THE CALIFORNIA ALMANAC OF EMISSIONS AND AIR QUALITY

— 2005 Edition —

This almanac was prepared and published by the staff of the

Planning and Technical Support Division
California Air Resources Board

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This document has been reviewed and approved by the staff of the California Air Resources Board. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board.

A Note from the Chairman ....

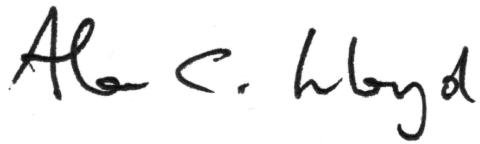
Welcome to the California Air Resources Board's Almanac of Emissions & Air Quality - 2005 Edition. This document gives the reader an excellent overview of the levels of air pollutants in different areas of our State, the sources of these pollutants, and the progress being made in reducing them. Air pollution is one of our State's most serious problems.

There are several reasons for this. California's population now numbers around 37 million and grows with each passing day. As the human population grows, so do the number of motor vehicles and the number of miles these vehicles are driven. This growth is important because motor vehicles contribute about 67% of our air pollution.

A second factor contributing to our air pollution problems is California's geography. The most heavily populated areas of our state are valleys or basins hemmed in by mountains. This geography works with a summer climate of hot, stagnant air to trap pollutants in the most heavily populated areas. In addition, the phenomena of global warming may also be adding to our air pollution problems. This is because higher temperatures can speed up the photochemical processes that produce ozone, one of the most health-damaging constituents of smog.

Though amazing progress has been made in reducing our state's air pollution (today's passenger car produces about 98% less air pollution than similar vehicles from the early 1970s), it remains a persistent public health problem. The Air Resources Board greatly appreciates the support California's citizens have given in the fight against air pollution.

I hope you find this Almanac informative and helpful. The Preface lists e-mail and telephone contacts for your questions or comments. For more information about air pollution, ways to combat it, or the Air Resources Board, visit our web site at *www.arb.ca.gov*.



Chairman,
California Air Resources Board

Preface

This almanac was prepared and published by the Air Resources Board (ARB) staff to aid air quality professionals and the public in evaluating air quality in California. The ARB, as part of the California Environmental Protection Agency (CalEPA), is the State board responsible for achieving and maintaining healthful air quality in California. This responsibility is shared with local air districts and the United States Environmental Protection Agency (U.S. EPA).

The following staff contributed to the production of this almanac: Jeff Austin, Vijay Bhargava, Martin Johnson, Marie Kavan, Anna Komorniczak, Darryl Look, Chris Nguyen, Marci Nystrom, Ravi Ramalingam, Michael Redgrave, Rajinder Sahota, Carolyn Suer, Dr. Patricia Velasco, Robert Weller, Yosh Yajima, and Xijie Zhang. The project was managed by Robert Fletcher, Chief of the Planning and Technical Support Division, Dr. Linda Murchison, Assistant Division Chief of the Planning and Technical Support Division, Robert Effa, Chief of the Air Quality Data Branch, Dr. Michael Benjamin, Manager of the Emission Inventory Systems Section, Mena Shah, Manager of the Statistical and Analytical Services Section, Gayle Sweigert, Manager of the Air Quality Analysis Section, and Karen Magliano, Manager of the Particulate Matter Analysis Section.

This is the sixth edition of this almanac which is updated annually as additional air quality and emission inventory data become available. If you find errors or have suggestions for improvements, please let us know. For general issues or issues related to air quality data, contact Paul Cox at (916) 327-7609 or *pcox@arb.ca.gov*. For issues related to emissions data, contact Andy Alexis at (916) 323-1085 or *aalexis@arb.ca.gov*.

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Chapter 1

Introduction

Overview

This almanac contains information about current and historical air quality and emissions in California. In addition, forecasted emissions are presented. This document is a reference for anyone interested in air quality and emissions for criteria pollutants (NOx, ROG, CO, etc.) and toxic air contaminants (TACs). When using this information, please remember that the air quality and emission values are a snapshot of data at a particular point in time. This edition of the almanac is a year 2004 snapshot of the air quality and emission inventory databases. It is important to keep in mind that emission and air quality data can change over time. For example, emission data may be revised to reflect improved estimation methods, and air quality data may be changed because of corrections or additions of data.

The information in this document is based on data maintained in ARB's emission and air quality databases. The emission and human population estimates are presented at five-year intervals from 1975 to 2020. Data for vehicle miles traveled (VMT) are also provided at five-year increments, beginning with the year 1980. The air quality statistics in this almanac are for the period 1984 to 2003 for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. In addition, available 2004 statistics for ozone are also included for the five major air basins. PM_{10} monitoring did not begin until 1988 and $PM_{2.5}$ monitoring until 1999. Therefore, PM_{10} data cover the years 1988 to 2003, and $PM_{2.5}$ data cover the period 1999 through 2003. Air quality monitoring for TACs began in 1990; therefore, data for TACs covers the period 1990 through 2003.

What's New in the 2005 Almanac?

- CD-ROM inside the back cover
- Web resources section (Chapter 1)
- Climate change discussion (Chapter 1)
- 8-Hour ozone statistics (Chapter 2, Chapter 4, Appendix A, and Appendix B)
- Statewide ammonia emissions table and discussion (Chapter 2)
- Statewide criteria pollutant emissions maps (Chapter 2)
- New federal designation maps (Chapter 2)
- $PM_{2.5}$ designation maps (Chapter 2)
- Emission, VMT/population, and diesel risk forecasts to 2020 (Chapter 3, Chapter 4, Appendix A, and Appendix D)
- Natural source emissions (Appendix E)

Organization

This document is divided into five chapters and six appendices that include information, maps, graphs, and tabular data. Chapter 1 contains introductory material. Chapters 2 through 4 and Appendices A and B provide information on the most important criteria pollutants for which health-based ambient air quality standards have been established. Chapter 5 and Appendix C provide information on TACs. Appendix D includes information on population and vehicle miles traveled (VMT), and Appendix E contains information on natural emissions. In addition to this information, Appendix F provides lists of the figures and tables included in Chapters 1 through 5.

To help the reader navigate through the document, a short summary of each chapter and appendix is provided below:

- **Chapter 1** contains introductory material designed to help the reader better understand the remaining chapters. Included is information about data interpretation, emission estimation, air quality monitoring, the State and national standards, web resources, area designations for the State and national standards, and toxic air contaminants. A glossary of terms used in the Almanac as well as a list of air pollution contacts is provided at the end of this chapter.
- **Chapter 2** includes current emissions for NO_x, ROG, PM_{10}, $PM_{2.5}$, CO, and NH_3 and air quality data for ozone, PM_{10}, $PM_{2.5}$, and CO for each air basin. The emission data also consists of lists of the State's highest emitting facilities. Information is included on how air quality in California compares to other parts of the country.
- **Chapter 3** provides historical emission and air quality trends from a statewide perspective. Statewide emission and air quality trends for ozone, PM_{10}, $PM_{2.5}$, CO, lead, and NO_2 are included. In addition, emission trends for oxides of sulfur (SO_x) are included.
- **Chapter 4** provides historical emission and air quality trends for the State's five most populated regions. The pollutants covered are ozone, PM_{10}, CO, and NO_2.
- **Chapter 5** contains emission, air quality, and health risk information on TACs for the State as a whole and for five of California's most populated regions. The ten TACs, including diesel particulate matter (diesel PM), that pose the greatest risk in ambient (outdoor) air are covered. The air quality and health risk trends are based on ambient data collected during 1990 through 2003 (except for diesel PM, which is based on estimates of ambient concentrations).
- **Appendix A** includes more detailed emission data for NO_x, ROG, PM_{10}, $PM_{2.5}$, and CO organized alphabetically, by air basin. Also included is a list of the highest emitting facilities in each air basin. Air quality data are provided for the criteria pollutants: ozone, PM_{10}, $PM_{2.5}$, CO, NO_2, and SO_2. Data are provided for all air basins and all counties (or county portions) within these air basins.
- **Appendix B** provides emission and air quality information similar to that found in Appendix A, but arranged by pollutant.

- **Appendix C** provides more detailed information on the ten TACs discussed in Chapter 5, including information on the emissions in each county and the air quality and health risk information for the individual sites where TAC concentrations are routinely measured.
- **Appendix D** provides tabulated information on surface area, population, and VMT for the State, each air basin, and for each county (or county portion) within the air basins.
- **Appendix E** provides emissions estimates for natural sources, including wildfires, vegetation (biogenic sources), and oil seeps (geogenic sources).
- **Appendix F** provides lists of the figures and tables included in Chapters 1 through 5.

This almanac focuses on air emissions and air quality. The California Environmental Protection Agency (Cal/EPA) has developed a set of indicators to measure California's overall environmental health. The indicators cover all media, not just air, and help us understand the causes of environmental problems, the status of the environment, and the effectiveness of our environmental strategies. The data in this almanac are more detailed indicators of the State's air quality health, and in conjunction with Cal/EPA's indicators, provide a continuum of information from detailed air quality trends to California's overall environmental health. The most recent set of Cal/EPA indicators are available at http://www.oehha.ca.gov/multimedia/epic/index.html.

California Facts and Figures

California is truly a "Land of Contrasts." The State offers a variety of physical features, including mountains, valleys, oceans, and deserts. In terms of size, California ranks third in the United States, after Alaska and Texas. California covers a total area of close to 160,000 square miles and is larger than many nations in the world today, including Great Britain, Japan, Italy, and Norway. Of California's total area, about 152,000 square miles are land, and almost 8,000 square miles are water. The Pacific Ocean forms the western boundary of California, with a coastline more than 1,200 miles long. This is nearly equal to the combined Atlantic coastlines of Maine, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, and New Jersey.

California is blessed with a wide range of scenery and climates. The southern coastal areas enjoy a Mediterranean climate with the oak-studded hills and sunny beaches for which the State is famous. The northern coast is covered by fog-shrouded redwood forests. Inland lies the vast Central Valley with its millions of acres of cropland. The Sierra Nevada in the eastern half of California runs nearly two-thirds the length of the State. The Sierra includes the highest mountain in the continental United States, Mount Whitney, as well as the southernmost glacier in North America. Most of the southeastern portion of the State is desert, with sun-baked Death Valley, the lowest point in North America, lying only 60 miles from Mount Whitney. Further south are the scenic mountain ranges of the Mojave Desert.

To a large degree, California's pleasant climate and abundance of relatively level land are the major features that have drawn people to the State. Since 1980, California's population has increased about 54 percent, from nearly 24 million to nearly 37 million in the year 2004. The increase in the average number of vehicle miles traveled (VMT) each day on our roadways has been even more dramatic. VMT has increased 120 percent, from about 389 million miles per day in 1980 to 857 million miles per day in 2004. With these dramatic increases in population and VMT have come tremendous challenges in controlling emissions to improve air quality.

Interpreting the Emission and Air Quality Statistics

Interpreting Criteria Pollutant Emission and Air Quality Statistics. A number of pollutant trends are presented in this almanac. Emission and air quality trends for the same pollutant are usually highly correlated. In some cases, however, the two trends may differ, at least in terms of the rate of increase or decrease. The comparison of emission trends to air quality trends is complex, and a number of confounding factors can affect the resulting trends, such as the impacts of transported ozone and particulate matter from one area to another. An area can show a stable (or flat) emission trend because local emission growth offsets the reductions achieved through technology, but this same area may show an improvement in air quality because ambient concentrations reflect the impact of transport from a region that has improved. Other factors that can affect air quality are meteorology, which can cause large differences from year to year, and changes in monitoring sites (both site closures and the establishment of new sites). In addition, the emission data and some air quality statistics are based on estimates. These estimates use the best available methods, however, they embody some degree of uncertainty. All of these factors should be kept in mind when using and interpreting the trends.

Emission inventory trends make use of historical emission inventory data and projections based on expectations of future economic and population growth and emission controls. The historical emission inventory data in this almanac were updated to reflect improvements in emission inventory methodologies. The future year projections for stationary and areawide sources were developed using the California Emission Forecasting System (CEFS) model assuming a 2004 base year and California specific economic projections. These economic projections were prepared by E.H. Pechan and Associates and reflect information provided by local air districts. The stationary source emission forecasts reflect control measure information received from local air districts as of September 2004. Future year emission projections for on and off road vehicles were developed using the ARB EMFAC 2002 version 2.2 and OFFROAD models, respectively. State Implementation Plan (SIP) and conformity inventory forecasts may differ from the forecasts presented in this almanac. For more information on these forecasts, please see the ARB SIP web page at *www.arb.ca.gov/sip/siprev1.htm*.

In general, the criteria pollutant air quality trends in this almanac represent data that have been summarized from a network of monitoring sites to characterize the air quality in a particular region (for example, a county or air basin). Whenever data are summarized, the resulting statistics may be influenced by a number of factors, including the number of monitoring sites in operation and the completeness of the data. To help in interpreting the air quality trends, the ARB has included information on the time periods for which air quality data are available for different pollutants at sites in California and Baja, Mexico in its publication titled: *"California State and Local Air Monitoring Network Plan - 2003"* (October 2003). This report is available on the web at *www.arb.ca.gov/aqd/namslams/namslams.htm*, or from the ARB's Planning and Technical Support Division by calling (916) 322-5350.

