71432	Benzene	4.53E-01	6.51E-06	2.56E-03	3.22E-04
31	ICE Air Compressor 12HP Gasoline E30	75070	Acetaldehyde	9.87E-02	1.42E-06	5.58E-04	7.03E-05
31	ICE Air Compressor 12HP Gasoline E30	91203	Naphthalene [PAH, POM]	1.71E-02	2.46E-07	9.67E-05	1.22E-05
31	ICE Air Compressor 12HP Gasoline E30	95636	1,2,4-Trimethylbenzene	1.66E-01	2.39E-06	9.37E-04	1.18E-04
31	ICE Air Compressor 12HP Gasoline E30	100414	Ethyl benzene	1.97E-01	2.84E-06	1.12E-03	1.41E-04
31	ICE Air Compressor 12HP Gasoline E30	106990	Butadiene [1,3]	1.09E-01	1.57E-06	6.17E-04	7.78E-05
31	ICE Air Compressor 12HP Gasoline E30	108383	m-Xylene	5.86E-01	8.43E-06	3.31E-03	4.17E-04
31	ICE Air Compressor 12HP Gasoline E30	108883	Toluene	8.94E-01	1.29E-05	5.05E-03	6.36E-04
31	ICE Air Compressor 12HP Gasoline E30	110543	Hexane	1.72E-01	2.48E-06	9.74E-04	1.23E-04

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
31	ICE Air Compressor 12HP Gasoline E30	7440020	Nickel	3.87E-04	5.56E-09	2.18E-06	2.75E-07
31	ICE Air Compressor 12HP Gasoline E30	7782505	Chlorine	5.41E-02	7.79E-07	3.06E-04	3.85E-05
32	Natural Gas Venting	71432	Benzene	7.93E+00	1.14E-04	6.10E-01	7.69E-02
33	Organic Solvents/Fugitive Emissions	67561	Methanol	7.94E-01	1.14E-05	9.07E-05	1.14E-05
33	Organic Solvents/Fugitive Emissions	75092	Methylene chloride (Dichloromethane)	9.55E+00	1.37E-04	1.09E-03	1.37E-04
33	Organic Solvents/Fugitive Emissions	108883	Toluene	1.59E+00	2.28E-05	1.81E-04	2.28E-05
33	Organic Solvents/Fugitive Emissions	71432	Benzene	3.31E-01	4.76E-06	3.78E-05	4.76E-06
33	Organic Solvents/Fugitive Emissions	71432	Benzene	3.25E+01	4.67E-04	3.71E-03	4.67E-04
33	Organic Solvents/Fugitive Emissions	95636	1,2,4-Trimethylbenzene	1.79E+01	2.57E-04	2.04E-03	2.57E-04
33	Organic Solvents/Fugitive Emissions	100414	Ethyl benzene	2.17E+01	3.12E-04	2.47E-03	3.12E-04
33	Organic Solvents/Fugitive Emissions	108383	m-Xylene	7.58E+01	1.09E-03	8.65E-03	1.09E-03
33	Organic Solvents/Fugitive Emissions	108883	Toluene	5.42E+01	7.79E-04	6.18E-03	7.79E-04
33	Organic Solvents/Fugitive Emissions	110543	Hexane	2.17E+01	3.12E-04	2.47E-03	3.12E-04
33	Organic Solvents/Fugitive Emissions	71432	Benzene	2.18E+00	3.13E-05	2.48E-04	3.13E-05
33	Organic Solvents/Fugitive Emissions	95636	1,2,4-Trimethylbenzene	1.20E+00	1.72E-05	1.37E-04	1.72E-05
33	Organic Solvents/Fugitive Emissions	100414	Ethyl benzene	1.45E+00	2.09E-05	1.66E-04	2.09E-05
33	Organic Solvents/Fugitive Emissions	108383	m-Xylene	5.08E+00	7.30E-05	5.79E-04	7.30E-05
33	Organic Solvents/Fugitive Emissions	108883	Toluene	3.63E+00	5.22E-05	4.14E-04	5.22E-05
33	Organic Solvents/Fugitive Emissions	110543	Hexane	1.45E+00	2.09E-05	1.66E-04	2.09E-05
33	Organic Solvents/Fugitive Emissions	71432	Benzene	3.62E-01	5.20E-06	4.13E-05	5.20E-06
33	Organic Solvents/Fugitive Emissions	71432	Benzene	7.97E-02	1.15E-06	9.10E-06	1.15E-06
33	Organic Solvents/Fugitive Emissions	71432	Benzene	1.96E+00	2.82E-05	2.24E-04	2.82E-05
33	Organic Solvents/Fugitive Emissions	71432	Benzene	6.50E+01	9.35E-04	7.42E-03	9.35E-04
33	Organic Solvents/Fugitive Emissions	95636	1,2,4-Trimethylbenzene	3.57E+01	5.14E-04	4.08E-03	5.14E-04
33	Organic Solvents/Fugitive Emissions	100414	Ethyl benzene	4.33E+01	6.23E-04	4.95E-03	6.23E-04
33	Organic Solvents/Fugitive Emissions	108383	m-Xylene	1.52E+02	2.18E-03	1.73E-02	2.18E-03
33	Organic Solvents/Fugitive Emissions	108883	Toluene	1.08E+02	1.56E-03	1.24E-02	1.56E-03

Table 15: Emission Rates by Source and Substance
SoCalGas Playa del Rey

Stack ID	Source Name	CAS	Pollutant	Annual Emissions (lbs/yr)	Annual Emissions (g/s)	Max Hourly Emissions (lbs/hr)	Max Hourly Emissions (g/s)
33	Organic Solvents/Fugitive Emissions	110543	Hexane	4.33E+01	6.23E-04	4.95E-03	6.23E-04
33	Organic Solvents/Fugitive Emissions	71432	Benzene	3.00E+00	4.31E-05	3.42E-04	4.31E-05
33	Organic Solvents/Fugitive Emissions	95636	1,2,4-Trimethylbenzene	1.65E+00	2.37E-05	1.88E-04	2.37E-05
33	Organic Solvents/Fugitive Emissions	100414	Ethyl benzene	2.00E+00	2.88E-05	2.28E-04	2.88E-05
33	Organic Solvents/Fugitive Emissions	108383	m-Xylene	7.00E+00	1.01E-04	7.99E-04	1.01E-04
33	Organic Solvents/Fugitive Emissions	108883	Toluene	5.00E+00	7.19E-05	5.71E-04	7.19E-05
33	Organic Solvents/Fugitive Emissions	110543	Hexane	2.00E+00	2.88E-05	2.28E-04	2.88E-05
34	Sump	71432	Benzene	4.85E-01	6.97E-06	5.54E-05	6.97E-06
34	Sump	95636	1,2,4-Trimethylbenzene	2.67E-01	3.84E-06	3.04E-05	3.84E-06
34	Sump	100414	Ethyl benzene	3.23E-01	4.65E-06	3.69E-05	4.65E-06
34	Sump	108383	m-Xylene	1.13E+00	1.63E-05	1.29E-04	1.63E-05
34	Sump	108883	Toluene	8.08E-01	1.16E-05	9.23E-05	1.16E-05
34	Sump	110543	Hexane	3.23E-01	4.65E-06	3.69E-05	4.65E-06

**Table 16: Dispersion Modeling Assumptions and Receptor Grid Spacing
SoCalGas Playa del Rey**

Parameter	Assumption								
<i>Model Control Options</i>									
• Use Regulatory Default?	Yes								
• Urban or Rural?	Urban County: Los Angeles Population: 9,818,605								
<i>Source Options</i>									
• Include Building Downwash?	Yes								
<i>Meteorology Options</i>									
• Meteorological Data	AERMOD-ready data from SCAQMD KLAX (2010-2016)								
<i>Receptor Grid Spacing</i>									
• Fenceline Grid Spacing	10 meters								
• Discrete Cartesian Receptors	<table border="0"> <tr> <td><u>Distance:</u></td> <td><u>Spacing:</u></td> </tr> <tr> <td>100 meters</td> <td>10 meters</td> </tr> <tr> <td>250 meters</td> <td>25 meters</td> </tr> <tr> <td>750 meters</td> <td>75 meters</td> </tr> </table>	<u>Distance:</u>	<u>Spacing:</u>	100 meters	10 meters	250 meters	25 meters	750 meters	75 meters
<u>Distance:</u>	<u>Spacing:</u>								
100 meters	10 meters								
250 meters	25 meters								
750 meters	75 meters								

Table 17: Annual Average Concentrations ($\mu\text{g}/\text{M}^3$) By Substance For The Cancer PMI, MEIR AND MEIW SoCalGas Playa del Rey

CAS	Compound	PMI (367297m E, 3758930m N)	MEIR (367400m E, 3758950m N)	MEIW (367290m E, 3758630m N)
50000	Formaldehyde	1.11E-01	5.00E+04	4.38E-03
67561	Methanol	2.51E-02	6.76E+04	9.83E-04
71432	Benzene	7.51E-02	7.14E+04	3.76E-03
75070	Acetaldehyde	6.55E-02	7.51E+04	2.69E-03
91203	Naphthalene	1.82E-03	9.12E+04	5.76E-05
100414	Ethyl benzene	3.33E-02	1.00E+05	1.71E-03
106934	Ethylene dibromide [EDB]	5.59E-04	1.07E+05	2.39E-05
106990	1,3-Butadiene	1.32E-02	1.07E+05	4.34E-04
108883	Toluene	1.15E-01	1.09E+05	5.19E-03
7664417	Ammonia	2.67E-02	7.66E+06	1.54E-03
50328	Benzo[a]pyrene	4.32E-08	5.03E+04	1.84E-09
56553	Benz[a]anthracene	2.55E-06	5.66E+04	1.09E-07
83329	Acenaphthene	1.01E-05	8.33E+04	4.30E-07
85018	Phenanthrene	2.68E-05	8.50E+04	1.14E-06
86737	Fluorene	1.28E-05	8.67E+04	5.46E-07
91576	2-Methyl naphthalene	1.63E-04	9.16E+04	6.92E-06
95636	1,2,4-Trimethylbenzene	2.78E-02	9.56E+04	1.41E-03
110543	Hexane	3.48E-02	1.11E+05	1.99E-03
120127	Anthracene	5.46E-06	1.20E+05	2.32E-07
129000	Pyrene	4.44E-06	1.29E+05	1.89E-07
191242	Benzo[g,h,i]perylene	1.89E-07	1.91E+05	8.02E-09
192972	Benzo[e]pyrene	1.78E-07	1.93E+05	7.57E-09
193395	Indeno[1,2,3-cd]pyrene	7.55E-08	1.93E+05	3.21E-09

Table 17: Annual Average Concentrations ($\mu\text{g}/\text{M}^3$) By Substance For The Cancer PMI, MEIR AND MEIW SoCalGas Playa del Rey

CAS	Compound	PMI (367297m E, 3758930m N)	MEIR (367400m E, 3758950m N)	MEIW (367290m E, 3758630m N)
198550	Perylene	3.78E-08	1.99E+05	1.61E-09
205992	Benzo[b]fluoranthene	6.47E-08	2.06E+05	2.75E-09
206440	Fluoranthene	2.74E-06	2.06E+05	1.17E-07
207089	Benzo[k]fluoranthene	3.24E-08	2.07E+05	1.38E-09
208968	Acenaphthylene	2.41E-05	2.09E+05	1.02E-06
218019	Chrysene	5.10E-06	2.18E+05	2.17E-07
9901	Diesel engine exhaust, particulate matter (Diesel PM)	2.81E-03	9.90E+03	1.40E-04
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	3.12E-06	1.15E+03	1.66E-07
7439921	Lead	6.96E-07	7.44E+06	3.46E-08
7440020	Nickel	2.49E-05	7.44E+06	5.90E-07
18540299	Chromium, hexavalent (& compounds)	8.39E-09	1.85E+07	4.17E-10
7440382	Arsenic	1.34E-07	7.44E+06	6.68E-09
7440439	Cadmium	1.26E-07	7.44E+06	6.26E-09
108383	m-Xylene	1.07E-01	1.08E+05	5.69E-03
7782505	Chlorine	3.44E-03	7.78E+06	8.04E-05
75092	Methylene chloride [Dichloromethane]	2.75E-03	7.51E+04	1.88E-04

Table 18: Maximum One Hour Concentrations ($\mu\text{g}/\text{M}^3$) By Substance For The Acute PMI, MEIR AND MEIW SoCalGas Playa del Rey

CAS	Compound	PMI (367046m E, 3759154m N)	MEIR (366970m E, 3758890m N)	MEIW (367250m E, 3758610m N)
50000	Formaldehyde	5.70E+00	6.98E+00	5.53E+00
67561	Methanol	1.05E+00	1.27E+00	1.04E+00
71432	Benzene	1.96E+02	1.82E+01	8.82E+00
75070	Acetaldehyde	1.92E+00	2.28E+00	1.92E+00
91203	Naphthalene	6.80E-02	8.42E-02	7.91E-02
100414	Ethyl benzene	9.28E-01	7.72E-01	7.22E-01
106934	Ethylene dibromide [EDB]	1.51E-02	1.75E-02	1.44E-02
106990	1,3-Butadiene	4.78E-01	5.89E-01	5.48E-01
108883	Toluene	3.43E+00	3.28E+00	3.18E+00
7664417	Ammonia	1.37E+00	1.56E+00	1.04E+00
50328	Benzo[a]pyrene	9.36E-07	1.06E-06	9.20E-07
56553	Benz[a]anthracene	5.54E-05	6.27E-05	5.44E-05
83329	Acenaphthene	2.19E-04	2.48E-04	2.15E-04
85018	Phenanthrene	5.81E-04	6.58E-04	5.71E-04
86737	Fluorene	2.78E-04	3.15E-04	2.74E-04
91576	2-Methyl naphthalene	3.52E-03	3.99E-03	3.46E-03
95636	1,2,4-Trimethylbenzene	7.67E-01	6.44E-01	6.04E-01
110543	Hexane	1.03E+00	7.85E-01	7.12E-01
120127	Anthracene	1.18E-04	1.34E-04	1.16E-04
129000	Pyrene	9.62E-05	1.09E-04	9.46E-05
191242	Benzo[g,h,i]perylene	4.08E-06	4.62E-06	4.01E-06
192972	Benzo[e]pyrene	3.85E-06	4.36E-06	3.79E-06
193395	Indeno[1,2,3-cd]pyrene	1.63E-06	1.85E-06	1.61E-06

Table 18: Maximum One Hour Concentrations ($\mu\text{g}/\text{M}^3$) By Substance For The Acute PMI, MEIR AND MEIW SoCalGas Playa del Rey

CAS	Compound	PMI (367046m E, 3759154m N)	MEIR (366970m E, 3758890m N)	MEIW (367250m E, 3758610m N)
198550	Perylene	8.18E-07	9.27E-07	8.04E-07
205992	Benzo[b]fluoranthene	1.40E-06	1.59E-06	1.38E-06
206440	Fluoranthene	5.95E-05	6.73E-05	5.84E-05
207089	Benzo[k]fluoranthene	7.01E-07	7.94E-07	6.89E-07
208968	Acenaphthylene	5.22E-04	5.91E-04	5.13E-04
218019	Chrysene	1.11E-04	1.25E-04	1.09E-04
9901	Diesel engine exhaust, particulate matter (Diesel PM)	1.36E+00	2.28E+00	1.75E+00
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	1.48E-03	2.47E-03	1.89E-03
7439921	Lead	3.37E-04	5.66E-04	4.33E-04
7440020	Nickel	1.01E-03	1.34E-03	1.35E-03
18540299	Chromium, hexavalent (& compounds)	4.07E-06	6.83E-06	5.22E-06
7440382	Arsenic	6.50E-05	1.09E-04	8.34E-05
7440439	Cadmium	6.10E-05	1.02E-04	7.82E-05
108383	m-Xylene	2.93E+00	2.32E+00	2.14E+00
7782505	Chlorine	1.19E-01	1.50E-01	1.61E-01
75092	Methylene chloride [Dichloromethane]	6.45E-02	2.70E-02	1.54E-02

Table 19: Chronic 8 Hour Concentrations ($\mu\text{g}/\text{M}^3$) By Substance For The 8-Hour Chronic PMI, MEIR AND MEIW SoCalGas Playa del Rey

CAS	Compound	PMI (367046m E, 3759154m N)	MEIR (367400m E, 3758950m N)	MEIW (366450m E, 3758850m N)
50000	Formaldehyde	5.62E-03	8.17E-02	1.62E-03
71432	Benzene	1.45E-01	4.13E-02	6.10E-03
75070	Acetaldehyde	3.32E-03	5.07E-02	9.58E-04
106990	1,3-Butadiene	5.81E-04	8.64E-03	1.64E-04
7440020	Nickel	8.92E-07	1.29E-05	2.46E-07
7440382	Arsenic	6.55E-09	5.10E-08	2.44E-09

**Table 20: PMI Source Contribution to Cancer Risk 30-years
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S30	ICE Air Compressor 12HP Gasoline E29	4.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.55E-06	29.29%
S7	Emergency ICE 99HP Diesel	2.15E-06	2.71E-08	5.53E-09	5.01E-08	1.09E-07	2.35E-06	15.09%
S33	Organic Solvents/Fugitive Emissions	2.22E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-06	14.26%
S4	ICE Main Unit 6 2000HP NG	2.16E-06	1.02E-09	2.54E-10	2.43E-09	5.00E-09	2.17E-06	13.95%
S6	ICE Main Unit 9 2000HP NG	1.66E-06	7.82E-10	1.95E-10	1.86E-09	3.83E-09	1.66E-06	10.69%
S5	ICE Main Unit 8 2000HP NG	1.57E-06	7.42E-10	1.85E-10	1.76E-09	3.64E-09	1.58E-06	10.14%
S31	ICE Air Compressor 12HP Gasoline E30	9.07E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.07E-07	5.84%
S34	Sump	2.34E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E-08	0.15%
S29	Air Compressor 120	2.21E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-08	0.14%
S32	Natural Gas Venting	2.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-08	0.14%
S27	TK-12	6.68E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.68E-09	0.04%
S25	TK-1A	6.08E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.08E-09	0.04%
S24	TK-1B	6.03E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.03E-09	0.04%
S21	TK-4C	4.46E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E-09	0.03%
S20	TK-4B	4.28E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.28E-09	0.03%
S28	Air Compressor 400	4.20E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.20E-09	0.03%
S19	TK-4A	4.10E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-09	0.03%
S18	TK-3	2.17E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-09	0.01%
S26	TK-2	1.28E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-09	0.01%
S8	Glycol Reboiler	1.77E-10	1.12E-10	2.78E-11	2.66E-10	5.47E-10	1.13E-09	0.01%
S13	Building AC & Heat V3	1.71E-10	1.08E-10	2.69E-11	2.57E-10	5.29E-10	1.09E-09	0.01%
S23	TK-5	1.09E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-09	0.01%

