Palomar Plating Facility

Location: 722 West Fourth Avenue, Escondido, CA 92025

Facility Contact: Karen Albert

Facility Description: Palomar Plating Co., Inc., is a metal finishing and non-destructive test service provider.

Health Risk Assessment Summary

Year:	1995
Cancer Risk:	364 in a million
Chronic Index:	1.2
Acute Index:	N/A

Pollutants of Concern

Cancer Risk:	Hexavalent chromium (ARB compound summary, EPA hazard summary)
Chronic Non-cancer Risk:	Hexavalent chromium (ARB compound summary, EPA hazard summary)

Air Toxics 'Hot Spots' Program

1995 Health Risk Assessment Summary for Palomar Plating Facility

705 West Third Avenue, Escondido, California

1.0 Executive Summary

This health risk assessment (HRA) estimates potential public health risks for the Palomar Plating facility located at 705 West Third Avenue in Escondido, California. It was prepared in accordance with requirements of the California Air Toxics "Hot Spots" Information and Assessment Act and is based on estimated facility emissions for the 1995 calendar year. Potential cancer as well as noncancer offsite health impacts were evaluated. The results of the HRA will be used to evaluate the applicability of public notification and risk mitigation requirements specified in San Diego Air Pollution Control District Rule 1210.

Figure 1 – Facility Location

1.1 Description of the Facility and Emissions

The Palomar Plating facility is located at 705 West Third Avenue in Escondido. The Palomar Plating facility consists of four building that occupy approximately one acre of land. A map that shows the facility location is provided as Figure 1. Figure 2 provides a more detailed view of the facility including facility boundary and emission source location.

The facility performs plating (nickel and cadmium), anodizing and painting operations, which emit a variety of toxic air contaminants, which were quantified by the District for the 1995 calendar year.

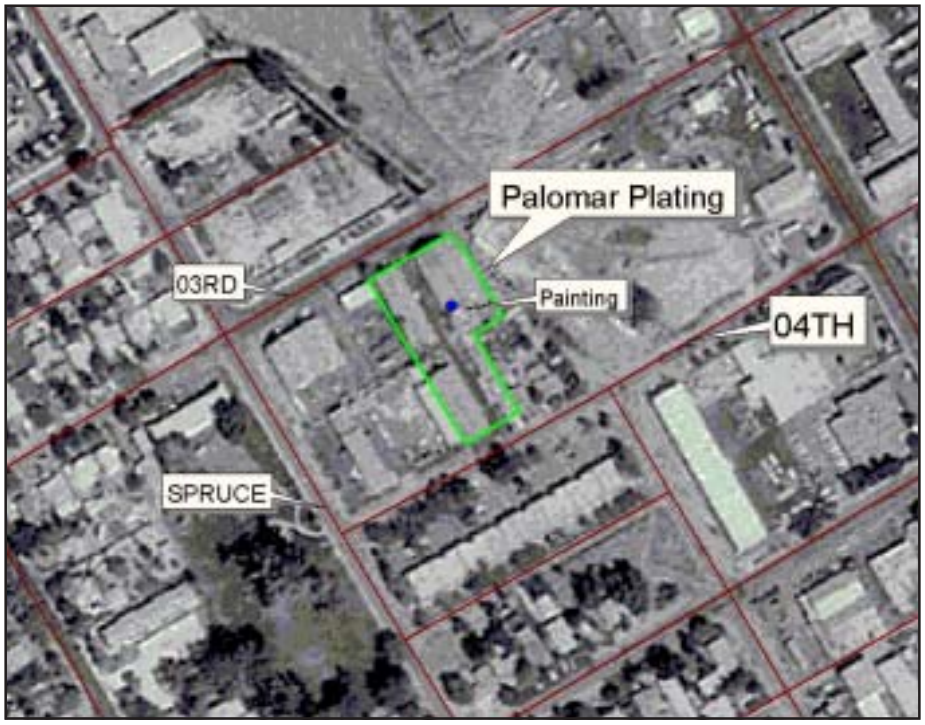

Figure 2 – Facility Diagram

1.2 Health Risk Assessment Procedure

This refined health risk assessment evaluates cancer risk and non-cancer chronic and acute health hazard indices for the point of maximum impact as well as residential, occupational and sensitive receptors. The HRA was prepared in accordance with The California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spots" Program (Revised 1992) Risk Assessment Guidelines and the Guidelines for Preparing Health Risk Assessments in Accordance with the Requirements of the Air Toxics "Hot Spots" Information and Assessment Act, San Diego Air Pollution Control District, December 16, 1997.

