CALIFORNIA AIR TOXICS "HOT SPOTS" INFORMATION AND ASSESSMENT ACT (AB2588)

2008 Air Toxics "Hot Spots" Program Report for San Diego County

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SAN DIEGO COUNTY
AIR POLLUTION CONTROL DISTRICT
10124 Old Grove Road
San Diego, CA 92131

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INTRODUCTION

The California Air Toxics "Hot Spots" Information and Assessment Act (AB2588) 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, assess air toxic problems, 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 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 (HRA), 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 emission estimates, results of local HRAs, current status of public notifications, and conclusions drawn from the program to date. Stationary source emission estimates, by facility, are also available on the Air Pollution Control District's (District) Web site (http://www.sdapcd.org) by selecting the Air Toxics button and then selecting Facility Emissions for San Diego County 1997 - 2008. 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 83% since 1989, large 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, cooperative effort by the public, industry, environmental groups, State Air Resources Board (CARB), and the District.

BACKGROUND

The District is the implementing agency for approximately 1,500 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 a HRA is necessary based upon the amount and toxicity of the reported emissions.

- **Health Risk Assessments** - Facilities required to submit HRAs must determine the level of public exposure to emitted compounds and 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 public notification levels (specified in 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. This plan must demonstrate how the facility will reduce health risks below significant levels. The facility must implement the plan as approved by the District.

The Air Toxics "Hot Spots" program has been implemented in phases. Facilities are required to update their toxic inventories at least every four years depending on program status for each facility. 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. For example, 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 inventory requirements more cost-effectively by completing industry-specific reporting forms. The District has standardized and automated many computational and record keeping tasks. In collaboration with the 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 program report on the region's toxic air contaminant emissions, risk assessment results, and control measures effectiveness. 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 78 facilities.

However, 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.

The District has evaluated at least four toxic emission inventories for most facilities in San Diego County. An estimate of current toxic air contaminant emissions (for calendar years 2004-2007) from all sources, industrial and non-industrial, is presented in Table 1 of this report. Detailed site-specific emission results are provided on the District's Web site.

PROGRAM DESCRIPTION AND STATUS

The industrial source emission estimates provided in Table 1 are for approximately 1,500 facilities including 329 auto body shops, 707 gasoline stations, and 220 dry cleaners. Detailed emission inventories for individual facilities are available on the District's Web site. Estimates of mobile, area, and natural source emissions prepared by the CARB are also presented in Table 1. Mobile, area, and natural source estimates come from several CARB emission reports. When multiple emission estimates were available, the most recent data was used for a category of source.

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources

Toxic Air Contaminant	Most Recent Emissions from Industrial Sources Estimated for 2004-2007 (lbs/yr)	Most Recent Total Mobil, Area, Natural Emissions from ARB (lbs/yr) (1)	Total San Diego County Emissions (lbs/yr)
Ammonia	17,636	14,046,734	14,064,370
Aluminum [2]	18,323	12,119,332	12,137,655
Methanol	12,641	5,327,148	5,339,789
Diesel Particulate [2, 3]	34,775	5,255,781	5,290,556
Toluene	301,114	4,739,800	5,040,914
Xylenes	276,652	3,500,135	3,776,787
Propylene	695	3,030,894	3,031,589
Formaldehyde	70,576	2,861,033	2,931,609
Trimethylpentane, 2,2,4-	49,926	2,388,354	2,438,280
Acetaldehyde	9,884	2,029,120	2,039,004
Benzene	39,290	1,674,566	1,713,856
Isopropyl Alcohol	227,318	1,437,409	1,664,727
Hexane	190,584	1,225,562	1,416,146
Ethyl Benzene	62,571	908,756	971,327
Trimethylbenzene, 1,2,4-	44,382	811,904	856,286
Methylene Chloride	36,669	602,601	639,270
Perchloroethylene	194,065	354,156	548,221
PAH, Unspecified [2]	687	544,831	545,518
Ethylene Glycol	5,479	510,519	515,998
Butadiene, 1,3-	1,483	504,653	506,136
Ethylene Glycol Butyl Ether	19,002	457,963	476,965
Methyl Ethyl Ketone	101,160	362,331	463,491
Chlorine	408	448,685	449,093
Acrolein	1,258	265,985	267,243
Phosphorus [2]	25	258,015	258,040
Naphthalene [2]	1,911	246,322	248,233
Dichlorobenzene	319	243,981	244,300
Barium [2]	7,586	169,333	176,919
Trichloroethane, 1,1,1-	831	150,399	151,230

