CALIFORNIA AIR TOXICS "HOT SPOTS" INFORMATION AND ASSESSMENT ACT (AB 2588)

2015 Air Toxics "Hot Spots" Program Report for San Diego County

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SAN DIEGO COUNTY
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INTRODUCTION

The California Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) was enacted by the Legislature in 1987 to address public concern over the release of toxic air contaminants into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information to identify sources of toxic air contaminants, quantify air toxics emissions, locate resulting "hot spots," notify persons that may be exposed to significant risks, and develop effective strategies to reduce potential risks to the public.

A requirement of the Air Toxics "Hot Spots" Information and Assessment Act (Section 44363 of the California Health and Safety Code) is for local air pollution control districts to provide the public with an annual progress report on the program. This report fulfills that requirement by providing information about emission inventories, approved health risk assessments (HRAs), public notification procedures, and steps undertaken to reduce public health risks. State and local health officials may use the report to establish priorities for developing and implementing air toxic control measures to protect public health.

This report summarizes the AB 2588 program elements, the current status of the program in San Diego County, stationary and mobile emissions estimates, results of local HRAs, current statuses of public notifications, and conclusions drawn from the program to date. Stationary source emission estimates, by facility, are also available on the San Diego County Air Pollution Control District's (District) website (http://www.sdapcd.org). This can be accomplished by hovering over the Programs tab, selecting Toxics and Emissions on the drop down list and then clicking on the Facility Emissions link. In addition, stationary source emissions inventories are available upon request for those without internet access.

Although toxic air contaminant emissions from stationary sources in San Diego County have been reduced by approximately 24.8% since 2009, significant amounts of toxic compounds are still emitted into the air from a wide variety of sources including motor vehicles, industrial facilities, household products, area sources, and natural processes. Prioritizing and reducing these emissions further will require a continued collaborative effort amongst the public, industry, environmental groups, the California Air Resources Board (CARB) and the District.

BACKGROUND

The District is the implementing agency for the approximately 3,000 San Diego facilities required to comply with the Air Toxics "Hot Spots" Act. The law requires facilities to submit information that is used to achieve the objectives of the program. For larger industrial facilities, this information includes:

- **Emission Inventory Reports** - Facilities must submit the information needed by the District to prepare a toxic emissions inventory report. The District then prioritizes each facility to determine if an HRA is necessary based upon the quantity and toxicity of their reported emissions.

- **Health Risk Assessments** - Facilities required to submit HRAs must determine the level of public exposure to their emitted compounds and the potential adverse public health impacts. The State Office of Environmental Health Hazard Assessment (OEHHA) assists the District in reviewing each HRA.

- **Public Notification** - If an adverse health impact exceeding the public notification levels of District Rule 1210 is identified, the facility must provide notice to all exposed persons regarding the results of the HRA.

- **Risk Reduction Audits and Plans -** Facilities with emissions that pose a potentially significant public health risk must submit a Risk Reduction Audit and Plan to the District. The plan must demonstrate how the facility will reduce health risks below significant levels. The facility must implement the plan as approved by the District.

Facilities that are subject to the "Hot Spots" Program are required to update their toxic inventories at least every four years. The District has developed toxic emission inventory reporting procedures that streamline this process while meeting the requirements of the CARB Emissions Inventory Criteria and Guidelines regulation. As a result, facilities are no longer required to perform emission calculations. Instead, the District provides customized inventory forms based upon site-specific equipment information and calculates facility emissions based on process information supplied by the facility operator. Additionally, the District has merged the Toxic Emission Reports with the Criteria Pollutant Emission Reports to eliminate duplicate data requests.

The District has also designed the local program to allow many small businesses to meet the inventory requirements more cost-effectively by completing industry-specific reporting forms. The District has standardized and automated many computational and record keeping tasks for these sources. In collaboration with CARB, OEHHA, and other air agencies, generic HRAs have been developed for gas stations, dry cleaners, and auto body shops to assess industry-wide impacts. These program enhancements save businesses time and money.

The District is required to review and approve the data submitted by facilities, compile an inventory of emissions, and publish an annual report on the region's toxic air contaminant emissions, risk assessment results and effectiveness of control measures. These reports are used by health officials to develop strategies for protecting the public health.

Toxic air contaminant emissions should not necessarily be equated with a significant health risk (cancer or non-cancer) to any individual or the public. The quantity and toxicity of the compounds being emitted and the level of public exposure must be known before drawing conclusions about health risks. This report presents data on emissions from several hundred facilities. In some cases, data on public exposure is still being developed, updated, or reviewed. HRAs have been completed for 79 facilities.

This being said, exposure to the toxic compounds in question, in sufficient quantities, can cause health problems ranging from relatively mild temporary conditions such as minor eye or throat irritation, shortness of breath, or headaches, to permanent and serious conditions such as cancer, birth defects, or damage to lungs, nerves, the liver, the heart, or other organs.

PROGRAM DESCRIPTION AND STATUS

Emissions Inventory

The District has evaluated at least five toxic emission inventories for most facilities in San Diego County. An estimate of current toxic air contaminant emissions (for calendar years 2011 - 2014) from all sources, industrial and non-industrial, is presented in Table 1 of this report.

