5.9 Public Health

This section presents the methodology and results of a human health risk assessment performed to assess potential impacts and public exposure associated with airborne emissions from the routine operation of the Chula Vista Energy Upgrade Project (CVEUP). Section 5.9.1 describes the affected environment. Section 5.9.2 discusses the environmental consequences from the operation of the power plant and associated facilities. Section 5.9.3 discusses cumulative impacts. Section 5.9.4 discusses mitigation measures. Section 5.9.5 presents applicable laws, ordinances, regulations, and standards (LORS). Section 5.9.6 presents permit requirements and schedules, and Section 5.9.7 presents agency contacts. Section 5.9.8 contains references cited or consulted in preparing this section.

Air will be the dominant pathway for public exposure to chemical substances released by the project. Emissions to the air will consist primarily of combustion by-products produced by the natural gas-fired turbines, and combustion products from the emergency generator engine. Potential health risks from combustion emissions will occur almost entirely by direct inhalation. To be conservative, additional pathways were included in the health risk modeling; however, direct inhalation is considered the most likely exposure pathway. The risk assessment was conducted in accordance with guidance established by the California Office of Environmental Health Hazard Assessment (OEHHA) and the California Air Resources Board (CARB).

Combustion byproducts with established California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS), including oxides of nitrogen (NO_x), carbon monoxide and fine particulate matter are addressed in Section 5.1, Air Quality. However, some discussion of the potential health risks associated with these substances is presented in this section. Human health risks potentially associated with accidental releases of stored acutely hazardous materials at the proposed facility (aqueous ammonia) are discussed in Section 5.5.

5.9.1 Affected Environment

The existing and proposed site is located in Chula Vista, California (San Diego County). The site is located at 3497 Main Street. The topography of the site is essentially flat, with a mean elevation of approximately 58 feet above mean sea level. The site and immediate surrounding area to the north, east, west, and south are primarily commercial and industrial or open space in nature. The site occupies approximately 3.82 acres of presently industrial land. Elevations to the north, west, east, and south of the site are relatively low, similar to site elevations.

The site is situated in census tract 133.08. Figure 5.1D-1 (Appendix 5.1D) shows the approximate locations of identified sensitive receptors within a 6-mile radius of the plant site. Figure 5.1D-2 (Appendix 5.1D) shows the site and surrounding census tracts. The Census Findings table (Appendix 5.1D) presents a summary of data for each identified census tract within the 6-mile radius.

According to the Auer land use classification scheme, a 3-kilometer radius boundary around the proposed site yields a predominately urban classification. This is consistent with the current land use and zoning designation for the site and surrounding area as "commercial-industrial," although a portion of the land surrounding the proposed site (to the south) is vacant.

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Schools (public and private), day care facilities, convalescent homes, and hospitals are of particular concern. The nearest sensitive receptors within 2 miles of the CVEUP site are listed in Table 5.9-1. Appendix 5.1D contains a list of all sensitive receptors within a radius of 6 miles from the site, figures showing all sensitive receptors within 6 miles of the project site, and the spatial distribution of census tracts within the six-mile radius. Appendix 5.1D delineates the population data by census tract.

TABLE 5.9-1
Sensitive Receptors within Two Miles of the CVEUP

Receptor Name	Receptor Type	UTM Coordinates (E/N), m
Nearest Residence	Residence	494329 / 3606102
Nearest Offsite Worker Location(East)	Worker	494561 / 3608987
Nearest Offsite Worker Location(West)	Worker	494387 / 3606136
Nearest Offsite Worker Location(North)	Worker	494495 / 3606264
Orange School	School	494628 / 3606534
Loma Verde School	School	496262 / 3607151
Castle Park School	School	494379 / 3607566
Montgomery School	School	493584 / 3606685
Finney School	School	495386 / 3605296
Castle Park High School	School	494661 / 3608492
Montgomery High School	School	494217 / 3604551
Rohr School	School	496114 / 3607148
S.T. Christian School	School	495263 / 3607109

All coordinates from Google Earth (center location of each receptor location).