Adverse health effects are reported as "excess lifetime cancer risk", cancer burden, or as a "total hazard index". Excess cancer risk is the maximum estimated increased risk of cancer following chronic exposure to a chemical suspected of being a human carcinogen, and is expressed as the probability of a person contracting cancer over a lifetime of exposure to chemical emissions.

Non-cancer risk is based on the aggregate health impact of toxic air contaminant emissions on specific organs or systems in the body. The potential for health impacts is called hazard indices (HI) and is calculated as the ratio of the estimated exposure to a particular hazardous air pollutant to the reference exposure level (REL) for that compound.

The REL is generally the level at (or below) which no adverse health impacts are expected. The sum of the hazard indices is called the total hazard index (THI) and is an indication of the likelihood of experiencing chronic or acute (non-cancer) health effects. A total hazard index of less than one (1.0) is not likely to result in adverse health effects to exposed persons in the population including sensitive individuals. With a THI above one, there is a greater potential that adverse health impacts may result.

Health impacts were quantified at the point of maximum impact (PMI), and for the maximum exposed individual (MEI). The MEI risk is calculated for both the maximum exposed individual resident (MEIR) and the maximum exposed individual worker in an occupational setting (MEIO). In addition, risks are calculated for sensitive receptors in the study area (if any) and the population excess cancer burden is calculated within the zone of impact (ZOI) of the facility.

The PMI represents the maximum estimated risk value at any offsite receptor location including locations at which human exposure would not be reasonably expected. For example, a PMI could be located in a vacant field adjacent to the facility even though there may be no (long term) human exposure at that point. Although the estimated risk values are calculated for the PMI, they are not used to determine public notification or risk reduction requirements. The MEIR and MEIO represent the maximum estimated risk value at any offsite receptor location at which people would reasonably be expected to be exposed at their residence (MEIR) or place of work (MEIO).

1.3 Summary of Health Risk Assessment Results

Table 1 summarizes the cancer risks at the point if maximum impact (PMI) as well as the maximum exposed individual resident (MEIR) and the maximum exposed individual in an occupation setting (MEIO).

Table 1 – Summary of Estimated Excess Cancer Risk

Maximum Individual Cancer Risk	Risk Value	Receptor Location (State Plane Coordinates)
PMI	364 in one million	East of the Facility, (6305048, 1986535)
MEIR	364 in one million	East of the Facility, (6305048, 1986535)
MEIO	88.5 in one million	Southeast of the Facility, (6305283, 1986385)

The maximum estimated cancer risk at an occupied receptor due to emissions from this facility is 364 in one million at the MEIR. The MEIR occurs immediately east of the facility. The maximum estimated risk at an occupational location (MEIO) is 89 in one million and is located southeast of the facility. A map showing the estimated residential cancer risk isopleths (areas where risk exceeds public notification levels), as well as the PMI, MEIR and sensitive receptors (if any) is presented as Figure 3. A map showing the estimated occupational cancer risk isopleths, as well as the MEIO and sensitive receptors (if any) is presented as Figure 4. The cancer risk is due to emissions of hexavalent chromium from the paint

Figure 3 – Residential Cancer Risk – PMI, MEIR

spray booth. The estimated risk values at the MEIR and MEIO exceed the cancer risk public notification level (10 in one million) and the estimated risk value at the MEIR exceeds the significant risk level (100 in one million) specified in District Rule 1200.

Table 2 summarizes the estimated cancer burden. Twenty census tracts were evaluated. Cancer burden (for both residents and workers) was calculated for each census tract. Estimated cancer burden (0.043) is significantly less than the cancer burden public notification level (1.0) specified in District Rule 1200.