The industrial source emission estimates provided in Table 1 are for approximately 3,000 facilities including 1,627 diesel engine facilities, 318 auto body shops, 700 gasoline stations, and 11 Perchloroethylene based dry cleaners. Detailed emission inventories for individual facilities are available on the District's website. The estimates of mobile, area, and natural source emissions are from CARB's California Toxics Inventory of 2008 (the most recent finalized version available, and can be accessed at http://www.arb.ca.gov/toxics/cti/cti.htm) are also presented in Table 1. When multiple emission estimates were available, the most recent data were used for a category of source.

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources

Pollutant	SDAPCD stationary sources (2011-2014) in lbs/yr	Total Mobile, Area, Natural from ARB (lbs/yr) (1)	Total San Diego County Emissions (lbs/yr)
Ammonia	28,565	13,704,290	13,732,855
Aluminum (2)	8,026	12,121,035	12,129,061
Methanol	6,580	5,312,470	5,319,050
Toluene	148,511	4,261,240	4,409,751
Diesel Particulate (2,3)	21,957	3,536,120	3,558,077
Xylenes	130,572	3,075,785	3,206,357
Propylene	661	2,783,486	2,784,147
Formaldehyde	59,635	2,518,641	2,578,276
2,2,4-Trimethylpentane	12,205	2,134,035	2,146,240
Acetaldehyde	8,186	1,881,102	1,889,288
Isopropyl Alcohol	144,094	1,437,539	1,581,633
Benzene	12,830	1,465,565	1,478,395
Hexane	47,949	1,112,147	1,160,096
Ethyl Benzene	40,238	805,127	845,365
1,2,4-Trimethylbenzene	96,046	717,938	813,984
Methylene Chloride	30,511	602,661	633,172
Ethylene Glycol	3,033	510,224	513,257

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources (continued)

PAH, Unspecified [2]	537	499,564	500,101
1,3-Butadiene	1,253	464,800	466,053
Ethylene Glycol Butyl Ether	8,877	457,985	466,862
Chlorine	558	458,437	458,995
Perchloroethylene	53,626	354,201	407,827
Methyl Ethyl Ketone	39,994	337,063	377,057
Phosphorous [2]	23	258,007	258,030
Acrolein	1,639	249,368	251,007
Dichlorobenzene	226	244,012	244,238
Naphthalene [2]	720	238,432	239,152
Barium [2]	56,409	168,806	225,215
Butanol	173,034	25,716	198,750
1,1,1-Trichloroethane	848	150,398	151,246
Zinc [2]	2,455	125,538	127,993
Manganese [2]	1,072	116,099	117,171
Styrene	18,233	79,133	97,366
Methyl Isobutyl Ketone	29,295	39,548	68,843
Propylene Glycol Methyl Ether	33,830	35,187	69,017
Trichloroethylene	5,016	44,218	49,234
Lead [2]	106	41,803	41,909
Copper [2]	1,588	29,566	31,154
Phenol	2,977	15,183	18,160
Chromium, Non-Hexavalent [2]	229	13,179	13,408
Arsenic [2]	34	8,909	8,943
Cobalt [2]	4	7,447	7,451
Nickel [2]	364	6,627	6,991
Chromium, Hexavalent [2]	6	6,756	6,762
Ethylene Oxide	0	3,766	3,766
Cadmium	22	2,297	2,319
Methyl Methacrylate	979	705	1,684
Mercury [2]	39	1,636	1,675
Ethylene Glycol Ethyl Ether Acetate	46	1,496	1,542
Thallium [2]	13	1,360	1,373
Vinyl Acetate	25	1,127	1,152
Chlorobenzene	319	745	1,064
Ethylene Glycol Ethyl Ether	1	1,027	1,028
Selenium [2]	13	1,003	1,016
Dibutyl Phthalate	42	827	869

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources (continued)

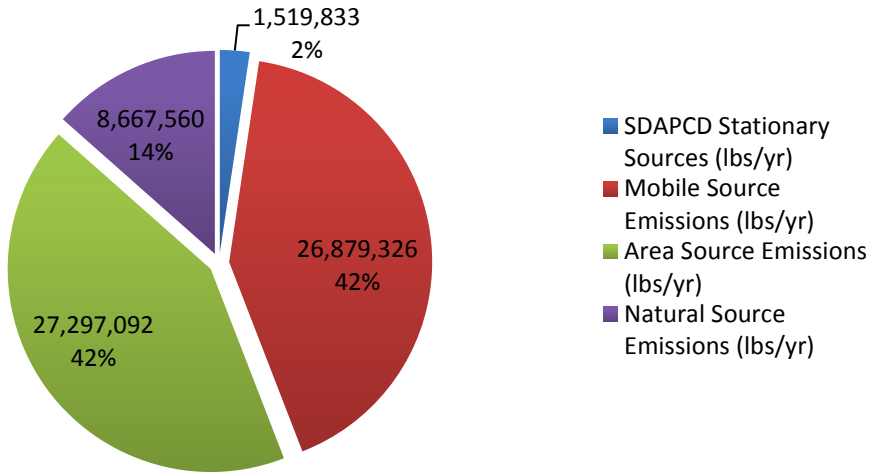
Methylene Diphenyl Isocyanate	41	562	603
Methyl Tert-Butyl Ether	0	575	575
Silver [2]	28	544	572
Ethylene Glycol Methyl Ether	5	53	58
Propylene Oxide	0	11	11
Cyclohexane	no data available	370,857	Unknown
Silica, Crystalline [2]	144,318	no data available	Unknown
Hydrogen Chloride	58,450	no data available	Unknown
Glycol Ethers, Unspecified	26,441	no data available	Unknown
Hydrogen Sulfide	19,368	no data available	Unknown
Hydrogen Fluoride	10,096	no data available	Unknown
Chlorobenzotrifluoride,para	5,482	no data available	Unknown
Dimethyl Sulfide	5,082	no data available	Unknown
Isocyanates, Unspecified	2,736	no data available	Unknown
Vinyl Chloride	2,151	no data available	Unknown
Ethylene Dichloride	2,018	no data available	Unknown
Chlorofluorocarbons	1,553	no data available	Unknown
Dioxane,1,4-	1,520	no data available	Unknown
Nitric Acid	1,485	no data available	Unknown
M-Pyrol	1,453	no data available	Unknown
Chloroform	1,138	no data available	Unknown
Carbon Disulfide	802	no data available	Unknown
Acrylonitrile	478	no data available	Unknown
Carbonyl Sulfide	308	no data available	Unknown
Carbon Tetrachloride	258	no data available	Unknown
Vinylidene Chloride	196	no data available	Unknown
Quinone	155	no data available	Unknown
Propylene Glycol	151	no data available	Unknown
Sodium Hydroxide [2]	50	no data available	Unknown
Benzyl Chloride	12	no data available	Unknown
Beryllium [2]	1	no data available	Unknown
Sulfuric Acid	1	no data available	Unknown
Acrylamide	0.4	no data available	Unknown
Total [4]	**1,519,828**	**62,843,978**	**64,363,806**