**Table 20: PMI Source Contribution to Cancer Risk 30-years
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S2	Emergency ICE 110HP NG	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.01%
S1	Emergency ICE 348HP NG	7.85E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.85E-10	0.01%
S12	Building AC & Heat V2	1.22E-10	7.67E-11	1.91E-11	1.82E-10	3.76E-10	7.76E-10	0.00%
S14	Building AC & Heat V4	9.52E-11	6.00E-11	1.49E-11	1.43E-10	2.94E-10	6.07E-10	0.00%
S15	Building AC & Heat V5	8.96E-11	5.65E-11	1.41E-11	1.34E-10	2.77E-10	5.71E-10	0.00%
S11	Building AC & Heat V1	8.79E-11	5.54E-11	1.38E-11	1.32E-10	2.71E-10	5.60E-10	0.00%
S17	Dehy Hot Oil Heater	8.09E-11	5.10E-11	1.27E-11	1.21E-10	2.50E-10	5.16E-10	0.00%
S16	Building AC & Heat V6	7.58E-11	4.77E-11	1.19E-11	1.14E-10	2.34E-10	4.83E-10	0.00%
S22	TK-6	4.73E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.73E-10	0.00%
S10	Loading Arm	1.30E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-10	0.00%
S3	Emergency ICE Fire Pump 93HP NG	5.79E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.79E-11	0.00%
S9	Thermal Oxidizer	3.38E-12	2.13E-12	5.30E-13	5.06E-12	1.04E-11	2.15E-11	0.00%

**Table 22: MEIR Source Contribution to Cancer Risk 30-years
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S30	ICE Air Compressor 12HP Gasoline E29	2.37E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.37E-06	25.87%
S4	ICE Main Unit 6 2000HP NG	1.76E-06	8.34E-10	2.08E-10	1.98E-09	4.09E-09	1.77E-06	19.36%
S6	ICE Main Unit 9 2000HP NG	1.30E-06	6.14E-10	1.53E-10	1.46E-09	3.01E-09	1.31E-06	14.27%
S5	ICE Main Unit 8 2000HP NG	1.25E-06	5.90E-10	1.47E-10	1.40E-09	2.89E-09	1.25E-06	13.71%
S33	Organic Solvents/Fugitive Emissions	9.92E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.92E-07	10.84%
S7	Emergency ICE 99HP Diesel	8.19E-07	1.03E-08	2.10E-09	1.90E-08	4.13E-08	8.92E-07	9.74%
S31	ICE Air Compressor 12HP Gasoline E30	4.77E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.77E-07	5.21%
S29	Air Compressor 120	2.17E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-08	0.24%
S32	Natural Gas Venting	1.63E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.63E-08	0.18%
S34	Sump	1.61E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E-08	0.18%
S27	TK-12	5.75E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.75E-09	0.06%
S24	TK-1B	4.34E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-09	0.05%
S25	TK-1A	4.33E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.33E-09	0.05%
S28	Air Compressor 400	4.06E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.06E-09	0.04%
S21	TK-4C	3.43E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.43E-09	0.04%
S20	TK-4B	3.30E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-09	0.04%
S19	TK-4A	3.18E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.18E-09	0.03%
S18	TK-3	1.69E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-09	0.02%
S8	Glycol Reboiler	2.38E-10	1.50E-10	3.74E-11	3.57E-10	7.35E-10	1.52E-09	0.02%
S2	Emergency ICE 110HP NG	1.30E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-09	0.01%
S26	TK-2	9.69E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-10	0.01%
S23	TK-5	7.89E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.89E-10	0.01%
S1	Emergency ICE 348HP NG	6.86E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.86E-10	0.01%
S17	Dehy Hot Oil Heater	1.07E-10	6.72E-11	1.67E-11	1.60E-10	3.29E-10	6.80E-10	0.01%
S22	TK-6	3.37E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.37E-10	0.00%
S13	Building AC & Heat V3	5.08E-11	3.20E-11	7.97E-12	7.61E-11	1.57E-10	3.23E-10	0.00%
S12	Building AC & Heat V2	4.39E-11	2.77E-11	6.90E-12	6.58E-11	1.36E-10	2.80E-10	0.00%

**Table 22: MEIR Source Contribution to Cancer Risk 30-years
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S11	Building AC & Heat V1	3.77E-11	2.38E-11	5.92E-12	5.65E-11	1.17E-10	2.40E-10	0.00%
S15	Building AC & Heat V5	2.69E-11	1.70E-11	4.22E-12	4.03E-11	8.31E-11	1.71E-10	0.00%
S16	Building AC & Heat V6	2.67E-11	1.68E-11	4.20E-12	4.01E-11	8.25E-11	1.70E-10	0.00%
S14	Building AC & Heat V4	2.63E-11	1.66E-11	4.13E-12	3.94E-11	8.12E-11	1.68E-10	0.00%
S10	Loading Arm	9.29E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.29E-11	0.00%
S3	Emergency ICE Fire Pump 93HP NG	6.34E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.34E-11	0.00%
S9	Thermal Oxidizer	3.26E-12	2.06E-12	5.12E-13	4.89E-12	1.01E-11	2.08E-11	0.00%

**Table 24: MEIW Source Contribution to Cancer Risk
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S33	Organic Solvents/Fugitive Emissions	1.24E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-08	23.35%
S7	Emergency ICE 99HP Diesel	8.74E-09	1.17E-10	9.54E-11	0.00E+00	0.00E+00	8.95E-09	16.88%
S30	ICE Air Compressor 12HP Gasoline E29	8.69E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.69E-09	16.38%
S4	ICE Main Unit 6 2000HP NG	7.91E-09	4.57E-12	3.96E-12	0.00E+00	0.00E+00	7.92E-09	14.92%
S6	ICE Main Unit 9 2000HP NG	5.44E-09	3.14E-12	2.72E-12	0.00E+00	0.00E+00	5.44E-09	10.26%
S5	ICE Main Unit 8 2000HP NG	5.33E-09	3.08E-12	2.67E-12	0.00E+00	0.00E+00	5.33E-09	10.05%
S31	ICE Air Compressor 12HP Gasoline E30	1.71E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-09	3.23%
S32	Natural Gas Venting	7.41E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.41E-10	1.40%
S29	Air Compressor 120	3.98E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-10	0.75%
S27	TK-12	2.26E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-10	0.43%
S25	TK-1A	1.64E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-10	0.31%
S24	TK-1B	1.61E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E-10	0.30%
S21	TK-4C	1.53E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-10	0.29%
S20	TK-4B	1.51E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-10	0.29%
S34	Sump	1.46E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-10	0.27%
S19	TK-4A	1.45E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-10	0.27%
S18	TK-3	7.42E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.42E-11	0.14%
S28	Air Compressor 400	7.22E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.22E-11	0.14%
S26	TK-2	4.04E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.04E-11	0.08%
S1	Emergency ICE 348HP NG	3.53E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.53E-11	0.07%
S23	TK-5	2.83E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-11	0.05%

**Table 24: MEIW Source Contribution to Cancer Risk
SoCalGas Playa del Rey**

Source	Source Description	Inhalation	Soil Ingestion	Dermal	Mother's Milk	Homegrown Produce	Total Cancer Risk	% of Total
S2	Emergency ICE 110HP NG	2.76E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.76E-11	0.05%
S8	Glycol Reboiler	7.05E-12	5.39E-12	4.67E-12	0.00E+00	0.00E+00	1.71E-11	0.03%
S22	TK-6	1.29E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E-11	0.02%
S17	Dehy Hot Oil Heater	2.87E-12	2.20E-12	1.90E-12	0.00E+00	0.00E+00	6.97E-12	0.01%
S10	Loading Arm	3.68E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E-12	0.01%
S3	Emergency ICE Fire Pump 93HP NG	3.48E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.48E-12	0.01%
S11	Building AC & Heat V1	8.88E-13	6.79E-13	5.88E-13	0.00E+00	0.00E+00	2.16E-12	0.00%
S12	Building AC & Heat V2	8.34E-13	6.37E-13	5.52E-13	0.00E+00	0.00E+00	2.02E-12	0.00%
S13	Building AC & Heat V3	7.80E-13	5.96E-13	5.17E-13	0.00E+00	0.00E+00	1.89E-12	0.00%
S16	Building AC & Heat V6	4.35E-13	3.33E-13	2.88E-13	0.00E+00	0.00E+00	1.06E-12	0.00%
S15	Building AC & Heat V5	4.08E-13	3.12E-13	2.70E-13	0.00E+00	0.00E+00	9.91E-13	0.00%
S14	Building AC & Heat V4	3.83E-13	2.93E-13	2.54E-13	0.00E+00	0.00E+00	9.30E-13	0.00%
S9	Thermal Oxidizer	1.83E-13	1.40E-13	1.21E-13	0.00E+00	0.00E+00	4.43E-13	0.00%

Table 26: PMI Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/ Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S33	Organic Solvents/ Fugitive Emissions	2.37E-05	9.44E-04	0.00E+00	3.40E-05	3.40E-05	6.05E-04	9.11E-04	0.00E+00	3.40E-04	3.40E-05	3.49E-02	3.49E-02	70.72%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-02	1.01E-02	20.45%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	7.35E-06	0.00E+00	1.89E-07	1.89E-07	1.12E-04	6.71E-04	0.00E+00	1.60E-06	1.89E-07	3.42E-04	6.71E-04	1.36%
S19	TK-4A	0.00E+00	2.61E-06	0.00E+00	4.14E-08	4.14E-08	2.10E-06	2.41E-06	0.00E+00	3.46E-07	4.14E-08	4.31E-04	4.31E-04	0.87%
S27	TK-12	0.00E+00	2.52E-06	0.00E+00	3.99E-08	3.99E-08	2.03E-06	2.33E-06	0.00E+00	3.34E-07	3.99E-08	4.16E-04	4.16E-04	0.84%
S25	TK-1A	0.00E+00	2.51E-06	0.00E+00	3.97E-08	3.97E-08	2.02E-06	2.31E-06	0.00E+00	3.32E-07	3.97E-08	4.14E-04	4.14E-04	0.84%
S20	TK-4B	0.00E+00	2.48E-06	0.00E+00	3.92E-08	3.92E-08	2.00E-06	2.29E-06	0.00E+00	3.29E-07	3.92E-08	4.10E-04	4.10E-04	0.83%
S24	TK-1B	0.00E+00	2.40E-06	0.00E+00	3.80E-08	3.80E-08	1.94E-06	2.22E-06	0.00E+00	3.18E-07	3.80E-08	3.97E-04	3.97E-04	0.80%
S21	TK-4C	0.00E+00	2.19E-06	0.00E+00	3.46E-08	3.46E-08	1.76E-06	2.02E-06	0.00E+00	2.90E-07	3.46E-08	3.61E-04	3.61E-04	0.73%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	4.86E-07	0.00E+00	8.03E-09	8.03E-09	7.51E-05	1.95E-04	0.00E+00	0.00E+00	8.03E-09	9.61E-05	1.95E-04	0.40%
S18	TK-3	0.00E+00	1.16E-06	0.00E+00	1.84E-08	1.84E-08	9.38E-07	1.07E-06	0.00E+00	1.54E-07	1.84E-08	1.92E-04	1.92E-04	0.39%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	4.27E-07	0.00E+00	7.04E-09	7.04E-09	6.59E-05	1.71E-04	0.00E+00	0.00E+00	7.04E-09	8.43E-05	1.71E-04	0.35%
S26	TK-2	0.00E+00	9.48E-07	0.00E+00	1.49E-08	1.49E-08	7.64E-07	8.75E-07	0.00E+00	1.26E-07	1.49E-08	1.56E-04	1.56E-04	0.32%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	3.73E-07	0.00E+00	6.15E-09	6.15E-09	5.75E-05	1.49E-04	0.00E+00	0.00E+00	6.15E-09	7.36E-05	1.49E-04	0.30%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	1.35E-06	0.00E+00	3.47E-08	3.47E-08	2.04E-05	1.23E-04	0.00E+00	2.94E-07	3.47E-08	6.27E-05	1.23E-04	0.25%
S23	TK-5	0.00E+00	4.49E-07	0.00E+00	7.07E-09	7.07E-09	3.62E-07	4.14E-07	0.00E+00	5.92E-08	7.07E-09	7.43E-05	7.43E-05	0.15%
S7	Emergency ICE 99HP Diesel	3.84E-05	3.84E-05	0.00E+00	6.07E-07	2.23E-11	3.89E-05	6.81E-05	3.84E-05	0.00E+00	2.23E-11	1.40E-06	6.81E-05	0.14%
S22	TK-6	0.00E+00	3.18E-07	0.00E+00	4.87E-09	4.87E-09	2.56E-07	2.93E-07	0.00E+00	4.18E-08	4.87E-09	5.28E-05	5.28E-05	0.11%
S29	Air Compressor 120	0.00E+00	1.64E-08	0.00E+00	1.09E-10	1.09E-10	3.19E-06	2.05E-05	0.00E+00	0.00E+00	1.09E-10	4.65E-06	2.05E-05	0.04%
S34	Sump	0.00E+00	4.06E-07	0.00E+00	1.51E-08	1.51E-08	2.66E-07	4.02E-07	0.00E+00	1.51E-07	1.51E-08	1.51E-05	1.51E-05	0.03%
S10	Loading Arm	0.00E+00	2.89E-07	0.00E+00	1.07E-08	1.07E-08	1.89E-07	2.86E-07	0.00E+00	1.07E-07	1.07E-08	1.07E-05	1.07E-05	0.02%
S1	Emergency ICE 348HP NG	0.00E+00	7.84E-09	0.00E+00	5.23E-11	5.23E-11	1.52E-06	9.81E-06	0.00E+00	0.00E+00	5.23E-11	2.22E-06	9.81E-06	0.02%

Table 26: PMI Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S8	Glycol Reboiler	0.00E+00	5.62E-08	0.00E+00	2.17E-09	2.17E-09	5.79E-08	8.26E-06	0.00E+00	0.00E+00	2.17E-09	1.22E-06	8.26E-06	0.02%
S28	Air Compressor 400	0.00E+00	3.04E-09	0.00E+00	2.03E-11	2.03E-11	5.89E-07	3.80E-06	0.00E+00	0.00E+00	2.03E-11	8.60E-07	3.80E-06	0.01%
S17	Dehy Hot Oil Heater	0.00E+00	2.03E-08	0.00E+00	7.87E-10	7.87E-10	2.10E-08	2.99E-06	0.00E+00	0.00E+00	7.87E-10	4.42E-07	2.99E-06	0.01%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	1.99E-09	0.00E+00	1.33E-11	1.33E-11	3.86E-07	2.49E-06	0.00E+00	0.00E+00	1.33E-11	5.64E-07	2.49E-06	0.01%
S2	Emergency ICE 110HP NG	0.00E+00	9.90E-10	0.00E+00	6.60E-12	6.60E-12	1.92E-07	1.24E-06	0.00E+00	0.00E+00	6.60E-12	2.80E-07	1.24E-06	0.00%
S9	Thermal Oxidizer	0.00E+00	4.40E-09	0.00E+00	1.70E-10	1.70E-10	4.54E-09	6.47E-07	0.00E+00	0.00E+00	1.70E-10	9.54E-08	6.47E-07	0.00%
S13	Building AC & Heat V3	0.00E+00	7.76E-10	0.00E+00	3.00E-11	3.00E-11	8.01E-10	1.14E-07	0.00E+00	0.00E+00	3.00E-11	1.68E-08	1.14E-07	0.00%
S12	Building AC & Heat V2	0.00E+00	7.42E-10	0.00E+00	2.87E-11	2.87E-11	7.65E-10	1.09E-07	0.00E+00	0.00E+00	2.87E-11	1.61E-08	1.09E-07	0.00%
S11	Building AC & Heat V1	0.00E+00	7.06E-10	0.00E+00	2.73E-11	2.73E-11	7.28E-10	1.04E-07	0.00E+00	0.00E+00	2.73E-11	1.53E-08	1.04E-07	0.00%
S14	Building AC & Heat V4	0.00E+00	3.48E-10	0.00E+00	1.35E-11	1.35E-11	3.59E-10	5.12E-08	0.00E+00	0.00E+00	1.35E-11	7.56E-09	5.12E-08	0.00%
S15	Building AC & Heat V5	0.00E+00	3.27E-10	0.00E+00	1.26E-11	1.26E-11	3.37E-10	4.81E-08	0.00E+00	0.00E+00	1.26E-11	7.09E-09	4.81E-08	0.00%
S16	Building AC & Heat V6	0.00E+00	3.09E-10	0.00E+00	1.19E-11	1.19E-11	3.18E-10	4.52E-08	0.00E+00	0.00E+00	1.19E-11	6.67E-09	4.52E-08	0.00%