Air quality and health risk data presented by CARB in the 2005 Almanac of Emissions and Air Quality for the San Diego Air Basin shows that over the period 1990 through 2003, the average concentrations for the top ten toxic air contaminants (TACs) have been substantially reduced, and the associated health risks for the air basin are showing a steady downward trend as well. CARB-estimated emissions inventory values for the top ten TACs for 2004 and ambient concentration and associated risk values for 1990-2003 are presented in Table 5.9-2 for the air basin.

TABLE 5.9-2
Top Ten Toxic Air Contaminants for the San Diego Air Basin

TAC	Year 2004 Emissions (tons/yr)	Maximum Concentration	Predicted Cancer Risk, per 10^6
Acetaldehyde	497	0.89 ppb	4
Benzene	849	0.371 ppb	34
1,3 Butadiene	190	0.074 ppb	28
Carbon tetrachloride	0.12	nd	nd
Chromium 6	0.24	0.03 ng/m^3	5
Para-Dichlorobenzene	203	0.15 ppb	10
Formaldehyde	1240	2.19 ppb	16
Methylene Chloride	370	0.13 ppb	<1
Perchloroethylene	657	0.037 ppb	1
Diesel PM	1,798	1.4 μg/m^3	420

ppb = parts per billion
μg/m^3 = micrograms per cubic meter
ng/m^3 = nanograms per cubic meter
nd = non-detect

5.9.2 Environmental Consequences

5.9.2.1 Significance Criteria

5.9.2.1.1 Cancer Risk

Cancer risk is the probability or chance of contracting cancer over a human life span (assumed to be 70 years). Carcinogens are not assumed to have a threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). Under various state and local regulations, an incremental cancer risk greater than 10-in-one million due to a project is considered to be a significant impact on public health. For example, the 10-in-one-million risk level is used by the Air Toxics Hot Spots (AB 2588) program and California's Proposition 65 as the public notification level for air toxic emissions from existing sources.

5.9.2.1.2 Non-Cancer Risk

Non-cancer health effects can be either chronic or acute. In determining potential non-cancer health risks (chronic and acute) from air toxics, it is assumed there is a dose of the chemical of concern below which there would be no impact on human health. The air concentration corresponding to this dose is called the Reference Exposure Level (REL). Non-cancer health risks are measured in terms of a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are typically summed with the resulting totals expressed as hazard indices for each organ system. A hazard index of less than 1.0 is considered to be an insignificant health risk. For this health risk assessment, all hazard quotients were summed regardless of target organ. This method leads to a conservative (upper bound) assessment. RELs used in the hazard index calculations were those published in the CARB/OEHHA listings dated April 2005 (see Table 5.1D-7, Appendix 5.1D).

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-carcinogenic air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. The chronic hazard index was calculated using the hazard quotients calculated with annual concentrations.

Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. For most chemicals, the air concentration required to produce acute effects is higher than the level required to produce chronic effects because the duration of exposure is shorter. Because acute toxicity is predominantly manifested in the upper respiratory system at threshold exposures, all hazard quotients are typically summed to calculate the acute hazard index. One-hour average concentrations are divided by acute RELs to obtain a hazard index for health effects caused by relatively high, short-term exposure to air toxics.

5.9.2.2 Construction Phase Impacts

The construction phase of the CVEUP is expected to take approximately 7 to 8 months. No significant public health effects are expected during the construction phase. Strict construction practices that incorporate safety and compliance with applicable LORS will be followed (see Section 5.9.5). In addition, mitigation measures to reduce air emissions from construction impacts will be implemented as described in Section 5.1.

Temporary emissions from construction-related activities are discussed in Section 5.1. Ambient air modeling for particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), carbon monoxide, sulfur dioxide (SO_2) and NO_x was performed as described in Section 5.1. Construction-related emissions are temporary and localized, resulting in no long-term impacts to the public.

Small quantities of hazardous waste may be generated during the construction phase of the project. Hazardous waste management plans will be in place so the potential for public exposure is minimal. Refer to Section 5.14 (Waste Management) for more information. No acutely hazardous materials will be used or stored onsite during construction (see Section 5.5, Hazardous Materials Handling). To ensure worker safety during construction, safe work practices will be followed (see Section 5.16, Worker Safety).