1. Emission data obtained from CARB's 2008 California Toxics Inventory.
2. This toxic air contaminant is emitted as a particulate.
3. The estimate of diesel particulate matter emissions are from diesel internal combustion engines only. Individual toxins of diesel particulate matter (i.e., arsenic, cadmium, copper, hexavalent chromium, lead, nickel, selenium, and zinc) from sources other than diesel internal combustion engines are reported as individual pollutants in above table.
4. Total of most recent available estimates for industrial, mobile, area, and natural sources.

Overall, local emissions of toxic air contaminants from industrial sources have decreased by approximately 24.8% since 2009. The most significant reductions were due to lower emissions from a variety of solvents and improved capture and controls of heavy metal emissions. Emission increases are primarily the result of increased usage of reformulated paints, solvents, and gasoline. Emission estimates for some compounds have increased even though the actual emission levels may not have changed, due to changes in combustion-related emission factors and newly listed toxic air contaminants not included in prior inventories.

Countywide total emissions for non-industrial sources (mobile, area, and natural sources) are presented in Table 1. Mobile sources include on-road vehicles, off-road vehicles, trains, mobile equipment, and utility equipment. Area sources include residential and commercial non-point sources such as fuel combustion, entrained road dust, waste burning, solvent use, pesticide application, and construction and demolition. Natural sources include wildfires and windblown dust from agricultural operations and unpaved areas. Emissions for the mobile, area, and natural source subcategories are presented in Figure 1, along with the stationary source emissions. A detailed listing of the emissions of each non-industrial toxic air contaminants is presented in Appendix A.

Figure 1: Comparison of Estimated Toxic Air Contaminant Emissions from All Sources



Facility Prioritization

The purpose of facility prioritization is to identify facilities that emit toxic air contaminants in amounts that warrant a detailed evaluation of potential public health risks through preparation of a site-specific HRA. Prioritization procedures consider the magnitude of toxic air contaminant emissions from facilities and the toxicity of those emissions, but do not consider the dilution characteristics of a specific facility's exhaust stacks or the expected health risks posed by the emissions. Requiring a facility to prepare a risk assessment based on their prioritization score does not mean the facility poses a significant risk to public health, only that their potential risks be evaluated.

Facilities are placed into three categories based on their prioritization score: Category A for facilities that are required to prepare and submit an HRA; Category B for facilities that may be required to conduct an HRA at a future date; and Category C for facilities that are not required to conduct an HRA. Ranges of prioritization scores for each category are shown in Table 2.

Table 2: Prioritization Categories

	Prioritization Category		
	A	B	C
Facility Score for carcinogenic compounds	Score $\geq$ 100	1 $\leq$ Score < 100	Score < 1
Facility Score for Non-carcinogenic compounds	Score $\geq$ 10	1 $\leq$ Score < 10	Score < 1

Facilities are reprioritized based on their most recently approved toxic emissions inventory report. Prioritization procedures can be found on the District's website at http://www.sdapcd.org/content/dam/sdc/apcd/PDF/Toxics_Program/APCD_Air_Toxis_Hot_Spot_Prioritization_Procedures.pdf.

Health Risk Assessments

An HRA is a study of the possible public health risks that may be posed by emissions of toxic compounds. Each facility that has been placed in Category A must prepare and submit an HRA to the District.

The assessment incorporates conservative pollutant dispersion estimates, human exposure assumptions, and health effects information to ensure that the final risk assessments are not underestimated. Accordingly, the results of a risk assessment may overstate actual health risks but are useful in comparing the relative risks of sources and pollutants and setting priorities for mitigation. For example, a risk assessment typically will estimate the increased cancer risk for a hypothetical individual who would remain at the one location with the greatest potential for exposure to toxic air contaminant emissions from the facility for 24 hours a day, 365 days per year, over 70 years.