Figure 4 – Occupational Cancer Risk – MEIO

Table 2 – Summary of Estimated Cancer Burden

Census Tract No.	Residential Cancer Risk	Occupational Cancer Risk	1995 Residential Population	1992 Occupational Population	Cancer Burden
200.08	1.067E-08	7.042E-09	8605	1239	1.005E-04
201.01	9.903E-08	6.536E-08	10038	734	1.042E-03
201.04	4.723E-08	3.117E-08	9942	1128	5.047E-04
202.02	1.902E-7	1.255E-07	5509	2964	1.420E-03
202.04	1.127E-07	7.438E-08	8326	1332	1.037E-03
202.05	7.076E-08	4.670E-08	9957	962	7.495E-04
202.97	1.572E-07	1.038E-07	5318	1953	1.039E-3
202.98	4.198E-07	2.771E-07	7629	6064	4.883E-03
203.01	8.602E-09	5.677E-09	9941	2149	9.771E-05
203.02	3.639E-08	2.402E-08	7425	714	2.873E-04
203.03	6.402E-09	4.225E-09	10507	15292	1.319E-04
204.01	1.463E-08	9.656E-09	2773	301	4.348E-05
204.02	4.496E-08	2.967E-08	7874	651	3.733E-04
204.03	2.393E-07	1.579E-07	3693	611	9.802E-04
205.00	5.522E-07	3.645E-07	4614	1977	3.268E-03
206.01	2.858E-06	1.886E-06	4741	2704	1.865E-02
206.98	5.790E-07	3.821E-07	5709	1082	3.719E-03
207.01	2.626E-07	1.733E-07	7120	3800	2.528E-03
207.05	2.370E-07	1.564E-07	4561	578	1.171E-03
207.06	1.845E-07	1.218E-07	5630	1314	1.199E-03
TOTAL					**4.323E-02**

Table 3 summarizes the estimated chronic noncancer health risks.

Table 3 – Summary of Estimated Chronic Non-cancer Health Risks

Health Risk		Hazard Index (THI)	Receptor Location (State Plane Coordinates)
Chronic	PMI	1.20	East of the facility (6305048, 1986535)
Chronic	MEIR	1.20	East of the facility (6305048, 1986535)
Chronic	MEIO	0.44	Southeast of the facility (6305283, 1986385)

The maximum estimated chronic health hazard index at an occupied receptor due to emissions from this facility is 1.20 at the MEIR. The MEIR occurs east of the facility. The maximum estimated chronic hazard index at an occupational location (MEIO) is 0.44 and is located southeast of the facility. A map showing the estimated chronic noncancer PMI, MEIR, MEIO and sensitive receptors (if any) is presented as Figure 5. Hexavalent chromium is the toxicant contributing to the chronic hazard index. The toxic endpoint is the respiratory system. The chronic noncancer total hazard index exceeds the public notification level and significant risk mitigation level (1.0 THI) specified in District Rule 1210.

Acute health hazards were not evaluated in this risk assessment. Possible acute health impacts due to toxic air contaminants emitted by this facility were found to be de minimus or below the level of concern when emissions were prioritized for this evaluation.

Detailed summaries of all health risk assessment results are presented in Section 5.0 and the supporting tables of this report.

2.0 Introduction and Background

2.1 The Air Toxics "Hot Spots" Program (AB2588)

The California Air Toxics "Hot Spots" Information and Assessment Act (AB2588) was enacted by legislature in 1987 to address public concern over the release of toxic air contaminants into the atmosphere. The law requires facilities that emit toxic substances to provide local air pollution control districts with information that will allow an assessment of air toxic emissions, identification of

Figure 5 – Chronic Risk – PMI, MEIR, MEIO

air toxic "hot spots," notification of the public exposed to significant health risk, and development of effective strategies for reducing potential risks to public health.

This statewide program is implemented by air districts using guidance developed by the California Air Resources Board (ARB), the state Office of Environmental Health Hazard Assessment (OEHHA), and the California Air Pollution Control Officers Association (CAPCOA). District Rule 1210 (Toxic Air Contaminant Public Health Risks - Public Notification and Risk Reduction) adopted in 1996 specifies the public notification and risk reduction requirements of the program.