A number of air quality statistics or indicators are used in this document. In general, 1-hour, 8-hour, and 24-hour concentrations reflect measured values and can be summarized by day, season or year. These data are also used to determine the number of days in which State or federal standards were exceeded. For the most part, this almanac provides data summarized as annual values. In contrast to measured

values, the peak indicators are calculated from the measured data. The peak indicator is used throughout the almanac for air quality trends for State standards. It represents the maximum concentration expected to be exceeded no more than once per year, on average based on the distribution of the data for each monitoring site. Because it is based on a robust statistical calculation using three years of data, it is relatively stable, thereby providing a trend indicator that is not highly influenced by year-to-year changes in weather. Finally, it is important to point out that the calculated number of days above the State and national PM_{10} and $PM_{2.5}$ standards differ from other pollutants in that they are statistically derived from the measured data. This is because monitoring does not occur every day as with other criteria pollutants.

Interpreting the Toxic Air Contaminant Emission and Air Quality Statistics. This almanac includes a number of statistics for the ten toxic air contaminants that generally pose the greatest ambient (outdoor) health risk to the public. These statistics are based on data collected by the ARB. TAC air quality data are also collected by the local air districts and for special studies. However, for consistency, only data collected by the ARB are included here. In general, TAC concentrations are sampled once every twelve days, for an average of two to three samples per month. Currently, the TAC sampling network comprises 18 sites located throughout California. The ARB originally established the network to measure the presence of TACs in the ambient air. The measured concentrations are generally used to represent average statewide concentrations and health risk. However, it is important to remember that concentrations can vary from one location to another. As a result, local concentrations and risks may be either higher or lower than the average values. Because the summary statistics are based on limited data, this information should be used with caution. The ARB has also been involved in efforts to better characterize local or community-wide exposures, and more information is available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm.*

A number of TAC emissions and air quality trends are presented in this almanac. Numerous factors influence the ambient measurements, and a number of assumptions are embodied in the summary statistics. The most important factors are summarized below. In contrast to the criteria pollutants, the control program for TACs is based on a risk assessment and risk management approach.

This almanac includes emissions data and ambient concentrations and information on the ten TACs that pose the greatest ambient risk in California: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, formaldehyde, methylene chloride, *para*-dichlorobenzene, perchloroethylene, and diesel particulate matter (diesel PM). The determination of risk for the first nine TACs is based on ambient montoring data while risk for diesel PM is based on estimates of ambient concentrations

It is important to note that the TAC information presented in this almanac reflects only those compounds for which data are available. There may be other compounds that pose a substantial risk, but have not been identified as a concern, or do not have data available. One example is dioxins, which may pose a substantial risk, but for which ambient air quality data are generally not available. Furthermore, the air quality and health risk information represents general population exposures. Therefore, the data may not provide information on localized impacts, often referred to as near-source exposures. The ARB has participated in several studies to address localized impacts and community health issues. Information from special studies in support of the community health program (SB25) and other studies are available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm*. The Web Resources section provides information on how to access this information.

The toxics emission inventory for 2004 represents the most currently available inventory compiled by the ARB staff. The toxic emissions for stationary sources include emissions data from the AB 2588 Air Toxics "Hot Spots" Program. For all source categories associated with

diesel fuel combustion, all particulate matter or "PM" emitted from these sources was considered "diesel PM." The areawide source emissions were estimated by either the local air districts or the ARB staff. These toxic emission estimates were developed by speciating criteria emissions. Emission estimates for the other mobile source categories are primarily from ARB's OFFROAD model, speciated for toxics. For the categories not currently included in the model, the emission estimates have been developed by either local air districts or ARB staff. Local air districts may also provide estimates for categories usually developed by ARB staff. Finally, the on-road mobile source emission estimates are based on the current model, EMFAC 2002, version 2.2. Again, the emission estimates have been speciated for toxics.

It is important to note that the health risk estimates reflect the estimated number of excess cancer cases per million people exposed over a 70-year period, and only for the ten compounds considered. In addition, the risk estimates are uncertain and actual health risk may be higher or lower than reported here. A number of factors add to the uncertainty, including the assumptions of the underlying risk factors, the assumption of a constant 70-year exposure, measurement biases and uncertainties, and the absence of ambient air quality data for diesel PM, dioxins, and other TACs that may pose a substantial health risk. However, the data are very useful for comparing relative health risks for the ten compounds considered (e.g., comparing the level of health risk for one compound or area relative to another).

While most of the TACs have some missing data caused by sampling or analysis problems, several TACs show substantial gaps in their data record. The limited sampling schedule only allows for two or three samples to be collected at each site during any month. In order to calculate a valid annual average (a mean of monthly means), each month during the year must have at least one valid measurement. Therefore, if there are no valid data in any given month, data for the year will appear to be missing, even though some data may be available. Additionally, for TACs that have measurements below the limit of detection (LOD) of the instruments, we assign a value of one-half the LOD to these measurements when estimating an annual average.

In addition to missing data, there have been several site changes since the TAC network began operating. In several cases, the site changes occurred during the middle of a year. Because the site-by-site statistics presented in this almanac do not combine concentrations measured at different sites, an annual average for the year during which the site change occurred will be missing. Since all of the valid monthly means from each site are included in the air basin or statewide annual average, the site changes may lead to some variation in year-to year statistics. In particular, the average health risk estimates may include a varying number of compounds and sites. Therefore, they may not be directly comparable from one year to the next. Site changes in each of the five major air basins are described in Chapter 5. A summary of the data record for all the monitoring sites and toxic air contaminants is available on ARB's web site at *www.arb.ca.gov/aqd/toxics/toxics.html*. In addition, information about specific gaps in the TAC data is available from the ARB's Monitoring and Laboratory Division at (916) 445-3742.

Finally, it is important to note that the concentrations and health risk estimates presented in this almanac are based on ambient outdoor measurements. They do not account for any indoor exposures to TACs. However, the indoor exposures can contribute significantly to individual health risk.

Meteorology's Role in Air Quality

Air quality trends for a 20-year period are presented in this almanac. These trends reflect the progress that has been achieved as a result of our long history of emission control programs. Other factors such as meteorology (weather) and terrain can influence air quality trends. Meteorology can cause year-to-year changes in air quality in which the benefits of emission reductions can be masked. This is the reason why we focus on long-term trends in this almanac.

Ozone is formed in the atmosphere from emissions of oxides of nitrogen (NOx) and reactive organic gases (ROG) through a series of complex chemical reactions. Hot sunny days, with stagnant air and little dispersion (or mixing), are conditions that are most conducive to the formation of ozone. The highest ozone concentrations occur during the hot sunny days of the summer months. Also, winds can transport ozone or ozone precursors from one region to another, contributing to air quality problems downwind of the source regions.

As mentioned, California's terrain also plays a role in the formation of ozone. Mountains, such as the Sierra Nevada Mountains in the San Joaquin Valley and the San Bernardino Mountains in the Los Angeles area, can form a barrier that prevents ozone from dispersing.

Likewise, particulate matter (PM) can vary from year to year due to meteorology and terrain. Ambient PM is comprised of both directly emitted PM such as dust or soot, as well as PM formed in the atmosphere from the reactions of precursor gases, known as secondary PM. In some areas, windy days can result in high PM concentrations due to windblown dust. In other areas, cold temperatures, high humidity, and stagnant air can be conducive to the buildup of secondary PM. The amount and frequency of rainfall can also affect PM concentrations. For example, PM exceedances in the South Coast and San Joaquin Valley commonly occur in the winter months under these types of meteorological conditions.

Meteorological data can help determine how one year compares to the long-term average conditions (i.e., to the climate). Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. For example, higher horizontal wind speeds and greater vertical mixing (a function of how temperature changes above the surface) generally lead to lower air pollution levels.

Some years have fewer days with conditions that are conducive to air pollution. One of the important factors is improved mixing conditions. For ozone, improved mixing conditions result from a number of factors, including, more rain, cooler temperatures, or a change in the location of the normal summertime high-pressure area resulting in more days with more winds that allow for ozone to be dispersed. Greater dispersion can also result from a sea breeze which is more developed than in a 'normal' year. These subtle changes can result in less summertime ozone formation and/or in the dispersion or dilution of ozone or emissions that form ozone.

The Web Resources Section provides information on how to access sources of meteorological data. Sources such as ARB's real-time air quality and meteorological information system (AQMIS2) allow access to various wind parameters including wind speed/direction, temperature, humidity, and visibility.

Sources of Emissions in California

California is a diverse state with many sources of air pollution. To estimate the sources and quantities of pollution, the ARB, in cooperation with local air districts and industry, maintains an inventory of California emission sources. Sources are subdivided into four major emission categories: stationary sources, area-wide sources, mobile sources, and natural sources.

Stationary source emissions are based on estimates made by facility operators and local air districts. Emissions from specific facilities can be identified by name and location. Area-wide emissions are estimated by ARB and local air district staffs. Emissions from area-wide sources may be either from small individual sources, such as residential fireplaces, or from widely distributed sources that cannot be tied to a single location, such as consumer products and dust from unpaved roads. Mobile source emissions are estimated by ARB staff with assistance from districts and other government agencies. Mobile sources include on-road cars, trucks, and buses and other sources such as boats, off-road recreational vehicles, aircraft, and trains. Natural sources are also estimated by the ARB staff and the air districts. These sources include biogenic hydrocarbons, geogenic hydrocarbons, natural wind-blown dust, and wildfires.

For the inventoried emission sources, the ARB compiles emission estimates for both the criteria pollutants and toxic air contaminants. Chapters 2 through 4 and Appendices A and B focus on five criteria pollutants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Emissions related to these criteria pollutants include reactive organic gases (ROG), oxides of nitrogen (NO_x), carbon monoxide (CO), oxides of sulfur (SO_x), ammonia (NH_3), particulate matter with an aerodynamic diameter of 10 microns or smaller (PM_{10}), and particulate matter with an aerodynamic diameter of 2.5 microns or smaller ($PM_{2.5}$).

While some pollutants, such as CO, are directly emitted, others are formed in the atmosphere from *precursor emissions*. Such is the case with ozone, which is formed in the atmosphere when hydrocarbon and NO_x precursor emissions react in the presence of sunlight. Particulate matter (PM), which includes PM_{10} and $PM_{2.5}$, is a complex pollutant that can either be directly emitted or formed in the atmosphere from precursor emissions. PM can form in the atmosphere from the reaction of gaseous precursors such as NO_x, ROG, SO_x, and ammonia. Examples of directly emitted PM include dust and soot.

Hydrocarbon is a general term used to describe compounds comprised of hydrogen and carbon atoms. Hydrocarbons are classified as to how photochemically reactive they are: relatively reactive or relatively non-reactive. Non-reactive hydrocarbons consist mostly of methane, which in turn consists of a single carbon atom and four hydrogen atoms. Emissions of *Total Organic Gases* and *Reactive Organic Gases* are two classes of hydrocarbons measured for California's emissions inventory. TOG includes all hydrocarbons, both reactive and non-reactive. In contrast, ROG includes only the reactive hydrocarbons.

In addition to the information about the criteria pollutants, Chapter 5 and Appendix C focus on the ten TACs that pose the greatest potential health risk, primarily based on statewide ambient air quality data. These ten TACs are: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter. Excluding diesel particulate matter, the remaining nine TACs represent over 95 percent of the potential health risk as measured

through the statewide TAC air monitoring network. Although diesel particulate matter is not currently monitored, emissions and modeled ambient concentrations indicate that diesel particulate matter has a higher health risk than the other nine compounds combined.

Air Quality Monitoring

Meteorology acts on the emissions released into the atmosphere to produce pollutant concentrations. These airborne pollutant concentrations are measured throughout California at air quality monitoring sites. The ARB operates a statewide network of monitors. Data from this network are supplemented with data collected by local air districts, other public agencies, and private contractors. As shown in Figure 1-1, there are more than 250 criteria pollutant monitoring sites in California. Currently, the ARB also monitors ambient concentrations of toxic air contaminants (TACs) at 18 of these sites. In addition to the California sites, a few monitoring sites are located in Mexico. These sites were established in cooperation with the United States Environmental Protection Agency (U.S. EPA) and the Mexican government to monitor the cross-border transport of pollutants and pollutant precursors. Each year, more than ten million air quality measurements from all of these sites are collected and stored in a comprehensive air quality database maintained by the ARB. To ensure the integrity of the data, the ARB routinely conducts audits and reviews of the monitoring instruments and the resulting data.

Figure 1-1

California Air Basins

California contains a wide variety of climates, physical features, and emission sources. This variety makes the task of improving air quality complex, because what works in one area may not be effective in another area. To better manage common air quality problems, California is divided into 15 air basins, as shown in Figure 1-2 and Table 1-1. The ARB established the initial air basin boundaries during 1968.

An air basin generally has similar meteorological and geographical conditions throughout. To the extent possible, the air basin boundaries follow along political boundary lines and are defined to include both the source area and the receptor area. However, air masses can move freely from basin to basin. As a result, pollutants such as ozone and particulate matter can be transported across air basin boundaries, and interbasin transport is a reality that must be dealt with in air quality programs. Although established in 1968, the air basin boundaries have been changed several times over the years, to provide for better air quality management.