Table 28: MEIR Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	1.06E-04	0.00E+00	2.72E-06	2.72E-06	1.60E-03	9.65E-03	0.00E+00	2.30E-05	2.72E-06	4.92E-03	9.65E-03	38.55%
S33	Organic Solvents/Fugitive Emissions	3.07E-06	1.22E-04	0.00E+00	4.41E-06	4.41E-06	7.85E-05	1.18E-04	0.00E+00	4.41E-05	4.41E-06	4.52E-03	4.52E-03	18.07%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	8.15E-06	0.00E+00	1.35E-07	1.35E-07	1.26E-03	3.27E-03	0.00E+00	0.00E+00	1.35E-07	1.61E-03	3.27E-03	13.06%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	6.01E-06	0.00E+00	9.92E-08	9.92E-08	9.29E-04	2.41E-03	0.00E+00	0.00E+00	9.92E-08	1.19E-03	2.41E-03	9.63%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	5.77E-06	0.00E+00	9.52E-08	9.52E-08	8.92E-04	2.31E-03	0.00E+00	0.00E+00	9.52E-08	1.14E-03	2.31E-03	9.25%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	2.13E-05	0.00E+00	5.48E-07	5.48E-07	3.23E-04	1.94E-03	0.00E+00	4.64E-06	5.48E-07	9.91E-04	1.94E-03	7.77%
S7	Emergency ICE 99HP Diesel	2.99E-04	2.99E-04	0.00E+00	4.72E-06	1.74E-10	3.03E-04	5.30E-04	2.99E-04	0.00E+00	1.74E-10	1.09E-05	5.30E-04	2.12%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.90E-05	7.90E-05	0.32%
S34	Sump	0.00E+00	1.98E-06	0.00E+00	7.34E-08	7.34E-08	1.30E-06	1.96E-06	0.00E+00	7.34E-07	7.34E-08	7.34E-05	7.34E-05	0.29%
S29	Air Compressor 120	0.00E+00	5.67E-08	0.00E+00	3.78E-10	3.78E-10	1.10E-05	7.09E-05	0.00E+00	0.00E+00	3.78E-10	1.61E-05	7.09E-05	0.28%
S27	TK-12	0.00E+00	1.67E-07	0.00E+00	2.65E-09	2.65E-09	1.35E-07	1.54E-07	0.00E+00	2.22E-08	2.65E-09	2.76E-05	2.76E-05	0.11%
S24	TK-1B	0.00E+00	1.26E-07	0.00E+00	2.00E-09	2.00E-09	1.02E-07	1.17E-07	0.00E+00	1.67E-08	2.00E-09	2.08E-05	2.08E-05	0.08%
S25	TK-1A	0.00E+00	1.26E-07	0.00E+00	2.00E-09	2.00E-09	1.02E-07	1.16E-07	0.00E+00	1.67E-08	2.00E-09	2.08E-05	2.08E-05	0.08%
S21	TK-4C	0.00E+00	9.96E-08	0.00E+00	1.57E-09	1.57E-09	8.03E-08	9.19E-08	0.00E+00	1.32E-08	1.57E-09	1.65E-05	1.65E-05	0.07%
S20	TK-4B	0.00E+00	9.60E-08	0.00E+00	1.52E-09	1.52E-09	7.74E-08	8.86E-08	0.00E+00	1.27E-08	1.52E-09	1.59E-05	1.59E-05	0.06%
S19	TK-4A	0.00E+00	9.24E-08	0.00E+00	1.47E-09	1.47E-09	7.45E-08	8.53E-08	0.00E+00	1.22E-08	1.47E-09	1.53E-05	1.53E-05	0.06%
S28	Air Compressor 400	0.00E+00	1.06E-08	0.00E+00	7.07E-11	7.07E-11	2.06E-06	1.33E-05	0.00E+00	0.00E+00	7.07E-11	3.00E-06	1.33E-05	0.05%
S18	TK-3	0.00E+00	4.90E-08	0.00E+00	7.74E-10	7.74E-10	3.95E-08	4.53E-08	0.00E+00	6.50E-09	7.74E-10	8.09E-06	8.09E-06	0.03%
S26	TK-2	0.00E+00	2.82E-08	0.00E+00	4.43E-10	4.43E-10	2.27E-08	2.60E-08	0.00E+00	3.74E-09	4.43E-10	4.66E-06	4.66E-06	0.02%

Table 28: MEIR Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S2	Emergency ICE 110HP NG	0.00E+00	3.40E-09	0.00E+00	2.27E-11	2.27E-11	6.60E-07	4.26E-06	0.00E+00	0.00E+00	2.27E-11	9.64E-07	4.26E-06	0.02%
S8	Glycol Reboiler	0.00E+00	2.66E-08	0.00E+00	1.03E-09	1.03E-09	2.74E-08	3.91E-06	0.00E+00	0.00E+00	1.03E-09	5.77E-07	3.91E-06	0.02%
S23	TK-5	0.00E+00	2.29E-08	0.00E+00	3.61E-10	3.61E-10	1.85E-08	2.11E-08	0.00E+00	3.02E-09	3.61E-10	3.79E-06	3.79E-06	0.02%
S1	Emergency ICE 348HP NG	0.00E+00	1.79E-09	0.00E+00	1.19E-11	1.19E-11	3.48E-07	2.24E-06	0.00E+00	0.00E+00	1.19E-11	5.07E-07	2.24E-06	0.01%
S17	Dehy Hot Oil Heater	0.00E+00	1.19E-08	0.00E+00	4.60E-10	4.60E-10	1.23E-08	1.75E-06	0.00E+00	0.00E+00	4.60E-10	2.58E-07	1.75E-06	0.01%
S22	TK-6	0.00E+00	9.74E-09	0.00E+00	1.49E-10	1.49E-10	7.86E-09	8.99E-09	0.00E+00	1.28E-09	1.49E-10	1.62E-06	1.62E-06	0.01%
S13	Building AC & Heat V3	0.00E+00	5.67E-09	0.00E+00	2.19E-10	2.19E-10	5.85E-09	8.34E-07	0.00E+00	0.00E+00	2.19E-10	1.23E-07	8.34E-07	0.00%
S12	Building AC & Heat V2	0.00E+00	4.90E-09	0.00E+00	1.90E-10	1.90E-10	5.06E-09	7.21E-07	0.00E+00	0.00E+00	1.90E-10	1.06E-07	7.21E-07	0.00%
S11	Building AC & Heat V1	0.00E+00	4.21E-09	0.00E+00	1.63E-10	1.63E-10	4.35E-09	6.20E-07	0.00E+00	0.00E+00	1.63E-10	9.14E-08	6.20E-07	0.00%
S15	Building AC & Heat V5	0.00E+00	3.00E-09	0.00E+00	1.16E-10	1.16E-10	3.10E-09	4.42E-07	0.00E+00	0.00E+00	1.16E-10	6.52E-08	4.42E-07	0.00%
S16	Building AC & Heat V6	0.00E+00	3.00E-09	0.00E+00	1.15E-10	1.15E-10	3.09E-09	4.39E-07	0.00E+00	0.00E+00	1.15E-10	6.48E-08	4.39E-07	0.00%
S14	Building AC & Heat V4	0.00E+00	2.94E-09	0.00E+00	1.13E-10	1.13E-10	3.03E-09	4.32E-07	0.00E+00	0.00E+00	1.13E-10	6.37E-08	4.32E-07	0.00%
S10	Loading Arm	0.00E+00	1.14E-08	0.00E+00	4.24E-10	4.24E-10	7.49E-09	1.13E-08	0.00E+00	4.24E-09	4.24E-10	4.24E-07	4.24E-07	0.00%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	1.66E-10	0.00E+00	1.10E-12	1.10E-12	3.21E-08	2.07E-07	0.00E+00	0.00E+00	1.10E-12	4.69E-08	2.07E-07	0.00%
S9	Thermal Oxidizer	0.00E+00	3.64E-10	0.00E+00	1.41E-11	1.41E-11	3.76E-10	5.36E-08	0.00E+00	0.00E+00	1.41E-11	7.90E-09	5.36E-08	0.00%

Table 30: MEIW Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S33	Organic Solvents/Fugitive Emissions	1.11E-06	4.42E-05	0.00E+00	1.59E-06	1.59E-06	2.83E-05	4.26E-05	0.00E+00	1.59E-05	1.59E-06	1.63E-03	1.63E-03	72.05%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	2.02E-06	0.00E+00	5.19E-08	5.19E-08	3.04E-05	1.84E-04	0.00E+00	4.40E-07	5.19E-08	9.39E-05	1.84E-04	8.14%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.29E-05	8.29E-05	3.66%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	1.43E-07	0.00E+00	2.36E-09	2.36E-09	2.21E-05	5.74E-05	0.00E+00	0.00E+00	2.36E-09	2.83E-05	5.74E-05	2.54%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	1.21E-07	0.00E+00	1.99E-09	1.99E-09	1.87E-05	4.84E-05	0.00E+00	0.00E+00	1.99E-09	2.39E-05	4.84E-05	2.14%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	1.07E-07	0.00E+00	1.76E-09	1.76E-09	1.65E-05	4.28E-05	0.00E+00	0.00E+00	1.76E-09	2.11E-05	4.28E-05	1.89%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	3.62E-07	0.00E+00	9.31E-09	9.31E-09	5.46E-06	3.31E-05	0.00E+00	7.89E-08	9.31E-09	1.68E-05	3.31E-05	1.46%
S27	TK-12	0.00E+00	1.72E-07	0.00E+00	2.73E-09	2.73E-09	1.39E-07	1.59E-07	0.00E+00	2.28E-08	2.73E-09	2.84E-05	2.84E-05	1.26%
S20	TK-4B	0.00E+00	1.21E-07	0.00E+00	1.91E-09	1.91E-09	9.76E-08	1.12E-07	0.00E+00	1.60E-08	1.91E-09	2.00E-05	2.00E-05	0.88%
S19	TK-4A	0.00E+00	1.19E-07	0.00E+00	1.89E-09	1.89E-09	9.61E-08	1.10E-07	0.00E+00	1.58E-08	1.89E-09	1.97E-05	1.97E-05	0.87%
S21	TK-4C	0.00E+00	1.18E-07	0.00E+00	1.87E-09	1.87E-09	9.53E-08	1.09E-07	0.00E+00	1.56E-08	1.87E-09	1.95E-05	1.95E-05	0.86%
S25	TK-1A	0.00E+00	1.03E-07	0.00E+00	1.64E-09	1.64E-09	8.34E-08	9.54E-08	0.00E+00	1.37E-08	1.64E-09	1.71E-05	1.71E-05	0.75%
S24	TK-1B	0.00E+00	1.03E-07	0.00E+00	1.62E-09	1.62E-09	8.28E-08	9.47E-08	0.00E+00	1.36E-08	1.62E-09	1.69E-05	1.69E-05	0.75%
S7	Emergency ICE 99HP Diesel	4.62E-06	4.62E-06	0.00E+00	1.37E-07	8.32E-12	4.79E-06	1.57E-05	4.62E-06	0.00E+00	8.32E-12	5.19E-07	1.57E-05	0.69%
S18	TK-3	0.00E+00	5.95E-08	0.00E+00	9.40E-10	9.40E-10	4.80E-08	5.49E-08	0.00E+00	7.89E-09	9.40E-10	9.82E-06	9.82E-06	0.43%
S34	Sump	0.00E+00	1.91E-07	0.00E+00	7.09E-09	7.09E-09	1.25E-07	1.89E-07	0.00E+00	7.09E-08	7.09E-09	7.09E-06	7.09E-06	0.31%
S29	Air Compressor 120	0.00E+00	4.76E-09	0.00E+00	3.17E-11	3.17E-11	9.24E-07	5.95E-06	0.00E+00	0.00E+00	3.17E-11	1.35E-06	5.95E-06	0.26%
S8	Glycol Reboiler	0.00E+00	3.90E-08	0.00E+00	1.51E-09	1.51E-09	4.03E-08	5.74E-06	0.00E+00	0.00E+00	1.51E-09	8.47E-07	5.74E-06	0.25%
S26	TK-2	0.00E+00	3.03E-08	0.00E+00	4.75E-10	4.75E-10	2.44E-08	2.79E-08	0.00E+00	4.01E-09	4.75E-10	4.99E-06	4.99E-06	0.22%
S1	Emergency ICE 348HP NG	0.00E+00	2.90E-09	0.00E+00	1.93E-11	1.93E-11	5.62E-07	3.62E-06	0.00E+00	0.00E+00	1.93E-11	8.20E-07	3.62E-06	0.16%
S23	TK-5	0.00E+00	1.75E-08	0.00E+00	2.76E-10	2.76E-10	1.41E-08	1.62E-08	0.00E+00	2.31E-09	2.76E-10	2.90E-06	2.90E-06	0.13%
S17	Dehy Hot Oil Heater	0.00E+00	1.43E-08	0.00E+00	5.52E-10	5.52E-10	1.47E-08	2.10E-06	0.00E+00	0.00E+00	5.52E-10	3.10E-07	2.10E-06	0.09%
S22	TK-6	0.00E+00	8.17E-09	0.00E+00	1.25E-10	1.25E-10	6.59E-09	7.54E-09	0.00E+00	1.07E-09	1.25E-10	1.36E-06	1.36E-06	0.06%

Table 30: MEIW Source Contribution to Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S28	Air Compressor 400	0.00E+00	8.76E-10	0.00E+00	5.84E-12	5.84E-12	1.70E-07	1.10E-06	0.00E+00	0.00E+00	5.84E-12	2.48E-07	1.10E-06	0.05%
S2	Emergency ICE 110HP NG	0.00E+00	5.11E-10	0.00E+00	3.41E-12	3.41E-12	9.92E-08	6.40E-07	0.00E+00	0.00E+00	3.41E-12	1.45E-07	6.40E-07	0.03%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	3.47E-10	0.00E+00	2.31E-12	2.31E-12	6.72E-08	4.34E-07	0.00E+00	0.00E+00	2.31E-12	9.82E-08	4.34E-07	0.02%
S10	Loading Arm	0.00E+00	1.00E-08	0.00E+00	3.73E-10	3.73E-10	6.58E-09	9.93E-09	0.00E+00	3.73E-09	3.73E-10	3.73E-07	3.73E-07	0.02%
S9	Thermal Oxidizer	0.00E+00	7.10E-10	0.00E+00	2.75E-11	2.75E-11	7.33E-10	1.04E-07	0.00E+00	0.00E+00	2.75E-11	1.54E-08	1.04E-07	0.00%
S11	Building AC & Heat V1	0.00E+00	2.29E-10	0.00E+00	8.86E-12	8.86E-12	2.37E-10	3.37E-08	0.00E+00	0.00E+00	8.86E-12	4.98E-09	3.37E-08	0.00%
S12	Building AC & Heat V2	0.00E+00	2.22E-10	0.00E+00	8.57E-12	8.57E-12	2.29E-10	3.26E-08	0.00E+00	0.00E+00	8.57E-12	4.81E-09	3.26E-08	0.00%
S13	Building AC & Heat V3	0.00E+00	2.14E-10	0.00E+00	8.28E-12	8.28E-12	2.21E-10	3.15E-08	0.00E+00	0.00E+00	8.28E-12	4.65E-09	3.15E-08	0.00%
S14	Building AC & Heat V4	0.00E+00	9.85E-11	0.00E+00	3.81E-12	3.81E-12	1.02E-10	1.45E-08	0.00E+00	0.00E+00	3.81E-12	2.14E-09	1.45E-08	0.00%
S15	Building AC & Heat V5	0.00E+00	9.70E-11	0.00E+00	3.75E-12	3.75E-12	1.00E-10	1.43E-08	0.00E+00	0.00E+00	3.75E-12	2.10E-09	1.43E-08	0.00%
S16	Building AC & Heat V6	0.00E+00	9.58E-11	0.00E+00	3.69E-12	3.69E-12	9.88E-11	1.40E-08	0.00E+00	0.00E+00	3.69E-12	2.07E-09	1.40E-08	0.00%

Table 32: PMI Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S33	Organic Solvents/Fugitive Emissions	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-02	3.49E-02	71.52%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-02	1.01E-02	20.68%
S19	TK-4A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.31E-04	4.31E-04	0.88%
S27	TK-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.16E-04	4.16E-04	0.85%
S25	TK-1A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.14E-04	4.14E-04	0.85%
S20	TK-4B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-04	4.10E-04	0.84%
S24	TK-1B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.97E-04	3.97E-04	0.81%
S21	TK-4C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.61E-04	3.61E-04	0.74%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	0.00E+00	1.23E-05	0.00E+00	0.00E+00	2.32E-05	1.00E-04	0.00E+00	0.00E+00	0.00E+00	2.89E-04	2.89E-04	0.59%
S18	TK-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.92E-04	1.92E-04	0.39%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-05	1.86E-04	0.00E+00	0.00E+00	0.00E+00	9.61E-05	1.86E-04	0.38%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-05	1.63E-04	0.00E+00	0.00E+00	0.00E+00	8.43E-05	1.63E-04	0.33%
S26	TK-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-04	1.56E-04	0.32%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-05	1.43E-04	0.00E+00	0.00E+00	0.00E+00	7.36E-05	1.43E-04	0.29%
S23	TK-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.43E-05	7.43E-05	0.15%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	0.00E+00	2.26E-06	0.00E+00	0.00E+00	4.26E-06	1.84E-05	0.00E+00	0.00E+00	0.00E+00	5.30E-05	5.30E-05	0.11%
S22	TK-6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.28E-05	5.28E-05	0.11%
S29	Air Compressor 120	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.50E-07	2.02E-05	0.00E+00	0.00E+00	0.00E+00	4.65E-06	2.02E-05	0.04%
S34	Sump	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-05	1.51E-05	0.03%
S10	Loading Arm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-05	1.07E-05	0.02%
S1	Emergency ICE 348HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.11E-07	9.65E-06	0.00E+00	0.00E+00	0.00E+00	2.22E-06	9.65E-06	0.02%
S28	Air Compressor 400	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-07	3.74E-06	0.00E+00	0.00E+00	0.00E+00	8.60E-07	3.74E-06	0.01%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.89E-08	2.45E-06	0.00E+00	0.00E+00	0.00E+00	5.64E-07	2.45E-06	0.01%
S7	Emergency ICE 99HP Diesel	4.37E-07	4.37E-07	2.66E-07	0.00E+00	0.00E+00	5.35E-07	1.50E-06	4.37E-07	0.00E+00	0.00E+00	2.54E-07	1.50E-06	0.00%