The SDAPCD is the local implementing agency for all regulated facilities in San Diego County. The SDAPCD periodically requires facilities to submit information used to achieve the objectives of the program. Program elements include:

- Emission Inventory Plans and Reports – Each four years, the SDAPCD inventories facilities in order to calculate toxic air contaminant emissions from all emission units at the facility. SDAPCD calculates emissions based on data such as material process information, material throughput, and emission estimation techniques developed or approved by the District.
- Health Risk Assessments – Based on facility emissions and the toxicity of those emissions, the SDAPCD prioritizes facilities to determine if a health risk assessment is required. Facilities required to submit health risk assessments must evaluate the quantity and toxicity of the compounds being emitted from the facility and the level of public exposure to determine the potential for adverse public health impacts. The HRAs and reviewed and approved by the District and OEHHA.
- Public Notification – If a facility's health risk assessment indicates potential public health risk above established Public Notification levels, the facility must notify all exposed individuals. Notification levels as specified in District Rule 1210 are 10 in one million for cancer risks, a cancer burden of 1.0, or a chronic or acute health hazard index of 1.0 or greater (up to 5.0 based on evaluation of potential of public health impacts and after discussions with OEHHA).
- Risk Reduction Audits and Plans – If a facility's health risk assessment indicates levels above the Risk Reduction level, the facility must submit a risk reduction audit and plan that demonstrates how the facility will reduce health risks below significant levels. Significant Risk Mitigation levels as specified in District Rule 1210 are 100 in one million for cancer risks, a cancer burden of 1.0, or a chronic or acute health hazard index of 1.0 or greater (up to 5.0 based on evaluation of potential of public health impacts and after discussions with OEHHA).
- Annual Report – The AB2588 annual report provides an inventory of emissions, summarizes priorities and progress of the program, ranks facilities, and describes the status of development of control measures to reduce emission so toxic air contaminants. These reports are used by health officials to develop strategies for protecting the public health.

2.2 The Hot Spots Program Health Risk Assessment

Public health risk assessment is the process of gathering and evaluating available information related to the potential for exposure to toxic substances and estimating the magnitude and potential consequences of these exposures. Risk assessments typically consist four of components: hazard identification, dose-response assessment, exposure assessment, and risk characterization. Each of these components as they relate to this HRA are described in Section 4.0 below.

This health risk assessment was conducted in accordance with the following guidance. The California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spots" Program Risk Assessment Guidelines were published by CAPCOA in June 1989. These guidelines were updated in January 1991 and October 1993. The purpose of the CAPCOA guidelines is to establish consistency in analytical and reporting methodology and to expedite agency review. Additional guidance is provided by the Guidelines for Preparing Health Risk Assessments in Accordance with the Requirements of the Air Toxics "Hot Spots" Information and Assessment Act, San Diego Air Pollution Control District, December 16, 1997.

The California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spots" Program Risk Assessment Guidelines were recently updated by the adoption of new or revised cancer unit risk factors and acute reference exposure levels. These new or revised values were used in this health risk assessment.

This HRA will be reviewed for completeness and accuracy by OEHHA prior to approval. Until such time that the HRA is reviewed and approved, the results should be considered preliminary.

3.0 Facility Description

3.1 Location and Surroundings

The Palomar Plating facility is located at 705 West Third Ave. in Escondido. The Palomar Plating facility consists of four building that occupy approximately one acre of land. A map that shows the facility location is provided as Figure 1. Figure 2 provides a more detailed view of the facility including facility boundary and source locations. The nearest residences are located immediately southeast of the facility. The facility is located in an area of commercial and light industrial facilities.

3.2 Facility Operations

The Palomar Plating facility performs plating (nickel and cadmium), anodizing and painting operations, which emit a variety of toxic air contaminants, which were quantified by the District for the 1995 calendar year.

3.3 Facility Emission Rates

This health risk assessment is based on facility emissions for the 1995 calendar year. Emissions were calculated by the District using standardized emission estimation procedures and are based on process information supplied by the facility. Based on a review of prioritization scores, compounds that would not contribute significantly (more than a few percent) to risk were eliminated from analysis in the HRA. Nickel and cadmium plating operations were found to have negligible emissions and were not evaluated in this health risk assessment. Toxic air contaminants from the painting operation that have acute health values were found to have negligible hourly emissions and were not evaluated in this risk assessment. A summary of emission rates used in this health risk assessment is presented in Table 4. A copy of the approved emission inventory is included as Appendix A.