Figure 1-2

List of Counties in Each Air Basin

Great Basin Valleys Air Basin
- Alpine County
- Inyo County
- Mono County

Lake County Air Basin
- Lake County

Lake Tahoe Air Basin
- El Dorado County (portion)
- Placer County (portion)

Mojave Desert Air Basin
- Kern County (portion)
- Los Angeles County (portion)
- Riverside County (portion)
- San Bernardino County (portion)

Mountain Counties Air Basin
- Amador County
- Calaveras County
- El Dorado County (portion)
- Mariposa County
- Nevada County
- Placer County (portion)
- Plumas County
- Sierra County
- Tuolumne County

North Central Coast Air Basin
- Monterey County
- San Benito County
- Santa Cruz County

North Coast Air Basin
- Del Norte County
- Humboldt County
- Mendocino County
- Sonoma County (portion)
- Trinity County

Northeast Plateau Air Basin
- Lassen County
- Modoc County
- Siskiyou County

Sacramento Valley Air Basin
- Butte County
- Colusa County
- Glenn County
- Placer County (portion)
- Sacramento County
- Shasta County
- Solano County (portion)
- Sutter County
- Tehama County
- Yolo County
- Yuba County

Table 1-1

List of Counties in Each Air Basin

Salton Sea Air Basin
- Imperial County
- Riverside County (portion)

San Diego Air Basin
- San Diego County

San Francisco Bay Area Air Basin
- Alameda County
- Contra Costa County
- Marin County
- Napa County
- San Francisco County
- San Mateo County
- Santa Clara County
- Solano County (portion)
- Sonoma County (portion)

San Joaquin Valley Air Basin
- Fresno County
- Kern County (portion)
- Kings County
- Madera County
- Merced County
- San Joaquin County
- Stanislaus County
- Tulare County

South Central Coast Air Basin
- San Luis Obispo County
- Santa Barbara County
- Ventura County

South Coast Air Basin
- Los Angeles County (portion)
- Orange County
- Riverside County (portion)
- San Bernardino County (portion)

Table 1-1 (continued)

Criteria Air Pollutants

California and National Ambient Air Quality Standards

Very simply, an ambient air quality standard is the definition of "clean air." More specifically, a standard establishes the concentration above which the pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Both the California and federal governments have adopted health-based standards for the *criteria pollutants*, which include but are not limited to ozone, particulate matter (PM_{10} and $PM_{2.5}$), and carbon monoxide. For most pollutants the State standards are more stringent than the national standards. The differences in the standards are generally explained by the different health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the State standards incorporate a margin of safety to protect sensitive individuals (a short list of the State and national ambient air quality standards can be found on page 20, while a complete list can be found on the ARB website at *www.arb.ca.gov/aqs/aqs.htm*). In general, the air quality standards are expressed as a measure of the amount of pollutant per unit of air. For example, the particulate matter standards are expressed as micrograms of particulate matter per cubic meter of air ($\mu g/m^3$).

Ozone

Ozone, a colorless gas which is odorless at ambient levels, is the chief component of urban smog. Ozone is not directly emitted as a pollutant, but is formed in the atmosphere when hydrocarbon and NO_x precursor emissions react in the presence of sunlight. Meteorology and terrain play major roles in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide the optimum conditions for ozone formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often impacts a large area.

Ozone impacts lung function by irritating and damaging the respiratory system. In addition, ozone causes damage to vegetation, buildings, rubber, and some plastics. Recognizing the impacts of day-long exposure, the U.S. EPA promulgated a new 8-hour standard for ozone in 1997.

On April 15, 2004 U.S. EPA designated areas of the country that exceed the 8-hour ozone standard as nonattainment. The designations became effective on June 15, 2004 and incorporate air quality data for the years 2001-2003. The designations can be accessed at U.S. EPA's website at *www.epa.gov/ozonedesignations*. These designations will trigger new planning requirements for the 8-hour standard.

State Ozone Standard:
0.09 ppm for 1 hour,
not to be exceeded.

National Ozone Standards:
0.12 ppm for 1 hour,
not to be exceeded more than once per year *and*
0.08 ppm for 8 hours,
not to be exceeded,
based on the fourth highest concentration averaged over three years.

Table 1-2

Particulate Matter (PM_{10} and $PM_{2.5}$)

Exposure to particulate matter aggravates a number of respiratory illnesses and may even cause early death in people with existing heart and lung disease. Both long-term and short-term exposure can have adverse health impacts. All particles with a diameter of 10 microns or smaller (PM_{10}) are harmful. For comparison, the diameter of a human hair is about 50 to 100 microns. PM_{10} includes the subgroup of finer particles with an aerodynamic diameter of 2.5 microns or smaller ($PM_{2.5}$). These finer particles pose an increased health risk because they can deposit deep in the lung and contain substances that are particularly harmful to human health.

PM_{10} is a mixture of substances that includes elements such as carbon and metals; compounds such as nitrates, sulfates, and organic compounds; and complex mixtures such as diesel exhaust and soil. These substances may occur as solid particles or liquid droplets. Some particles are emitted directly into the atmosphere. Others, referred to as secondary particles, result from gases that are transformed into particles through physical and chemical processes in the atmosphere.

In 1982, the ARB adopted 24-hour average and annual average PM_{10} standards. National ambient air quality standards for PM_{10} have been in place since 1987. However, California's PM_{10} standards are more health-protective.

In June 2002, the ARB adopted recommendations to lower the level of the PM_{10} annual standard from 30 $\mu g/m^3$ to 20 $\mu g/m^3$ and established a new annual $PM_{2.5}$ standard of 12 $\mu g/m^3$. The ARB plans to review short-term PM exposure studies in the future to determine if the current State 24-hour PM standards are adequately protective of public health. Additional information on the State PM standards is available on the ARB's website at *www.arb.ca.gov/research/aaqs/std-rs/std-rs.htm.*

The U.S. EPA promulgated new national ambient air quality standards for $PM_{2.5}$ in 1997 to complement the national PM_{10} standards. In early 2004, the ARB transmitted recommendations for area designations for the national $PM_{2.5}$ standards to U.S. EPA. U.S. EPA is scheduled to issue final designations by the end of 2004, with the designations becoming effective in early 2005.

State PM_{10} Standards:
50 µg/m³ for 24 hours
not to be exceeded *and*
20 µg/m³ annual arithmetic mean,
not to be exceeded.

State $PM_{2.5}$ Standard:
12 µg/m³ annual arithmetic mean,
not to be exceeded.

National PM_{10} Standards:
150 µg/m³ for 24 hours, not to be exceeded,
more than once per year *and*
50 µg/m³ annual arithmetic mean
averaged over 3 years, not to be exceeded.

National $PM_{2.5}$ Standards:
65 µg/m³ for 24 hours based on the
98th percentile concentration averaged
over three years, not to be exceeded *and*
15 µg/m³ annual arithmetic mean
averaged over 3 years, not to be exceeded.

Table 1-3

Carbon Monoxide

Carbon monoxide is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Carbon monoxide is harmful because it is readily absorbed through the lungs into the blood, where it binds with hemoglobin and reduces the ability of the blood to carry oxygen. As a result, insufficient oxygen reaches the heart, brain, and other tissues. The harm caused by CO can be critical for people with heart disease (angina), chronic lung disease, or anemia, as well as for unborn children. Even healthy people exposed to high levels of CO can experience headaches, fatigue, slow reflexes, and dizziness. Health damage caused by CO is of greater concern at high elevations where the air is less dense, aggravating the consequences of reduced oxygen supply. As a result, California has a more stringent CO standard for the Lake Tahoe Air Basin.

State CO Standards:
20 ppm for 1 hour *and*
9.0 ppm for 8 hours,
neither to be exceeded.

6 ppm for 8 hours
(Lake Tahoe Air Basin only),
not to be equaled or exceeded.

National CO Standards:
35 ppm for 1 hour *and*
9 ppm for 8 hours,
neither to be exceeded more than once per year.

Table 1-4

Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	Federal Standards[2]	
		Concentration[3]	Primary[3,4]	Secondary[3,5]
Ozone (O_3)	1 Hour	0.09 ppm (180 $\mu g/m^3$)	0.12 ppm (235 $\mu g/m^3$)[6]	Same as Primary Standard
	8 Hour	—	0.08 ppm (157 $\mu g/m^3$)[6]	
Respirable Particulate Matter (PM_{10})	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	20 $\mu g/m^3$	50 $\mu g/m^3$	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	65 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	12 $\mu g/m^3$	15 $\mu g/m^3$	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard
	1 Hour	0.25 ppm (470 $\mu g/m^3$)	—	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	0.030 ppm (80 $\mu g/m^3$)	—
	24 Hour	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (365 $\mu g/m^3$)	—
	3 Hour	—	—	0.5 ppm (1300 $\mu g/m^3$)
	1 Hour	0.25 ppm (655 $\mu g/m^3$)	—	—
Lead[7]	30 Day Average	1.5 $\mu g/m^3$	—	—
	Calendar Quarter	—	1.5 $\mu g/m^3$	Same as Primary Standard

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calender year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18,1997. Contact U.S. EPA for further clarification and current federal policies.
7. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Table 1-5

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California and National Area Designations

Both the California and federal governments use monitoring data to designate areas according to their attainment status for most of the pollutants with ambient air quality standards. The purpose of the designations is to identify those areas with air quality problems and thereby initiate planning efforts to make the air more healthful. There are three basic designation categories: nonattainment, attainment, and unclassified. In addition, the California (State) designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are making progress and nearing attainment.

A *nonattainment designation* indicates that the air quality violates an ambient air quality standard. Although a number of areas may be designated as nonattainment for a particular pollutant, the severity of the problem can vary greatly. For example, in two ozone nonattainment areas, the first area has a measured maximum concentration of 0.13 parts per million (ppm), while the second area has a measured maximum concentration of 0.23 ppm. While both areas are designated as nonattainment, it is obvious that the second area has a more severe ozone problem and will need a more stringent emission control strategy. To identify the severity of the problem and the extent of planning required, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe).

In contrast to nonattainment, an *attainment designation* indicates that the air quality does not violate the established standard. Under the federal Clean Air Act, nonattainment areas that are redesignated as attainment must develop and implement maintenance plans designed to assure continued compliance with the standard.

Finally, an *unclassified designation* indicates that there are insufficient data for determining attainment or nonattainment. The U.S. EPA combines unclassified and attainment into one designation for ozone and carbon monoxide. More detailed information on the area designation categories can be found on the ARB's website at *www.arb.ca.gov/desig/desig.htm*.

Ozone - State Area Designations

Some rural and northern coastal areas of California are designated as attainment for the State ozone standard. Last year, two new areas attained the State standard: San Luis Obispo County and the Northern Sonoma Air Quality Management District. However, most of the rest of the State, including all of the major urban areas, have ozone concentrations that violate the State standard, and therefore, are designated as nonattainment. Although few areas have made sufficient progress to be redesignated as attainment for the State ozone standard, ozone precursor emissions continue to decline throughout California. As a result, air quality is improving, and more areas should eventually qualify for attainment status, as precursor emissions continue to be reduced statewide.

Figure 1-3

Ozone - National 1-Hour Area Designations

Similar to the State designations, most of the major urban areas in California are designated as nonattainment for the national 1-hour ozone standard. In contrast to the State designations, there are only two designation categories for the national ozone standards: attainment/unclassifed and nonattainment.

Ozone air quality in Butte, northern Sutter, Yuba, and Ventura counties, and the San Francisco Bay Area Air Quality Management District now meets the national 1-hour ozone standard, but these areas have not yet been officially redesignated as attainment. Eastern Kern county has been officially redesignated as attainment/unclassified. All the remaining areas of California are designated as attainment/unclassified. Ambient ozone concentrations in these areas do not violate the national 1-hour standard. However, a number of these areas violate the new 8-hour national ozone standard.

U.S. EPA has indicated that it intends to revoke the 1-hour standard by June 15, 2005. However, nonattainment areas are still required to complete their 1-hour planning requirements or submit early 8-hour ozone plans. For more information refer to the U.S. EPA website at *www.epa.gov/ttn/naaqs/ozone/o3imp8hr/finalrule.html*.

Figure 1-4

Ozone - National 8-Hour Area Designations

On April 15, 2005, the U.S. EPA made first time designations for the national 8-hour ozone standard. There are 15 nonattainment areas in California, including all of the five largest urban areas in California. In addition, a number of smaller counties and rural areas exceed the standard. An area violates the federal 8-hour ozone standard if the calculated fourth highest 8-hour concentration averaged over a three-year period exceeds the attainment level of the standard at any monitoring site in the region.

The designations became effective on June 15, 2004, and triggered new planning requirements. State Implementation Plans will be due to the U.S. EPA by 2007. Until then, all of our programs designed to achieve the national 1-hour standard will bring us closer to attaining the national 8-hour standard. The U.S. EPA will publish an implementation rule later this year that will identify many of the specific planning and control requirements for the 8-hour standard.