While the HRA procedures are generally considered to be conservative, some factors that may tend to underestimate impacts are difficult to evaluate. For example, an HRA is based on emission estimates for the indicated inventory year. These emissions are assumed to occur for 70 years to obtain a "lifetime" cancer risk. In reality, the emissions from the same facility are likely to be higher or lower during years not evaluated in the HRA. Additionally, the cumulative effect of emissions from other nearby mobile, area, and stationary sources and the potential for complex mixtures of toxic air contaminants to create additional health problems by their combined reaction to each other cannot be estimated. Also, some facility emission estimates are based on average factors for individual types of equipment and actual emissions may be higher or lower. Finally, the HRA results only include potential impacts from compounds with OEHHA-approved health values. Compounds without OEHHA-approved health values are not included.

CARB lists more than 700 compounds to be assessed under the Air Toxics "Hot Spots" Program. The list includes potentially carcinogenic substances as well as compounds that may cause health problems such as respiratory irritation or central nervous system depression. The toxicity varies from compounds that pose a concern if more than a few grams are emitted per day, to those that may pose no significant health risks even if many pounds are emitted per day. OEHHA reviews and updates the toxicity of the listed compounds. This updated information is then distributed to all groups involved in the program for use in identifying facilities required to prepare risk assessments and in preparing the assessments.

Each HRA is reviewed by the District and OEHHA to identify deficiencies requiring correction. The District then approves, modifies, or returns the HRA for corrections. The results of all risk assessments prepared under this program are available for public review. The HRA results of active facilities required to implement a risk reduction plan and/or conduct biennial public information notification are presented in Table 3. A list of active facilities with previously approved HRAs but that are not required to implement a risk reduction plan and/or conduct biennial public notification are presented in the Appendix B.

Table 3: Health Risk Assessment Results

HRA Evaluation Period	Facility		Max. Lifetime Cancer Risk per million (1)	Lifetime Cancer Burden (2)	Chronic THI (3)	Acute THI (4)
Facilities required to implement a risk reduction plan and conduct biennial public notification.						
2005	S.D. City Miramar Landfill	San Diego	8.5	0.19	2.06	0.37
2012	GKN Chemtronics	El Cajon	1.01	< 1.0	0.64	1.84
Facilities required to conduct biennial public notification.						
2003	Pacific Ship Repair	San Diego	41	< 1	0.24	< 0.1
2005	S.D. City Pump Station 2	San Diego	33	< 1.0	0.3	0.1
2009	National Steel & Shipbuilding	San Diego	21.2	0.38	0.57	0.76
2005	USN Air Station/North Island	Coronado	13.5	0.19	< 0.1	0.72

1. This column reports the maximum lifetime excess cancer risk estimate at an occupational or residential receptor (whichever is greater) approved by the District. The maximum estimated risk generally is possible at only one location. All other locations show lower risks. This estimate assumes that a person resides at the location of maximum impact 24 hours per day, 365 days per year with 70 years of exposure, or a person works at the location of maximum impact 8 hours per day, 245 days per year, with 40 years of exposure. Actual cancer risk will likely be less.
2. Excess cancer burden is an estimate of the increased number of cancer cases in a population (i.e., all census tracts within or partially within the one in one million isopleth) as a result of exposure to emitted substances. Actual cancer burden will likely be less.
3. Chronic total health hazard index (THI) is the sum of the ratios of the average annual exposure level of each compound to the compound's Reference Exposure Level (REL). Actual chronic THI will likely be less.
4. Acute THI is the sum of the ratios of the maximum one-hour exposure level of each compound to the compound's REL. Actual acute THI will likely be less.

Public Notification and Risk Reduction

Once an HRA has been approved the Air Toxics "Hot Spots" Program requires facilities with risks over specified levels to provide public notice to all exposed persons. In addition, facilities with significant risks are required to reduce risks below the significant risk levels within five years of the approval of a required risk reduction plan. The California Health and Safety Code does not define "significant risk." The District, in consultation with interested parties, established public notification and significant risk levels (as well as public notification and risk reduction procedures) in District Rule 1210. These levels are presented in Table 4.

Table 4: Public Notification and Significant Risk Levels

	Public Notification Level	Significant Risk Level
Maximum Incremental Cancer Risk	10.0	100.0
Cancer Burden	1.0	1.0
Total Chronic Noncancer Health Hazard Index*	1.0	1.0
Total Acute Noncancer Health Hazard Index*	1.0	1.0

***** A value greater than 1.0 but less than 5.0 would not trigger public notification or risk reduction requirements if the Air Pollution Control Officer determines, after consultation with OEHHA, that adverse public health effects are unlikely to occur at the levels of exposure estimated in the approved public health risk assessment.

In establishing public notification procedures, the District considered input from the California Air Pollution Control Officers Association's *Air Toxics "Hot Spots" Program Public Notification Guidelines* (October 1992), CARB guidance, other regulatory precedents, public workshops, and a local public notification committee consisting of representatives from the District, local industry and industry groups, academic institutions, and environmental organizations. The procedures are generally consistent with procedures adopted by other California air districts.

Facilities required to perform public notification must distribute notices to each household and business that may be exposed to potential risks exceeding the District's public notification level. Notifications must be issued biennially until the facility demonstrates to the District that it has reduced the potential health risk below the notification thresholds.