Table 4 – Summary of 1995 Facility Toxic Emissions

Toxic Air Contaminant	Annual Emissions (lb./yr.)
Chromium (hexavalent)	0.33

4.0 Assessment Methodology

4.1 Hazard Identification

Hazard identification is the process of determining whether a chemical may be linked to a particular health effect. During the hazard identification process a large amounts of information is evaluated to make a qualitative determination of whether a pollutant is a human carcinogen or is associated with other types of adverse health impacts. Toxic air contaminants that may result in adverse health impacts are divided into two broad categories, carcinogens and noncarcinogens.

4.2 Dose Response Assessment

Dose response assessment is the process of determining the quantitative relationship between the exposure to a toxic compound and the occurrence of adverse health impacts. For carcinogens, the dose response relationship is expressed as a potency slope (or unit risk factor) which is used to calculate the probability or risk of cancer associated with a given exposure level. For noncarcinogens the dose response data are used to develop noncancer reference exposure levels (RELs). RELs developed to characterize health effects caused by long term exposure are termed chronic RELs. RELs developed to characterize health effects caused by short term exposure are termed acute RELs. Hazard identification and dose response assessments are performed by OEHHA and published for use by air districts. A summary of the health effects data used in this HRA is presented in Table 5.

Table 5 – Summary of Health Effects Data

Toxic Air Contaminant	Unit Risk Factor $(\mu g/m^3)^{-1}$	Chronic REL $(\mu g/m^3)$	Acute REL $(\mu g/m^3)$
Chromium (hexavalent)	1.5E-01	2.0E-03	n/a

4.3 Exposure Assessment

Exposure assessment is the process of estimating the extent of public exposure to each toxic air contaminant for which dose response data is available. Exposure assessment involves emission quantification, air dispersion modeling, evaluation of environmental fate, identification of exposure routes, identification of exposed populations, and estimation of long-term annual and short term (acute) exposure levels.

4.3.1 Air Dispersion Model Description

The Industrial Source Complex Short Term (ISCST3) model was used in this HRA to evaluate air dispersion. ISCST3 is a straight-line Gaussian model, capable of handling complex, multiple emission point sources. ISCST3 includes algorithms that treat point, area, volume and lines sources, stack tip and building downwash and can be used in simple (flat) and complex terrain. Standard regulatory default model settings were used. ISCST3 dispersion modeling inputs and output are included in Appendix B.

4.3.2 Meteorological Data

The ISCST3 dispersion model requires sequential hourly meteorological data. Data includes wind speed and direction, ambient temperature, rural mixing height and stability class. In San Diego County, surface meteorological data are available for San Diego Lindbergh Field and Miramar Marine Corps. Air Station. Upper air meteorological data is available for Miramar Marine Corps Air Station only.

Generally, for locations influenced primarily by maritime air masses, Lindbergh Field surface data is used with the Miramar upper air data. For inland locations, surface and upper air data for Miramar are typically used. Miramar surface and upper air data were used for this analysis. Three years of meteorological data (1991, 1992, and 1993) were used. The data was modified so that the minimum mixing height for any hour is not less than 100 meters. Acute exposures were based on worst-case hour conditions. Chronic and cancer exposures were based on 3-year average conditions.

4.3.3 Receptor Grid

The goal of developing a receptor grid is to ensure that the maximum impact points are identified. Several types of receptor grids are typically used in a refined health risk assessment. To initially define the zone of study, an expansive receptor grid is developed. Once the extent of the zone of study is determined, more dense receptor grids (not more than 100 meter spacing) is used to identify the maximum impact points. Maximum impact points include the point of maximum impact (PMI) and the maximum exposed individual risk, which is calculated for both the maximum exposed individual resident (MEIR) and the maximum exposed individual worker in an occupational setting (MEIO).

4.4 Risk Characterization

Risk characterization is the integration of health effects and public exposure data to quantify both population wide and individual health risks.

4.4.1 Risk Assessment Model

Health impacts were characterized at each receptor location using the ACE2588 (Assessment of Chemical Exposure) risk assessment model (Version 93288). Health impacts were characterized for cancer risk chronic non-cancer health hazards using the annual ground level concentrations provided by the ISCST3 model. For multipathway carcinogens, the ACE2588 model calculates the individual excess cancer risk by adding together the contribution from each applicable exposure pathway including inhalation, soil ingestion, dermal exposure, ingestion of home grown food and mothers milk.