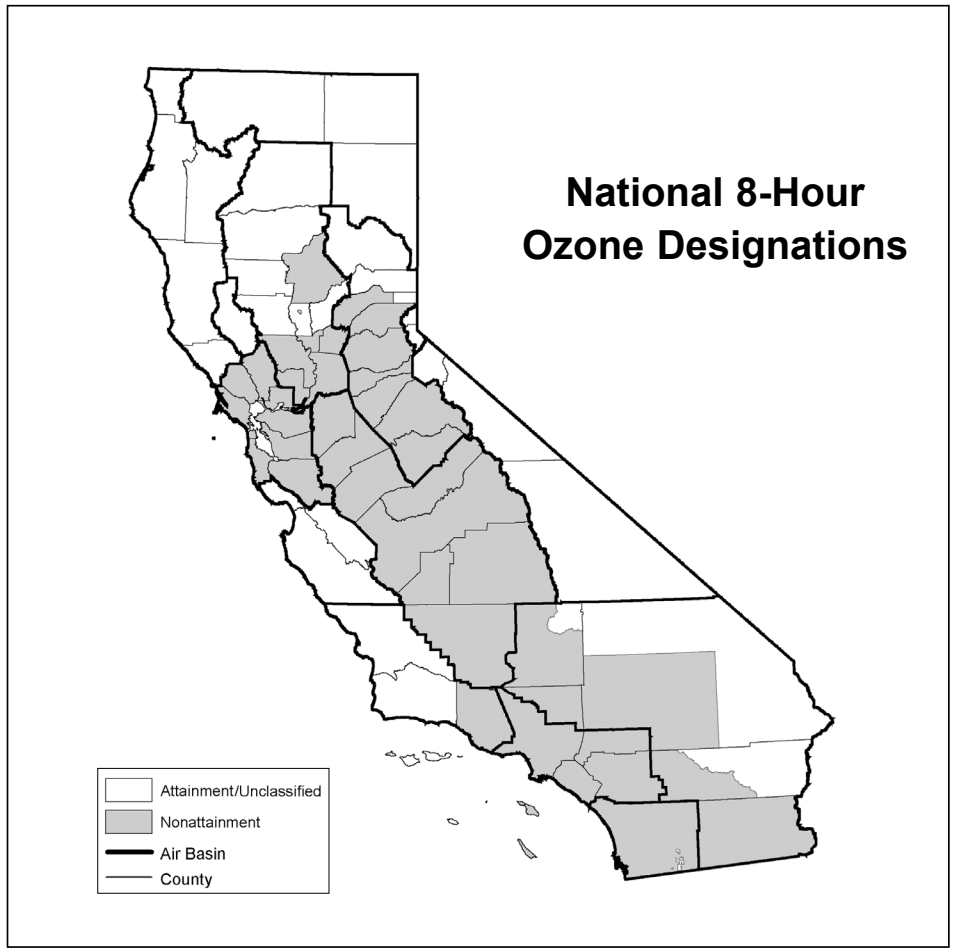

Figure 1-5

PM_{10} - State Area Designations

The majority of California is designated as nonattainment for the State PM_{10} standards. Three counties in the northern half of the State remain unclassified, and one area, the Lake County Air Basin has been designated as attainment. In addition, Siskiyou County has been proposed to be redesignated as attainment.

PM_{10} remains a widespread problem, and its causes are very diverse. Because of the variety of sources and the size and chemical make-up of the particles, the PM_{10} problem can vary considerably from one area to the next. In addition, high PM_{10} concentrations are seasonal, and the high season varies from area to area. For example, in some areas, windblown dust may contribute to high PM_{10} concentrations in the summer and fall, while in other areas, high concentrations due to secondary particles may occur during the winter. As a result, two areas with similar PM_{10} concentrations may have very different PM_{10} problems, and multiple control strategies are needed to effectively deal with these problems.

Figure 1-6

PM_{10} - National Area Designations

In contrast to the State PM_{10} designations, there are only two designation categories for the national PM_{10} standards: attainment/unclassified and nonattainment. Areas designated as nonattainment for the national PM_{10} standards are required to develop and implement plans designed to meet the standards. Although they are still designated as nonattainment, Sacramento, Mammoth Lakes, Trona (northwestern San Bernardino County), and the portion of San Bernardino County outside of the South Coast air basin now meet the national PM_{10} standards.

Figure 1-7

$PM_{2.5}$ - State Area Designations

Since California adopted the new $PM_{2.5}$ standard in 2002, this is the second year of area designations for the State $PM_{2.5}$ standard. Approximately half of California is designated as nonattainment for the State $PM_{2.5}$ standard, with Lake County Air Basin as the only attainment area. Additionally, Lake Tahoe and North Central Coast Air Basins are proposed to be designated attainment this year. Nonattainment areas include all of the major urban areas as well as a few rural areas. Secondary formation of $PM_{2.5}$ and particles directly emitted from combustion processes are major contributors to high $PM_{2.5}$ concentrations in these areas.

California's programs to reduce ozone, PM_{10}, and diesel PM are helping reduce $PM_{2.5}$. In addition, as required by new legislation enacted in 2003 (Senate Bill 656), ARB has assembled a list of measures that can be used by air districts to further reduce PM and PM precursor emissions, it is available on the web at *www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm*.

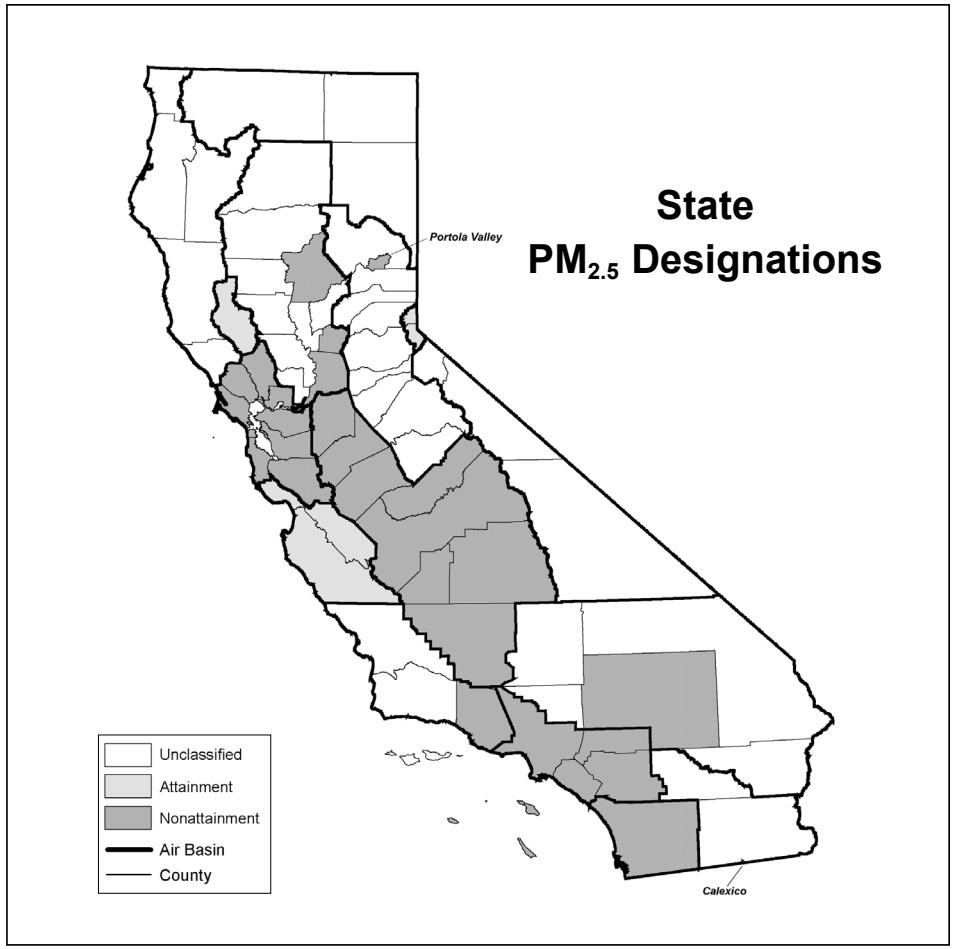

Figure 1-8

$PM_{2.5}$ - National Area Designations

The U. S. EPA is expected to promulgate first time area designations for $PM_{2.5}$ at the end of 2004. The San Joaquin Valley, South Coast, and San Diego air basins are expected to be designated nonattainment. These air basins include major urban areas as well as some rural areas. Reactions in the atmosphere from precursor gases emitted from combustion sources and direct particulate emissions from mobile sources and burning activities lead to high $PM_{2.5}$ concentrations in these areas. The remaining areas of the State are designated attainment/unclassified.

State Implementation Plans for $PM_{2.5}$ nonattainment areas are scheduled for submittal in early 2008. Until then, actions taken to reduce ozone, PM_{10} and diesel PM will also help in reducing $PM_{2.5}$.

Designations Expected December 2004
Figure 1-9

Carbon Monoxide - State Area Designations

Currently, there is only one area in the state that does not meet the State CO standards: the City of Calexico, in Imperial County. California has made tremendous progress in reducing CO concentrations in the last ten years, during which a number of areas have been redesignated as attainment. Most recently, Los Angeles County qualified for attainment and will be considered for redesignation as attainment in early 2005. Much of the progress in reducing ambient CO is attributable to motor vehicle controls and the introduction of cleaner fuels.

With respect to the nonattainment area, the problem in Calexico is unique in that this area is probably impacted by emissions from Mexico. Additional studies are needed to determine the most effective control strategy for the Calexico area.

Figure 1-10

Carbon Monoxide - National Area Designations

The U.S. EPA uses only two designation categories for CO: attainment/unclassified and nonattainment. All areas of California except the South Coast Air Basin are currently designated as attainment/unclassified for the national CO standards. However, the South Coast Air Basin now meets the requirements for attainment, although they have not been officially redesignated. Most CO is directly emitted by cars and trucks, and the ARB's motor vehicle controls should be sufficient to overcome the problem in the coming years. In addition, the City of Calexico, in Imperial County, has carbon monoxide concentrations that violate the national standards. There is a high likelihood that cross-border traffic contributes to the local CO problem in this area, and more study is needed to determine the most effective control strategy. The U.S. EPA has not acted to change this area's designation from attainment/unclassified to nonattainment.

Figure 1-11

Toxic Air Contaminants

A toxic air contaminant or TAC is defined as an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set ambient air quality standards.

The Air Resources Board's TAC program traces its beginning to the criteria pollutant program in the 1960s. For many years, the criteria pollutant control program has been effective at reducing TACs since many volatile organic compounds and PM constituents are also TACs. During the 1980s, the public's concern over toxic chemicals heightened. As a result, citizens demanded protection and control over the release of toxic chemicals into the air. In response to public concerns, the California legislature enacted a 1983 law governing the release of TACs. This law charges the Air Resources Board with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. To date, the ARB has designated nearly 192 compounds as TACs. Additionally, the ARB has implemented control strategies for a number of compounds that pose high risk and show potential for effective control.

The majority of the estimated health risk from TACs can be attributed to a relatively few compounds, the most important being PM from diesel-fueled engines (diesel particulate matter or diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions will vary depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other toxic air contaminants, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, the ARB has made preliminary concentration estimates for the State and its 15 air basins using a PM-based exposure method. The method uses the ARB emission inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies on chemical speciation of ambient data. These data were used, along with receptor modeling techniques, to estimate outdoor concentrations of diesel PM. Details on the method and the resulting estimates for individual air basins can be found in the ARB report entitled: *"Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant -- Appendix III Part A Exposure Assessment,"* (April 1998). In addition to diesel PM, benzene and 1,3-butadiene are also significant contributors to overall ambient public health risk in California.

This almanac (Chapter 5 and Appendix C) includes information for ten TACs: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel PM. These ten compounds pose the greatest ambient risk based on air quality data, or concentration estimates in the case of diesel PM. Note that other TACs, for example dioxins, may also pose a significant health risk. However, sufficient air quality data are not yet available for these

compounds. In order to provide information on ambient levels of dioxins and dioxin-like compounds, the Air Resources Board is conducting the California Ambient Dioxin Air Monitoring Program (CADAMP). Ten sampling sites have been deployed in CADAMP, five in the San Francisco Bay Area, four in the South Coast Air Basin, and one in Sacramento. Monitoring at the ten sites will continue until December 2004 with over 400 samples to be analyzed. More information on the dioxin monitoring program, including results, can be found at *www.arb.ca.gov/aaqm/qmosopas/dioxins/overview.htm.*

Most of the TAC data in this almanac were obtained from monitors operated by the ARB. The majority of the information is presented on a pollutant-by-pollutant basis, with a focus on cancer risk. The available data represent average population exposures and may not represent the health risk near local sources. Localized impacts may involve exposure to different toxic air contaminants or to higher or lower concentrations than those represented by the ambient monitoring data. ARB participated in several studies to address localized impacts and community health issues to learn which communities are the most impacted and who in those communities are the most vulnerable. More information on these studies is available on the web at *www.arb.ca.gov/ch/ch.htm*.

The ARB has substantially increased its knowledge about TACs in the last 15 years, and the data indicate that control efforts have been effective in reducing public exposures and associated health risks. The future gradual phase-in of control strategies will likely continue to result in lower exposures for California's citizens. In the interim, work continues on identifying toxic substances and developing a better understanding of the risks they pose. Health experts still have only a limited knowledge of the mechanisms by which many toxic substances harm the body, and there is still much work to be done in researching health effects and quantifying cancer risks. Cooperative strategies between the ARB, businesses, and other State, local, and federal agencies will be a major focus of future control efforts.