As of March 2015, there were 20 facilities with estimated risks above public notification levels, and therefore, they have been required to inform the public of their most recent approved HRA results. Based on the response from the public, four of those facilities (Flame Spray Inc., National Steel & Shipbuilding, Palomar Plating, and Senior Flexonics-Ketema Division) were required to hold public meetings to provide further information regarding their emissions and their HRA results.

Public notification is required biennially based on the most recent approved HRA until it is demonstrated that potential health risks have been reduced below public notification levels. The facilities currently required to conduct biennial public notification are listed in Table 3. The current status of each facility's public notification is shown in Table 5.

Table 5: Biennial Public Notification Statuses

HRA Evaluation Period	Facility		Most Recent Notification Year
2008	GKN Chemtronics	El Cajon	2015
2009	National Steel & Shipbuilding	San Diego	2015
2003	Pacific Ship Repair	San Diego	2015
2005	S.D. City – Pump Station 2	San Diego	2015
2005	S.D. City – Miramar Landfill	San Diego	2016*
2005	USN Air Station / North Island	Coronado	2016*

* Notification is in process with the District.

Under Rule 1210, facilities with potentially significant public health risks must reduce those risks below significant risk levels within five years of the approval of a risk reduction plan. Currently, the District has approved 90 HRAs under the "Hot Spots" Program. Six active facilities had estimated risks that required risk reduction: two are in the process of being updated and four have implemented risk reductions that resulted in estimated risk below the public notification levels. GKN Chemtronics' and S.D. City – Miramar Landfill's risk reduction plans are currently in effect but are under review for possible updates by the facility and the District. The USN Air Station reduced their acute risks substantially but must continue biennial public notification because of residual cancer risks. To see more details regarding facilities with HRA, public notification and risk reduction requirements, please see Appendix B.

Recent And Expected Changes To The Program

Changes to the Air Toxics "Hot Spots" Act in 1992 required that OEHHA develop risk assessment guidelines for the Air Toxics "Hot Spots" Program, including a "likelihood of risks" approach to risk assessment. OEHHA has developed and published documents providing guidance for HRA work. These documents are of: (1) *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,* (2) *Technical Support Document for the Derivation of Noncancer Reference Exposure Levels,* (3) *Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures,* and (4) *Technical Support Document for Exposure Assessment and Stochastic Analysis*. To supplement OEHHA's guidelines, CARB provided a document titled *Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk.*

In March 2015, OEHHA finalized updates to *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.* These changes consider the varying breathing rates of different age groups. The combined effects of these updates will, in most cases, result in a higher estimated risk, even if the emissions are not increasing. This higher estimated risk may range from a very small increase to as much as a factor of 2.7, depending on exposure type and other parameters. The District is working with stakeholders to develop tools and guidance to streamline the implementation of these new health risk assessment procedures.

In August 2016, the California Air Pollution Control Officers Association (CAPCOA) finalized updates to the *Facility Prioritization Guidelines*. These guidelines were updated in response to the finalized updates to OEHHA's *The Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (HRA).* OEHHA's updates to the HRA guidelines also prompted CAPCOA to update to their *Public Notification Guidelines.* The draft of this document was made available for public comment on September 2016, with comments due to CAPCOA on October 31, 2016.

Additionally, the District is working with an outside vendor to build a new emissions inventory system (EIS). The new EIS will be a web based database application designed to accept and present information via the internet. The new EIS will allow regulated facilities to provide emissions inventory data to the District and will enable the public to view the approved emissions inventory data via the internet. The District will utilize the new EIS to conduct the 2015 emissions inventory.

QUALITY OF THE EMISSIONS INVENTORY DATA

The District depends on the facilities to provide representative emissions inventory data based on maintained records. Additionally, emission calculations conducted as part of the District's permit application review can be utilized. Emissions are estimated using several different techniques, depending on the specific processes being evaluated, and the District's website contains approved default emission calculation methods for various operations. The District reviews the submitted emissions inventory data to ensure there are no errors prior to estimating the emissions.

Uniform and comprehensive guidelines for estimating toxic air contaminant emissions do not exist for many types of processes. In these cases, emissions are estimated by conducting source tests, reviewing previous evaluations of similar operations, comparing materials used, or applying best engineering judgment. Accordingly, a comparison of emissions among similar processes may not be appropriate especially when comparing old emissions with more recent emissions.

OTHER REGULATIONS

The control of air toxic contaminants is required through federal and state laws and local regulations. The District has been delegated authority from the U.S. Environmental Protection Agency (EPA) to locally administer Federal National Emission Standards for Hazardous Air Pollutants (NESHAPs). Additionally, the District administers State Airborne Toxic Control Measures (ATCMs) that pertain to stationary sources.

At the federal level, the 1990 Clean Air Act (CAA) Amendments required the EPA to develop nationwide control measures for air toxics. The Federal CAA now lists 187 substances as hazardous air pollutants (HAPs) and the EPA develops the NESHAPs for large and small sources of HAPs. Under state law, newly adopted federal NESHAPs become state ATCMs automatically, unless the state elects to adopt a separate regulation.