5.9.2.3 Operational Phase Impacts

Environmental consequences potentially associated with the project are potential human exposure to chemical substances emitted into the air. The human health risks potentially associated with these chemical substances were evaluated in a health risk assessment. The chemical substances potentially emitted to the air from the proposed facility include ammonia, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons

(PAHs) from the combustion turbines, and metals from the generator engine. These chemical substances are listed in Table 5.9-3.

TABLE 5.9-3
Chemical Substances Potentially Emitted to the Air from the CVEUP

Criteria Pollutants	Noncriteria Pollutants (Continued)
Carbon monoxide	Polycyclic aromatic hydrocarbons (PAHs)
NO_X	Benzo(a)anthracene
Particulate matter	Benzo(a)pyrene
SO_X	Benzo(b)fluoranthene
VOCs	Benzo(k)fluoranthene
	Chrysene
Noncriteria Pollutants (Toxic Pollutants)	Dibenz(a,h)anthracene
Ammonia	Indeno(1,2,3-cd)pyrene
Acetaldehyde	Naphthalene
Acrolein	Diesel Particulate
1,3-Butadiene	Arsenic
Benzene	Cadmium
Ethylbenzene	Chromium
Formaldehyde	Copper
Hexane	Lead
Propylene	Mercury
Propylene oxide	Nickel
Toluene	Silver
Xylene	Zinc

Emissions of criteria pollutants will adhere to NAAQS or CAAQS as discussed in Section 5.1, Air Quality. The proposed facility also will include emission control technologies necessary to meet the required emission standards specified for criteria pollutants under San Diego Air Pollution Control District (SDAPCD) rules. Offsets will not be required because the existing facility is a non-major source, and the proposed project will not change this status under District NSR Rules 20.1 and 20.2. Finally, air dispersion modeling results (presented in Section 5.1) show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general public with a wide margin of safety. Therefore, the project is not anticipated to have a significant impact on public health from emissions of criteria pollutants.

Potential impacts associated with emissions of toxic pollutants to the air from the proposed facility were addressed in a health risk assessment, presented in Appendix 5.1D. The risk assessment was prepared using guidelines developed by OEHHA and CARB, as implemented in the latest version of the HARP model.

5.9.2.4 Public Health Impact Study Methods

Emissions of toxic pollutants potentially associated with the facility were estimated using emission factors approved by SDAPCD, CARB, and the U.S. Environmental Protection Agency (USEPA). Concentrations of these pollutants in air potentially associated with the emissions were estimated using the HARP dispersion modeling module. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a risk assessment, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels for non-cancer health effects (for non-carcinogenic substances).

Health risks were evaluated for a hypothetical maximum exposed individual (MEI) located at the MIR (maximum impact receptor). The hypothetical MEI is an individual assumed to be located at the MIR point (assumed residential receptor) where the highest concentrations of air pollutants associated with facility emissions are predicted to occur, based on air dispersion modeling. Human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any location in the vicinity of the facility. The highest concentration location represents the MIR.

Health risks potentially associated with concentrations of carcinogenic pollutants in air were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in air over a 70-year lifetime. Evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations in air with the RELs. An REL is a concentration in air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is referred to as a hazard quotient. The unit risk values and RELs used to characterize health risks associated with modeled concentrations in air were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB, 2005), and are presented in Table 5.9-4.

TABLE 5.9-4
Toxicity Values Used to Characterize Health Risks

Compound	Unit Risk Factor ($\mu g/m^3)^{-1}$	Chronic Reference Exposure Level ($\mu g/m^3$)	Acute Reference Exposure Level ($\mu g/m^3$)
Acetaldehyde	2.7E-06	9.00E+00	--
Acrolein	--	6.00E-02	1.90E-01
Ammonia	--	2.00E+02	3.2E+03
Arsenic	3.3E-03	3.00E-01	1.9E-01
Benzene	2.9E-05	6.00E+01	1.3E+03
1,3-Butadiene	1.7E-04	--	--
Cadmium	4.2E-03	2.00E-02	--
Chromium	1.5E-01	2.00E-01	--
Copper	--	2.40E+00	1.0E+02
Diesel PM	3.00E-04	5.00E+00	--
Ethylbenzene	--	2.00E+03	--
Formaldehyde	6.0E-06	3.00E+00	9.4E+01
Hexane	--	--	--
Lead	1.2E-05	--	--
Mercury (inorganic)	--	9.00E-02	1.8E+00
Naphthalene	3.4E-05	9.00E+00	--
Nickel	2.6E-04	5.00E-02	6.0E+00
PAHs (as BaP for HRA)	1.3E-03	--	--
Propylene	--	3.00E+03	--
Propylene oxide	3.7E-06	3.00E+01	3.1E+03
Silver	--	--	--
Toluene	--	3.00E+02	3.7E+04
Xylene	--	7.00E+02	2.2E+04
Zinc	--	3.50E+01	--

Source: CARB/OEHHA, 4/2005.