Additional information on TACs may be found on the ARB website at *www.arb.ca.gov/toxics/toxics.htm*. Detailed information on the health effects of these pollutants, as well as many other toxic air contaminants, can be found in a report entitled: *"Toxic Air Contaminant Identification List-Summaries."* This report, dated September 1997, is available from the ARB Public Information Office and on the web at *www.arb.ca.gov/toxics/tac/intro.htm.*

Figure 1-12

Climate Change

The earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. The greenhouse gases (GHG) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons. Climate research has identified other greenhouse agents that can drive climate change, particularly tropospheric ozone, and atmospheric aerosols (particles containing sulfate, black carbon or other carbonaceous compounds).

Greenhouse gases absorb infrared energy that would otherwise escape from the Earth. As the infrared energy is absorbed, the air surrounding the earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history.

It is a fact that human activities have increased the atmospheric abundance of greenhouse gases. There are uncertainties as to exactly what the climate changes will be in various local areas of the Earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy. Already, some of these effects have been seen in California.

The United States has the highest emissions of greenhouse gases of any nation on Earth. California's transportation sector is the single largest contributor of GHGs in the State, producing close to 60% of all such emissions. In the absence of controls, the State's inventory of greenhouse gases would mirror the growth in population; transportation and land-use trends in California would continue to increase greenhouse gas production.

California has been studying the impacts of climate change since 1988, when AB4420 was approved. This legislation directed the California Energy Commission, in consultation with the Air Resources Board and other agencies, to study the implications of global warming on California's environment, economy, and water supply. The Energy Commission was also directed to prepare and maintain the state's inventory of GHG emissions. More information on the Energy Commission's climate change activities can be found on the web at *www.energy.ca.gov/global_climate_change/index.html*.

In 2002, recognizing that global warming would impact California, AB1493 was approved. That bill directed the ARB to adopt regulations to achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles. ARB staff's proposal implementing these regulations was approved by the Air Resources Board in September, 2004. These regulations will be reviewed and may be modified by the California Legislature. The average reduction of greenhouse gases from new California cars and light trucks will be about 22 percent in 2012 and about 30 percent in 2016, compared to today's vehicles. More information on ARB's Climate Change regulations can be found on the web at *www.arb.ca.gov/cc/cc.htm*.

California Air Quality Regulation

The responsibility for controlling air pollution in California is shared between 35 local air districts, the Air Resources Board, and the United States Environmental Protection Agency. The basic responsibilities of each of these entities are outlined below.

District Responsibilities:

- Control and permit industrial pollution sources (such as power plants, refineries, and manufacturing operations) and widespread area-wide sources (such as bakeries, dry cleaners, service stations, and commercial paint applicators).
- Adopt local air quality plans and rules.

Air Resources Board Responsibilities:

- Establish State ambient air quality standards.
- Adopt and enforce emission standards for mobile sources (except where federal law preempts ARB's authority), fuels, consumer products, and toxic air contaminants.
- Provide technical support to the local districts.
- Oversee local district compliance with State and federal law.
- Approve local air quality plans and submit State Implementation Plans to U.S. EPA.

United States Environmental Protection Agency Responsibilities:

- Establish national ambient air quality standards.
- Set emission standards for mobile sources, including those sources under exclusive federal jurisdiction (like interstate trucks, aircraft, marine vessels, locomotives, and farm/construction equipment).
- Oversee State air programs as they relate to the Federal Clean Air Act.
- Approve State Implementation Plans.

List of Air Pollution Contacts

Amador County Air Pollution Control District
All of Amador County
(209) 257-0112
www.amadorapcd.org

Antelope Valley Air Pollution Control District
Northeast portion of Los Angeles County
(661) 723-8070
www.avaqmd.ca.gov

Bay Area Air Quality Management District
All of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, western portion of Solano County, and southern portion of Sonoma County
(415) 749-5000
www.baaqmd.gov

Butte County Air Quality Management District
All of Butte County
(530) 891-2882
www.bcaqmd.org

Calaveras County Air Pollution Control District
All of Calaveras County
(209) 754-6504
www.co.calaveras.ca.us/departments/env.html

Colusa County Air Pollution Control District
All of Colusa County
(530) 458-0590
www.colusanet.com/apcd

El Dorado County Air Pollution Control District
All of El Dorado County
(530) 621-6662
www.co.el-dorado.ca.us/emd/apcd

Feather River Air Quality Management District
All of Sutter and Yuba counties
(530) 634-7659
www.fraqmd.org

Glenn County Air Pollution Control District
All of Glenn County
(530) 934-6500
www.countyofglenn.net/Air_Pollution_Control/home_page.asp

Great Basin Unified Air Pollution Control District
All of Alpine, Inyo, and Mono counties
(760) 872-8211
gb1@greatbasinapcd.org

Imperial County Air Pollution Control District
All of Imperial County
(760) 482-4606
www.imperialcounty.net

Kern County Air Pollution Control District
Eastern portion of Kern County
(661) 862-5250
www.kernair.org

Lake County Air Quality Management District
All of Lake County
(707) 263-7000
www.lcaqmd.net

Lassen County Air Pollution Control District
All of Lassen County
(530) 251-8110
lassenag@psln.com

Mariposa County Air Pollution Control District
All of Mariposa County
(209) 966-2220
www.mariposacounty.org/healthdepartment/index.html

Mendocino County Air Quality Management District
All of Mendocino County
(707) 463-4354
www.co.mendocino.ca.us/aqmd

Modoc County Air Pollution Control District
All of Modoc County
(530) 233-6419
modapcd@hdo.net

Mojave Desert Air Quality Management District
Northern portion of San Bernardino County and eastern portion of Riverside County
(760) 245-1661
www.mdaqmd.ca.gov

Monterey Bay Unified Air Pollution Control District
All of Monterey, San Benito and Santa Cruz counties
(831) 647-9411
www.mbuapcd.org

North Coast Unified Air Quality Management District
All of Del Norte, Humboldt, and Trinity counties
(707) 443-1580
www.ncuaqmd.org

Northern Sierra Air Quality Management District
All of Nevada, Plumas, and Sierra counties
(530) 274-9360
www.nccn.net/~nsaqmd

No. Sonoma County Air Pollution Control District
Northern portion of Sonoma County
(707) 433-5911
nsc@sonic.net

Placer County Air Pollution Control District
All of Placer County
(530) 889-7130
www.placer.ca.gov/airpollution/airpolut.htm

Sacramento Metro Air Quality Management District
All of Sacramento County
(916) 874-4800
www.airquality.org **or** *www.sparetheair.com*

San Diego County Air Pollution Control District
All of San Diego County
(858) 650-4650
www.sdapcd.co.san-diego.ca.us

San Joaquin Valley Unified Air Pollution Control District
All of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties and western portion of Kern County
(559) 230-6000
www.valleyair.org

San Luis Obispo County Air Pollution Control District
All of San Luis Obispo County
(805) 781-4AIR
www.slocleanair.org

Santa Barbara County Air Pollution Control District
All of Santa Barbara County
(805) 961-8800
www.sbcapcd.org

Shasta County Air Quality Management District
All of Shasta County
(530) 225-5674
www.co.shasta.ca.us/Departments/Resourcemgmt/drm/aqmain.htm

Siskiyou County Air Pollution Control District
All of Siskiyou County
(530) 841-4029
ebeck@co.siskiyou.ca.us

South Coast Air Quality Management District
Los Angeles County except for portion covered by Antelope Valley APCD, all of Orange County, western portion of San Bernardino County, and western portion of Riverside County
(909) 396-2000
www.aqmd.gov

Tehama County Air Pollution Control District
All of Tehama County
(530) 527-3717
www.tehcoapcd.net

Tuolumne County Air Pollution Control District
All of Tuolumne County
(209) 533-5693
bsandman@co.tuolumne.ca.us

Ventura County Air Pollution Control District
All of Ventura County
(805) 645-1400
www.vcapcd.org

Yolo-Solano Air Quality Management District
All of Yolo County and eastern portion of Solano County
(530) 757-3650
www.ysaqmd.org

Milestones in California's Emission Control Programs

Historical Milestones:

1963: First vehicle emission control in the country – positive crankcase ventilation required to reduce evaporative emissions.

1966: First tailpipe emission standards for hydrocarbons (HC) and carbon monoxide (CO).

1971: First oxides of nitrogen (NO_x) standards for cars and light trucks.

1973: First heavy-duty diesel truck standards.

1975: Two-way catalytic converters first used to control HC and emissions from cars.

1976: "Unleaded" gasoline first offered for sale, with reduced lead levels.

Three-way catalyst first used to control NO_x, HC, and CO emissions from cars.

1984: California Smog Check program implemented to identify and repair ineffective emission control systems on cars and light-trucks.

1988: California Clean Air Act is enacted, setting forth the framework for meeting State ambient air quality standards.

1992: California's reformulated gasoline introduced – reducing evaporative emissions, phasing out lead in gasoline, and requiring wintertime oxygenates to reduce CO formation.

First consumer product regulations take effect, regulating HC emissions from aerosol antiperspirants and deodorants.

1993: Cleaner diesel fuel launched, reducing emissions of diesel particulate matter, sulfur dioxide, and NO_x.

Regulations to limit HC emissions from consumer products such as hairspray, windshield washer fluid, and air fresheners take effect.

1994: Low emission vehicle regulations to further reduce emissions from cars and light trucks take effect.

1996: Cleaner burning gasoline debuts with emission benefits equivalent to removing 3.5 million cars from California roads.

Regulations reducing HC emissions from spray paint take effect.

1998: Tighter standards for California diesel trucks and buses take effect.

Revamped Smog Check II program implemented.

1999: ARB acted to phaseout MTBE in gasoline.

2000: Tighter emission standards for off-road diesel equipment, such as tractors and generators, take effect nationwide.

More stringent California standards for the small engines used in lawn and garden equipment take effect.

Diesel Risk Reduction Plan adopted.

2001: First California standards for large spark ignition off-road engines such as forklifts and pumps take effect.

More stringent standards for pleasure boats and personal watercraft sold in California begin.

Limits on HC emissions from products such as carpet and upholstery cleaners take effect.

2002: Emission standards for new heavy-duty diesel trucks are cut in half, nationwide.

2003: New emission standards for inboard marine engines sold in California take effect.

Upcoming Milestones:

2004: Regulations to further reduce emissions from cars (and require light-trucks and sport-utility vehicles to meet the same emission standards as cars) take effect in California.

MTBE in California gasoline is fully phased out.

Tighter standards for on-road motorcycles begin.

2005: Limits on HC emissions from paint removers take effect.

2006: Low sulfur diesel fuel required nationwide.

2007: Tighter emission standards for heavy-duty diesel trucks take effect nationwide.

2009: Greenhouse gas emission standards for passenger cars and light trucks.

2011: Tighter emission standards for off-road diesel equipment.

Web Resources (www.arb.ca.gov/californiaalmanac)

Much of the information used to develop the Almanac is accessible through a variety of databases and tools available on the ARB website at *www.arb.ca.gov/californiaalmanac*.

Data

Real-time Air Quality Data - Air Quality and Meteorological Information System (AQMIS2) - Allows access to near real-time air quality and meteorological data. These data are available in tabular summary reports.

Historical Air Quality Data - Aerometric Data Analysis and Management System (iADAM) - Allows access to historical data (data for record) in tabular summary reports or displayed as graphs.

Emission Inventory Data - Allows access to historical and projected emissions, vehicle activity, and human population. Data is available for 2004, as well as for the years 1975-2020 at five year intervals.

Facility Search Engine - Allows users to locate criteria or toxics emissions data for a specific facility.

Top 25 Source Categories - Provides users with emissions for the top 25 highest emitting source categories by geographic area.

Community Level Emissions - Community Health Air Pollution Information System (CHAPIS) - Allows users to query and view emissions using a map interface.

Toxics Emission Factors - California Air Toxics Emission Factor database (CATEF) - Provides over 2000 emission factors to estimate toxic air emissions for specific industrial processes or emissions.

Information

Area Designations - Provides information regarding the designation areas in California with respect to the State Ambient Air Quality Standards.

Biomass Burning Alternatives - Information on alternatives to burning and provides helpful information on service providers in this effort.

Central California Air Quality Studies (CCAQS) - Comprises two studies with the goal of providing an improved understanding of particulate matter and visibility in central California.

Outdoor residential waste burning information - Provides information on regulations for outdoor residential waste burning and includes resources on alternatives to burning.

Air Quality Data Quality Assurance Site Index - Air monitoring web site that allows the user to gain access to the most recent quality assurance information on any particular air monitoring site. This information consists of pollutants monitored, location, operation information, and photos of the site if available.

Transport - Information on the movement of ozone and ozone precursors between basins or regions and established mitigation requirements.

Glossary of Air Quality Terms

Air: So called "pure" air is a mixture of gases containing about 78 percent nitrogen; 21 percent oxygen; less than one percent of carbon dioxide, argon, and other gases; and varying amounts of water vapor.

Air Basin: A land area with generally similar meteorological and geographic conditions throughout. To the extent possible, air basin boundaries are defined along political boundary lines and include both the source and receptor areas. California is currently divided into 15 air basins.