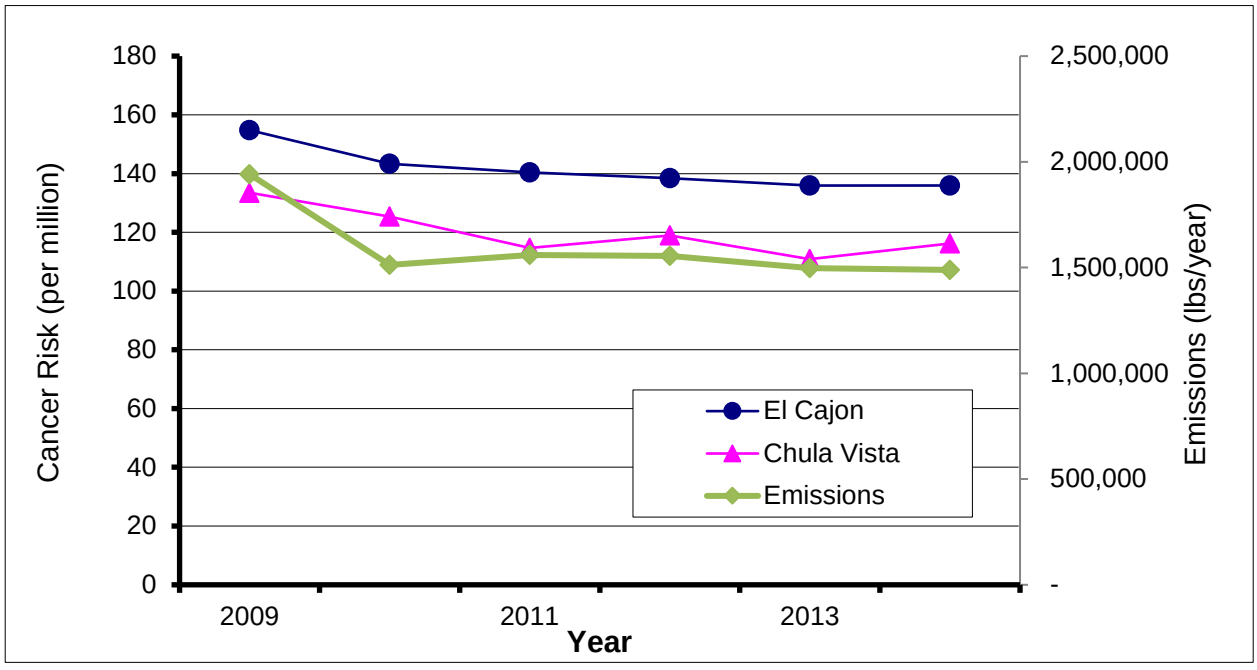
At the state level, CARB continues to develop ATCMs under the Toxic Air Contaminant Identification and Control Program (AB 1807, or the Tanner Program). Once ATCMs are adopted by CARB, the local air districts must implement those emission reduction measures as they pertain to stationary sources of air pollutants.

During this reporting period, the District also continued to enforce local rules designed to reduce toxic air contaminant emissions along with other District rules to control criteria air pollutants and their precursors.

TOXIC AIR CONTAMINANTS AMBIENT MONITORING

The District started sampling for toxic air contaminants at the El Cajon and Chula Vista air monitoring stations in the mid-1980s. This work, which is carried out in collaboration with CARB, provides information on ambient levels of a number of organic and inorganic toxic compounds. Integrated 24-hour air sampling is performed once every twelve days by the District, and CARB analyzes the samples and validates those data. CARB then publishes detailed toxic sampling results from all California monitoring sites on its website (http://www.arb.ca.gov/adam/toxics/sitesubstance.html). A summary of the CARB-approved results for the two San Diego County air toxic monitoring stations is provided in Figure 2.

Figure 2 – Toxic Air Contaminant Incremental Cancer Risk* and Toxic Emissions



* Does not include risk from diesel particulate matter from engines.

Excluding diesel particulates, a 12.96% reduction in the ambient incremental cancer risk from air toxics has been measured in Chula Vista and a 12.2% reduction has occurred in El Cajon since 2009, as shown in Figure 2. The estimated cancer risks were 116 in one million for Chula Vista and 136 in one million for El Cajon in 2013.

Diesel particulate matter also contributes significantly to ambient risk levels. Although a method does not exist to directly monitor diesel particulate concentrations, CARB has suggested methods that can be used to estimate diesel concentrations. The District took measurements of elemental carbon, an indicator of diesel particulate matter, at El Cajon, Escondido and San Diego between August 2008 and June 2010. These measurements indicated diesel particulate emissions could add an additional 354 in one million to the ambient risk levels in San Diego County. For California, CARB estimated risk from diesel particulate matter decreased by about 50% from 870 in one million since 1990, statewide.

CONCLUSIONS

Motor vehicles, area sources, and natural sources are key contributors to the toxic air contaminants in San Diego County's air, as they annually emit more than 62.8 million pounds of these compounds into the atmosphere, according to CARB's *2008 California Toxics Inventory*. Although industrial facilities emit toxic air contaminants, such emissions from industrial sources have been reduced by approximately 24.8% since 2009. Based on the most recent estimates, the facilities that have been inventoried emit less than 1.5 million pounds of toxic air contaminants annually. Table 1 and Appendix A provide the current inventories of toxic pollutants for stationary, mobile, area, and natural sources. The majority of local facilities are in compliance with current District emission standards, which focus on both criteria air pollutants (e.g., volatile organic compounds, oxides of nitrogen, particulate matter) and toxic air contaminants. When non-compliance is determined, the facility and District work closely to bring a prompt return to compliance.