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources -- Continued

Butanol	125,384	25,724	151,108
Zinc [2]	4,124	125,642	129,766
Manganese [2]	2,068	116,037	118,105
Styrene	17,473	88,099	105,572
Methyl Isobutyl Ketone	62,748	40,014	102,762
Propylene Glycol Methyl Ether	22,084	35,193	57,277
Trichloroethylene	5,275	44,212	49,487
Lead [2]	127	41,818	41,945
Copper [2]	6,169	29,582	35,751
Chromium, Non-Hexavalent	169	19,758	19,927
Phenol	3,729	15,182	18,911
Arsenic [2]	51	8,911	8,962
Cobalt [2]	9	7,380	7,389
Nickel [2]	392	6,567	6,959
Ethylene Oxide	1	3,765	3,766
Methyl Methacrylate	2,776	706	3,482
Cadmium [2]	32	2,325	2,357
Ethylene Glycol Ethyl Ether Acetate	846	1,496	2,342
Mercury [2]	51	1,647	1,698
Thallium [2]	30	1,360	1,390
Ethylene Glycol Ethyl Ether	164	1,027	1,191
Vinyl Acetate	44	1,127	1,171
Dibutyl Phthalate	276	827	1,103
Chlorobenzene [2]	241	806	1,047
Selenium [2]	23	1,005	1,028
Methylene Diphenyl Isocyanate	152	563	715
Methyl Tert Butyl Ether	90	575	665
Silver [2]	50	551	601
Ethylene Glycol Methyl Ether	175	53	228
Chromium, Hexavalent [2]	13	55	68
Silica, Crystalline [2]	173,584	no available data	Unknown
Glycol ethers	56,712	no available data	Unknown
Hydrogen Chloride	40,924	no available data	Unknown
Hydrogen Sulfide	14,913	no available data	Unknown
M-Pyrol	6,080	no available data	Unknown
Vinyl Chloride	3,901	no available data	Unknown
Propylene Glycol	3,190	no available data	Unknown
Ethylene Dichloride	2,120	no available data	Unknown
Chlorofluorocarbons	1,676	no available data	Unknown
Isocyanates	1,644	no available data	Unknown
Dioxane,1,4-	1,642	no available data	Unknown
Sodium Hydroxide	1,494	no available data	Unknown

Table 1: Estimated Toxic Air Contaminant Emissions - All Sources -- Continued

Chloroform	974	no available data	Unknown
Nitric acid	885	no available data	Unknown
Carbon Disulfide	747	no available data	Unknown
Hydrogen Fluoride	545	no available data	Unknown
Quinone	320	no available data	Unknown
Vinylidene Chloride	161	no available data	Unknown
Acrylonitrile	280	no available data	Unknown
Ethylene Glycol Methyl Ether Acetate	266	no available data	Unknown
Carbonyl Sulfide	250	no available data	Unknown
Carbon Tetrachloride	177	no available data	Unknown
Sulfuric Acid	49	no available data	Unknown
Toluene Diisocyanate,2,6-	26	no available data	Unknown
Benzyl chloride	15	no available data	Unknown
Beryllium	2	no available data	Unknown
TOTAL	**2,294,593**	**67,098,314**	**69,080,330 (4)**

1. Emission data obtained from CARB's 2006 California Toxics Inventory.
2. This toxic air contaminant is emitted as a particulate.
3. The estimate of diesel particulate matter emissions are from stationary diesel internal combustion engines only. Individual toxins of diesel particulate matter (i.e., arsenic, cadmium, copper, hexavalent chromium, lead, nickel, selenium, and zinc) are also reported separately on the 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 83% since 1989. The most significant reductions include a variety of solvents and heavy metals. Emission increases are primarily the result of increased usage of reformulated paints, solvents, and gasoline. Emission estimates for some compounds have increased, although the actual emission levels may not have changed. This is due to changes in combustion-related emission factors and newly listed toxic air contaminants not included in initial inventories.

County-wide emissions for non-industrial sources (mobile, area, and natural sources) are presented in Table 1. Emissions for the mobile, area, and natural source subcategories are presented in Table 2. 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 of toxic air contaminants were obtained from CARB's 2006 California Toxics Inventory for non-industrial sources (released in May 2008) which may be found at http://www.arb.ca.gov/toxics/cti/cti.htm.

Table 2: CARB Estimated Toxic Air Contaminant Emissions – Non-Industrial Sources

Toxic Air Contaminant	Mobile Source	Area Source	Natural Source	Most Recent Total Mobile, Area, Natural Emissions from ARB (lbs/yr)
Ammonia	4,304,631	7,713,137	2,028,966	14,046,734
Aluminum	1,834	12,113,007	4,491	12,119,332
Methanol	119,646	488,730	4,718,772	5,327,148
Diesel Particulate Matter	5,255,781	0		5,255,781
Toluene	3,908,381	831,419		4,739,800
Xylenes	3,464,014	36,121		3,500,135
Propylene	2,146,585	33,152	851,157	3,030,894
Formaldehyde	2,749,270	111,763		2,861,033
Trimethylpentane, 2,2,4-	2,299,297	89,057		2,388,354
Acetaldehyde	1,117,274	89,550	822,296	2,029,120
Benzene	1,667,302	7,264		1,674,566
Isopropyl Alcohol		1,437,409		1,437,409
Hexane	949,879	275,684		1,225,562
Ethyl Benzene	863,091	45,665		908,756
Trimethylbenzene, 1,2,4-	769,879	42,025		811,904
Methylene Chloride		602,601		602,601
Polycyclic Aromatic Hydrocarbons (PAH's), unspecified	448,977	92,480	3,375	544,831
Ethylene Glycol		510,519		510,519
Butadiene, 1,3-	376,721	24,087	103,846	504,653
Ethylene Glycol Butyl Ether		457,963		457,963
Chlorine	151,266	258,399	39,020	448,685
Methyl Ethyl Ketone	162,709	199,622		362,331
Perchloroethylene		354,156		354,156
Acrolein	174,308	20,008	71,670	265,985
Phosphorus	1,219	254,689	2,108	258,015
Naphthalene	172,206	73,919	197	246,322
Dichlorobenzene		243,981		243,981
Barium	52,042	117,291		169,333
Trichloroethane, 1,1,1-		150,399		150,399
Zinc	12,940	92,430	20,273	125,642
Manganese	2,737	112,580	720	116,037
Styrene	83,095	5,004		88,099
Trichloroethylene		44,212		44,212
Lead	7,199	34,152	466	41,818
Methyl Isobutyl Ketone		40,014		40,014
Propylene Glycol Methyl Ether		35,193		35,193
Copper	11,984	17,397	201	29,582
Butanol		25,728		25,728
Chromium, Non-Hexavalent	8,879	10,935		19,813
Phenol	6,537	8,645		15,182
Arsenic	6,716	1,951	244	8,911
Cobalt	1,052	6,328		7,380
Nickel	2,357	4,211		6,567