ACE2588 model outputs are presented in Appendix C. The ACE2588 model output provides a variety of information about emissions, receptor fields used, terrain elevations, peak 1-hour and average annual concentrations for all compounds at all receptors, cancer risk by pathway at all receptors, acute hazard indices by endpoint at each receptor, chronic hazard indices by endpoint at each receptor, and the contribution to the cancer risk, and acute and chronic noncancer risk by compound at the peak receptor(s).

Unit risk factors, oral cancer potency factors, and acute and chronic acceptable exposure levels for non-cancer compounds used in the preparation of this HRA are from the California Air Pollution Control Officers' Association (CAPCOA), "Air Toxics 'Hot Spots' Program Revised 1992 Risk Assessment Guidelines," October 1993, or OEHHA recommended revisions to those values.

4.4.2 Cancer Risk and Non-cancer Health Hazard Index Assessment Methodology

The ISCST3 model was run using a 1-gram per second emission rate to determine the annual and maximum hourly dilution factor. Dilution factor is expressed as a concentration per unit emission ($\mu g/m^3$ per gm/s) at each receptor location. Dilution factors are then multiplied by the source emission rate for each compound to obtain the maximum hourly and annual average concentration for each compound (per source). The annual average concentration multiplied by the unit risk factor (URF) yields the lifetime inhalation cancer risk per compound. Risks are calculated individually by source at each receptor location. Inhalation cancer risk is calculated according to the following equation:

$$\text{Cancer Risk}_i = \sum_j \sum_k \left[(X/Q)_{ij} \times Q_{jk} \times URF_k \right]$$

Where:

i,j,k = Individual receptors i, sources j, or pollutants k,
$\sum$ = The summation over sources j or pollutants k,
$(X/Q)_{i,j}$ = Dilution factor ($\mu g/m^3$ / gm/s) at receptor i for source j,
$Q_{j,k}$ = Emission rate (g/s) from source j of pollutant k, and
URF_k = Unit risk factor $(\mu g/m^3)^{-1}$ for pollutant k.

Population excess cancer burden is calculated using the following equation:

$$\text{Population Excess Cancer Burden} = \sum (R_i \times P_i)$$

Where:

i = Individual census tracts within the zone of impact
$\sum$ = The summation over individual census tracts (i)
Ri = Risk at individual census tracts
Pi = Population at individual census tracts

Population Excess Cancer Burden is calculated for both worker and residential populations in each census tract within the zone of impact.

Annual average concentration divided by the chronic reference exposure level (REL) yields the chronic total hazard index (THI) per source for each receptor and for each compound. Maximum one-hour concentration divided by the acute reference exposure level (REL) yields the acute total hazard index (THI) per source for each receptor for each compound. Compounds that affect the same target organ or systems are summed to give the aggregate health hazard index. Total inhalation health hazard index is calculated as shown below.

$$\text{Total Hazard Index (THI)}_i = \sum_j \sum_k [\, (X/Q)_{ij} \times Q_{jk} / REL_k \,]$$

Where:

i,j,k = Individual receptors i, sources j, or pollutants k,
$\sum$ = The summation over sources j or pollutants k,
$(X/Q)_{i,j}$ = Dilution factor ($\mu g/m^3$ / gm/s) at receptor i for source j,
$Q_{j,k}$ = Emission rate (g/s) from source j of pollutant k, and
REL_k = Reference exposure level ($\mu g/m^3$) for pollutant k.

5.0 Rick Assessment Results

Adverse health effects are reported as "excess lifetime cancer risk" or as a "total hazard index".

Excess cancer risk is the maximum estimated increased risk of cancer following chronic exposure to a chemical suspected of being a human carcinogen and is expressed as the probability of a person contracting cancer over a lifetime of exposure to chemical emissions. To calculate this, the health risk assessment follows a conservative formula, which defines lifetime exposure as 24 hours per day, everyday for 70 years.