Air District: A political body responsible for managing air quality on a regional or county basis. California is currently divided into 35 air districts.

Air Monitoring: Sampling for and measuring of pollutants present in the atmosphere.

Air Pollution: Degradation of air quality resulting from unwanted chemicals or other materials occurring in the air.

Air Pollution Control District (APCD): A county agency with authority to regulate stationary, indirect, and area sources of air pollution (e.g., power plants, highway construction, and housing developments) within a given county, and governed by a district air pollution control board composed of the elected county supervisors.

Air Quality Management District (AQMD): A group of counties or portions of counties, or an individual county specified in law with authority to regulate stationary, indirect, and area sources of air pollution within the region and governed by a regional air pollution control board comprised mostly of elected officials from within the region.

Air Quality Management Plan (AQMP): A plan prepared by an APCD / AQMD, for a county or region designated as a nonattainment area, for the purpose of bringing the area into compliance with the requirements of the national and/or California ambient air quality standards. AQMPs are incorporated into the State Implementation Plan (SIP).

Air Quality Standard (AQS): The prescribed level of a pollutant in the outside air that should not be exceeded during a specific time period to protect public health. Established by both federal and state governments.

Air Toxics: A generic term referring to a harmful chemical or group of chemicals in the air. Substances that are especially harmful to health, such as those considered under U.S. EPA's hazardous air pollutant program or California's AB 1807 and / or AB 2588 air toxics programs, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Ambient Air Quality Standards (California-CAAQS or National-NAAQS): Health- and welfare-based standards for outdoor air which identify the maximum acceptable average concentrations of air pollutants during a specified period of time.

Area-wide Sources (also known as "Area Sources"): Stationary sources of pollution (e.g., water heaters, gas furnaces, fireplaces, and woodstoves) that are typically associated with homes and non-industrial sources. Area-wide sources do not include mobile sources. The California Clean Air Act requires air districts to include area-wide sources in the development and implementation of their Air Quality

Maintenance Plan. Under the federal air toxics program, an area-wide source is defined as any source that emits less than 10 tons per year of a single hazardous air pollutant (HAP) or 25 tons per year of all HAPs.

Attainment Area: A geographical area identified to have air quality as good as, or better than, the national and/or California ambient air quality standards. An area may be an attainment area for one pollutant and a nonattainment area for others.

California Clean Air Act (CCAA): A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5.

Climate Change: An change in the temperature of the Earth's troposphere. Climate change has occurred in the past as a result of natural influences, but the term is most often used to refer to the warming predicted by computer models to occur as a result of increased emissions of greenhouse gases.

Emission Inventory: An estimate of the amount of pollutants emitted into the atmosphere from major mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

Emission Standard: The maximum amount of a pollutant that is allowed to be discharged from a polluting source such as an automobile or smoke stack

Environmental Justice: The fair treatment of people of all races and incomes with respect to development, implementation, and enforcement of environmental laws, regulations, and policies.

Expected Peak Day Concentration (EPDC): See Peak 1-Hour Indicator

Exceedance: A measured level of an air pollutant higher than the national or state ambient air quality standards.

Exposure: The concentration of the pollutant in the air multiplied by the population exposed to that concentration over a specified time period.

Exposure Assessment: Measurement or estimation of the magnitude, frequency, duration and route of exposure to a substance for the populations of interest.

Federal Clean Air Act (FCAA): A federal law passed in 1970 and amended in 1974, 1977 and 1990 which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, mobile and stationary control measures, air toxics standards, acid rain control measures, and enforcement provisions.

Hydrocarbon: A general term used to describe compounds comprised of hydrogen and carbon atoms. Hydrocarbons are classified as to how photochemically reactive they are: relatively reactive or relatively non-reactive.

Mean: Average.

Mobile Sources: Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes (compare with Stationary Sources).

Nonattainment Area: A geographic area that does not meet either a State or federal standard for a given pollutant. This area usually consists of an air basin, but can be any geographic area defined by either the U.S. EPA or CARB.

Nonattainment Transitional: A subcategory of the nonattainment designation category for State standards that signals progress and implies the area is nearing attainment.

Peak 1-Hour Indicator: Using a statistical process, it is a site-specific and pollutant-specific value that represents the concentration expected to be exceeded once per year, on average, based on the distribution of data for the monitoring site. The calculation procedure uses data collected at the monitoring site for a three-year period. For example, the 2003 peak indicator is calculated using data for the years 2001, 2002, and 2003. The site with the highest peak indicator for a region is used for the long-term trends in the almanac. It is also referred to as the California Design Value or the Expected Peak Day Concentration.

Precursor Emissions: Emissions which form pollutants in the atmosphere due to the reaction of themselves with each other or with sunlight. Ozone is formed in the atmosphere when hydrocarbon and NO_x react in the presence of sunlight. Particulate Matter (PM) is a complex pollutant that can be formed from the reaction of gaseous precursors such as NO_x, ROG, SO_x, and ammonia.

Reactive Organic Gas (ROG): A reactive chemical gas, composed of non-methane hydrocarbons that may contribute to the formation of smog. Also sometimes referred to as non-methane organic gases (NMOGs).

Risk Assessment: An evaluation of risk which estimates the relationship between exposure to a harmful substance and the likelihood that harm will result from that exposure.

State Implementation Plan (SIP): A plan prepared by states and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical foundation for understanding the air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and modeling analyses.

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities which emit air pollutants (compare with Mobile Sources).

Total Organic Gases (TOG): All gases consisting of substances containing carbon, except carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

Toxic Air Contaminant (TAC): An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code section 39650 et seq.) than pollutants subject to CAAQSs. Health effects to TACs may occur at extremely low levels, and it is typically difficult to identify levels of exposure which do not produce adverse health effects.

Vehicle Miles Traveled (VMT): The miles traveled by motor vehicles over a specified length of time (e.g., daily, monthly, or yearly) or over a specified road or transportation corridor.

Volatile Organic Compounds (VOC): A group of chemicals that react in the ambient air with nitrogen oxides and hydrocarbons in the presence of heat and sunlight to form ozone. Examples of VOCs include gasoline fumes and oil-based paints. This group of chemicals does not include methane or other compounds determined by U.S. EPA to have negligible photochemical reactivity.

Chapter 2

Current Emissions and Air Quality -- Criteria Pollutants

Introduction

This chapter provides statewide information on current emissions and air quality, relative to the State and national ambient air quality standards (see Chapter 5 for information on toxic air contaminants). This section gives a national perspective on how California's air quality compares with that in other areas of the nation. The second section of this chapter includes a summary table of the Statewide Emission Inventory. The table shows emissions data by three major source categories: stationary sources, area-wide sources, and mobile sources. Emissions data for natural sources is provided in Appendix E. The remaining sections of this Chapter provide information on emissions (including the high emitting facilities) and air quality on a statewide basis. This information is organized by pollutant, for ozone (and ozone precursor emissions), particulate matter (PM_{10} and $PM_{2.5}$), CO, and ammonia (NH_3).

Emissions are reported as annual averages, in tons per day. For most sources and pollutants that are not seasonal, this describes emissions very well. However, for some pollutants such as PM_{10} and $PM_{2.5}$, annual averages do not give an accurate indication of the seasonal nature of emissions. Therefore, they may appear to be artificially low. Many sources of PM_{10} and $PM_{2.5}$ are seasonal, including wildfires, agricultural processes, residential wood combustion, or dust storms in the Owens Valley and Mono Lake areas. Many sources of PM_{10} and $PM_{2.5}$ can also be very localized, and basinwide annual averages do not give any information about these sources.

State and local agencies have implemented many control measures during the last three decades to improve air quality. As a result, there has been a steady decline in both emissions and pollutant concentrations. However, two criteria pollutants, ozone and particulate matter, still pose air quality problems. Significant progress has been made towards attainment of CO standards. With the exception of the City of Calexico in Imperial County, both the national and State CO standards have been attained statewide. Although substantial progress has been made in reducing ozone and PM levels, it will be a challenge to reduce emissions sufficiently to attain these standards statewide.

Figure 2-1 shows the national 1-hour ozone design values for the top 15 urban areas in the nation, based on data for 2000 to 2002. The design values in all these areas exceed the national 1-hour standard of 0.12 ppm. Five of the top 15 areas are located in California, with

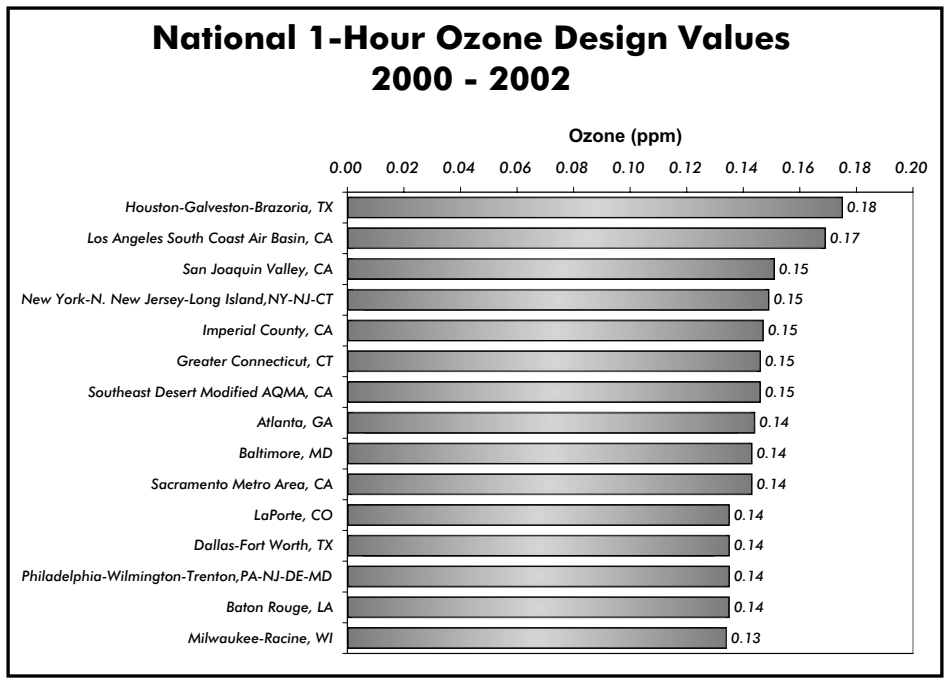

Figure 2-1

the Los Angeles South Coast Air Basin and San Joaquin Valley areas ranking second and third. Unlike previous years, the top spot is not held by a California area. However, the ranking of areas can change, depending on the ozone statistic used. For example, based on the average estimated exceedance rate during 2000 to 2002, the San Joaquin Valley area would rank first (16.9 days) while the Houston-Galveston-Brazoria, Texas area would rank fourth (5.4 days.) Overall, as ozone concentrations in California decline, our air quality continues to improve relative to other areas of the nation.

Attainment of the standards for particulate matter (PM_{10} and $PM_{2.5}$) is also a significant problem. The PM_{10} problem is most prevalent in the western United States. Eight western areas are classified as serious PM_{10} nonattainment areas. Half of these, the Coachella Valley, the Owens Valley, the San Joaquin Valley, and the South Coast Air Basin, are located in California. In contrast, the $PM_{2.5}$ problem is prevalent in both the eastern United States and in California. Because of the complex nature of the PM problem, it will be many years before the standards are attained.

Carbon monoxide poses much less of a problem than PM. Figure 2-2 shows the four areas in the nation that averaged at least one day with CO concentrations above the level of the national standard during 2000 to 2002. The Calexico (Imperial County) area ranked second. Calexico is the only area in California where the national CO standard is still violated. However, the Calexico area has made considerable progress towards attainment. Peak levels have declined significantly in the last five years, as have the number of days that the standard is exceeded. The State's stringent motor vehicle emission standards and clean fuels programs continue to be effective in reducing ambient CO concentrations. Furthermore, as a result of these controls, CO concentrations in nine other California areas no longer violate the national standards, and these areas have been redesignated as attainment.