Table 32: PMI Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/ Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S8	Glycol Reboiler	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.70E-07	0.00E+00	0.00E+00	0.00E+00	1.22E-06	1.22E-06	0.00%
S2	Emergency ICE 110HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.92E-08	1.22E-06	0.00E+00	0.00E+00	0.00E+00	2.80E-07	1.22E-06	0.00%
S17	Dehy Hot Oil Heater	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-07	0.00E+00	0.00E+00	0.00E+00	4.42E-07	4.42E-07	0.00%
S9	Thermal Oxidizer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.81E-08	0.00E+00	0.00E+00	0.00E+00	9.54E-08	9.54E-08	0.00%
S13	Building AC & Heat V3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	0.00E+00	0.00E+00	0.00E+00	1.68E-08	1.68E-08	0.00%
S12	Building AC & Heat V2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-08	0.00E+00	0.00E+00	0.00E+00	1.61E-08	1.61E-08	0.00%
S11	Building AC & Heat V1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00	1.53E-08	1.53E-08	0.00%
S14	Building AC & Heat V4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.39E-09	0.00E+00	0.00E+00	0.00E+00	7.56E-09	7.56E-09	0.00%
S15	Building AC & Heat V5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E-09	0.00E+00	0.00E+00	0.00E+00	7.09E-09	7.09E-09	0.00%
S16	Building AC & Heat V6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.76E-09	0.00E+00	0.00E+00	0.00E+00	6.67E-09	6.67E-09	0.00%

Table 34: MEIR Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/ Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S33	Organic Solvents/ Fugitive Emissions	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.52E-03	4.52E-03	25.79%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	0.00E+00	1.77E-04	0.00E+00	0.00E+00	3.34E-04	1.44E-03	0.00E+00	0.00E+00	0.00E+00	4.16E-03	4.16E-03	23.70%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.27E-04	3.12E-03	0.00E+00	0.00E+00	0.00E+00	1.61E-03	3.12E-03	17.79%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-04	2.30E-03	0.00E+00	0.00E+00	0.00E+00	1.19E-03	2.30E-03	13.12%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E-04	2.21E-03	0.00E+00	0.00E+00	0.00E+00	1.14E-03	2.21E-03	12.60%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	0.00E+00	3.58E-05	0.00E+00	0.00E+00	6.74E-05	2.91E-04	0.00E+00	0.00E+00	0.00E+00	8.38E-04	8.38E-04	4.78%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.90E-05	7.90E-05	0.45%
S34	Sump	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.34E-05	7.34E-05	0.42%
S29	Air Compressor 120	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-06	6.98E-05	0.00E+00	0.00E+00	0.00E+00	1.61E-05	6.98E-05	0.40%
S27	TK-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.76E-05	2.76E-05	0.16%
S24	TK-1B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-05	2.08E-05	0.12%
S25	TK-1A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-05	2.08E-05	0.12%
S21	TK-4C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-05	1.65E-05	0.09%
S20	TK-4B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-05	1.59E-05	0.09%
S19	TK-4A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-05	1.53E-05	0.09%
S28	Air Compressor 400	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.20E-07	1.30E-05	0.00E+00	0.00E+00	0.00E+00	3.00E-06	1.30E-05	0.07%
S7	Emergency ICE 99HP Diesel	3.40E-06	3.40E-06	2.07E-06	0.00E+00	0.00E+00	4.17E-06	1.17E-05	3.40E-06	0.00E+00	0.00E+00	1.98E-06	1.17E-05	0.07%
S18	TK-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.09E-06	8.09E-06	0.05%
S26	TK-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-06	4.66E-06	0.03%
S2	Emergency ICE 110HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-07	4.18E-06	0.00E+00	0.00E+00	0.00E+00	9.64E-07	4.18E-06	0.02%
S23	TK-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	3.79E-06	0.02%
S1	Emergency ICE 348HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.10E-08	2.20E-06	0.00E+00	0.00E+00	0.00E+00	5.07E-07	2.20E-06	0.01%
S22	TK-6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-06	1.62E-06	0.01%

Table 34: MEIR Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S8	Glycol Reboiler	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-07	0.00E+00	0.00E+00	0.00E+00	5.77E-07	5.77E-07	0.00%
S10	Loading Arm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.24E-07	4.24E-07	0.00%
S17	Dehy Hot Oil Heater	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-07	0.00E+00	0.00E+00	0.00E+00	2.58E-07	2.58E-07	0.00%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.56E-09	2.04E-07	0.00E+00	0.00E+00	0.00E+00	4.69E-08	2.04E-07	0.00%
S13	Building AC & Heat V3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-08	0.00E+00	0.00E+00	0.00E+00	1.23E-07	1.23E-07	0.00%
S12	Building AC & Heat V2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.59E-08	0.00E+00	0.00E+00	0.00E+00	1.06E-07	1.06E-07	0.00%
S11	Building AC & Heat V1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.52E-08	0.00E+00	0.00E+00	0.00E+00	9.14E-08	9.14E-08	0.00%
S15	Building AC & Heat V5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-08	0.00E+00	0.00E+00	0.00E+00	6.52E-08	6.52E-08	0.00%
S16	Building AC & Heat V6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.63E-08	0.00E+00	0.00E+00	0.00E+00	6.48E-08	6.48E-08	0.00%
S14	Building AC & Heat V4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.55E-08	0.00E+00	0.00E+00	0.00E+00	6.37E-08	6.37E-08	0.00%
S9	Thermal Oxidizer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.64E-09	0.00E+00	0.00E+00	0.00E+00	7.90E-09	7.90E-09	0.00%

Table 36: MEIW Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S33	Organic Solvents/Fugitive Emissions	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.63E-03	1.63E-03	77.26%
S32	Natural Gas Venting	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.29E-05	8.29E-05	3.93%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	0.00E+00	3.39E-06	0.00E+00	0.00E+00	6.38E-06	2.75E-05	0.00E+00	0.00E+00	0.00E+00	7.93E-05	7.93E-05	3.76%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.99E-06	5.48E-05	0.00E+00	0.00E+00	0.00E+00	2.83E-05	5.48E-05	2.60%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.36E-06	4.62E-05	0.00E+00	0.00E+00	0.00E+00	2.39E-05	4.62E-05	2.19%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-06	4.09E-05	0.00E+00	0.00E+00	0.00E+00	2.11E-05	4.09E-05	1.94%
S27	TK-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-05	2.84E-05	1.35%
S20	TK-4B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-05	2.00E-05	0.95%
S19	TK-4A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-05	1.97E-05	0.93%
S21	TK-4C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-05	1.95E-05	0.93%
S25	TK-1A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-05	1.71E-05	0.81%
S24	TK-1B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-05	1.69E-05	0.80%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	0.00E+00	6.08E-07	0.00E+00	0.00E+00	1.15E-06	4.94E-06	0.00E+00	0.00E+00	0.00E+00	1.42E-05	1.42E-05	0.67%
S18	TK-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.82E-06	9.82E-06	0.47%
S34	Sump	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.09E-06	7.09E-06	0.34%
S29	Air Compressor 120	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-07	5.86E-06	0.00E+00	0.00E+00	0.00E+00	1.35E-06	5.86E-06	0.28%
S26	TK-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.99E-06	4.99E-06	0.24%
S1	Emergency ICE 348HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-07	3.56E-06	0.00E+00	0.00E+00	0.00E+00	8.20E-07	3.56E-06	0.17%
S23	TK-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E-06	2.90E-06	0.14%
S22	TK-6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-06	1.36E-06	0.06%
S28	Air Compressor 400	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-08	1.08E-06	0.00E+00	0.00E+00	0.00E+00	2.48E-07	1.08E-06	0.05%
S8	Glycol Reboiler	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.05E-07	0.00E+00	0.00E+00	0.00E+00	8.47E-07	8.47E-07	0.04%
S2	Emergency ICE 110HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-08	6.29E-07	0.00E+00	0.00E+00	0.00E+00	1.45E-07	6.29E-07	0.03%
S7	Emergency ICE 99HP Diesel	1.63E-07	1.63E-07	9.90E-08	0.00E+00	0.00E+00	2.00E-07	5.59E-07	1.63E-07	0.00E+00	0.00E+00	9.48E-08	5.59E-07	0.03%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-08	4.26E-07	0.00E+00	0.00E+00	0.00E+00	9.82E-08	4.26E-07	0.02%
S10	Loading Arm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-07	3.73E-07	0.02%
S17	Dehy Hot Oil Heater	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-07	0.00E+00	0.00E+00	0.00E+00	3.10E-07	3.10E-07	0.01%

Table 36: MEIW Source Contribution to 8-Hour Chronic Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S9	Thermal Oxidizer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00	1.54E-08	1.54E-08	0.00%
S11	Building AC & Heat V1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.55E-09	0.00E+00	0.00E+00	0.00E+00	4.98E-09	4.98E-09	0.00%
S12	Building AC & Heat V2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-09	0.00E+00	0.00E+00	0.00E+00	4.81E-09	4.81E-09	0.00%
S13	Building AC & Heat V3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-09	0.00E+00	0.00E+00	0.00E+00	4.65E-09	4.65E-09	0.00%
S14	Building AC & Heat V4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-09	0.00E+00	0.00E+00	0.00E+00	2.14E-09	2.14E-09	0.00%
S15	Building AC & Heat V5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-09	0.00E+00	0.00E+00	0.00E+00	2.10E-09	2.10E-09	0.00%
S16	Building AC & Heat V6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-09	0.00E+00	0.00E+00	0.00E+00	2.07E-09	2.07E-09	0.00%

Table 38: PMI Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S32	Natural Gas Venting	0.00E+00	0.00E+00	7.18E+00	0.00E+00	0.00E+00	7.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.18E+00	7.18E+00	97.79%
S33	Organic Solvents/Fugitive Emissions	4.61E-06	1.10E-04	2.64E-02	0.00E+00	0.00E+00	2.64E-02	1.05E-04	0.00E+00	1.05E-04	0.00E+00	2.64E-02	2.64E-02	0.36%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	5.97E-05	2.07E-02	0.00E+00	0.00E+00	1.87E-02	5.73E-04	0.00E+00	8.82E-03	0.00E+00	1.85E-02	2.07E-02	0.28%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	5.90E-05	2.04E-02	0.00E+00	0.00E+00	1.85E-02	5.66E-04	0.00E+00	8.72E-03	0.00E+00	1.83E-02	2.04E-02	0.28%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	6.67E-06	3.14E-03	0.00E+00	0.00E+00	3.19E-03	3.71E-04	0.00E+00	2.03E-02	0.00E+00	3.14E-03	2.03E-02	0.28%
S1	Emergency ICE 348HP NG	0.00E+00	5.76E-06	2.71E-03	0.00E+00	0.00E+00	2.76E-03	3.21E-04	0.00E+00	1.76E-02	0.00E+00	2.71E-03	1.76E-02	0.24%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	6.92E-06	4.34E-03	0.00E+00	0.00E+00	4.42E-03	1.06E-03	0.00E+00	1.31E-02	0.00E+00	4.34E-03	1.31E-02	0.18%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	6.13E-06	3.84E-03	0.00E+00	0.00E+00	3.91E-03	9.37E-04	0.00E+00	1.17E-02	0.00E+00	3.84E-03	1.17E-02	0.16%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	5.83E-06	3.65E-03	0.00E+00	0.00E+00	3.72E-03	8.91E-04	0.00E+00	1.11E-02	0.00E+00	3.65E-03	1.11E-02	0.15%
S28	Air Compressor 400	0.00E+00	1.96E-06	9.23E-04	0.00E+00	0.00E+00	9.39E-04	1.09E-04	0.00E+00	5.99E-03	0.00E+00	9.23E-04	5.99E-03	0.08%
S29	Air Compressor 120	0.00E+00	1.79E-06	8.42E-04	0.00E+00	0.00E+00	8.56E-04	9.97E-05	0.00E+00	5.46E-03	0.00E+00	8.42E-04	5.46E-03	0.07%
S2	Emergency ICE 110HP NG	0.00E+00	1.46E-06	6.86E-04	0.00E+00	0.00E+00	6.98E-04	8.15E-05	0.00E+00	4.46E-03	0.00E+00	6.86E-04	4.46E-03	0.06%
S7	Emergency ICE 99HP Diesel	3.25E-04	3.25E-04	1.07E-03	0.00E+00	0.00E+00	6.19E-04	7.81E-05	0.00E+00	1.35E-03	0.00E+00	2.80E-04	1.35E-03	0.02%
S19	TK-4A	0.00E+00	3.67E-07	6.35E-04	0.00E+00	0.00E+00	6.35E-04	3.67E-07	0.00E+00	3.67E-07	0.00E+00	6.35E-04	6.35E-04	0.01%
S20	TK-4B	0.00E+00	3.45E-07	5.95E-04	0.00E+00	0.00E+00	5.96E-04	3.45E-07	0.00E+00	3.45E-07	0.00E+00	5.95E-04	5.96E-04	0.01%
S21	TK-4C	0.00E+00	2.95E-07	5.10E-04	0.00E+00	0.00E+00	5.10E-04	2.95E-07	0.00E+00	2.95E-07	0.00E+00	5.10E-04	5.10E-04	0.01%
S27	TK-12	0.00E+00	2.84E-07	4.91E-04	0.00E+00	0.00E+00	4.91E-04	2.84E-07	0.00E+00	2.84E-07	0.00E+00	4.91E-04	4.91E-04	0.01%
S25	TK-1A	0.00E+00	2.67E-07	4.61E-04	0.00E+00	0.00E+00	4.61E-04	2.67E-07	0.00E+00	2.67E-07	0.00E+00	4.61E-04	4.61E-04	0.01%
S24	TK-1B	0.00E+00	2.61E-07	4.51E-04	0.00E+00	0.00E+00	4.51E-04	2.61E-07	0.00E+00	2.61E-07	0.00E+00	4.51E-04	4.51E-04	0.01%
S18	TK-3	0.00E+00	1.53E-07	2.66E-04	0.00E+00	0.00E+00	2.66E-04	1.53E-07	0.00E+00	1.53E-07	0.00E+00	2.66E-04	2.66E-04	0.00%
S26	TK-2	0.00E+00	1.11E-07	1.92E-04	0.00E+00	0.00E+00	1.92E-04	1.11E-07	0.00E+00	1.11E-07	0.00E+00	1.92E-04	1.92E-04	0.00%
S8	Glycol Reboiler	0.00E+00	7.28E-08	2.18E-05	0.00E+00	0.00E+00	2.19E-05	7.44E-05	0.00E+00	9.72E-05	0.00E+00	2.18E-05	9.72E-05	0.00%
S34	Sump	0.00E+00	3.83E-07	9.39E-05	0.00E+00	0.00E+00	9.40E-05	3.83E-07	0.00E+00	3.83E-07	0.00E+00	9.39E-05	9.40E-05	0.00%
S23	TK-5	0.00E+00	4.55E-08	7.88E-05	0.00E+00	0.00E+00	7.89E-05	4.55E-08	0.00E+00	4.55E-08	0.00E+00	7.88E-05	7.89E-05	0.00%
S22	TK-6	0.00E+00	3.30E-08	5.74E-05	0.00E+00	0.00E+00	5.74E-05	3.30E-08	0.00E+00	3.30E-08	0.00E+00	5.74E-05	5.74E-05	0.00%
S10	Loading Arm	0.00E+00	1.91E-07	4.67E-05	0.00E+00	0.00E+00	4.68E-05	1.91E-07	0.00E+00	1.91E-07	0.00E+00	4.67E-05	4.68E-05	0.00%
S17	Dehy Hot Oil Heater	0.00E+00	2.29E-08	6.86E-06	0.00E+00	0.00E+00	6.88E-06	2.33E-05	0.00E+00	3.05E-05	0.00E+00	6.86E-06	3.05E-05	0.00%
S9	Thermal Oxidizer	0.00E+00	1.76E-08	5.27E-06	0.00E+00	0.00E+00	5.29E-06	1.80E-05	0.00E+00	2.35E-05	0.00E+00	5.27E-06	2.35E-05	0.00%
S13	Building AC & Heat V3	0.00E+00	1.04E-09	3.11E-07	0.00E+00	0.00E+00	3.12E-07	1.06E-06	0.00E+00	1.38E-06	0.00E+00	3.11E-07	1.38E-06	0.00%

Table 38: PMI Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S12	Building AC & Heat V2	0.00E+00	1.01E-09	3.02E-07	0.00E+00	0.00E+00	3.03E-07	1.03E-06	0.00E+00	1.35E-06	0.00E+00	3.02E-07	1.35E-06	0.00%
S11	Building AC & Heat V1	0.00E+00	9.48E-10	2.84E-07	0.00E+00	0.00E+00	2.85E-07	9.67E-07	0.00E+00	1.26E-06	0.00E+00	2.84E-07	1.26E-06	0.00%
S14	Building AC & Heat V4	0.00E+00	4.67E-10	1.40E-07	0.00E+00	0.00E+00	1.40E-07	4.79E-07	0.00E+00	6.25E-07	0.00E+00	1.40E-07	6.25E-07	0.00%
S15	Building AC & Heat V5	0.00E+00	4.41E-10	1.32E-07	0.00E+00	0.00E+00	1.33E-07	4.53E-07	0.00E+00	5.91E-07	0.00E+00	1.32E-07	5.91E-07	0.00%
S16	Building AC & Heat V6	0.00E+00	4.17E-10	1.25E-07	0.00E+00	0.00E+00	1.26E-07	4.28E-07	0.00E+00	5.59E-07	0.00E+00	1.25E-07	5.59E-07	0.00%