Current and future air quality programs at the local, state and federal levels will further reduce toxic air contaminant emissions. Measures to reduce vehicle trips and miles traveled will reduce tailpipe emissions of toxic air contaminants that result from the combustion of gasoline. Ongoing measures to reduce emissions of volatile organic compounds (which are ozone precursors) will also decrease emissions of toxic volatile organic compounds. Additionally, OEHHA's recent updates to *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* document will likely result in higher risks being calculated for the same emissions. With higher risk estimates, more facilities will be challenged to decrease their risk when required by existing rules and regulations. As the District implements this change, more emission reductions will be realized.

The District has quantified approximately 0.54 million pounds per year of industrial toxic emissions reductions in San Diego County between 2009 and 2014. Ongoing implementation of the Air Toxics "Hot Spots" Program, as well as other rules that control emissions, will continue to incrementally reduce the emissions of toxic air contaminants, resulting in reduced public health risks associated with those air pollutants. Those efforts will improve information on levels of exposure and risk as well as identifying compounds, processes, and facilities that are potentially causing significant risks.

APPENDIX A - CARB Estimated Toxic Air Contaminant Emissions – Non-Industrial Sources

Toxic Air Contaminant	Mobile Source (lbs/yr)	Area Source (lbs/yr)	Natural Source (lbs/yr)	Total Mobile, Area, Natural from CARB (lbs/yr)
Ammonia	3,872,504	7,802,824	2,028,962	13,704,290
Aluminum	1,697	12,114,847	4,491	12,121,035
Methanol	104,969	488,729	4,718,772	5,312,470
Toluene	3,429,983	831,257		4,261,240
Diesel Particulate Matter	3,536,120			3,536,120
Xylenes	3,039,683	36,102		3,075,785
Propylene	1,879,831	52,499	851,157	2,783,486
Formaldehyde	2,406,814	111,826		2,518,641
Trimethylpentane, 2,2,4-	2,045,047	88,988		2,134,035
Acetaldehyde	969,207	89,599	822,296	1,881,102
Benzene	1,458,295	7,269		1,465,565
Isopropyl Alcohol		1,437,539		1,437,539
Hexane	836,500	275,647		1,112,147
Ethyl Benzene	759,473	45,654		805,127
Trimethylbenzene, 1,2,4-	675,942	41,996		717,938
Methylene Chloride		602,661		602,661
Ethylene Glycol		510,224		510,224
PAHs, Unspecified	384,477	111,909	3,178	499,564
Butadiene, 1,3-	334,291	26,663	103,846	464,800
Chlorine	160,981	258,436	39,020	458,437
Ethylene Glycol Butyl Ether		457,985		457,985
Cyclohexane	347,193	23,664		370,857
Perchloroethylene		354,201		354,201
Methyl Ethyl Ketone	137,455	199,608		337,063
Phosphorus	1,161	254,738	2,108	258,007
Acrolein	158,063	19,635	71,670	249,368
Dichlorobenzene		244,012		244,012
Naphthalene	151,170	87,262		238,432
Barium	51,498	117,308		168,806
Trichloroethane, 1,1,1-		150,398		150,398
Zinc	12,816	92,449	20,272	125,538
Manganese	2,787	112,591	720	116,099
Styrene	74,131	5,002		79,133
Trichloroethylene		44,218		44,218
Lead	7,186	34,151	466	41,803
Methyl Isobutyl Ketone		39,548		39,548
Propylene Glycol Methyl Ether		35,187		35,187
Copper	11,965	17,400	201	29,566
Butanol		25,716		25,716
Phenol	6,537	8,646		15,183
Chromium, Non-Hexavalent	2,246	10,934		13,179
Arsenic	6,714	1,951	244	8,909
Cobalt	1,120	6,327		7,447

APPENDIX A – CARB Estimated Toxic Air Contaminant Emissions – Non-Industrial Sources (continued)

Toxic Air Contaminant	Mobile Source (lbs/yr)	Area Source (lbs/yr)	Natural Source (lbs/yr)	Total Mobile, Area, Natural from CARB (lbs/yr)
Chromium, Hexavalent	6,754	2		6,756
Nickel	2,416	4,210		6,627
Ethylene Oxide		3,766		3,766
Cadmium	852	1,444		2,297
Mercury	86	1,550		1,636
Ethylene Glycol Ethyl Ether Acetate		1,496		1,496
Thallium		1,339	21	1,360
Vinyl Acetate		1,127		1,127
Ethylene Glycol Ethyl Ether		1,027		1,027
Selenium	678	293	32	1,003
Dibutyl Phthalate		827		827
Chlorobenzene	56	688		745
Methyl Methacrylate		705		705
Methyl Tert-Butyl Ether	575			575
Methylene Diphenyl Isocyanate		562		562
Silver	50	389	106	544
Ethylene Glycol Methyl Ether		53		53
Propylene Oxide		11		11
TOTALS	**26,879,326**	**27,297,092**	**8,667,560**	**62,843,978**