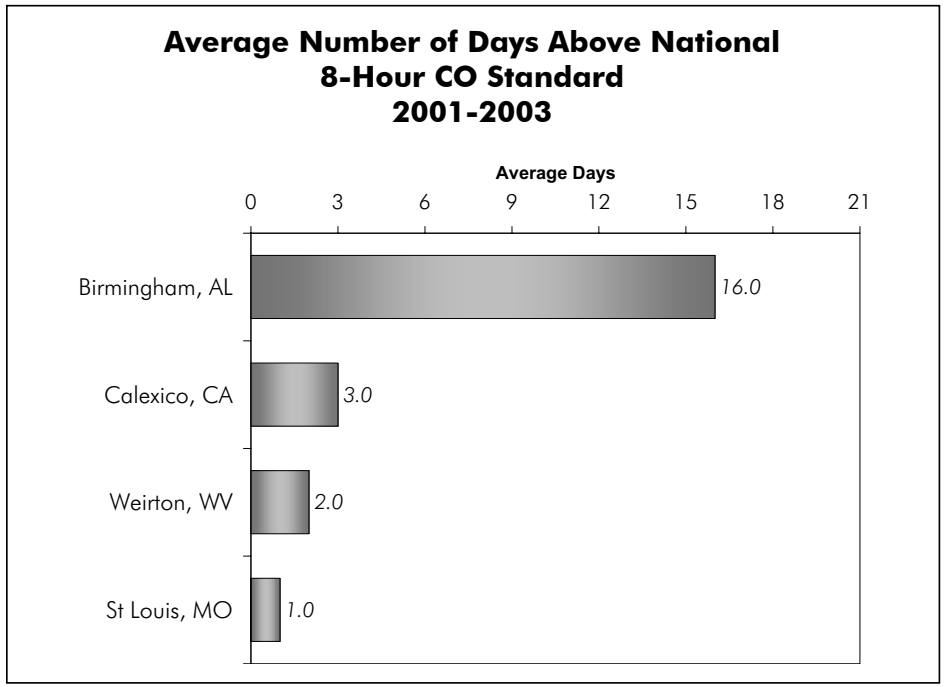

Figure 2-2

2004 Statewide Emission Inventory Summary

Division	Emissions (tons/day, annual average)						
Major Category	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Stationary Sources	**505**	**405**	**506**	**134**	**131**	**86**	**49**
Fuel Combustion	45	341	395	41	41	36	2
Waste Disposal	22	2	3	0	1	1	44
Cleaning And Surface Coatings	222	1	0	0	0	0	-
Petroleum Production And Marketing	155	10	11	62	2	2	-
Industrial Processes	61	51	97	31	87	47	4
Area-Wide Sources	**707**	**2138**	**93**	**5**	**1835**	**582**	**341**
Solvent Evaporation	449	-	-	-	0	0	30
Miscellaneous Processes	258	2138	93	5	1835	582	311
Mobile Sources	**1299**	**11259**	**2527**	**74**	**119**	**97**	**103**
On-Road Motor Vehicles	824	8172	1589	12	49	34	103
Other Mobile Sources	**476**	**3087**	**938**	**62**	**70**	**63**	**0**
Total Statewide - All Sources	***2512***	***13802***	***3126***	***213***	***2086***	***765***	***493***

* Includes directly emitted particulate matter only.

** Natural sources are provided in Appendix E. These summaries do not include emissions from wind blown dust - exposed lake beds from Owens and Mono Lakes. These emissions are estimated to be about 131 tons/day of PM_{10}.

Table 2-1

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Stationary Sources (division total)	505	405	506	134	131	86	49
Fuel Combustion (major category total)	45	341	395	41	41	36	2
- Electric Utilities	5	77	31	3	8	8	1
- Cogeneration	6	47	31	2	4	4	0
- Oil And Gas Production (Combustion)	8	24	35	3	2	2	0
- Petroleum Refining (Combustion)	2	17	35	13	3	3	-
- Manufacturing And Industrial	9	70	132	14	8	7	1
- Food And Agricultural Processing	5	55	35	3	3	3	-
- Service And Commercial	9	32	70	3	5	5	-
- Other (Fuel Combustion)	2	20	26	1	8	4	-
Waste Disposal (major category total)	22	2	3	0	1	1	44
- Sewage Treatment	0	0	0	0	0	0	1
- Landfills	17	1	1	0	0	0	11
- Incinerators	0	1	1	0	0	0	-
- Soil Remediation	0	-	0	-	0	0	-
- Other (Waste Disposal)	4	0	0	-	0	0	32
Cleaning And Surface Coatings (major category total)	222	1	0	0	0	0	-
- Laundering	1	0	0	-	-	-	-
- Degreasing	47	-	-	-	-	-	-
- Coatings And Related Process Solvents (sub-category total)	130	0	0	0	0	0	-
- Auto Marine, & Aircraft	*22*	*0*	*0*	*0*	*0*	*0*	*-*
- Paper & Fabric	*3*	*0*	*0*	*0*	*0*	*0*	*-*
- Metal, Wood, & Plastic	*34*	*0*	*0*	*0*	*0*	*0*	*-*
- Other	*70*	*0*	*0*	*0*	*0*	*0*	*-*

* Includes directly emitted particulate matter only.

Table 2-2

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Stationary Sources (division total) (continued)							
Cleaning And Surface Coatings (major category) (continued)							
- Printing	18	1	0	-	0	0	-
- Adhesives And Sealants	20	-	-	-	-	-	-
- Other (Cleaning And Surface Coatings)	6	-	0	-	0	0	-
Petroleum Production And Marketing (major category total)	155	10	11	62	2	2	-
- Oil And Gas Production	49	1	3	0	0	0	-
- Petroleum Refining	22	8	8	62	2	2	-
- Petroleum Marketing (sub-category total)	84	0	0	-	0	0	-
- Fuel Distribution Losses	*4*	*0*	*0*	*0*	*0*	*0*	-
- Fuel Storage Losses	*3*	*0*	*0*	*0*	*0*	*0*	-
- Vehicle Refueling	*50*	*0*	*0*	*0*	*0*	*0*	-
- Other	*26*	*0*	*0*	*0*	*0*	*0*	-
- Other (Petroleum Production And Marketing)	0	-	-	-	-	-	-
Industrial Processes (major category total)	61	51	97	31	87	47	4
- Chemical	20	1	2	4	4	4	0
- Food And Agriculture	20	3	9	1	15	7	-
- Mineral Processes	4	39	63	20	46	21	0
- Metal Processes	2	2	1	0	1	1	-
- Wood And Paper	3	1	2	0	9	6	-
- Glass And Related Products	0	0	12	5	2	2	-
- Electronics	1	0	0	-	0	0	-
- Other (Industrial Processes)	11	5	7	1	9	7	4

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Area-Wide Sources (division total)	707	2138	93	5	1835	582	341
Solvent Evaporation (major category total)	449	-	-	-	0	0	30
- Consumer Products	253	-	-	-	-	-	-
- Architectural Coatings And Related Process Solvent (sub-category total)	109	-	-	-	-	-	-
- Architectural Coatings	*93*	*0*	*0*	*0*	*0*	*0*	*-*
- Thinning & Cleanup Solvents	*16*	*0*	*0*	*0*	*0*	*0*	*-*
- Pesticides/Fertilizers (sub-category total)	55	-	-	-	-	-	30
- Farm Use	*53*	*0*	*0*	*0*	*0*	*0*	*-*
- Commercial Use	*2*	*0*	*0*	*0*	*0*	*0*	*-*
- Asphalt Paving / Roofing	32	-	-	-	0	0	-
- Other (Solvent Evaporation)	-	-	-	-	-	-	-
Miscellaneous Processes (major category total)	258	2138	93	5	1835	582	311
- Residential Fuel Combustion (sub-category total)	56	823	75	4	119	115	6
- Wood Combustion	*53*	*795*	*10*	*2*	*114*	*110*	*6*
- Cooking And Space Heating	*3*	*24*	*54*	*2*	*5*	*5*	*-*
- Other	*1*	*4*	*10*	*0*	*1*	*1*	*-*
- Farming Operations (sub-category total)	118	-	-	-	164	34	252
- Tilling,Harvesting, & Growing	*0*	*0*	*0*	*0*	*145*	*32*	*-*
- Livestock	*118*	*0*	*0*	*0*	*19*	*2*	*252*

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Area-Wide Sources (division total) (continued)							
Miscellaneous Processes (major category) (continued)							
- Construction And Demolition (sub-category total)	-	-	-	-	200	42	-
- Building	*0*	*0*	*0*	*0*	*114*	*24*	*-*
- Road Construction Dust	*0*	*0*	*0*	*0*	*86*	*18*	*-*
- Paved Road Dust	-	-	-	-	406	80	-
- Unpaved Road Dust	-	-	-	-	475	100	-
- Fugitive Windblown Dust (sub-category total)	-	-	-	-	312	68	-
- Farm Lands	*0*	*0*	*0*	*0*	*180*	*40*	*-*
- Pasture Lands	*0*	*0*	*0*	*0*	*19*	*4*	*-*
- Unpaved Roads	*0*	*0*	*0*	*0*	*114*	*24*	*-*
- Fires	1	10	0	-	1	1	-
- Managed Burning and Disposal (sub-category total)	78	1304	17	1	132	123	1
- Agricultural Burning	*19*	*216*	*6*	*0*	*26*	*24*	*1*
- Non-Agricultural Burning	*58*	*1088*	*12*	*0*	*107*	*98*	*-*
- Other	*0*	*0*	*0*	*0*	*0*	*0*	*-*
- Cooking	6	0	-	-	25	19	-
- Other (Miscellaneous Processes)	0	1	0	-	1	1	53

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Mobile Sources (division total)	1299	11259	2527	74	119	97	103
On-Road Motor Vehicles (major category total)	824	8172	1589	12	49	34	103
- Light Duty Passenger (sub-category total)	381	3596	330	2	17	10	60
- Non-Evaporative	*216*	*3594*	*328*	*2*	*17*	*10*	*60*
- Evaporative	*164*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*1*	*1*	*3*	*0*	*0*	*0*	*0*
- Light Duty Trucks(<3750 lbs.) (sub-category total)	139	1515	135	1	5	3	15
- Non-Evaporative	*78*	*1513*	*131*	*1*	*5*	*3*	*15*
- Evaporative	*60*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*0*	*2*	*5*	*0*	*0*	*0*	*0*
- Light Duty Trucks (>3750 lbs) (sub-category total)	108	1212	154	1	6	4	17
- Non-Evaporative	*65*	*1211*	*152*	*1*	*6*	*4*	*17*
- Evaporative	*42*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*0*	*1*	*2*	*0*	*0*	*0*	*0*
- Medium Duty Trucks (sub-category total)	59	628	91	0	3	2	7
- Non-Evaporative	*38*	*627*	*88*	*0*	*3*	*2*	*7*
- Evaporative	*21*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*0*	*1*	*3*	*0*	*0*	*0*	*0*
- Light Heavy Duty Gas Trucks (<10000 lbs) (sub-category total)	20	132	17	0	0	0	1
- Non-Evaporative	*11*	*132*	*17*	*0*	*0*	*0*	*1*
- Evaporative	*9*	*0*	*0*	*0*	*0*	*0*	*0*
- Light Heavy Duty Gas Trucks (>10000 lbs) (sub-category total)	5	36	6	0	0	0	0
- Non-Evaporative	*2*	*36*	*6*	*0*	*0*	*0*	*0*
- Evaporative	*2*	*0*	*0*	*0*	*0*	*0*	*0*
- Medium Heavy Duty Gas Trucks (sub-category total)	28	219	21	0	0	0	0
- Non-Evaporative	*18*	*219*	*21*	*0*	*0*	*0*	*0*
- Evaporative	*10*	*0*	*0*	*0*	*0*	*0*	*0*

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Mobile Sources (division total) (continued)							
On-Road Motor Vehicles (major category) (continued)							
- Heavy Heavy Duty Gas Trucks (sub-category total)	21	277	42	0	0	0	0
- Non-Evaporative	*16*	*277*	*42*	*0*	*0*	*0*	*0*
- Evaporative	*5*	*0*	*0*	*0*	*0*	*0*	*0*
- Light Heavy Duty Diesel Trucks (<10000 lbs)	1	3	19	0	0	0	0
- Light Heavy Duty Diesel Trucks (>10000 lbs)	1	3	16	0	0	0	0
- Medium Heavy Duty Diesel Trucks	4	24	141	2	4	3	0
- Heavy Heavy Duty Diesel Trucks	22	96	527	6	12	10	0
- Motorcycles (Mcy) (sub-category total)	20	164	5	-	0	0	0
- Non-Evaporative	*14*	*164*	*5*	*0*	*0*	*0*	*0*
- Evaporative	*7*	*0*	*0*	*0*	*0*	*0*	*0*
- Heavy Duty Diesel Urban Buses	2	9	46	0	1	1	-
- Heavy Duty Gas Urban Buses (sub-category total)	6	70	8	0	0	0	0
- Non-Evaporative	*6*	*70*	*8*	*0*	*0*	*0*	*0*
- Evaporative	*0*	*0*	*0*	*0*	*0*	*0*	*0*
- School Buses (sub-category total)	2	20	15	0	1	0	0
- Non-Evaporative	*1*	*17*	*1*	*0*	*0*	*0*	*0*
- Evaporative	*0*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*1*	*3*	*14*	*0*	*1*	*0*	*0*
- Motor Homes (sub-category total)	6	169	16	0	0	0	0
- Non-Evaporative	*6*	*168*	*13*	*0*	*0*	*0*	*0*
- Evaporative	*0*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*0*	*0*	*3*	*0*	*0*	*0*	*0*