Table 2: CARB Estimated Toxic Air Contaminant Emissions – Non-Industrial Sources—Continued

Ethylene Oxide		3,765		3,765
Cadmium	881	1,444		2,325
Mercury	97	1,550		1,647
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	680	293	32	1,005
Dibutyl Phthalate		827		827
Chlorobenzene	118	688		806
Methyl Methacrylate		706		706
Methyl Tert-Butyl Ether	575	0		575
Methylene Diphenyl Isocyanate		563		563
Silver	56	389	106	551
Chromium, Hexavalent	53	2		55
Ethylene Glycol Methyl Ether		53		53
Propylene Oxide		11		11
TOTALS	**31,302,267**	**27,128,158**	**8,667,958**	**67,098,384**

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 does not mean the facility poses a significant risk to public health.

Facilities are placed into three categories: Category A for facilities that are required to prepare and submit a HRA; Category B for facilities that may be required to conduct a HRA at a future date; and Category C for facilities that are not required to conduct a HRA. Ranges of prioritization scores for each category are shown in Table 3.

Table 3: 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 Web site at www.sdapcd.org/toxics/procs/prior.pdf.

In 2008, the District made itself available to several potentially affected facilities to meet to discuss their prioritization scores and HRA requirements upon the facilities' request. The goal of the meetings will be to ensure that a HRA is warranted and to provide basic HRA information to the facilities.

Health Risk Assessments

A 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 a 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, a 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. Years other than the inventory year, in particular for years before this program, may have higher (or lower) emissions. 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 an additional health problem 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 concern if more than a few grams are emitted per day, to those that may pose no significant health risks 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. A summary of the results of the HRA prepared under this program is presented in Table 4.