Tables 5.9-5 and 5.9-6 delineate the maximum hourly and annual emissions of all identified air toxic pollutants from the facility processes.

TABLE 5.9-5
Maximum CVEUP Hourly, Daily, and Annual Air Toxic Emissions (2 turbines)

Toxic	Emission Factor* (lb/mmscf)	Max Hour Emissions (lb)	Max Daily Emissions (lb)	Max Annual Emissions (tons)
Total PAHs w/o Naphthalene	0.000241	0.000226	0.00545	0.000564
Naphthalene	0.00166	0.00156	0.0375	0.00388
Ethylbenzene	0.0179	0.0168	0.405	0.04189
1-3 Butadiene	0.000127	0.000119	0.00287	0.00030
Acetaldehyde	0.137	0.129	3.1	0.3206
Acrolein	0.0189	0.0177	0.427	0.0442
Benzene	0.0133	0.0125	0.301	0.03112
Formaldehyde	0.917	0.861	20.7	2.145
Toluene	0.071	0.0666	1.6	0.166
Xylenes	0.0261	0.0245	0.59	0.06107
Ammonia	5 ppmvd	6.4	154.0	13.9

* Emission Factors derived from SDAPCD gas turbine emission factor database (T08 – T11)

TABLE 5.9-6
Diesel Engine Exhaust Emissions

Toxic	Max Hour Emissions (lb)	Max Daily Emissions (lb)	Max Annual Emissions (lb)
Diesel Particulate Matter	0.0035	0.0035	0.182
Diesel Organic Gases	0.032	0.032	1.67

5.9.2.5 Characterization of Risks from Toxic Air Pollutants

The excess lifetime cancer risk associated with concentrations in air estimated for the CVEUP MIR location is estimated to be 1.50 x 10^{-7}. Excess lifetime cancer risks less than 1 x 10^{-6} are unlikely to represent significant public health impacts that require additional controls of facility emissions. Risks higher than 1 x 10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population, and toxicity of the risk-driving chemicals. Health effects risk thresholds are listed on Table 5.9-7. Risks associated with pollutants potentially emitted from the facility are presented in Table 5.9-8. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 5.1D. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

TABLE 5.9-7
Health Effects Significant Threshold Levels

	Significance Thresholds	
Agency	**SDAPCD**	**State of California**
Cancer Risk per million	<= 1.0 without T-BACT	<= 1.0 without T-BACT
	<= 10.0 with T-BACT	<= 10.0 with T-BACT
Acute Hazard Index	1.0	1.0
Chronic Hazard Index	1.0	1.0
Cancer Burden	1.0	1.0

T-BACT = best available control technology for air toxic compounds

TABLE 5.9-8
CVEUP Health Risk Assessment Summary (turbines and emergency generator engine)

	Turbines	
Risk Category	**Facility Values**	**Applicable Significance Threshold**
Cancer Risk	1.50E -07	<= 10.0 with T-BACT
Chronic Hazard Index	0.00687	1.0
Acute Hazard Index	0.0884	1.0
Cancer Burden	0.051	1.0
	Emergency Generator	
Risk Category	**Health Risk Assessment Values**	**Applicable Significance Threshold**
Cancer Risk	1.92E -08	<= 10.0 with T-BACT
Chronic Hazard Index	0.000012	1.0
Acute Hazard Index	0.0*	1.0

* No acute REL has been established for diesel PM.

Cancer risks potentially associated with facility emissions also were assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the facility. Cancer burden is calculated as the worst-case product of excess lifetime cancer risk and the number of individuals at that risk level. A worst-case estimate of cancer burden was calculated based on the following assumptions.