Table 40: MEIR Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S32	Natural Gas Venting	0.00E+00	0.00E+00	5.93E-01	0.00E+00	0.00E+00	5.93E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.93E-01	5.93E-01	77.23%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	7.51E-05	2.60E-02	0.00E+00	0.00E+00	2.35E-02	7.20E-04	0.00E+00	1.11E-02	0.00E+00	2.33E-02	2.60E-02	3.38%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	7.51E-05	2.60E-02	0.00E+00	0.00E+00	2.35E-02	7.20E-04	0.00E+00	1.11E-02	0.00E+00	2.33E-02	2.60E-02	3.38%
S2	Emergency ICE 110HP NG	0.00E+00	7.19E-06	3.37E-03	0.00E+00	0.00E+00	3.43E-03	4.00E-04	0.00E+00	2.19E-02	0.00E+00	3.37E-03	2.19E-02	2.85%
S28	Air Compressor 400	0.00E+00	6.09E-06	2.87E-03	0.00E+00	0.00E+00	2.92E-03	3.40E-04	0.00E+00	1.86E-02	0.00E+00	2.87E-03	1.86E-02	2.42%
S29	Air Compressor 120	0.00E+00	5.69E-06	2.68E-03	0.00E+00	0.00E+00	2.73E-03	3.17E-04	0.00E+00	1.74E-02	0.00E+00	2.68E-03	1.74E-02	2.26%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	7.92E-06	4.97E-03	0.00E+00	0.00E+00	5.06E-03	1.22E-03	0.00E+00	1.50E-02	0.00E+00	4.97E-03	1.50E-02	1.96%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	6.74E-06	4.23E-03	0.00E+00	0.00E+00	4.30E-03	1.03E-03	0.00E+00	1.28E-02	0.00E+00	4.23E-03	1.28E-02	1.67%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	6.72E-06	4.21E-03	0.00E+00	0.00E+00	4.28E-03	1.03E-03	0.00E+00	1.28E-02	0.00E+00	4.21E-03	1.28E-02	1.67%
S33	Organic Solvents/Fugitive Emissions	1.93E-06	4.60E-05	1.10E-02	0.00E+00	0.00E+00	1.11E-02	4.40E-05	0.00E+00	4.40E-05	0.00E+00	1.10E-02	1.11E-02	1.44%
S1	Emergency ICE 348HP NG	0.00E+00	2.29E-06	1.08E-03	0.00E+00	0.00E+00	1.10E-03	1.28E-04	0.00E+00	6.99E-03	0.00E+00	1.08E-03	6.99E-03	0.91%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	9.42E-07	4.43E-04	0.00E+00	0.00E+00	4.51E-04	5.24E-05	0.00E+00	2.87E-03	0.00E+00	4.43E-04	2.87E-03	0.37%
S7	Emergency ICE 99HP Diesel	5.46E-04	5.46E-04	1.80E-03	0.00E+00	0.00E+00	1.04E-03	1.31E-04	0.00E+00	2.27E-03	0.00E+00	4.71E-04	2.27E-03	0.30%
S27	TK-12	0.00E+00	8.82E-08	1.52E-04	0.00E+00	0.00E+00	1.52E-04	8.82E-08	0.00E+00	8.82E-08	0.00E+00	1.52E-04	1.52E-04	0.02%
S34	Sump	0.00E+00	6.07E-07	1.49E-04	0.00E+00	0.00E+00	1.49E-04	6.07E-07	0.00E+00	6.07E-07	0.00E+00	1.49E-04	1.49E-04	0.02%
S20	TK-4B	0.00E+00	6.74E-08	1.16E-04	0.00E+00	0.00E+00	1.16E-04	6.74E-08	0.00E+00	6.74E-08	0.00E+00	1.16E-04	1.16E-04	0.02%
S25	TK-1A	0.00E+00	6.73E-08	1.16E-04	0.00E+00	0.00E+00	1.16E-04	6.73E-08	0.00E+00	6.73E-08	0.00E+00	1.16E-04	1.16E-04	0.02%
S21	TK-4C	0.00E+00	6.58E-08	1.14E-04	0.00E+00	0.00E+00	1.14E-04	6.58E-08	0.00E+00	6.58E-08	0.00E+00	1.14E-04	1.14E-04	0.01%
S24	TK-1B	0.00E+00	6.56E-08	1.13E-04	0.00E+00	0.00E+00	1.13E-04	6.56E-08	0.00E+00	6.56E-08	0.00E+00	1.13E-04	1.13E-04	0.01%
S19	TK-4A	0.00E+00	6.44E-08	1.11E-04	0.00E+00	0.00E+00	1.11E-04	6.44E-08	0.00E+00	6.44E-08	0.00E+00	1.11E-04	1.11E-04	0.01%
S8	Glycol Reboiler	0.00E+00	7.54E-08	2.26E-05	0.00E+00	0.00E+00	2.27E-05	7.71E-05	0.00E+00	1.01E-04	0.00E+00	2.26E-05	1.01E-04	0.01%
S18	TK-3	0.00E+00	3.20E-08	5.54E-05	0.00E+00	0.00E+00	5.55E-05	3.20E-08	0.00E+00	3.20E-08	0.00E+00	5.54E-05	5.55E-05	0.01%
S26	TK-2	0.00E+00	1.75E-08	3.01E-05	0.00E+00	0.00E+00	3.01E-05	1.75E-08	0.00E+00	1.75E-08	0.00E+00	3.01E-05	3.01E-05	0.00%
S17	Dehy Hot Oil Heater	0.00E+00	2.09E-08	6.29E-06	0.00E+00	0.00E+00	6.31E-06	2.14E-05	0.00E+00	2.79E-05	0.00E+00	6.29E-06	2.79E-05	0.00%
S23	TK-5	0.00E+00	1.15E-08	2.00E-05	0.00E+00	0.00E+00	2.00E-05	1.15E-08	0.00E+00	1.15E-08	0.00E+00	2.00E-05	2.00E-05	0.00%
S10	Loading Arm	0.00E+00	5.24E-08	1.28E-05	0.00E+00	0.00E+00	1.29E-05	5.24E-08	0.00E+00	5.24E-08	0.00E+00	1.28E-05	1.29E-05	0.00%
S22	TK-6	0.00E+00	5.73E-09	9.97E-06	0.00E+00	0.00E+00	9.97E-06	5.73E-09	0.00E+00	5.73E-09	0.00E+00	9.97E-06	9.97E-06	0.00%

Table 40: MEIR Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S9	Thermal Oxidizer	0.00E+00	6.85E-09	2.05E-06	0.00E+00	0.00E+00	2.06E-06	7.00E-06	0.00E+00	9.13E-06	0.00E+00	2.05E-06	9.13E-06	0.00%
S11	Building AC & Heat V1	0.00E+00	1.78E-09	5.33E-07	0.00E+00	0.00E+00	5.35E-07	1.82E-06	0.00E+00	2.37E-06	0.00E+00	5.33E-07	2.37E-06	0.00%
S12	Building AC & Heat V2	0.00E+00	1.54E-09	4.61E-07	0.00E+00	0.00E+00	4.63E-07	1.57E-06	0.00E+00	2.05E-06	0.00E+00	4.61E-07	2.05E-06	0.00%
S13	Building AC & Heat V3	0.00E+00	1.51E-09	4.53E-07	0.00E+00	0.00E+00	4.55E-07	1.54E-06	0.00E+00	2.02E-06	0.00E+00	4.53E-07	2.02E-06	0.00%
S14	Building AC & Heat V4	0.00E+00	6.31E-10	1.89E-07	0.00E+00	0.00E+00	1.90E-07	6.47E-07	0.00E+00	8.45E-07	0.00E+00	1.89E-07	8.45E-07	0.00%
S15	Building AC & Heat V5	0.00E+00	5.86E-10	1.76E-07	0.00E+00	0.00E+00	1.76E-07	6.02E-07	0.00E+00	7.85E-07	0.00E+00	1.76E-07	7.85E-07	0.00%
S16	Building AC & Heat V6	0.00E+00	5.62E-10	1.69E-07	0.00E+00	0.00E+00	1.69E-07	5.77E-07	0.00E+00	7.54E-07	0.00E+00	1.69E-07	7.54E-07	0.00%

Table 42: MEIW Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S32	Natural Gas Venting	0.00E+00	0.00E+00	2.51E-01	0.00E+00	0.00E+00	2.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.51E-01	2.51E-01	63.42%
S31	ICE Air Compressor 12HP Gasoline E30	0.00E+00	8.30E-05	2.87E-02	0.00E+00	0.00E+00	2.60E-02	7.96E-04	0.00E+00	1.23E-02	0.00E+00	2.57E-02	2.87E-02	7.26%
S30	ICE Air Compressor 12HP Gasoline E29	0.00E+00	7.80E-05	2.70E-02	0.00E+00	0.00E+00	2.45E-02	7.48E-04	0.00E+00	1.15E-02	0.00E+00	2.42E-02	2.70E-02	6.82%
S29	Air Compressor 120	0.00E+00	4.97E-06	2.34E-03	0.00E+00	0.00E+00	2.38E-03	2.77E-04	0.00E+00	1.52E-02	0.00E+00	2.34E-03	1.52E-02	3.83%
S28	Air Compressor 400	0.00E+00	4.86E-06	2.29E-03	0.00E+00	0.00E+00	2.33E-03	2.71E-04	0.00E+00	1.48E-02	0.00E+00	2.29E-03	1.48E-02	3.75%
S4	ICE Main Unit 6 2000HP NG	0.00E+00	6.52E-06	4.08E-03	0.00E+00	0.00E+00	4.16E-03	9.97E-04	0.00E+00	1.24E-02	0.00E+00	4.08E-03	1.24E-02	3.14%
S6	ICE Main Unit 9 2000HP NG	0.00E+00	6.10E-06	3.82E-03	0.00E+00	0.00E+00	3.89E-03	9.36E-04	0.00E+00	1.16E-02	0.00E+00	3.82E-03	1.16E-02	2.93%
S5	ICE Main Unit 8 2000HP NG	0.00E+00	5.94E-06	3.72E-03	0.00E+00	0.00E+00	3.79E-03	9.08E-04	0.00E+00	1.13E-02	0.00E+00	3.72E-03	1.13E-02	2.86%
S2	Emergency ICE 110HP NG	0.00E+00	3.45E-06	1.62E-03	0.00E+00	0.00E+00	1.65E-03	1.92E-04	0.00E+00	1.05E-02	0.00E+00	1.62E-03	1.05E-02	2.66%
S33	Organic Solvents/Fugitive Emissions	1.10E-06	2.63E-05	6.30E-03	0.00E+00	0.00E+00	6.31E-03	2.51E-05	0.00E+00	2.51E-05	0.00E+00	6.30E-03	6.31E-03	1.59%
S1	Emergency ICE 348HP NG	0.00E+00	1.08E-06	5.10E-04	0.00E+00	0.00E+00	5.19E-04	6.04E-05	0.00E+00	3.31E-03	0.00E+00	5.10E-04	3.31E-03	0.84%
S7	Emergency ICE 99HP Diesel	4.17E-04	4.17E-04	1.37E-03	0.00E+00	0.00E+00	7.94E-04	1.00E-04	0.00E+00	1.74E-03	0.00E+00	3.60E-04	1.74E-03	0.44%
S3	Emergency ICE Fire Pump 93HP NG	0.00E+00	4.08E-07	1.92E-04	0.00E+00	0.00E+00	1.95E-04	2.27E-05	0.00E+00	1.25E-03	0.00E+00	1.92E-04	1.25E-03	0.31%
S27	TK-12	0.00E+00	5.12E-08	8.84E-05	0.00E+00	0.00E+00	8.85E-05	5.12E-08	0.00E+00	5.12E-08	0.00E+00	8.84E-05	8.85E-05	0.02%
S34	Sump	0.00E+00	2.62E-07	6.42E-05	0.00E+00	0.00E+00	6.42E-05	2.62E-07	0.00E+00	2.62E-07	0.00E+00	6.42E-05	6.42E-05	0.02%
S25	TK-1A	0.00E+00	3.58E-08	6.18E-05	0.00E+00	0.00E+00	6.18E-05	3.58E-08	0.00E+00	3.58E-08	0.00E+00	6.18E-05	6.18E-05	0.02%
S24	TK-1B	0.00E+00	3.57E-08	6.16E-05	0.00E+00	0.00E+00	6.16E-05	3.57E-08	0.00E+00	3.57E-08	0.00E+00	6.16E-05	6.16E-05	0.02%
S20	TK-4B	0.00E+00	3.29E-08	5.69E-05	0.00E+00	0.00E+00	5.69E-05	3.29E-08	0.00E+00	3.29E-08	0.00E+00	5.69E-05	5.69E-05	0.01%
S21	TK-4C	0.00E+00	3.29E-08	5.69E-05	0.00E+00	0.00E+00	5.69E-05	3.29E-08	0.00E+00	3.29E-08	0.00E+00	5.69E-05	5.69E-05	0.01%
S19	TK-4A	0.00E+00	3.19E-08	5.51E-05	0.00E+00	0.00E+00	5.51E-05	3.19E-08	0.00E+00	3.19E-08	0.00E+00	5.51E-05	5.51E-05	0.01%
S8	Glycol Reboiler	0.00E+00	2.19E-08	6.57E-06	0.00E+00	0.00E+00	6.60E-06	2.24E-05	0.00E+00	2.93E-05	0.00E+00	6.57E-06	2.93E-05	0.01%
S18	TK-3	0.00E+00	1.63E-08	2.83E-05	0.00E+00	0.00E+00	2.83E-05	1.63E-08	0.00E+00	1.63E-08	0.00E+00	2.83E-05	2.83E-05	0.01%
S26	TK-2	0.00E+00	8.96E-09	1.55E-05	0.00E+00	0.00E+00	1.55E-05	8.96E-09	0.00E+00	8.96E-09	0.00E+00	1.55E-05	1.55E-05	0.00%
S23	TK-5	0.00E+00	6.42E-09	1.11E-05	0.00E+00	0.00E+00	1.11E-05	6.42E-09	0.00E+00	6.42E-09	0.00E+00	1.11E-05	1.11E-05	0.00%
S17	Dehy Hot Oil Heater	0.00E+00	5.08E-09	1.53E-06	0.00E+00	0.00E+00	1.53E-06	5.19E-06	0.00E+00	6.78E-06	0.00E+00	1.53E-06	6.78E-06	0.00%

Table 42: MEIW Source Contribution to Acute Hazard Index (HI)
SoCalGas Playa del Rey

Source	Source Description	Cardiovascular (CV)	Central Nervous System (CNS)	Immune System	Kidney	Alimentary System	Reproductive/Developmental	Respiratory	Skin	Eyes	Endocrine System	Hematologic System	Max HI	% of Total
S10	Loading Arm	0.00E+00	2.55E-08	6.26E-06	0.00E+00	0.00E+00	6.27E-06	2.55E-08	0.00E+00	2.55E-08	0.00E+00	6.26E-06	6.27E-06	0.00%
S22	TK-6	0.00E+00	3.11E-09	5.42E-06	0.00E+00	0.00E+00	5.42E-06	3.11E-09	0.00E+00	3.11E-09	0.00E+00	5.42E-06	5.42E-06	0.00%
S9	Thermal Oxidizer	0.00E+00	4.00E-09	1.20E-06	0.00E+00	0.00E+00	1.20E-06	4.09E-06	0.00E+00	5.34E-06	0.00E+00	1.20E-06	5.34E-06	0.00%
S11	Building AC & Heat V1	0.00E+00	1.42E-09	4.26E-07	0.00E+00	0.00E+00	4.28E-07	1.45E-06	0.00E+00	1.90E-06	0.00E+00	4.26E-07	1.90E-06	0.00%
S12	Building AC & Heat V2	0.00E+00	1.31E-09	3.92E-07	0.00E+00	0.00E+00	3.93E-07	1.34E-06	0.00E+00	1.74E-06	0.00E+00	3.92E-07	1.74E-06	0.00%
S13	Building AC & Heat V3	0.00E+00	1.26E-09	3.76E-07	0.00E+00	0.00E+00	3.77E-07	1.28E-06	0.00E+00	1.67E-06	0.00E+00	3.76E-07	1.67E-06	0.00%
S16	Building AC & Heat V6	0.00E+00	6.51E-10	1.95E-07	0.00E+00	0.00E+00	1.96E-07	6.68E-07	0.00E+00	8.72E-07	0.00E+00	1.95E-07	8.72E-07	0.00%
S15	Building AC & Heat V5	0.00E+00	6.21E-10	1.86E-07	0.00E+00	0.00E+00	1.87E-07	6.38E-07	0.00E+00	8.32E-07	0.00E+00	1.86E-07	8.32E-07	0.00%
S14	Building AC & Heat V4	0.00E+00	5.98E-10	1.80E-07	0.00E+00	0.00E+00	1.80E-07	6.14E-07	0.00E+00	8.02E-07	0.00E+00	1.80E-07	8.02E-07	0.00%

Table 44: Population Exposure Estimates
SoCalGas Playa del Rey

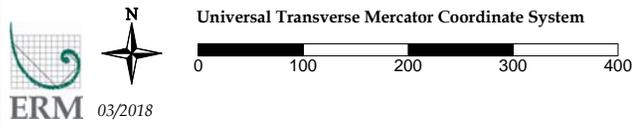
Health Impact Analysis	Census Tract	Maximum Cancer Risk or Non-cancer HI	X-UTM (m)	Y-UTM (m)	Census Tract Population ¹	Estimated Percentage of Census Tract Within ZOI ²	Zone of Impact Population
Cancer Risks	2766.01	9.15E-06	367,400	3,758,950	3838	0.40	1535
Acute HI	2766.01	0.68	366,970	3,758,890	3838	0.05	192

(1) Population from 2010 Census data

(2) Percentage of risk in census tract estimated from 2010 Census data

Appendix B

Figures



- Legend**
- Property Boundary
 - ◆ Cancer Risks

Figure 2
PMI, MEIR and MEIW for Cancer, Chronic and Acute Health Impacts
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA



Legend

- Property Boundary
- + Point Sources

ERM 03/2018

Universal Transverse Mercator Coordinate System

0 250 500 750

Figure 3
Point Sources
 SoCalGas Playa Del Rey
 8141 Gulana Avenue
 Playa Del Rey, CA



Legend

- Property Boundary
- Area Source
- Areapoly Source

ERM 03/2018

Universal Transverse Mercator Coordinate System

Figure 4
Area Sources
 SoCalGas Playa Del Rey
 8141 Gulana Avenue
 Playa Del Rey, CA



Legend

- Property Boundary
- Southwest Volume Source Location
- Volume Source Location

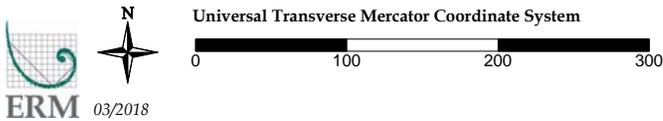


Figure 5
Volume Sources
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA



Notes:

- Building Dimensions (Length x Width x Height):
 Building 1: 189 x 192 x 47 x 125 x 144 x 66 x 12 (H) ft
 Building 2: 216 (L) x 87 (W) x 32 (H) ft
 Building 3: 32 (L) x 30 (W) x 12 (H) ft
 Building 4: 51 x 21 x 31 x 18 x 14 (H) ft

All dimensions are in feet (ft)

ERM 03/2018

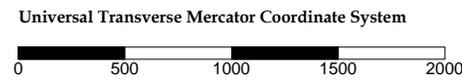
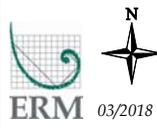
Universal Transverse Mercator Coordinate System

- Legend
- Property Boundary
 - Buildings

Figure 6
Building Dimensions
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, Mapbox, and the GIS User Community



- Legend**
- Property Boundary
 - ◆ Sensitive Receptor

Figure 7
Sensitive Receptors
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA



Legend

- Property Boundary
- Cancer Risk - 1 in One Million
- Cancer Risk - 10 in One Million

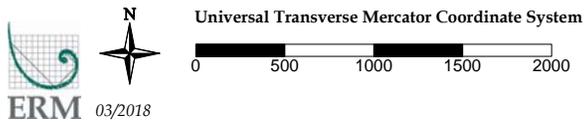
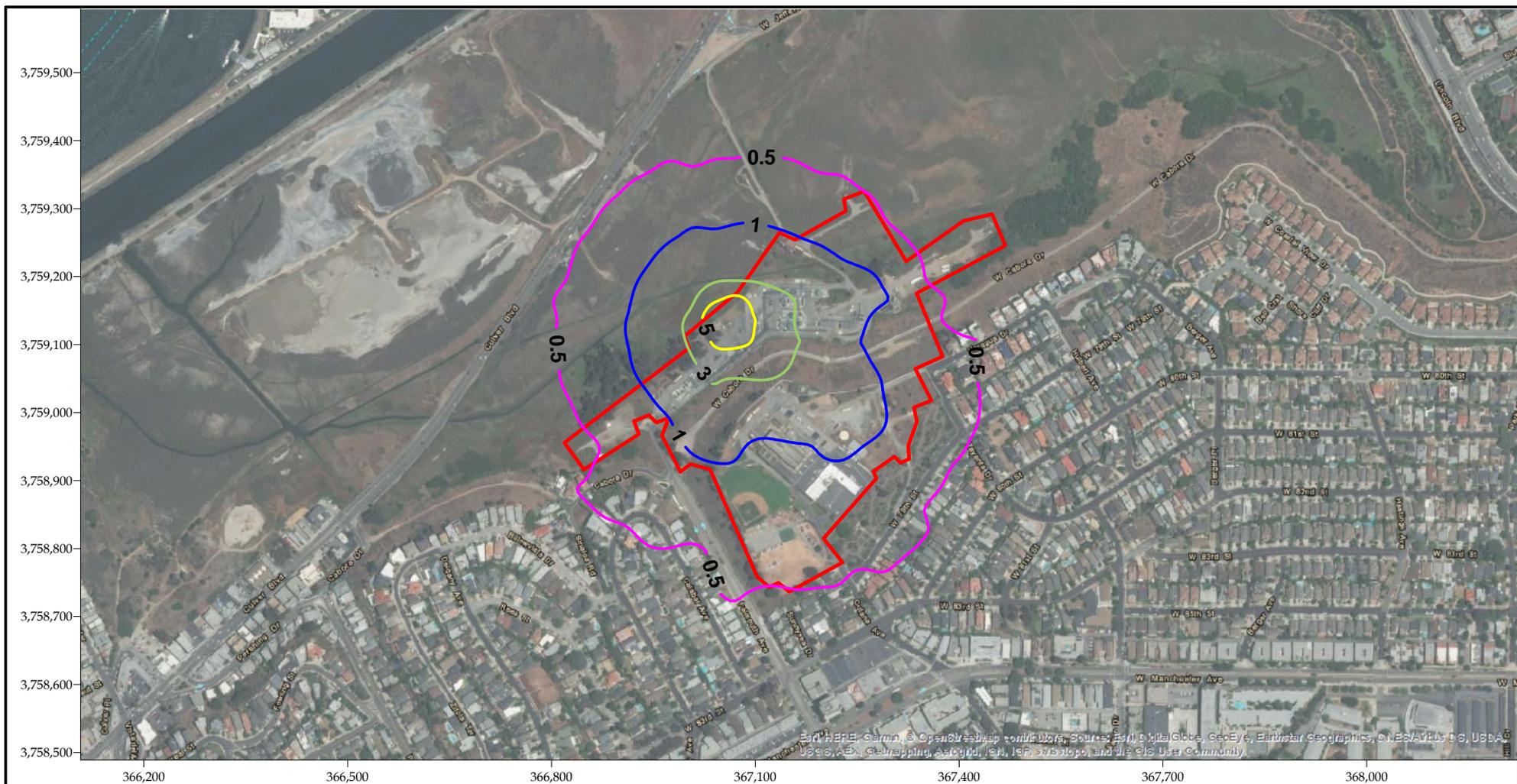


Figure 8
Cancer Risk Isopleths
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA



Legend

- Property Boundary
- Acute Hazard Index - 0.5
- Acute Hazard Index - 1.0
- Acute Hazard Index - 3.0
- Acute Hazard Index - 5.0

ERM 05/2018 Universal Transverse Mercator Coordinate System

Figure 9
Acute Hazard Isopleths
SoCalGas Playa Del Rey
8141 Gulana Avenue
Playa Del Rey, CA

Appendix C

Supporting Documentation

Table 2-1
Summary of Results
Southern California Gas Company- Playa Del Rey
Unit No. 6 D14
August 12, 2013

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.63	14.62	14.73	
Carbon Dioxide, %	3.99	4.01	3.96	
Flow Rate, dscfm	7,573	7,572	7,527	
Carbon Monoxide,				
ppm	< 10.0	< 10.0	< 10.0	
ppm @ 15% O ₂	< 9.41	< 9.39	< 9.56	89
lb/hr	< 0.335	< 0.335	< 0.333	
g/bHp-hr	< 0.0769	< 0.0769	< 0.0798	
lbs/MMscf	< 23.2	< 23.2	< 23.6	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		15.9		
ppm @ 15% O ₂		14.9		56
lb/hr		0.305		
g/bHp-hr		0.0698		
lbs/MMscf		21.1		
Operating Parameters,				
Engine Load, %	98.9	99.0	94.7	
Fuel Flow, scfh	14,441	14,452	14,114	
Heat Rate, MMBtu/hr	14.09	14.10	13.77	
Horsepower, bHp	1,979	1,980	1,894	
RPM	330	330	330	
Comp. Suction Press., psi	389	389	387	
Comp. Discharge Press., psi	1,459	1,459	1,474	
Catalyst Temp. Inlet, °F	613	614	612	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Timing, °BTDC	0.3	0.3	0.3	
Engine Operating Hours	77,263	77,263	77,263	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	1,403	1,403	1,403	

NR - Not Required



AIR MEASUREMENT SERVICES, INC.

Horizon Test#: S03-210-FRA

Date Tested: May 1 and 2, 2012

Report Date: June 12, 2012

Revision Number: 0

**DESTRUCTION EFFICIENCY OF AN OXIDIZER
CONTROLLING ORGANIC VAPOR EMISSIONS
FROM A BULK LIQUIDS LOADING FACILITY**

Facility ID No.: 8582

Source ID No.: C131

Facility:

Southern California Gas Company
8141 Gulena Avenue
Playa Del Rey, California 90293

Prepared for:

Southern California Gas Company
Post Office Box 3249
Los Angeles, California 90051-1249

Prepared by:

Horizon Air Measurement Services, Inc.
310 Cortez Circle
Camarillo, California 93012

Regulatory Agency:

South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

**Edward S. Swede
Sr. Project Manager**

**Richard J. Vacherot
Technical Director**

2. SUMMARY OF RESULTS

The results of the test program are summarized in Table 2-1. The reported values are the average of four, 90-minute test runs for a total run time of 6 hours as required by SCAQMD Method 501.1. The total VOC destruction efficiency of the oxidizer was 99.7%. The controlled emission rate of VOC was 0.0033 pounds per thousand gallons (lbs/1000 gallons) of fuel transferred which is well within the Permit to Operate limit of 0.08 lbs/1000 gallons.

During the loading of each truck, every component of the entire waste gas vapor line, including the couplings to the trucks, was surveyed using an Organic Vapor Analyzer (OVA) in accordance with EPA Method 21. No leaks were detected as defined in SCAQMD Rule 462 (75 ppm, as methane, above the local ambient concentration).

Table 2-1
Summary of Results
Southern California Gas Company
Playa Del Rey
Thermal Oxidizer

Flow Rate,	Average (Runs 1-4)	Emissions Limit
Waste Gas Vapors, dscfm	26.0	
Oxidizer Exhaust, dscfm	362	
Volatile Organic Compounds,		
Inlet Gas Vapors,		
ppm, C ₁	146,875	
lb/hr, C ₁	7.26	
Oxidizer Exhaust,		
ppm, C ₁	36.9	
lb/hr, C ₁	0.0250	
lb/hr, VOC	0.0304	
lb VOC/1000 gal fuel transferred	0.0033	0.08
Oxidizer Destruction Efficiency, %	99.7	90
Operating Parameters,		
Oxidizer Temperature Set Point, °F	1,530	>1400
Fuel Transferred, gallons	55,328	
Duration, hrs	6.00	
Fuel Transfer Rate, gph	9,221	

Table 2-2
Summary of Results
 Souther California Gas Company- Playa Del Rey
 Unit No. 8 **D16**
 August 12, 2013

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.70	14.69	14.73	
Carbon Dioxide, %	3.93	3.93	3.90	
Flow Rate, dscfm	7,823	7,795	7,674	
Carbon Monoxide,				
ppm	< 10.0	< 10.0	< 10.0	
ppm @ 15% O ₂	< 9.51	< 9.51	< 9.57	89
lb/hr	< 0.346	< 0.345	< 0.340	
g/bHp-hr	< 0.0796	< 0.0793	< 0.0817	
lbs/MMscf	< 23.4	< 23.4	< 23.5	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		17.2		
ppm @ 15% O ₂		16.4		56
lb/hr		0.340		
g/bHp-hr		0.0782		
lbs/MMscf		23.1		
Operating Parameters,				
Engine Load, %	98.8	98.7	94.4	
Fuel Flow, scfh	14,795	14,747	14,468	
Heat Rate, MMBtu/hr	14.44	14.39	14.12	
Horsepower, bHp	1,975	1,974	1,888	
RPM	329	329	330	
Comp. Suction Press., psi	386	385	386	
Comp. Discharge Press., psi	1,457	1,458	1,458	
Catalyst Temp. Inlet, °F	615	624	632	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Timing, °BTDC	0.6	0.6	0.6	
Engine Operating Hours	80,533	80,533	80,533	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	1,423	1,423	1,423	

NR - Not Required

Table 2-3
Summary of Results
 Southern California Gas Company- Playa Del Rey
 Unit No. 9 **D17**
 August 13, 2013

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.56	14.58	14.58	
Carbon Dioxide, %	4.01	4.04	4.03	
Flow Rate, dscfm	7,761	7,808	7,760	
Carbon Monoxide,				
ppm	< 10.0	< 10.0	< 10.0	
ppm @ 15% O ₂	< 9.30	< 9.34	< 9.33	89
lb/hr	< 0.344	< 0.346	< 0.344	
g/bHp-hr	< 0.0809	< 0.0812	< 0.0814	
lbs/MMscf	< 23.4	< 23.5	< 23.6	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		13.5		
ppm @ 15% O ₂		12.6		56
lb/hr		0.266		
g/bHp-hr		0.062		
lbs/MMscf		18.1		
Operating Parameters,				
Engine Load, %	96.4	96.6	95.8	
Fuel Flow, scfh	14,666	14,701	14,526	
Heat Rate, MMBtu/hr	14.26	14.30	14.13	
Horsepower, bHp	1,928	1,931	1,916	
RPM	330	330	329	
Comp. Suction Press., psi	443	443	442	
Comp. Discharge Press., psi	1,471	1,471	1,465	
Catalyst Temp. Inlet, °F	642	615	641	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Engine Operating Hours	79,473	79,473	79,473	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	1,188	1,188	1,188	

NR - Not Required

Table 2-1
Summary of Results
Southern California Gas Company
Playa Del Rey
Unit 6 - D14
August 4, 2015

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.44	14.50	14.50	
Carbon Dioxide, %	3.59	3.55	3.56	
Flow Rate, dscfm	6,797	6,749	6,386	
Carbon Monoxide,				
ppm	< 10.0	< 10.0	< 10.0	
ppm @ 15% O ₂	< 9.14	< 9.23	< 9.21	89
lb/hr	< 0.301	< 0.299	< 0.283	
g/bHp-hr	< 0.07	< 0.07	< 0.067	
lbs/MMscf	< 20.4	< 20.4	< 19.4	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		25.6		
ppm @ 15% O ₂		23.6		56
lb/hr		0.437		
g/bHp-hr		0.102		
lbs/MMscf		29.8		
Operating Parameters,				
Engine Load, %	99.3	96.9	96.3	
Fuel Flow, scfh	14,731	14,636	14,600	
Heat Rate, MMBtu/hr	15.05	14.95	14.92	
Horsepower, bHp	1,985	1,938	1,925	
RPM	330	329	330	
Comp. Suction Press., psi	439	438	429	
Comp. Discharge Press., psi	1,455	1,460	1,503	
Catalyst Temp. Inlet, °F	629	633	637	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Timing, °BTDC	0.3	0.3	0.3	
AFRC Target, mV	7.400	7.400	7.400	
Engine Operating Hours	80,313	80,313	80,313	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	3,050	3,050	3,050	

NA - Not Available

NR - Not Required

Table 2-2
Summary of Results
Southern California Gas Company
Playa Del Rey
Unit 8 - D16
August 3, 2015

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.78	14.36	14.95	
Carbon Dioxide, %	3.41	3.28	3.30	
Flow Rate, dscfm	7,453	7,377	6,814	
Carbon Monoxide,				
ppm	< 10.0	< 10.0	< 10.0	
ppm @ 15% O ₂	< 9.64	< 9.03	< 9.92	89
lb/hr	< 0.330	< 0.327	< 0.302	
g/bHp-hr	< 0.0776	< 0.0770	< 0.0747	
lbs/MMscf	< 23.9	< 23.7	< 22.6	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		18.2		
ppm @ 15% O ₂		16.4		56
lb/hr		0.340		
g/bHp-hr		0.0801		
lbs/MMscf		24.7		
Operating Parameters,				
Engine Load, %	96.5	96.3	91.7	
Fuel Flow, scfh	13,794	13,774	13,317	
Heat Rate, MMBtu/hr	14.21	14.19	13.72	
Horsepower, bHp	1,931	1,925	1,834	
RPM	332	332	331	
Comp. Suction Press., psi	400	396	393	
Comp. Discharge Press., psi	1,453	1,453	1,452	
Catalyst Temp. Inlet, °F	613	615	610	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Timing, °BTDC	0.0	0.0	0.0	
AFRC Target, mV	6.900	6.900	6.900	
Engine Operating Hours	82,263	82,263	82,263	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	1,730	1,730	1,730	

NA - Not Available
 NR - Not Required

Table 2-3
Summary of Results
Southern California Gas Company
Playa Del Rey
Unit 9 - D17
August 3, 2015

Run	Max (15 Min)	Normal (30 min)	Min (15 Min)	Emission Limit
Oxygen, %	14.51	14.55	14.60	
Carbon Dioxide, %	3.53	3.53	3.48	
Flow Rate, dscfm	6,592	6,700	6,352	
Carbon Monoxide,				
ppm	15.3	14.7	14.9	
ppm @ 15% O ₂	14.1	13.6	14.0	89
lb/hr	0.447	0.435	0.420	
g/bHp-hr	0.105	0.102	0.103	
lbs/MMscf	30.9	30.2	29.9	
Total Non-Methane/Non-Ethane Hydrocarbons,				
ppm		32.3		
ppm @ 15% O ₂		30.0		56
lb/hr		0.548		
g/bHp-hr		0.129		
lbs/MMscf		38.0		
Operating Parameters,				
Engine Load, %	96.5	96.4	92.5	
Fuel Flow, scfh	14,449	14,417	14,062	
Heat Rate, MMbtu/hr	14.89	14.85	14.49	
Horsepower, bHp	1,931	1,928	1,850	
RPM	330	329	329	
Comp. Suction Press., psi	409	407	405	
Comp. Discharge Press., psi	1,455	1,455	1,454	
Catalyst Temp. Inlet, °F	619	627	631	
Catalyst Temp. Outlet, °F	NR	NR	NR	
Timing, °BTDC	0.5	0.5	0.5	
AFRC Target, mA	7.5	7.5	7.5	
Engine Operating Hours	82,604	82,604	82,604	
AFRC Faults / Alarms	None	None	None	
Engine Operating Hours (since last emission test)	3,131	3,131	3,131	