Table 4: Health Risk Assessment Results

HRA Evaluation Period	Facility		Max. Lifetime Cancer Risk per million (2)	Lifetime Cancer Burden (3)	Chronic THI (4)	Acute THI (5)
1989	General Dynamics / Pacific Hwy (7)	San Diego	1,000	37	3.8	1.0
1995	Palomar Plating (7, 8)	Escondido	364	< 0.1	1.2	N/a
1995	Campbell Marine (7)	San Diego	154	< 0.1	0.83	17
2003	Southern California Plating	San Diego	123	0.04	< 0.1	0.2
1994	Hues Metal Finishing (8)	San Marcos	85	< 0.1	0.66	12
1989	Otay Landfill (6, 10)	San Diego	42	0.16	< 0.1	< 0.1
1995	Escon Tool and Manufacturing (7, 8)	San Marcos	41	0.25	0.80	3.1
2002	Pacific Ship Repair	San Diego	41	< 1	0.24	< 0.1
1995	Flame Spray Inc. (8)	San Diego	40	< 0.1	0.14	30
1989	Powerine Oil Co. (7)	San Diego	32	< 0.1	0.10	0
1993	USN Point Loma Naval Complex (1)	San Diego	28	< 0.1	0.18	0.47
1993	National Steel & Shipbuilding (1)	San Diego	27	< 0.1	0.3	3.5
1993	Chem-tronics, Inc. (1, 8)	El Cajon	26	0.12	0.36	20
2003	Kyocera America	San Diego	26	< 0.1	1.04	1.81
1993	USMC Miramar / USN Miramar (1)	San Diego	24	0.2	0.13	0.81
1989	Sycamore Landfill (6, 10)	San Diego	19	< 0.1	< 0.1	< 0.1
1993/1998	USN Air Station/North Island (1, 8, 9)	Coronado	15	< 0.1	0.20	0.8
1993	USN Navy Station, 32nd St. (1)	San Diego	15	0.2	0.11	3
2004	City of Oceanside - Water Utilities (6)	Oceanside	8.9	< 0.1	< 0.1	0.69
2004	Southwest Airlines (6)	San Diego	8.8	< 0. 1	< 0.1	0.17
1993	Santa Fe Pacific Pipeline (1)	San Diego	8	< 0.1	< 0.1	< 0.1
1994	Continental Maritime	San Diego	7.7	< 0.1	< 0.1	0.44
1993	BF Goodrich / Rohr Industries (1)	Chula Vista	7.7	< 0.1	< 0.1	< 0.1
1993	Southwest Marine (1)	San Diego	7.7	< 0.1	< 0.1	2.1
2003	Palomar Medical Center (6)	Escondido	7.6	< 0.1	0.28	< 0.1
1989	San Marcos Landfill (10)	San Marcos	7.4	< 0.1	< 0.1	< 0.1
1993	Solar Turbines / Ruffin Rd (1)	San Diego	7.3	< 0.1	< 0.1	2.1
1989	S.D. City Pt. Loma Waste Water Treatment. Plant	San Diego	7.3	< 0.1	0.30	1.1
2003	Goal Line (6)	Escondido	7.0	< 0.1	< 0.1	0.06
1989	General Dynamics / Kearny Villa Rd (7)	San Diego	6.5	0.53	0.05	0.3
1993	Solar Turbines / Pacific Hwy (1)	San Diego	6.1	< 0.1	< 0.1	3.3
2004	Space & Naval Warfare Systems (11)	San Diego	6.1	< 0.1	< 0.1	0.8
1989	Kelco/Div. Merck & Co. Inc.	San Diego	6.0	0.10	0.40	0.2
1993	Superior Ready Mix / Canyon Rock (1)	San Diego	5.6	< 0.1	< 0.1	0.47
1993	USN Amphibious Base (1, 8)	Coronado	5.3	< 0.1	< 0.1	1.3
2004	Cremation Services	Vista	5.0	< 0.1	0.9	1.97
1993	Signet Armorlite (1, 8)	San Marcos	4.6	< 0.1	< 0.1	0.47
1994	Senior Flexonics, Ketema Division (8)	El Cajon	4.5	< 0.1	0.02	4.24
1989	Sony	San Diego	4.5	< 0.1	0.09	0.1
1993	Hanson Aggregates/Nelson & Sloan/7th & Main (1)	Chula Vista	4.2	< 0.1	< 0.1	< 0.1
1989	Vulcan / CALMAT Co. / Hwy 76	Pala	4.2	< 0.1	0.10	< 0.1
1989	ARCO	San Diego	4.0	< 0.1	< 0.1	0
1993	Hanson Aggregates / Sim J. Harris (1)	San Diego	3.9	< 0.1	< 0.1	< 0.1
1989	Palomar Airport Landfill (10)	Carlsbad	3.9	< 0.1	< 0.1	< 0.1
1993	Hanson Aggregates/H.G. Fenton/East County Mtls (1)	El Cajon	3.7	< 0.1	< 0.1	0.1
1989	Bonsall Landfill (10)	Vista	3.7	< 0.1	< 0.1	< 0.1
1993	Wyroc (1)	Vista	3.6	< 0.1	< 0.1	0.13
1989	Equillon Enterprises / Shell Oil Co / Mission Rd	San Diego	3.3	< 0.1	< 0.1	0
1989	Vulcan / CALMAT Co. / Friars Rd	San Diego	3.3	< 0.1	0.14	0.3
1993	Hanson Aggregates / Nelson & Sloan / Tri Way (1)	Lakeside	3.1	< 0.1	< 0.1	0.1
1989	Knight & Carver Inc. / Hancock St (7)	San Diego	2.8	< 0.1	< 0.1	0.5
1993	Hanson Aggregates / H.G. Fenton / Carrol Cyn. (1)	San Diego	2.6	< 0.1	< 0.1	< 0.1
1989	Southern California Edison Co.	San Onofre	2.2	< 0.1	< 0.1	< 0.1
2004	United Airlines (6)	San Diego	2.2	< 0.1	< 0.1	0.11
1993	Hanson Aggregates/Nelson & Sloan/Birch Quarry (1)	Chula Vista	2.1	< 0.1	< 0.1	0.1
1989	Duke Energy / SDG&E / South Bay Plant	Chula Vista	2.1	< 0.1	< 0.1	0.34
2003	Neptune Society (11)	El Cajon	2	< 0.1	0.7	0.9

Table 4: Health Risk Assessment (HRA) Results - Continued

HRA Evaluation Period	Facility		Max. Lifetime Cancer Risk per million (2)	Lifetime Cancer Burden (3)	Chronic THI (4)	Acute THI (5)
1993	Frazee Paint (1)	San Diego	1.8	< 0.1	0.5	0.5
1989	UCSD Campus	San Diego	1.8	< 0.1	< 0.1	0.4
2003	Veterans Administration Hospital (6)	San Diego	1.8	< 0.1	< 0.1	0.34
1989	USMC Base/Camp Pendleton	Pendleton	1.7	< 0.1	0.14	0.64
1993	Asphalt Inc. (1)	Lakeside	1.3	< 0.1	< 0.1	< 0.1
1989	Vulcan / CALMAT Co. / Black Mountain Rd	San Diego	1.3	< 0.1	0.20	0.4
1994	Ogden Power Pacific	Chula Vista	1.0	< 0.1	0.92	0.21
1989	Cabrillo Power / SDG&E / Encina Plant	Carlsbad	0.9	< 0.1	< 0.1	0.1
1989	Cabrillo Power / SDG&E / 32nd St. Naval Station (7)	San Diego	0.8	< 0.1	< 0.1	< 0.1
1989	Texaco Refining & Marketing, Inc.	San Diego	0.8	< 0.1	< 0.1	0
1993	Teledyne Ryan Aeronautical (1, 7)	San Diego	0.79	< 0.1	< 0.1	0.12
1993	Hanson Aggregates / South Coast Materials (1)	Carlsbad	0.7	< 0.1	< 0.1	< 0.1
2003	Cabrillo Power II LLC - Kearny Mesa (6)	San Diego	0.6	< 0.1	< 0.1	0.13
1989	Chevron USA Inc.	San Diego	0.60	< 0.1	< 0.1	0
1993	Deutsch Co. (1)	Oceanside	0.4	< 0.1	< 0.1	< 0.1
2004	Pacific Gas Turbine (6)	San Diego	0.3	< 0.1	< 0.1	0.29
1989	Cabrillo Power / SDG&E / Naval Training Center (7)	San Diego	0.2	< 0.1	< 0.1	< 0.1
1999	Chromalloy San Diego	El Cajon	0.165	< 0.1	< 0.1	< 0.1
1989	San Diego State University	San Diego	0.1	< 0.1	< 0.1	0.5
1989	Cabrillo Power/SDG&E Company/USN North Island (7)	Coronado	0.05	< 0.1	< 0.1	< 0.1
2004	Cremation Services, Inc.	Vista	5	< 0.1	0.91	1.97