The MIR concentration was applied to all affected portions of identified census tracts within the radius area defined by the distance to the highest (MIR) concentration. A detailed listing and map of affected census tracts and year 2000 population estimates are provided in Appendix 5.1D. Figures presented in Appendix 5.1D show the 6-mile radius plot in relationship to the census tract locations and site. This procedure results in a conservatively high estimate of cancer burden. The calculated cancer burden for CVEUP is 0.051.

As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. Therefore, the risks for all of these individuals would be lower (and in most cases, substantially lower) than 1.50×10^{-7}. The estimated cancer burden was 0.051, indicating that emissions from the facility would not be associated with any increase in cancer cases in the previously defined population. In addition, the cancer burden is less than the Rules 1200/1210 threshold value of 1.0. As stated previously, the methods used in this calculation considerably overstate the potential cancer burden, further suggesting that facility emissions are unlikely to represent a significant public health impact in terms of cancer risk.

The acute non-cancer hazard quotient associated with concentrations in air is shown in Table 5.9-8. The acute non-cancer hazard quotients for all target organs fall below 1.0. As described previously, a hazard quotient less than 1.0 is unlikely to represent significant impact to public health. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 5.1D. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Detailed risk and hazard values are provided in the HARP output presented in Appendix 5.1D.

The estimates of excess lifetime cancer risks and non-cancer risks associated with chronic or acute exposures fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have estimated such risks by extrapolation from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that humans are as sensitive as the most sensitive animal species). Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero.

An excess lifetime cancer risk of 1×10^{-6} is typically used as a screening threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1×10^{-6}, which has historically been judged to be an acceptable risk, originates from efforts by the Food and Drug Administration to use quantitative risk assessment for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a “virtually safe dose” has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1 x 10^{-6} (one-in-one million), which are called de minimis risks. De minimis risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4 x 10^{-3} (four-in-ten thousand), called de manifestis risks, were consistently regulated. De manifestis risks are typically risks of regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis et al, 1987).

The estimated lifetime cancer risks to the maximally exposed individual located at the CVEUP MIR are well below the 1 x 10^{-6} significance level, and the aggregated cancer burden associated this risk level is less than 1.0 excess cancer case. In addition, the cancer burden is less than the Rule 1200/1210 threshold value of 1.0. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the facility emissions should consider that the conservatism in the assumptions and methods used in risk estimation considerably overstate the risks from facility emissions. Based on the results of this risk assessment, there are no significant public health impacts anticipated from emissions of toxic pollutant to the air from the proposed facility.

5.9.2.6 Hazardous Materials

Hazardous materials may be used and stored at the facility. The hazardous materials stored in significant quantities onsite and descriptions of their uses are presented in Section 5.5. Use of chemicals at the proposed facility will be in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials, therefore, will not pose significant impacts to public health. While mitigation measures will be in place to prevent releases, accidental releases that migrate offsite could result in potential impacts to the public.

The California Accidental Release Program regulations (CalARP) and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of a program listed hazardous material. RMP-listed materials proposed to be used at the facility include aqueous ammonia as discussed in Section 5.5.

An offsite consequence analysis will be performed to assess potential risks to offsite human populations if a spill or rupture of the aqueous ammonia storage tank were to occur. Results of this analysis will be included in the facility RMP.

5.9.2.7 Operation Odors

Small amounts of ammonia used to control NO_x emissions may escape up the exhaust stack but would not produce objectionable odors. The expected exhaust gas ammonia concentration, known as ammonia "slip," will be less than 5 parts per million (ppm). After mixing with the atmosphere, the concentration at ground level will be far below the detectable odor threshold of 5 ppm that the Compressed Gas Association has determined to be acceptable, as well as being below the ACGIH Threshold Limit Value (TLV) and Short Term Exposure Limit (STEL) values of 25 and 35 ppm respectively (adopted 2003). Therefore, potential ammonia emissions are not expected to create objectionable odors.

Other combustion contaminants are not present at concentrations that could produce objectionable odors.

5.9.2.8 Electromagnetic Field Exposure

Because the electric transmission line does not travel through residential areas, and based on recent findings of the National Institute of Environmental Health Sciences (NIEHS 1999), electromagnetic field exposures are not expected to result in a significant impact on public health. The NIEHS report to the U.S. Congress found that “the probability that EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal scientific support that exposure to this agent is causing any degree of harm” (NIEHS, 1999).