NA - Not Available

NR - Not Required

Table 2-1
Summary of Results
Southern California Gas Company
Hot Oil Heater - H670A - D145
August 4, 2015

Run/Load	1	Permit Limit
Oxygen, %	9.26	
Carbon Dioxide, %	6.73	
Flow Rate, dscfm	1215	
Carbon Monoxide, ppm	< 10.0	50
ppm @ 3% O ₂	< 15.4	
lb/hr	< 0.0538	
lb/MMBtu	< 0.0112	
lb/MMscf	< 11.5	
Operating Parameters, Load, %	92	
Fuel Flow, scfh	4678	
Heat Rate, MMBtu/hr	4.78	



ATTACK II

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard (29CFR 1910.1200)

Made in the USA: RAMCO SPECIALTY PRODUCTS, INC. ♦ 5956 State Road ♦ Bakersfield, CA 93308-3022
 Ph: (800) 334-7071 ♦ Fax: (714) 375-1225 ♦ E-Mail: 1wcsramco@ramcospec.com ♦ Web: www.ramcospec.com

SECTION I – PRODUCT IDENTIFICATION

Product Name: ATTACK II (Aerosol)	Proper Shipping Name: CONSUMER COMMODITY
Product Number: 1671	Date Prepared: 03/03/2006
Product Description: Solvent Cleaner & Degreaser	Prepared By: Paul Williams
Information Phone: (800) 334-7071	24-Hour Emergency Phone: (800) 255-3924

NFPA – HMIS CODES

Health 1	Flammability 2	Corrosive 0	Reactivity 0	Personal Protection B
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SECTION II – MATERIAL IDENTIFICATION AND INFORMATION

Description	CAS #	313-Chem	Skin	Carcinogen	PEL	TWA/TLV	Wt %
Citrus Terpene	5989-27-5	NO	NO	NO	N/E	N/E	40-50
Nonylphenol Ethoxylate	127087-87-0	NO	NO	NO	N/E	N/E	10-20
Carbon Dioxide Propellant	124-38-9	NO	NO	NO	10,000 ppm	10,000 ppm	01-05

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

*Boiling Point	~ 323°F	Evaporation Rate (n-Bu-Ac=1.0)	N/A
Vapor Pressure of Can (psig @ 70°F)	78	*Water Solubility	Emulsifies
*Vapor Density (Air=1.0 @ 77°F)	>1	Molecular Weight, Avg.	N/A
*Specific Gravity (H2O=1 @ 75°F)	0.874	Viscosity, Typical (cp)	N/A
VOC (Grams/Liter @ 25°C – EPA Method 24)	N/A	*Appearance	Clear Orange Liquid
% Volatile by Volume	N/A	*Odor	Citrus Fragrance
Total VOC % (Volatile Organic Compounds)	~78	*pH	N/A

*Data Based on Aerosol Concentrate Only.

SECTION IV – FIRE & EXPLOSION HAZARD DATA

Flash Point (Of Concentrate Only)	122°F (T.O.C.)
Auto Ignition Temperatures	N/A
Flammability Limits in Air	
Lower Explosive Limit Estimated	N/A
Upper Explosive Limit Estimated	N/A
Extinguishing Media	Foam, CO2, Dry Media
Unusual Fire Fighting Procedures	Exposure to temperatures above 120°F may cause bursting.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus and protective clothing. Cool fire-exposed containers to prevent rupturing.
Flammability (as per USA Flame Projection Test)	Extremely-Flammable Spray



ATTACK II

Page 2 of 2

SECTION V – HEALTH HAZARD DATA & EMERGENCY FIRST AID PROCEDURES

ENTRY ROUTES	ADVERSE/CHRONIC EFFECTS	FIRST AID PROCEDURES
EYES	May cause slight irritation but does not injure eye tissue.	Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists, get medical attention immediately.
INGESTION	Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.	DO NOT INDUCE VOMITING. Seek medical attention immediately.
INHALATION	Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation can cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.	Remove to fresh air. Seek medical attention immediately. If breathing stops, give artificial respiration.
SKIN	Frequent or prolonged contact may cause irritation.	Wash with soap and water. If irritation persists, seek medical attention.
MEDICAL CONDITIONS TO AVOID		None Known.

SECTION VI – REACTIVITY DATA

STABILITY	Stable – Avoid open flames and exposure to high temperatures.
HAZARDOUS POLYMERIZATION	Will not occur – No conditions known.
INCOMPATIBILITY	Strong oxidizing agents.
HAZARDOUS DECOMPOSITION	Carbon Dioxide, Carbon Monoxide.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED – Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.	
WASTE DISPOSAL	Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.
HANDLING & STORAGE	Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
NFPA Code 30B Rating	Level 3 Aerosol
OTHER PRECAUTIONS	KEEP OUT OF REACH OF CHILDREN – For Industrial/Institutional Use Only. Read and follow label directions.

SECTION VIII – CONTROL MEASURES

RESPIRATORY PROTECTION	None needed for proper use in accordance with label directions.
VENTILATION	Provide local exhaust to keep air concentration of ingredients listed in Section II below established exposure limits.
PROTECTIVE GLOVES	None needed for proper use in accordance with label directions. Use chemical resistant gloves if skin contact will be made.
EYE PROTECTION	None needed unless it is anticipated that a splash or spray back will occur, then wear safety glasses or chemical proof goggles.
OTHER PROTECTIVE CLOTHING/EQUIPMENT	None needed for proper use in accordance with label directions.
WORK HYGIENIC PRACTICES	Employees must practice good personal hygiene; washing exposed areas of skin several times daily and before eating, drinking, smoking, using restroom and at end of work period. Remove contaminated clothing and laundry before reuse.

SECTION IX – TRANSPORTATION DATA

PROPER SHIPPING NAME	CONSUMER COMMODITY
DOT ID NUMBER	N/A
DOT HAZARD CLASS	ORM-D

The information and recommendations set forth herein are presented in good faith and believed to be correct and reliable. RAMCO Specialty Products, Inc. makes no representation as to the completeness or accuracy thereof and supplies information upon the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to use.

MSDS 2006

N/D = Not Determined

N/E = Not Established

N/A = Not Applicable

< = Less Than

> - Greater Than



TOOL COOL

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard (29CFR 1910.1200)

Made in the USA: RAMCO SPECIALTY PRODUCTS, INC. ♦ 5956 State Road ♦ Bakersfield, CA 93308-3022
 Ph: (800) 334-7071 ♦ Fax: (714) 375-1225 ♦ E-Mail: 1wcsr@ramcospec.com ♦ Web: www.ramcospec.com

SECTION I – PRODUCT IDENTIFICATION

Product Name: TOOL COOL (Aerosol)	Proper Shipping Name: CONSUMER COMMODITY
Product Number: 10491	Date Prepared: 01/14/2010
Product Description: Cutting and Tapping Fluid	Prepared By: Warren Squyres
Information Phone: (800) 334-7071	24-Hour Emergency Phone: (800) 255-3924

HMIS RATING

(Based on Aerosol Concentrate)

0 – Minimal 1 – Slight 2 – Moderate 3 – Serious 4 – Extreme

HEALTH 1	FLAMMABILITY 3	PHYSICAL HAZARD 0	Personal Protection B
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SECTION II – MATERIAL IDENTIFICATION AND INFORMATION

Description	CAS #	313-Chem	Skin	Carcinogen	PEL	TWA/TLV	Wt %
Ethyl Alcohol	64-17-5	NO	NO	NO	1000 ppm	1000 ppm	40-60
Polyalkylene Glycol Monobutyl Ether	9038-95-3	NO	NO	NO	N/E	N/E	10-20
Amine containing alcohol	Trade Secret*	NO	NO	NO	N/E	N/E	01-10
Liquified Petroleum Gas	68476-86-8	NO	NO	NO	1000 ppm	1000ppm	20-40

*Massachusetts Trade Secret Code No. = 99-206-098

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

AEROSOL CONCENTRATE ONLY		TOTAL CONTENTS	
Boiling Point	170°F	Total VOC %	78.36%
Water Solubility	Complete	Vapor Pressure (can, psig @ 72°F)	50
Vapor Density (Air=1)	>1		
Specific Gravity (H2O=1 @ 70°F)	0.862		
Appearance	Clear Liquid		
Odor	Alcohol Odor		
pH	N/A		

SECTION IV – FIRE & EXPLOSION HAZARD DATA

Flash Point (Of Concentrate Only)	41°F (T.C.C.)
Auto Ignition Temperatures	N/A
Flammability Limits in Air	
Lower Explosive Limit Estimated	N/A
Upper Explosive Limit Estimated	N/A
Extinguishing Media	Water Fog, Foam, CO2, Dry Media
Unusual Fire Fighting Procedures	Exposure to temperatures above 120°F may cause bursting.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus and protective clothing. Cool fire-exposed containers to prevent rupturing.
Flammability (as per CSMA Flame Projection Test)	Extremely-Flammable Spray



TOOL COOL

Page 2 of 2

SECTION V – HEALTH HAZARD DATA & EMERGENCY FIRST AID PROCEDURES

PRIMARY ROUTES OF ENTRY & EFFECTS OF OVEREXPOSURE		FIRST AID PROCEDURES
EYES	May cause irritation and corneal inflammation.	Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists, get medical attention immediately.
INGESTION	Can cause gastrointestinal irritation, nausea, vomiting, diarrhea, and depression of the central nervous system. Prolonged ingestion may cause liver damage, "fetal alcohol syndrome" in pregnant females, and neuronal degeneration. Aspiration of material into the lungs can cause severe pulmonary injury.	DO NOT INDUCE VOMITING. Seek medical attention immediately.
INHALATION	Inhalation of vapors or mist can cause irritation of nasal and respiratory passages, dizziness, and headache. Repeated or prolonged inhalation of mist can produce delayed lung damage, possibly progressing to death.	Remove to fresh air. Seek medical attention immediately. If breathing stops, give artificial respiration.
SKIN	Frequent or prolonged contact may cause irritation and/or dermatitis. May aggravate existing skin conditions.	Wash with soap and water. If irritation persists, seek medical attention.

SECTION VI – REACTIVITY DATA

STABILITY	Material Stable
HAZARDOUS POLYMERIZATION	Will not occur
INCOMPATIBILITY	Avoid contact with halogens, strong acids, strong bases, and strong oxidizing agents.
HAZARDOUS DECOMPOSITION	Material decomposed by fire may produce oxides of carbon, nitrogen, and phosphorous.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED – Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.	
WASTE DISPOSAL	Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.
HANDLING & STORAGE	Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
NFPA Code 30B Rating	Level 3 Aerosol
OTHER PRECAUTIONS	KEEP OUT OF REACH OF CHILDREN – For Industrial/Institutional Use Only. Read and follow label directions.

SECTION VIII – CONTROL MEASURES

RESPIRATORY PROTECTION	None needed for proper use in accordance with label directions.
VENTILATION	Provide local exhaust.
PROTECTIVE GLOVES	Wear solvent resistant gloves to prevent skin contact.
EYE PROTECTION	Always wear safety glasses or chemical proof goggles when working with chemicals.
OTHER PROTECTIVE CLOTHING/EQUIPMENT	None needed for proper use in accordance with label directions.
WORK HYGIENIC PRACTICES	Employees must practice good personal hygiene; washing exposed areas of skin several times daily and before eating, drinking, smoking, using restroom and at end of work period. Remove contaminated clothing and laundry before reuse.

SECTION IX – TRANSPORTATION DATA

PROPER SHIPPING NAME	CONSUMER COMMODITY
DOT ID NUMBER	N/A
DOT HAZARD CLASS	ORM-D

The information and recommendations set forth herein are presented in good faith and believed to be correct and reliable. RAMCO Specialty Products, Inc. makes no representation as to the completeness or accuracy thereof and supplies information upon the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to use.

N/D = Not Determined

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< = Less Than

> - Greater Than

MSDS 2009



Z-WAY

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard (29CFR 1910.1200)

Made in the USA: RAMCO SPECIALTY PRODUCTS, INC. ♦ 5956 State Road ♦ Bakersfield, CA 93308-3022
 Ph: (800) 334-7071 ♦ Fax: (714) 375-1225 ♦ E-Mail: 1wcsr@ramcospec.com ♦ Web: www.ramcospec.com

SECTION I – PRODUCT IDENTIFICATION

Product Name: Z-WAY (Aerosol)	Proper Shipping Name: CONSUMER COMMODITY
Product Number: 101010	Date Prepared: 03/03/2006
Product Description: Penetrating Lubricant	Prepared By: Paul Williams
Information Phone: (800) 334-7071	24-Hour Emergency Phone: (800) 255-3924

NFPA – HMIS CODES

Health 1	Flammability 1	Corrosive 0	Reactivity 0	Personal Protection B
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SECTION II – MATERIAL IDENTIFICATION AND INFORMATION

Description	CAS #	313-Chem	Skin	Carcinogen	PEL	TWA/TLV	Wt %
Mineral Oil	8042-47-5	NO	NO	NO	5mg/m ³	5mg/m ³	10-20
Dipropylene Glycol Monomethyl Ether	34590-94-8	NO	NO	NO	100 ppm	100 ppm	01-10
Octamethylcyclotetrasiloxane	556-67-2	NO	NO	NO	N/E	10 ppm*	01-05
Decamethylcyclopentasiloxane	541-02-6	NO	NO	NO	N/E	10 ppm*	01-05
Carbon Dioxide Propellant	124-38-9	NO	NO	NO	10,000 ppm	10,000 ppm	01-05

* Manufacturer's recommended TWA exposure limit.

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

*Boiling Point	>300°F	Evaporation Rate (n-Bu-Ac=1.0)	N/A
Vapor Pressure of Can (psig @ 70°F)	90	*Water Solubility	Slight
*Vapor Density (Air=1.0 @ 77°F)	>1	Molecular Weight, Avg.	N/A
*Specific Gravity (H2O=1 @ 75°F)	0.83	Viscosity, Typical (cp)	N/A
VOC (Grams/Liter @ 25°C – EPA Method 24)	N/A	*Appearance	Clear Yellowish Liquid
% Volatile by Volume	N/A	*Odor	Banana Scent
Total VOC % (Volatile Organic Compounds)	~6.5	*pH	N/A

*Data Based on Aerosol Concentrate Only.

SECTION IV – FIRE & EXPLOSION HAZARD DATA

Flash Point (Of Concentrate Only)	>200°F (T.O.C.)
Auto Ignition Temperatures	N/A
Flammability Limits in Air	
Lower Explosive Limit Estimated	N/A
Upper Explosive Limit Estimated	N/A
Extinguishing Media	Foam, CO2, Dry Media
Unusual Fire Fighting Procedures	Exposure to temperatures above 120°F may cause bursting.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus and protective clothing. Cool fire-exposed containers to prevent rupturing.
Flammability (as per USA Flame Projection Test)	Non-Flammable Spray



Z-WAY

Page 2 of 2

SECTION V – HEALTH HAZARD DATA & EMERGENCY FIRST AID PROCEDURES

ENTRY ROUTES	ADVERSE/CHRONIC EFFECTS	FIRST AID PROCEDURES
EYES	May cause slight irritation.	Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists, get medical attention.
INGESTION	Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.	DO NOT INDUCE VOMITING. Seek medical attention immediately.
INHALATION	Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation can cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects. Prolonged exposure may affect the liver.	Remove to fresh air. Seek medical attention immediately. If breathing stops, give artificial respiration.
SKIN	Frequent or prolonged contact may cause irritation.	Wash with soap and water. If irritation persists, seek medical attention.
MEDICAL CONDITIONS TO AVOID	None Known.	

SECTION VI – REACTIVITY DATA

STABILITY	Stable – Avoid open flames and exposure to high temperatures.
HAZARDOUS POLYMERIZATION	Will not occur – No conditions known.
INCOMPATIBILITY	Strong oxidizing agents.
HAZARDOUS DECOMPOSITION	Carbon Dioxide, Carbon Monoxide.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	– Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.
WASTE DISPOSAL	Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.
HANDLING & STORAGE	Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
NFPA Code 30B Rating	Level 1 Aerosol
OTHER PRECAUTIONS	KEEP OUT OF REACH OF CHILDREN – For Industrial/Institutional Use Only. Read and follow label directions.

SECTION VIII – CONTROL MEASURES

RESPIRATORY PROTECTION	None needed for proper use in accordance with label directions.
VENTILATION	Provide local exhaust to keep air concentration of ingredients listed in Section II below established exposure limits.
PROTECTIVE GLOVES	Use chemical resistant gloves if skin contact will be made.
EYE PROTECTION	Always wear safety glasses or chemical proof goggles when working with chemicals.
OTHER PROTECTIVE CLOTHING/EQUIPMENT	None needed for proper use in accordance with label directions.
WORK HYGIENIC PRACTICES	Employees must practice good personal hygiene; washing exposed areas of skin several times daily and before eating, drinking, smoking, using restroom and at end of work period. Remove contaminated clothing and laundry before reuse.

SECTION IX – TRANSPORTATION DATA

PROPER SHIPPING NAME	CONSUMER COMMODITY
DOT ID NUMBER	N/A
DOT HAZARD CLASS	ORM-D

The information and recommendations set forth herein are presented in good faith and believed to be correct and reliable. RAMCO Specialty Products, Inc. makes no representation as to the completeness or accuracy thereof and supplies information upon the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to use.