1. Indicates this facility updated a 1989 health risk assessment in accordance with District Rule 1210.
2. This column reports the maximum lifetime excess cancer risk estimate at an occupational/residential receptor reported by the facility or corrected 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, for 70 years of exposure or a person works at the location of maximum impact 8 hours per day, 245 days per year, for 40 years of exposure. Actual cancer risk will likely be less.
3. 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.
4. 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.
5. 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.
6. HRA results are points of maximum impact. Cancer risk was < 10 in one million, chronic THI was < 1 and acute THI was <1 at all residential, occupational, and commercial locations.
7. This facility has ceased operations.
8. This facility successfully implemented a risk reduction program (see Table 7).
9. The cancer and chronic HRA results are based on 1993 HRA. The acute result is based on an updated 1998 acute HRA.
10. This facility has installed landfill gas collection and control systems after the HRA evaluation period.
11. HRA results are from District in-house risk evaluation.

Public Notification and Risk Reduction

Once a 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. The California Health and Safety Code does not define "significant risk." ~~The~~ 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 5.

Table 5: Public Notification and Significant Risk Levels

	Public Notification Level	Significant Risk Level
Maximum Incremental Cancer Risk	10	100
Cancer Burden	1.0	1.0
Total Acute Noncancer Health Hazard Index	1.0*	1.0*
Total Chronic 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.[1]

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 2009, 19 facilities with estimated risks above public notification levels were required to inform the public of their HRA results. Based on the response from the public, seven facilities 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. Table 6 lists the facilities currently required to conduct biennial public notification.

[1] The South Coast Air Quality Management District has revised its cancer risk mitigation threshold to 25 in one million.

Table 6: Facilities Conducting Biennial Public Notification

HRA Evaluation Period	Facility		Most Recent Notification Date
1993	USN Point Loma Naval Complex	San Diego	2007
1993	National Steel & Shipbuilding	San Diego	2007
1993	MCAS Miramar / USN Miramar	San Diego	2007
1993	USN Navy Station, 32nd St.	San Diego	2007
1998	USN Air Station / North Island*	Coronado	2007
2003	Southern California Plating	San Diego	2006
2003	Pacific Ship Repair	San Diego	2008

* USN Air Station North Island successfully implemented a risk reduction plan for acute risk. The acute HRA result is based on an updated 1998 acute HRA. USN Air Station North Island is required to conduct public notifications for potential cancer risk from a gas station. The cancer and chronic HRA results are based on 1993 HRA.

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. Of the 78 approved HRAs under the "Hot Spots" program, nine currently active facilities had estimated risks above the significant risk mitigation levels. These facilities, shown in Table 7, each prepared and implemented a risk reduction plan within five years. All but two facilities (USN Air Station, North Island and Cremation Services, Inc.) successfully reduced their toxic emissions below public notification levels. The USN Air Station reduced their acute risks substantially but must continue biennial public notification because of residual cancer risks. As of March 2009, Cremation Services is the process of developing a risk reduction plan.

Table 7: Facilities Implementing a Risk Reduction Plan

HRA Evaluation Period	Facility	
1993	Chem-tronics, Inc.	El Cajon
1995	Flame Spray Inc.*	San Diego
1994	Hues Metal Finishing	San Marcos
1994	Senior Flexonics, Ketema Aerospace and Electronics Division	El Cajon
1993	Signet Armorlite	San Marcos
1993 / 1998	USN Air Station / North Island**	Coronado
1993	USN Amphibious Base	Coronado
2003	Southern California Plating	San Diego

* Flame Spray has a facility-wide usage / emission limits incorporated into all their metal spraying permits which will keep total cancer risk to be less than 10 in a million, total chronic health hazard index less than 1 and total acute health hazard index less than 1. All District permitted thermal spraying operations are controlled by high efficiency particulate air filters.

** USN Air Station North Island successfully implemented a risk reduction plan for acute risk. The acute HRA result is based on an updated 1998 acute HRA. USN Air Station North Island is required to conduct public notifications for potential cancer risk. The cancer and chronic HRA results are based on 1993 HRA.