5.9.2.9 Summary of Impacts

Results from an air toxics risk assessment based on emissions modeling indicate that there will be no significant incremental public health risks from construction or operation of the proposed project. Results from criteria pollutant modeling for routine operations indicate that potential ambient concentrations of NO_2, carbon dioxide, SO_2, and PM_{10} will not significantly impact air quality (see Section 5.1). Potential concentrations are below the federal and California standards established to protect public health, including the more sensitive members of the population.

5.9.3 Cumulative Impacts

The health risk assessment for the proposed project indicates that the maximum cancer risk will be approximately 1.50 x 10^{-7} (versus a significance threshold of 10.0 in one million with T-BACT) at the point of maximum exposure to air toxics from power plant emissions. This risk level is considered to be insignificant. Non-cancer chronic and acute effects will also be less than significant. Therefore, the risk of impacts from the CVEUP combining with impacts from other past, present, and reasonably foreseeable future projects to make a significant impact are also very low. Existing projects are considered as air pollutant emitters in the background data that is used in health risk modeling for the air toxics risk assessment. As part of this application for certification, the Applicant will obtain a listing of additional projects that have applied for air permits from the SDAPCD and will conduct a detailed emissions modeling analysis of the potential for the CVEUP’s impacts to combine with impacts of these other projects.

5.9.4 Mitigation Measures

5.9.4.1 Criteria Pollutants

Emissions of criteria pollutants will be minimized by applying Best Available Control Technology (BACT) to the facility. BACT for the combustion turbine includes the combustion of natural gas.

The proposed project location is in an area that is designated by the federal air agencies as non-attainment for ozone and unclassifiable for particulate matter. Pursuant to SDAPCD Rules 20.1 and 20.2, offsets are not required for a minor source proposing a modification which will not result in the source becoming a major source, i.e., the minor source status will remain valid. The combination of using BACT and clean fuels will result in no change in the facility status as "minor source." Therefore, further mitigation of emissions is not required to protect public health.

5.9.4.2 Toxic Pollutants

Emissions of toxic pollutants to the air will be minimized through the use of natural gas as the only fuel at the proposed facility. Emissions from tanks storing liquid organic chemicals will be minimized through the use of one or a combination of the following:

- Use of small-capacity, fixed roof tanks
- Use of low vapor pressure organic substances
- Use of exempt compounds
- Use of vapor balance and/or vapor recovery systems on a case-by-case basis as deemed appropriate

5.9.4.3 Hazardous Materials

Mitigation measures for hazardous materials are presented below and discussed in more detail in Section 5.5. Potential public health impacts from the use of hazardous materials are only expected to occur as a result of an accidental release. The plant has many safety features designed to prevent and minimize impacts from the use and accidental release of hazardous materials. The CPEUP site will include the following design features:

- Curbs, berms, and/or secondary containment structures will be provided where accidental release of chemicals may occur.

- A fire-protection system will be included to detect, alarm, and suppress a fire, in accordance with applicable LORS.

- Construction of the aqueous ammonia storage system will be in accordance with applicable LORS.

A RMP for the facility will be prepared prior to commencement of facility operations. The RMP will estimate the risk presented by handling aqueous ammonia at the facility. The RMP will include a hazard analysis, offsite consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process will accurately identify and propose adequate mitigation measures to reduce the risk to the lowest possible level.

A safety program will be implemented and will include safety training programs for contractors and operations personnel, including instructions on: (1) the proper use of personal protective equipment, (2) safety operating procedures, (3) fire safety, and (4) emergency response actions. The safety program will also include programs on safely operating and maintaining systems that use hazardous materials. Emergency procedures for CVEUP personnel include power plant evacuation, hazardous material spill cleanup, fire prevention, and emergency response.

Areas subject to potential leaks of hazardous materials will be paved and bermed. Incompatible materials will be stored in separate containment areas. Containment areas will be drained to either a collection sump or to holding or neutralization tanks. Also, piping and tanks exposed to potential traffic hazards will be additionally protected by traffic barriers.