MSDS 2006

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< = Less Than

> - Greater Than



NEXGEN 95

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard (29CFR 1910.1200)

Made in the USA: RAMCO SPECIALTY PRODUCTS, INC. ♦ 853 W. 17th Street Unit B ♦ Costa Mesa, CA 92627
 Ph: (800) 334-7071 ♦ Fax: (714) 949-646-4649 ♦ E-Mail: 1wcsr@ramcospec.com ♦ Web: www.ramcospec.com

SECTION I – PRODUCT IDENTIFICATION

Product Name:	NEXGEN 95 (Aerosol)	Proper Shipping Name:	CONSUMER COMMODITY
Product Number:	101211	Date Prepared:	03/14/2010
Product Description:	Safety Solvent Degreaser	Prepared By:	Warren Squyres
Information Phone:	(800) 334-7071	24-Hour Emergency Phone:	(800) 255-3924

HMIS RATING

(Based on Aerosol Concentrate)

0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Extreme

Health	2	Flammability	0	Reactivity	1	Personal Protection	G
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SECTION II – MATERIAL IDENTIFICATION AND INFORMATION

Description	CAS #	313-Chem	Skin	Carcinogen	PEL	TWA/TLV	Wt %
1-bromopropane	106-94-5	NO	NO	NO	25 ppm	25 ppm	80-100
1,3-Dioxolane	646-06-0	NO	NO	NO	N/A	N/A	01-05
1,2 Butylene Oxide	106-88-7	NO	NO	YES	N/A	N/A	00-01
Carbon Dioxide Propellant	124-38-9	NO	NO	NO	10,000 ppm	10,000 ppm	01-10

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

*Boiling Point	160°F	Evaporation Rate (n-Bu-Ac=1.0)	N/A
Vapor Pressure of Can (psig @ 70°F)	90	*Water Solubility	Slight
*Vapor Density (Air=1.0 @ 77°F)	4.25	*Appearance	Clear Colorless Liquid
*Specific Gravity (H2O=1 @ 75°F)	1.33	*Odor	Strong Odor
Total VOC % (Volatile Organic Compounds)	96	*pH	N/A

*Data Based on Aerosol Concentrate Only.

SECTION IV – FIRE & EXPLOSION HAZARD DATA

Flash Point (Of Concentrate Only)	None
Auto Ignition Temperatures	N/A
Flammability Limits in Air	
Lower Explosive Limit Estimated	N/A
Upper Explosive Limit Estimated	N/A
Extinguishing Media	Foam, CO ₂ , Dry Media
Unusual Fire Fighting Procedures	Exposure to temperatures above 120°F may cause bursting.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus and protective clothing. Cool fire-exposed containers to prevent rupturing.
Flammability (as per USA Flame Projection Test)	Non-Flammable Spray



NEXGEN 95

Page 2 of 2

SECTION V – HEALTH HAZARD DATA & EMERGENCY FIRST AID PROCEDURES

ENTRY ROUTES	ADVERSE/CHRONIC EFFECTS	FIRST AID PROCEDURES
EYES	May cause slight Irritation but does not injure eye tissue.	Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists, get medical attention immediately.
INGESTION	Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.	DO NOT INDUCE VOMITING. Seek medical attention immediately.
INHALATION	Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation can cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.	Remove to fresh air. Seek medical attention immediately. If breathing stops, give artificial respiration.
SKIN	Frequent or prolonged contact may cause irritation.	Wash with soap and water. If irritation persists, seek medical attention.

SECTION VI – REACTIVITY DATA

STABILITY	Material stable
HAZARDOUS POLYMERIZATION	Will not occur
INCOMPATIBILITY	No materials identified
HAZARDOUS DECOMPOSITION	Hydrogen Bromide, bromine, oxides of carbon and oxides of nitrogen

SECTION VII – PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED – Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.	
WASTE DISPOSAL	Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.
HANDLING & STORAGE	Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
NFPA Code 30B Rating	Level 1 Aerosol
OTHER PRECAUTIONS	KEEP OUT OF REACH OF CHILDREN – For Industrial/Institutional Use Only. Read and follow label directions.

SECTION VIII – CONTROL MEASURES

RESPIRATORY PROTECTION	None needed for normal use in accordance with label directions.
VENTILATION	Provide local exhaust to keep air concentration of ingredients listed in Section II below established exposure limits.
PROTECTIVE GLOVES	Use chemical resistant gloves to help prevent skin contact.
EYE PROTECTION	Always wear safety glasses or chemical proof goggles when working with chemicals.
OTHER PROTECTIVE CLOTHING/EQUIPMENT	None
WORK HYGIENIC PRACTICES	Employees must practice good personal hygiene; washing exposed areas of skin several times daily and before eating, drinking, smoking, using restroom and at end of work period. Remove contaminated clothing and laundry before reuse.

SECTION IX – TRANSPORTATION DATA

PROPER SHIPPING NAME	CONSUMER COMMODITY
DOT ID NUMBER	N/A
DOT HAZARD CLASS	ORM-D

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N/D = Not Determined

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N/A = Not Applicable

< = Less Than

> - Greater Than

MSDS 2009



RAM STRIP

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard (29CFR 1910.1200)

Made in the USA: RAMCO SPECIALTY PRODUCTS, INC. ♦ 5956 State Road ♦ Bakersfield, CA 93308-3022
 Ph: (800) 334-7071 ♦ Fax: (714) 375-1225 ♦ E-Mail: 1wcsramco@ramcospec.com ♦ Web: www.ramcospec.com

SECTION I – PRODUCT IDENTIFICATION

Product Name: RAM STRIP (Aerosol)	Proper Shipping Name: CONSUMER COMMODITY
Product Number: 1014	Date Prepared: 03/01/2006
Product Description: Paint & Varnish Remover	Prepared By: Paul Williams
Information Phone: (800) 334-7071	24-Hour Emergency Phone: (800) 255-3924

NFPA – HMIS CODES

Health 3	Flammability 3	Corrosive 0	Reactivity 1	Personal Protection H
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SECTION II – MATERIAL IDENTIFICATION AND INFORMATION

Description	CAS #	313-Chem	Skin	Carcinogen	PEL	TWA/TLV	Wt %
*Methylene Chloride	75-09-2	YES	NO	YES	25 ppm	25 ppm	50-60
*Toluene	108-88-3	YES	YES	NO	100 ppm	100 ppm	01-10
Ethanol	64-17-5	NO	NO	NO	400 ppm	400 ppm	01-10
Methanol	67-56-1	YES	YES	NO	200 ppm	200 ppm	01-05
Liquified Petroleum Gas	68476-85-7	NO	NO	NO	1000 ppm	1000 ppm	10-20

*WARNING – This chemical known to the State of California to cause cancer.

*WARNING – This chemical known to the State of California to cause birth defects or other reproductive harm.

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

*Boiling Point	104°F	Evaporation Rate (n-Bu-Ac=1.0)	N/A
Vapor Pressure of Can (psig @ 70°F)	50	*Water Solubility	Slight
*Vapor Density (Air=1.0 @ 77°F)	>1	Molecular Weight, Avg.	N/A
*Specific Gravity (H2O=1 @ 75°F)	1.130	Viscosity, Typical (cp)	N/A
VOC (Grams/Liter @ 25°C – EPA Method 24)	N/A	*Appearance	Clear to Opaque Liquid
% Volatile by Volume	N/A	*Odor	Mild Sweet Solvent Odor
Total VOC % (Volatile Organic Compounds)	39.8	*pH	N/A

*Data Based on Aerosol Concentrate Only.

SECTION IV – FIRE & EXPLOSION HAZARD DATA

Flash Point (Of Concentrate Only)	~ 75°F (T.O.C.)
Auto Ignition Temperatures	N/A
Flammability Limits in Air	
Lower Explosive Limit Estimated	N/A
Upper Explosive Limit Estimated	N/A
Extinguishing Media	Foam, CO2, Dry Media
Unusual Fire Fighting Procedures	Exposure to temperatures above 120°F may cause bursting.
Special Fire Fighting Procedures	Wear self-contained breathing apparatus and protective clothing. Cool fire-exposed containers to prevent rupturing.
Flammability (as per USA Flame Projection Test)	Extremely-Flammable Spray



RAM STRIP

Page 2 of 2

SECTION V – HEALTH HAZARD DATA & EMERGENCY FIRST AID PROCEDURES

ENTRY ROUTES	ADVERSE/CHRONIC EFFECTS	FIRST AID PROCEDURES
EYES	May cause pain. May cause moderate eye irritation. May cause slight corneal injury. Vapors may irritate eyes.	Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists, get medical attention immediately.
INGESTION	Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.	DO NOT INDUCE VOMITING. Seek medical attention immediately.
INHALATION	Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation can cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.	Remove to fresh air. Seek medical attention immediately. If breathing stops, give artificial respiration.
SKIN	Frequent or prolonged contact may cause irritation.	Wash with soap and water. If irritation persists, seek medical attention.
MEDICAL CONDITIONS TO AVOID		None Known.

SECTION VI – REACTIVITY DATA

STABILITY	Stable – Avoid open flames and exposure to high temperatures.
HAZARDOUS POLYMERIZATION	Will not occur – No conditions known.
INCOMPATIBILITY	Strong oxidizing agents.
HAZARDOUS DECOMPOSITION	Carbon Dioxide, Carbon Monoxide.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED – Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.	
WASTE DISPOSAL	Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.
HANDLING & STORAGE	Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
NFPA Code 30B Rating	Level 1 Aerosol
OTHER PRECAUTIONS	KEEP OUT OF REACH OF CHILDREN – For Industrial/Institutional Use Only. Read and follow label directions.

SECTION VIII – CONTROL MEASURES

RESPIRATORY PROTECTION	None needed for proper use in accordance with label directions. If ventilation is not adequate to reduce vapors below Threshold Limit Value (TLV) levels, use a NIOSH/MSHA approved air-purifying respirator equipped with an organic vapor cartridge for short-term exposures. For long-term exposure, use supplied air respirator.
VENTILATION	Provide local exhaust to keep air concentration of ingredients listed in Section II below established exposure limits.
PROTECTIVE GLOVES	Use chemical resistant gloves if hand contact will be made.
EYE PROTECTION	Safety glasses or chemical proof goggles.
OTHER PROTECTIVE CLOTHING/EQUIPMENT	None needed for proper use in accordance with label directions.
WORK HYGIENIC PRACTICES	Employees must practice good personal hygiene; washing exposed areas of skin several times daily and before eating, drinking, smoking, using restroom and at end of work period; Remove contaminated clothing and launder before reuse.

SECTION IX – TRANSPORTATION DATA

PROPER SHIPPING NAME	CONSUMER COMMODITY
DOT ID NUMBER	N/A
DOT HAZARD CLASS	ORM-D

The information and recommendations set forth herein are presented in good faith and believed to be correct and reliable. RAMCO Specialty Products, Inc. makes no representation as to the completeness or accuracy thereof and supplies information upon the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to use.

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> - Greater Than

Material Safety Data Sheet

OMB No. 1218-0072 (Non-Mandatory Form) From U.S. Department of Labor/OSHA



<u>IDENTITY:</u> Natural Gas	
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Section I

<u>Manufacturer's Name:</u> Southern California Gas Company	<u>Emergency Telephone Number:</u> Residential (800) 427-2200 Commercial/Industrial (800) 427-2000
<u>Address:</u> 555 West 5 th Street, GT 16C0 Los Angeles, CA 90013-1044	<u>Telephone Number for Information:</u> (213) 244 – 2740 (Safety & Health Department - general information)
	<u>Date Prepared:</u> UPDATED – 1/2009, 4/2010, 2/2012

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Methane CAS number 74-82-8	Cal/OSHA PEL none listed	Simple asphyxiant ACGIH TLV 1,000 ppm		approx. 93%
Ethane CAS number 74-84-0	Cal/OSHA PEL none listed	Simple asphyxiant ACGIH TLV 1,000 ppm		approx. 4%
Propane CAS number 74-98-6	Cal/OSHA PEL 1,000 ppm	Simple asphyxiant ACGIH TLV 1,000 ppm		approx. 1%
Butane CAS number 106-97-8	Cal/OSHA PEL 800 ppm	Simple asphyxiant ACGIH TLV 1,000 ppm		approx. 0.5%
Carbon Dioxide CAS number 124-38-9	Cal/OSHA PEL 5,000 ppm	Simple asphyxiant ACGIH TLV 5,000 ppm		approx. 1%

Section III - Physical/Chemical Characteristics

Boiling Point	-259 F (methane)	Specific Gravity (H ₂ O = 1)	* N/A
Vapor Pressure (mm Hg)	* N/A	Melting Point	*N/A
Vapor Density (AIR = 1)	0.58 - 0.63	Evaporation Rate (Butyl Acetate = 1)	*N/A
Solubility in Water: 3.5 ml/ 100 ml water at 17 C			

SoCalGas vents natural gas during the course of routine operation and maintenance of equipment.

The VOC emission factor is calculated as follows:

Specific Gravity = 0.58-0.63 (Air = 1)

Air Density = 1.23 kg/m³ at 60 deg F

Nat Gas Density = (0.63) * (1.23 kg/m³) * (1000 g/kg) * (1 lb/453.6g) * (0.3048³ m³/ft³)
 = 0.0484 lb natural gas/scf
 = 48,400 lb natural gas/mmscf

Natural gas composition is approximately (per SoCalGas MSDS):

Gas Component	Molecular Formula	MSDS Vol. Concentration (%)	Molecular Weight (g/mole)	NG Density at 60 deg F (g/l)	Constant at 60 deg F (l/mole)	Weight Percent (%)
Methane	CH ₄	93.00%	16.04	0.7749	23.68	81.29%
Ethane	C ₂ H ₆	4.00%	30.07	0.7749	23.68	6.55%
Propane	C₃H₈	1.00%	44.1	0.7749	23.68	2.40%
Butane	C₄H₁₀	0.50%	58.12	0.7749	23.68	1.58%
CO ₂	CO ₂	1.00%	44.01	0.7749	23.68	2.40%
Other		0.50%				5.77%

VOC composition (excluding methane, ethane, carbon dioxide, and other) = 3.98% by weight

VOC emission factor = (48,400 lb natural gas/mmscf) * (0.0398 lb VOC/lb natural gas)
 = 1930 lb VOC/mmscf

Benzene Laboratory Analyses Summary

Northern Transmission System

North Needles, Lines 4000 and 235 (Transwestern)

Line 4000	Brn & Cldwl	Rep #09-088-5	15 ppm	-	2.99 lb/mmcf
Line 4000	Mntgmry Labs	Rep #H99939	19 ppm	-	1.19 lb/mmcf
Nwbry Spg	Brn & Cldwl	Rep #08-218-3	20 ppm	-	3.99 lb/mmcf
Vctrville	Mntgmry Labs	Rep #H99940	7.3 ppm	-	1.46 lb/mmcf

South Needles, Line 3000 (El Paso)

Nwbry Spg	Brn & Cldwl	Rep #08-218-4	14 ppm	-	2.79 lb/mmcf
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Southern Transmission System

Blythe, Lines 2001 & 2002 (El Paso)

Pnte Sta	Brn & Cldwl	Rep #09-088-4	3.3 ppm	-	0.66 lb/mmcf
Pnte Sta	Brn & Cldwl	Rep #08-218-1	22 ppm	-	4.39 lb/mmcf
Pnte Sta	Mntgmry Labs	Rep #H99938	11 ppm	-	0.69 lb/mmcf

System Average Benzene Concentration = 2.27 lb/mmcf

Benzene Emission Factor = $4.69E-05$ lb benzene / lb natural gas

$(2.27 \text{ lb benzene / mmscf}) * (\text{mmscf} / 48,400 \text{ lb natural gas})$

**See Attached Tanks Output Excel file
(8582-TANKS-2015.xls)**

Appendix D

Document Certification

ATTACHMENT

FORM A	SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT AB2588 SECTION, 21865 E. COPLEY DR., DIAMOND BAR CA 91765-0949	INVENTORY YEAR 20 <u>15</u>
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AB2588 AIR TOXICS DOCUMENT CERTIFICATION & SUBMITTAL FORM

Please check the appropriate boxes for purpose of submittal:

<input type="checkbox"/> INITIAL INFORMATION for ATR	<input type="checkbox"/> EARLY ACTION REDUCTION PLAN (EARP)	<input type="checkbox"/> INITIAL
<input type="checkbox"/> AIR TOXICS INVENTORY REPORT (ATR)	<input type="checkbox"/> VOLUNTARY RISK REDUCTION PLAN (VRRP)	<input type="checkbox"/> REVISION
<input checked="" type="checkbox"/> HEALTH RISK ASSESSMENT (HRA)	<input type="checkbox"/> IMPLEMENTATION PROGRESS REPORT for VRRP/RRP	<input type="checkbox"/> FINAL
<input type="checkbox"/> RISK REDUCTION PLAN (RRP)	<input type="checkbox"/> OTHER: _____	

Does your facility participate or wish to participate in VRRP program pursuant to Rule 1402(h)? YES NO

Please provide the following information:

Facility name <input style="width:95%;" type="text" value="Playa del Rey Storage Field"/>	SCAQMD ID <input style="width:95%;" type="text" value="8582"/>	Facility SIC/NAICS CODE <input style="width:95%;" type="text" value="4922"/>
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Facility address <input style="width:95%;" type="text" value="8141 Gulana Avenue"/> <input style="width:95%;" type="text" value="Playa del Rey, CA 90293"/>	Mailing address <input style="width:95%;" type="text" value="8141 Gulana Avenue"/> <input style="width:95%;" type="text" value="Playa del Rey, CA 90293"/>
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Contact Person (Company Official)

Name: John A. Thompson	Title: Storage Manager
Telephone: 310-578-2689	eMail: _____

Preparer (if different from above)

Name: Karin Fickerson	Title: Air Quality Team Lead, Environmental Services
Company: SoCalGas	
Telephone: 805-681-8013	eMail: kfixckerson@semprautilities.com

FAILURE TO SUBMIT REQUIRED INFORMATION OR KNOWINGLY SUPPLYING FALSE INFORMATION IS PUNISHABLE TO THE EXTENT DEFINED IN HEALTH AND SAFETY CODE SECTIONS 44381(a) AND 44381(b), WHICH INCLUDES MINIMUM FINES OF NOT LESS THAN FIVE HUNDRED DOLLARS.

Signature Of Responsible Company Official 	Date <input style="width:95%;" type="text" value="6/1/18"/>
Name Of Responsible Company Official <input style="width:95%;" type="text" value="John A. Thompson"/>	Title <input style="width:95%;" type="text" value="Storage Manager"/>