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 a series of Technical Support Documents for the determination of: (1) Acute Toxicity Exposure Levels, (2) Cancer Potency Factors, (3) Chronic Toxicity Exposure Levels, (4) Exposure Assessment and Stochastic Analysis, and (5) *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. To supplement OEHHA's guidelines, CARB provided *Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk.*

The revised OEHHA guidelines which were adopted in 2003 introduced numerous changes to the risk assessment process including incorporating new compounds and health values, preparing tiered analyses, performing stochastic risk analysis, evaluating alternate exposure scenarios, and significant changes to inhalation pathway calculations. These changes make preparation of HRAs using current tools impractical. CARB developed a computer program that will enable the District to incorporate the numerous changes resulting from adoption of the new guidelines. The program, called HARP (Hotspots Analysis Reporting Program), includes emissions inventory, air dispersion modeling, risk assessment, and graphic display modules. The District reviewed a preliminary version of the software and reported its findings to CARB in May 2002. CARB released a working version of the software on December 31, 2003, and several additional revisions since its release. District staff continues to provide feedback to CARB on the most recent version of the HARP software. The District intends to assist affected facilities with HRA requirements.

CARB adopted revisions to the *Emissions Inventory Criteria and Guidelines Report* regulation effective on September 26, 2007. These revisions allow temporary exemptions to some diesel engines from the “Hot Spots” Program, which will allow coordination with CARB’s diesel engine regulations.

As of March 2009, OEHHA approved six new 8-hour non-cancer reference exposure levels (REL) and revised the acute and/or chronic non-cancer health data for the same six pollutants. CARB, OEHHA and the air districts are still discussed on how this new 8-hour REL’s shall be implemented. Additionally, OEHHA is still in the process of revising the HRA Guidelines which will update the cancer potency guidelines.

QUALITY OF THE EMISSIONS INVENTORY DATA

The District’s Web site contains approved emission estimates for each facility inventoried. These emissions were determined using several different techniques, depending on the specific processes being evaluated.

Uniform and comprehensive toxic air contaminant guidelines 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 engineering judgment. Accordingly, the quality of emission estimates varies and a direct comparison of relative emissions between facilities may be inappropriate.

In the early stages of the program, hundreds of California facilities undertook similar inventory efforts concurrently, placing a tremendous demand on consultants and source testing firms. At

the time, few people had extensive experience inventorying and testing air toxics. For some compounds and processes, test methods had not yet been developed and alternative techniques for estimation had to be used. Where source testing was used, results were sometimes inconsistent between facilities or between several tests of the same exhaust stack. Some test results conflicted with known process information, e.g., stack emissions of trace metals versus fuel composition data.

Some of these problems were related to the initial program startup and have been minimized as experience has been gained. Other problems are inherent to measuring very small quantities of trace compounds and applying emission results from tests conducted over relatively few hours to a whole year of operation. Also, where the District had reason to suspect actual emissions of a toxic air contaminant reported as non-detectable, the District used the CARB-recommended practice of estimating the emission based on one-half the detection limit. Accordingly, consideration should be given to these issues when comparing emission estimates and any inferred health risks. The accuracy of the reported values can vary widely and current emission estimates may differ greatly from previously reported values.

AIR TOXICS CONTROL MEASURES

The objectives of the Air Toxics "Hot Spots" program are to develop a complete inventory of toxic air contaminant emission sources in California, to assess the potential public health risks associated with those emissions, and to require facilities with significant risks to reduce these risks to levels below the significant risk level. At the same time, existing and new programs at the local, State, and federal levels also reduce air toxics emissions.

At the State level, CARB continues to implement an ongoing program to identify toxic air contaminants, assess their public health risks, and develop air toxics control measures to reduce toxic emissions from specific source categories Statewide. Under this program known as AB 1807, or the Tanner program, CARB in cooperation with OEHHA develops priorities for identification of toxic compounds, investigates and documents the adverse health risks posed by such compounds, identifies Statewide sources of emissions, evaluates public health risks and available control technologies, and approves Statewide emission control measures. Local air districts then must implement the State-approved emission reduction measures.

At the federal level, the 1990 Clean Air Act (CAA) Amendments greatly expanded the Environmental Protection Agency (EPA) program to develop nationwide control measures for air toxics. The Federal CAA now lists 188 substances as hazardous air pollutants and requires EPA to develop control measures for significant sources of these pollutants. Many of these substances are included in the emissions being inventoried under the Air Toxics "Hot Spots" program. In addition, State and local permitting agencies are implementing National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for many large and small sources of hazardous air pollutants. Under State law, newly adopted federal NESHAPs regulations become State Airborne Toxic Control Measures (ATCMs) automatically unless the State elects to adopt a separate regulation. Table 8 presents recent and proposed State ATCMs and federal NESHAPs.