Non-cancer risk is based on the health impact on a single organ in the body from toxic air contaminants for acute (short) and chronic (long-term) exposure which are calculated as fractions. These fractions or hazard indices are the maximum acceptable public exposure level to a toxic air contaminant. The acceptable exposure level is generally the level at (or below) which no adverse health impacts are expected. The sum of these hazard indices is called the total hazard index and is an indication of the likelihood of experiencing chronic or acute (non cancer) health effects. A total hazard index of less than one (1.0) is not likely to result in adverse health effects including sensitive individuals. With a total hazard index above one, there is a greater potential that adverse health impacts may result.

5.1 Concentrations of Toxic Air Contaminants

Annual average and predicted peak 1-hour concentrations of each evaluated compound are presented in tabular form in Appendix C (ACE model output).

5.2 Carcinogenic Risk Assessment Results

The maximum estimated cancer risk at an occupied receptor due to emissions from this facility is 364 in one million at the MEIR. The MEIR occurs immediately east of the facility. The maximum estimated risk at an occupational location (MEIO) is 89 in one million and is located southeast of the facility. A map showing the estimated residential cancer risk isopleths (areas where risk exceeds public notification levels), as well as the PMI, MEIR and sensitive receptors (if any) is presented as Figure 3. A map showing the estimated occupational cancer risk isopleths, as well as the MEIO and sensitive receptors (if any) is presented as Figure 4. The cancer risk is due to emissions of hexavalent chromium from the paint spray booth. The estimated risk values at the MEIR and MEIO exceed the cancer risk public notification level (10 in one million) and the estimated risk value at the MEIR exceeds the risk reduction level (100 in one million) specified in District Rule 1200.

Cancer burden (for both residents and workers) was calculated for each census tract. Estimated cancer burden (0.043) is significantly less than the cancer burden public notification level (1.0) specified in District Rule 1200. Table 2 summarizes the estimated cancer burden.

5.3 Chronic Health Hazard Indices

The maximum estimated chronic health hazard index at an occupied receptor due to emissions from this facility is 1.20 at the MEIR. The MEIR occurs east of the facility. The maximum estimated chronic hazard index at an occupational location (MEIO) is 0.44 and is located southeast of the facility. A map showing the estimated chronic noncancer PMI, MEIR, MEIO and sensitive receptors (if any) is presented as Figure 5. Hexavalent chromium is the toxicant contributing to the chronic hazard index. The toxic endpoint is the respiratory system. The chronic noncancer total hazard index exceeds the public notification level and significant risk mitigation level (1.0 THI) specified in District Rule 1210.

5.4 Acute Health Hazard Indices

Acute health hazards were not evaluated in this risk assessment. Possible acute health impacts due to toxic air contaminants emitted by this facility were found to be de minimus or below the level of concern when emissions were prioritized for this evaluation.

6.0 Uncertainty

By their nature, health risk assessments cannot be completely accurate. Scientists don't have enough information on actual public exposure and on how toxic contaminants affect people. When information is missing or uncertain, risk analysts make assumptions that tend to overestimate the potential risk. This provides a margin of safety in the protection of human health. An example of this is the assumption that residential exposures occur 24 hours per day for 70 years, even though people typically are not at their residences 100 percent of the time for 70 continuous years.

However, factors that may tend to underestimate risk are difficult to evaluate. These include the cumulative effect of emissions from other nearby facilities and the potential for complex mixtures of toxic air contaminants to create an additional health problem by their combined reaction to each other.

Because health risk assessments cannot be relied upon to accurately predict rates of disease in the population they are best used as a tool to compare facilities and evaluate emission and risk trends. In the Air Toxics "Hot Spots" program the District uses HRAs to estimate which facilities present the highest risk to the public. Facilities with risks that exceed the District's risk public notification level as specified in Rule 1210 are required to notify the public of the estimated risks. Facilities with estimated risks exceeding the significant risk level are required to reduce risk below that level, generally within five years.

8.0 References

California Air Pollution Control Officers' Association (CAPCOA), "Air Toxics 'Hot Spots' Program Revised 1992 Risk Assessment Guidelines," October 1993.

San Diego Air Pollution Control District (SDAPCD), "Guidelines for Preparing Health Risk Assessments in Accordance with the Requirements of Assembly Bill 2588: The Air Toxics 'Hot Spots' Information and Assessment Act of 1987," December 16, 1997.