5.9.5 Laws, Ordinances, Regulations, and Standards

An overview of the regulatory process for public health issues is presented in this section. The relevant LORS that affect public health and are applicable to this project are identified in Table 5.9-9. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the selection locations within this report where each of these issues is addressed. Table 5.9-9 summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies.

TABLE 5.9-9
Laws, Ordinances, Regulations, and Standards for Public Health

LORS	Public Health Concern	Primary Regulatory Agency	Project Conformance
Federal Clean Air Act Title III	Public exposure to air pollutants	USEPA Region 9 CARB SDAPCD	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels. Emissions of criteria pollutants will be minimized by applying BACT to the facility. Increases in emissions of criteria pollutants will be fully offset.
Health and Safety Code 25249.5 et seq. (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	OEHHA	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed thresholds that require exposure warnings.
40 CFR Part 68 (Risk Management Plan) and CalARP Program Title 19	Public exposure to acutely hazardous materials	USEPA Region 9 San Diego County Department of Health Services San Diego County Fire Department	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank. An RMP will be prepared prior to commencement of facility operations.
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	San Diego County Department of Health Services CARB SDAPCD	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank.
CHSC 25500-25542	Hazmat Inventory	State Office of Emergency Services and San Diego County Department of Environmental Health	Prepare all required HazMat plans and inventories, distribute to affected agencies
CHSC 44300 et seq.	AB2588 Air Toxics Program	SDAPCD	Participate in the AB2588 inventory and reporting program at the District level.
SDAPCD Rule 1200 and 1210	Toxics NSR	SDAPCD	Application of BACT and T-BACT, preparation of HRA

TABLE 5.9-9
Laws, Ordinances, Regulations, and Standards for Public Health

LORS	Public Health Concern	Primary Regulatory Agency	Project Conformance
CHSC 25249.5	Proposition 65	OEHHA	Comply with all signage and notification requirements.
Health and Safety Code Sections 44360 to 44366 (Air Toxics “Hot Spots” Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB SDAPCD	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels.

5.9.6 Permits Required and Schedule

Agency-required permits related to public health include an RMP and SDAPCD Permit to Construct/Permit to Operate. These requirements are discussed in detail in Sections 5.5 (Hazardous Materials Handling) and 5.1 (Air Quality), respectively.

5.9.7 Agencies Involved and Agency Contacts

Table 5.9-10 provides contact information for agencies involved with Public Health.

TABLE 5.9-10
Summary of Agency Contacts for Public Health

Public Health Concern	Primary Regulatory Agency	Regulatory Contact
Public exposure to air pollutants	USEPA Region 9	David Howekamp (916) 744-1219
	CARB	Mike Tollstrup (916) 322-6026
	SD APCD	Tom Weeks 858-566-2715
Public exposure to chemicals known to cause cancer or reproductive toxicity	OEHHA	Cynthia Oshita or Susan Long, (916) 445-6900
Public exposure to acutely hazardous materials	USEPA Region 9	David Howekamp, (916) 744-1219
	San Diego County Department of Health Services	Environmental Health HazMat Michael Dorsey (619) 338-2231

5.9.8 References

California Air Resources Board (CARB). 2005. Consolidated table of OEHHA/ARB approved risk assessment health values. (http://arbis.arb.ca.gov/toxics/healthval/contable.pdf)

HARP Express User Manual. Dillingham Software Engineering, Inc., Version 2.07, September 2004.

HARP User Guide. CalEPA-Air Resources Board, December 2003.

Hutt. P.B. 1985. Use of quantitative risk assessment in regulatory decision making under federal health and safety statutes, in Risk Quantitation and Regulatory Policy. Eds. D.G. Hoel, R.A. Merrill and F.P. Perera. Banbury Report 19, Cold Springs Harbor Laboratory.

National Institute of Environmental Health Sciences (NIEHS). 1999. Environmental Health Institute report concludes evidence is 'weak' that EMFs cause cancer. Press release. National Institute of Environmental Health Sciences, National Institutes of Health.

OEHHA/CARB. 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, CalEPA, August 2003. HARP Model, Version 1.3, Updated 11/27/06.

SCAQMD. 2005. Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics Hot Spots Information and Assessment Act (AB2588). July 2005.

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