Table 8: Recent and Proposed ATCMs and NESHAPs Applicable in San Diego County

ATCM / NESHAP	Primary Pollutant	Current Status	Estimated Number of Affected Facilities in San Diego County
ATCM for Stationary Internal Compression Ignition Engines	Diesel Particulate Matter	Revisions Effective October 18, 2007	More than 1500 plus approximately 100 agricultural engines
ATCM for Portable Diesel-Fueled Engines	Diesel Particulate Matter	Revisions Effective September 12, 2007	Approximately 800
ATCM for Chrome Plating and Chromic Acid Anodizing	Hexavalent Chromium	Revisions Effective October 24, 2007	8
ATCM for Dry Cleaning Operations	Perchloroethylene	Revisions Effective December 27, 2007	Approximately 174
ATCM for Composite Wood Products	Formaldehyde	Effective April 18, 2008	Countywide
Diesel Particulate Matter Control Measure for Public Fleet Vehicles and Utilities	Diesel Particulate Matter	Effective January 5, 2007	Countywide
ATCM for Cruise Ship and Oceangoing Ships Onboard Incineration	Dioxins and Furans	Revisions Effective November 28, 2007	All cruise ships within 3 miles of the County's coastline
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards	Diesel Particulate Matter	Effective December 31, 2006	All equipment at the County's ports
Diesel Particulate Matter Control Measure for Off-Road Equipment	Diesel Particulate Matter	Effective June 15, 2008	Countywide
Diesel Particulate Matter Control for Commercial In-Use Harbor Craft	Diesel Particulate Matter	Adopted October 26, 2007	All harbor craft in County's ports
Diesel Particulate Matter Control for Heavy Duty Diesel-Fueled Private Vehicles	Diesel Particulate Matter	Adopted December 12, 2008	Countywide
ATCM for Auxiliary Engines on Oceangoing Vessels	Diesel Particulate Matter	Effective December 6, 2006	Countywide
NESHAP for Polyurethane Foam Manufacturing	Methylene Chloride	Effective July 16, 2007	1

Table 8: Recent and Proposed ATCMs and NESHAPs Applicable to San Diego County - Continued

ATCM / NESHAP	Primary Pollutant	Current Status	Estimated Number of Affected Facilities in San Diego County
NESHAP for Halogenated Solvent Cleaning	Methylene Chloride, Perchloroethylene, and 1,1,1-trichloroethylene	Modifications Effective May 3, 2007	2
NESHAP for Paint Stripping and Miscellaneous Stripping Operations	Methylene Chloride, Chromium, Cadmium, Lead, Nickel, and Manganese	Effective January 9, 2008	More than 400
NESHAP for Bulk Terminals & Pipeline Facilities	Benzene	Effective January 10, 2008	3
NEHSAP for Gasoline Distribution Facilities	Benzene	Effective January 10, 2008	Approximately 900

CARB is developing diesel particulate matter control measures to reduce toxic diesel particulate matter emissions from mobile sources. These control measures will affect public diesel fleets, trash trucks, off-road vehicles, and cargo handling equipment. These control measures will significantly reduce diesel particulate emissions by requiring the fleet average to meet a low particulate matter emission threshold or requiring the installation of diesel particulate filters or diesel oxidation catalysts as best available control technology. Diesel particulate filters and diesel oxidation catalysts reduce particulate emissions by 30% to 85%. Because diesel particulate matter represents such a high percentage of ambient background risk from toxic air contaminants (see the following section) these control measures are expected to have significant air quality benefit.

The federal CAA required EPA to develop a strategy to control emissions of hazardous air pollutants from area sources in urban areas. EPA developed this Strategy and it includes a list of 33 air toxics that pose the greatest potential health threat in urban areas and 70 source categories that represent 90 percent of the emissions from these air toxics. Of these 70 area source categories, 49 have been regulated to date and the remaining area source standards must be promulgated pursuant to court-ordered deadlines. Table 8 contains the area source NESHAPs that have been recently promulgated under the Federal CAA and affect sources in San Diego County. "Area Sources" are those facilities that emit less than 10 tons per year of any single hazardous air pollutant or less than 25 tons per year of a combination of hazardous air pollutants.