APPENDIX B – Historical Health Risk Assessments

HRA Evaluation Period	Facility	
Active facilities required to implement a risk reduction plan and conduct biennial public notification.		
2005	S.D. City Miramar Landfill	San Diego
2012	GKN Chemtronics (previous HRA in 1993 and 2008)	El Cajon
Active facilities required to conduct biennial public notification.		
2003	Pacific Ship Repair	San Diego
2005	S.D. City Pump Station 2	San Diego
2009	National Steel & Shipbuilding (previous HRA in 1993 and 2005)	San Diego
2005	USN Air Station/North Island (previous HRA in 1993 and 1998)*	Coronado
Active facilities that implemented a risk reduction plan and currently have risks below the public notification level.		
1995	Flame Spray Inc.	San Diego
1994	Senior Flexonics, Ketema Division	El Cajon
1993	USN Amphibious Base	Coronado
2005	Vision Systems (previous HRA in 2005)	El Cajon
Active Facilities not required to implement a risk reduction plan and not required to conduct biennial public notification.		
1989	ARCO	San Diego
1993	Asphalt Inc.	Lakeside
2006	BF Goodrich / Rohr Industries (previous HRA in 1993)	San Diego
1989	Bonsall Landfill	Vista
1989	Cabrillo Power / SDG&E / Encina Plant	Carlsbad
2003	Cabrillo Power II LLC - Kearny Mesa	San Diego
1989	Chevron USA Inc.	San Diego
1999	Chromalloy San Diego	El Cajon
2004	City of Oceanside - Water Utilities	Oceanside
1994	Continental Maritime	San Diego
1993	Deutsch Co.	Oceanside
1989	Equillon Enterprises / Shell Oil Co / Mission Rd	San Diego
1993	Frazee Paint	San Diego
2003	Goal Line	Escondido
1993	Hanson Aggregates / H.G. Fenton / Carrol Cyn.	San Diego
1993	Hanson Aggregates / Nelson & Sloan / Tri Way	Lakeside
1993	Hanson Aggregates / Sim J. Harris	San Diego
1993	Hanson Aggregates / South Coast Materials	Carlsbad
1993	Hanson Aggregates/H.G. Fenton/East County Mtls	El Cajon
1993	Hanson Aggregates/Nelson & Sloan/7th & Main	Chula Vista
1993	Hanson Aggregates/Nelson & Sloan/Birch Quarry	Chula Vista
1989	Kelco/Div. Merck & Co. Inc.	San Diego
2003	Kyocera America	San Diego
2003	Neptune Society	El Cajon
1994	Ogden Power Pacific	Chula Vista
1989	Otay Landfill	San Diego
2004	Pacific Gas Turbine	San Diego
1989	Palomar Airport Landfill	Carlsbad
2003	Palomar Medical Center	Escondido
1989	S.D. City Pt. Loma Waste Water Treatment. Plant	San Diego
1989	San Diego State University	San Diego
1989	San Marcos Landfill	San Marcos
1993	Santa Fe Pacific Pipeline	San Diego
1993	Solar Turbines / Pacific Hwy	San Diego
1993	Solar Turbines / Ruffin Rd	San Diego

APPENDIX B – Historical Health Risk Assessments (continued)

HRA Evaluation Period	Facility	
Active facilities not required to implement a risk reduction plan and not required to conduct biennial public notification (continued).		
1989	Sony	San Diego
1989	Southern California Edison Co.	San Onofre
2004	Southwest Airlines	San Diego
1993	Southwest Marine	San Diego
2004	Space & Naval Warfare Systems	San Diego
1993	Superior Ready Mix / Canyon Rock	San Diego
1989	Sycamore Landfill	San Diego
1989	Texaco Refining & Marketing, Inc.	San Diego
1989	UCSD Campus	San Diego
2004	United Airlines	San Diego
1989	USMC Base/Camp Pendleton	Pendleton
2005	USMC Miramar / USN Miramar (previous HRA in 1993)	San Diego
2005	USN Navy Station, 32nd St. (previous HRA in 1993)	San Diego
2005	USN Point Loma Naval Complex (previous HRA in 1993)	San Diego
2003	Veterans Administration Hospital	San Diego
1989	Vulcan / CALMAT Co. / Black Mountain Rd	San Diego
1989	Vulcan / CALMAT Co. / Friars Rd	San Diego
1989	Vulcan / CALMAT Co. / Hwy 76	Pala
1993	Wyroc	Vista
Facilities that have ceased operation or have no active permits.		
1989	Cabrillo Power / SDG&E / 32nd St. Naval Station	San Diego
1989	Cabrillo Power / SDG&E / Naval Training Center	San Diego
1989	Cabrillo Power/SDG&E Company/USN North Island	Coronado
1995	Campbell Marine	San Diego
1989	Duke Energy / SDG&E / South Bay Plant	Chula Vista
1995	Escon Tool and Manufacturing	San Marcos
1989	General Dynamics / Kearny Villa Rd	San Diego
1989	General Dynamics / Pacific Hwy	San Diego
1994	Hues Metal Finishing	San Marcos
1989	Knight & Carver Inc. / Hancock St	San Diego
1995	Palomar Plating	Escondido
1989	Powerine Oil Co.	San Diego
1993	Signet Armorlite	San Marcos
2013	Southern California Plating (previous HRA in 2002 and 2009)	San Diego
1993	Teledyne Ryan Aeronautical	San Diego

* USN Air Station/North Island successfully implemented a risk reduction plan for acute risk as demonstrated by their updated 1998 acute HRA results.