TOXIC AIR CONTAMINANTS AMBIENT MONITORING

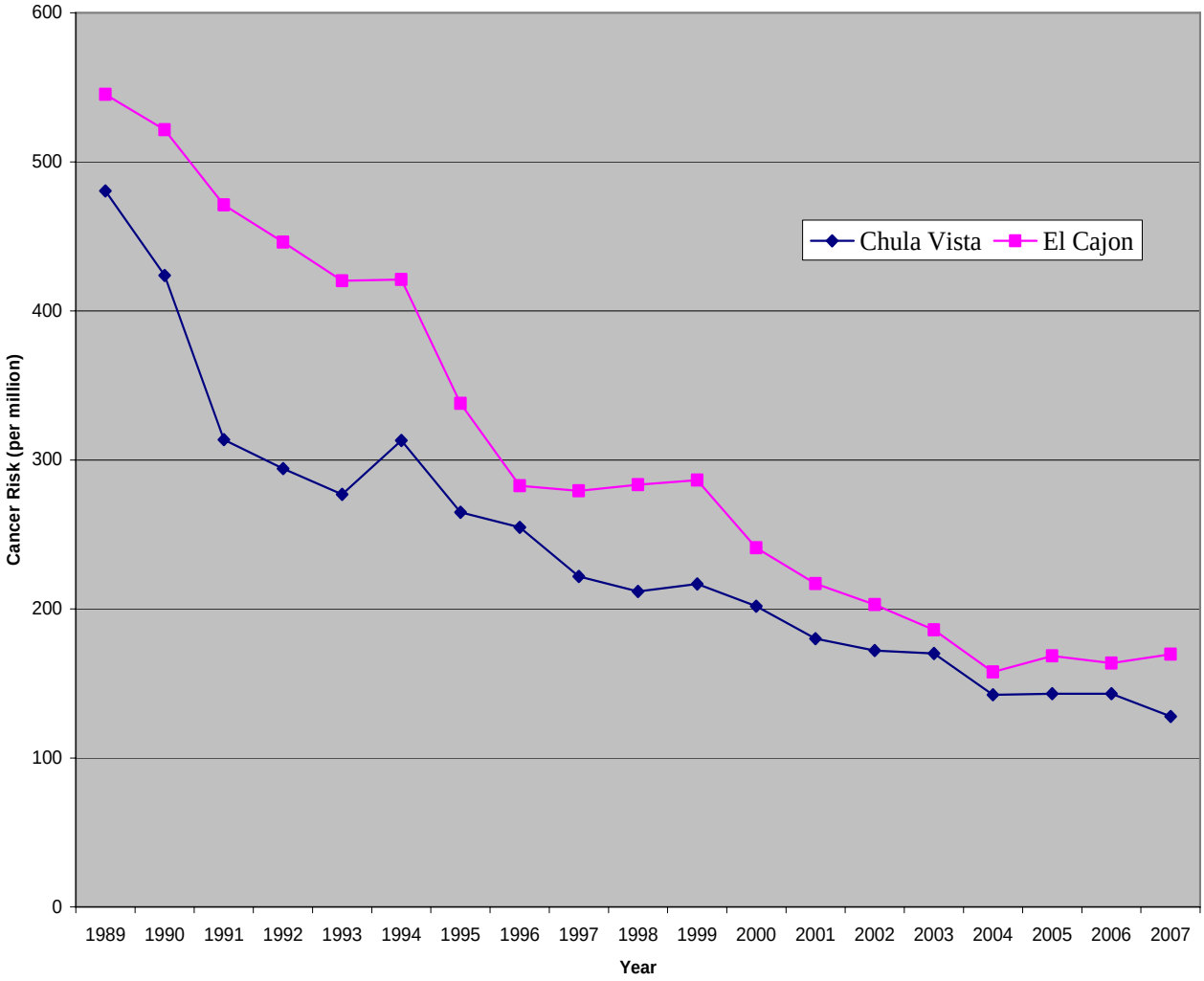
The District started sampling for toxic air contaminants at the El Cajon and Chula Vista monitoring stations in the mid-1980s. This work, which is carried out in collaboration with CARB, provides information on ambient levels of a number of organic and inorganic toxic compounds. Integrated 24-hour air samples are performed once every twelve days by the District. Staff of CARB analyze the samples and validate the data. The CARB publishes detailed toxic sampling results from all California monitoring sites on its Web site

(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 1.

Excluding diesel particulates, a 73% reduction in the ambient incremental cancer risk from air toxics has been measured in Chula Vista and a 69% reduction in El Cajon since 1989 as shown in Figure 1. The estimated risk was 128 in one million for Chula Vista and 170 in one million for El Cajon in 2007, down from 481 and 545 in one million, respectively, in 1989.

Diesel particulates also contribute 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. Based on CARB estimates, diesel particulate emissions could add an additional 420 in one million to the ambient risk levels in San Diego County. CARB estimates that risk from diesel particulate decreased by about 50% from 870 in one million since 1990.

Figure 1 – Toxic Air Contaminant Incremental Cancer Risk (excluding diesel particulate matter from engines)



CONCLUSIONS

Industrial facilities still emit large quantities of toxic air contaminants although emissions from industrial sources have been reduced by approximately 82% since 1989. Based on the most recent estimates, those sites inventoried emit more than 2.4 million pounds of toxic air contaminants annually (down from approximately 5 million pounds in 1998). Motor vehicles and area and natural sources are also key contributors of toxic air contaminants, emitting more than 67 million pounds as reported by CARB's 2006 CTI. Tables 1 and 2 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 now focus on both criteria air pollutants (e.g., volatile organic compounds, oxides of nitrogen, particulate matter) and toxic air contaminants. Estimated emissions of toxic air contaminants from industrial sources have decreased by approximately 10.4 million pounds since 1989.

Current and future air quality programs at the local, State, and federal levels will further reduce toxic air contaminants emissions. Measures to reduce vehicle trips and miles traveled will reduce toxic emissions which result from the burning of gasoline. Measures to reduce emissions of volatile organic compounds as ozone precursors will also decrease emissions of toxic volatile organic compounds.

State ATCMs are reducing emissions of diesel particulate matter from engines, perchloroethylene from dry cleaning operations, hexavalent chromium from electroplating operations, hexavalent chromium and nickel from metal deposition operations, and toxic metals from metal melting operations. Federal emission control programs have produced dramatic emission reductions of chlorofluorocarbons and methyl chloroform. The District also requires best available control technology for many new and modified sources of toxic air contaminants.

Approximately 10.4 million pounds of industrial emission reductions have been quantified in San Diego County between 1989 and 2007. Ongoing implementation of the toxic air contaminant control program *Air Toxics "Hot Spots" Program Report* will continue to reduce local public health risks associated with emissions of toxic air contaminants. 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.

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