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

2004 Statewide Emission Inventory by Sub-Category

Division Major Category Sub-Category	Emissions (tons/day, annual average)						
	ROG	CO	NO_x	SO_x	PM_{10}*	$PM_{2.5}$*	NH_3
Mobile Sources (division total) (continued)							
Other Mobile Sources (major category total)	476	3087	938	62	70	63	0
- Aircraft	42	266	53	3	7	7	-
- Trains	9	33	177	17	5	5	-
- Ships And Commercial Boats (sub-category total)	7	15	76	40	6	6	-
- Residual Oil	*0*	*0*	*3*	*4*	*1*	*1*	*0*
- Diesel	*6*	*11*	*70*	*36*	*5*	*5*	*0*
- Gasoline	*0*	*3*	*0*	*0*	*0*	*0*	*0*
- Other Fuel	*0*	*1*	*3*	*0*	*0*	*0*	*0*
- Recreational Boats (sub-category total)	118	662	30	1	9	7	-
- Non-Evaporative	*107*	*661*	*27*	*1*	*9*	*7*	*0*
- Evaporative	*10*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*1*	*1*	*3*	*0*	*0*	*0*	*0*
- Off-Road Recreational Vehicles (sub-category total)	51	261	4	0	0	0	-
- Snowmobiles	*43*	*138*	*3*	*0*	*0*	*0*	*0*
- Motorcycles	*3*	*45*	*0*	*0*	*0*	*0*	*0*
- All-Terrain Vehicles	*2*	*42*	*0*	*0*	*0*	*0*	*0*
- Four-Wheel Drive Vehicles	*3*	*36*	*2*	*0*	*0*	*0*	*0*
- Off-Road Equipment (sub-category total)	188	1727	471	1	33	30	-
- Lawn And Garden Equipment	*112*	*822*	*15*	*0*	*3*	*3*	
- Non-Evaporative	*80*	*819*	*9*	*0*	*3*	*2*	*0*
- Evaporative	*31*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*1*	*3*	*6*	*0*	*0*	*0*	*0*
- Commercial & Industrial Equipment	*76*	*905*	*456*	*1*	*30*	*27*	*0*
- Non-Evaporative	*29*	*652*	*30*	*0*	*2*	*2*	*0*
- Evaporative	*3*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*44*	*170*	*398*	*0*	*28*	*26*	*0*
- Natural Gas	*1*	*82*	*29*	*0*	*0*	*0*	*0*
- Farm Equipment (sub-category total)	18	124	127	1	8	8	-
- Non-Evaporative	*2*	*67*	*2*	*0*	*0*	*0*	*0*
- Evaporative	*1*	*0*	*0*	*0*	*0*	*0*	*0*
- Diesel	*15*	*57*	*125*	*1*	*8*	*8*	*0*
- Fuel Storage and Handling	42	-	-	-	-	-	-
Total Statewide - All Sources	**2512**	**13802**	**3126**	**213**	**2086**	**765**	**493**

* Includes directly emitted particulate matter only.

Table 2-2 (continued)

Ozone

2004 Statewide Emission Inventory - Ozone Precursors by Category

NO_x Sources - Statewide

NO_x is a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone, PM_{10}, and $PM_{2.5}$. Most NO_x emissions are produced by the combustion of fuels. Industrial sources report NO_x emissions to local air districts and to the ARB. Other sources of NO_x emissions are estimated by the local air districts and the ARB. Mobile sources (including on-road and other) make up about 81 percent of the total statewide NO_x emissions. Area-wide sources, which include residential fuel combustion, managed burning and disposal, commercial cooking, and fires, contribute only a small portion of the total NO_x emissions.

NO_X Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	506	16%
Area-wide Sources	93	3%
On-Road Mobile	1589	51%
Gasoline Vehicles	845	27%
Diesel Vehicles	743	24%
Other Mobile	938	30%
Gasoline Vehicles	76	2%
Diesel Vehicles	778	25%
Other	85	3%
Total Statewide	***3126***	***100%***

Table 2-3

ROG Sources - Statewide

Reactive organic gases (ROG) are volatile organic compounds that are photochemically reactive and contribute to the formation of ozone, as well as PM_{10} and $PM_{2.5}$. These emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide ROG emissions. Stationary sources of ROG emissions include processes that use solvents (such as dry cleaning, degreasing, and coating operations) and petroleum-related processes (such as petroleum refining and marketing and oil and gas extraction). Area-wide ROG sources include consumer products, pesticides, aerosol and architectural coatings, asphalt paving and roofing, and other evaporative emissions.

ROG Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	505	20%
Area-wide Sources	707	28%
On-Road Mobile	824	33%
Gasoline Vehicles	794	32%
Diesel Vehicles	30	1%
Other Mobile	476	19%
Gasoline Vehicles	357	14%
Diesel Vehicles	75	3%
Other	43	2%
Total Statewide	***2512***	***100%***

Table 2-4

Largest Stationary Sources Statewide

Largest Stationary Sources of NO_x Statewide

Air Basin	Facility Name	City	Tons/Year
Mojave Desert	TXI Riverside Cement Company	Oro Grande	4609
Mojave Desert	Cemex - Black Mountain Quarry	Apple Valley	4483
Mojave Desert	California Portland Cement	Mojave	2942
San Francisco Bay Area	Shell Martinez Refinery	Martinez	2898
San Francisco Bay Area	Tesoro Refining And Marketing	Martinez	2307
San Francisco Bay Area	Valero Refining Company	Benicia	2289
Mojave Desert	Mitsubishi Cement 2000	Lucerne Valley	2245
San Francisco Bay Area	Chevron Products Company	Richmond	2063
Mojave Desert	Searles Valley Minerials	Trona	2026
San Francisco Bay Area	Hanson Permanente Cement	Cupertino	1935

Table 2-5

Largest Stationary Sources of ROG Statewide

Air Basin	Facility Name	City	Tons/Year
San Francisco Bay Area	Tesoro Refining And Marketing	Martinez	2041
San Francisco Bay Area	Chevron Products Company	Richmond	1637
San Francisco Bay Area	Shell Martinez Refinery	Martinez	1462
South Coast	Chevron USA	El Segundo	870
San Francisco Bay Area	Conoco Phillips - San Francisco	Rodeo	769
San Francisco Bay Area	New United Motor Manufacturing	Fremont	581
South Coast	Mobil Oil	Torrance	573
San Joaquin Valley	Crimson Resource Management (Natural Gas)	Taft	448
South Coast	West Coast Products	Carson	409
San Francisco Bay Area	Valero Refining Company	Benicia	389

Table 2-6

Facility totals are the most recent available data. Some facilities may have reduced or increased emissions since these data were collected. These changes will be reflected in subsequent almanacs.
The list of facilities does not include military bases, landfills, or airports.

Statewide Emissions Maps - Ozone Precursors

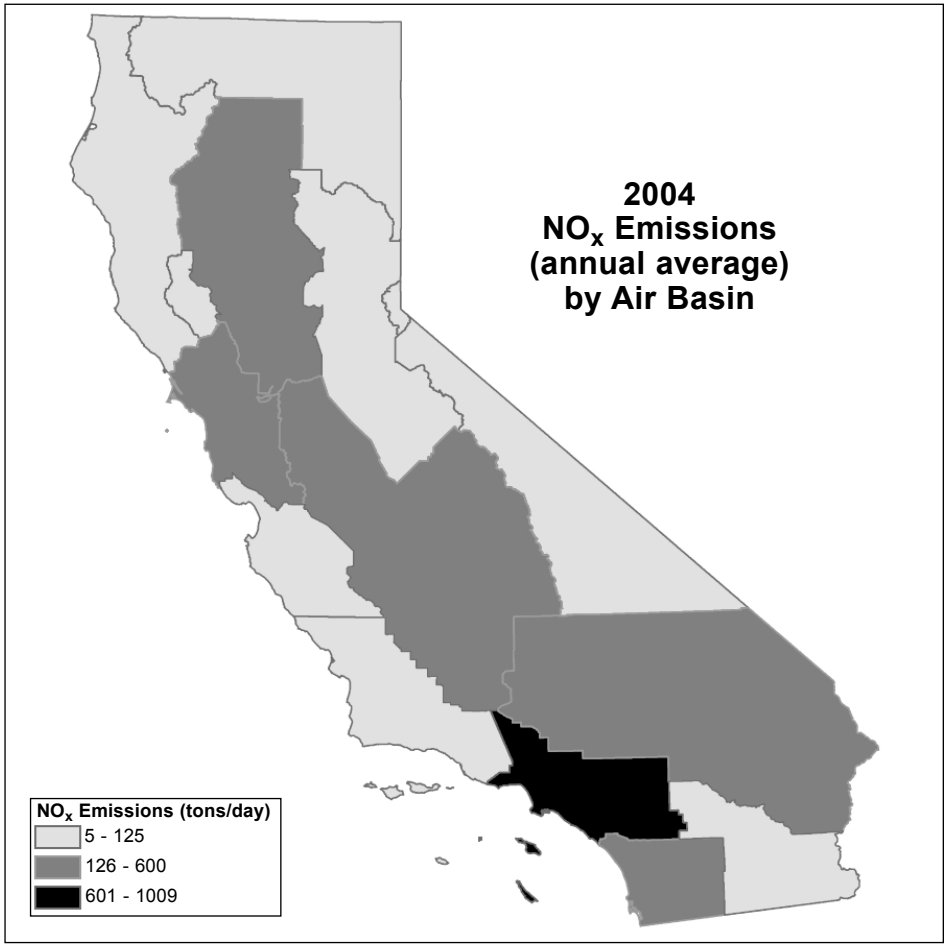

Figure 2-3

Figure 2-4

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Ozone - 2003 Air Quality

Air quality as it relates to ozone has improved greatly in California over the last several decades, although not uniformly throughout the State. However, despite aggressive emission controls, maximum measured ozone concentrations still exceed the State standard in 10 of the 15 air basins. Maximum measured values exceed the national 1-hour standard in seven air basins and exceed the national 8-hour standard in 10 air basins. California's highest ozone concentrations occur in the South Coast Air Basin, where the peak 1-hour indicator is close to two times the level of the State standard.

Ozone concentrations are generally lower near the coast than they are inland, and rural areas tend to be cleaner than urban areas. This can be explained in part by the characteristics of ozone, including pollutant reactivity, transport, and deposition. Based on current ozone concentrations, substantial additional emission control measures will be needed to attain the standards throughout the State. 2003 air quality data for California's five largest air basins can be found in Chapter 4, along with information on 8-hour ozone concentrations, and preliminary 2004 ozone data.

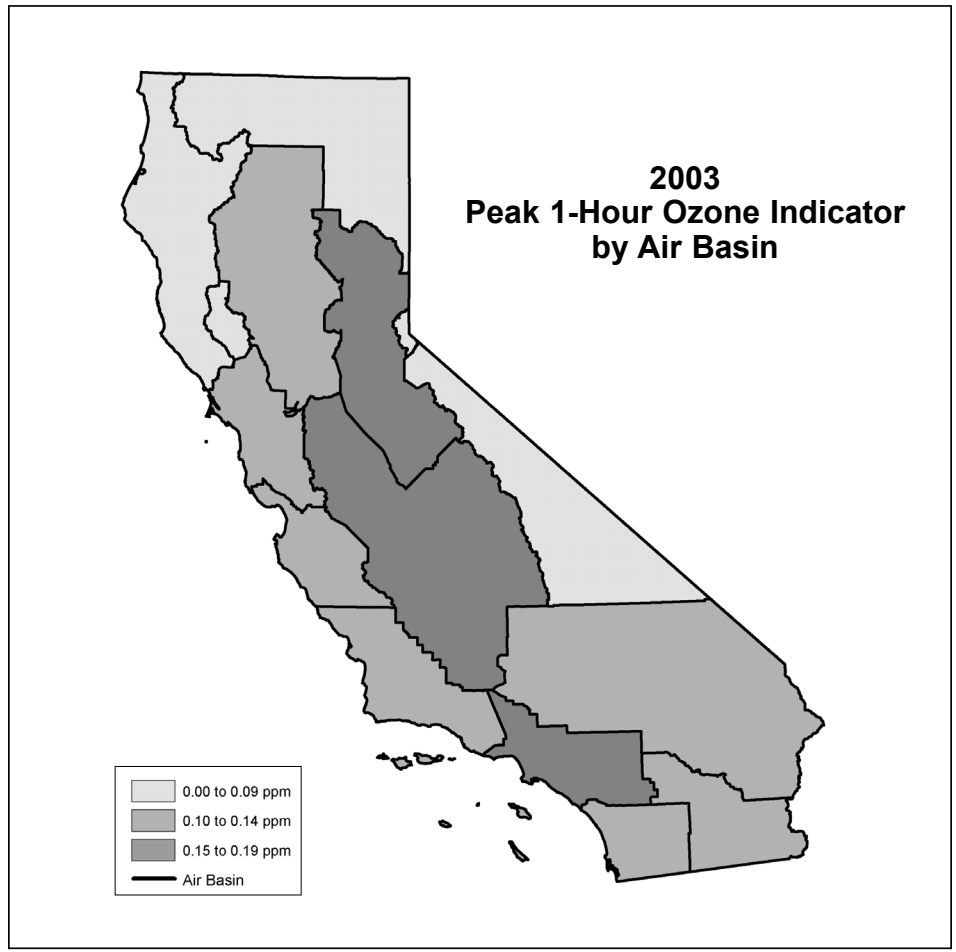

Figure 2-5

Ozone - 2003 Air Quality Tables

Maximum Peak 1-Hour and 8-Hour Indicator and Exceedance Days by Air Basin

AIR BASIN	2003 Maximum Peak Indicator in parts per million		Number of Days in 2003 Above the Standard		
			State	National	
	1-Hour	8-Hour	1-Hour	1-Hour	8-Hour
Great Basin Valleys Air Basin	0.09	0.08	0	0	0
Lake County Air Basin	0.08	0.07	0	0	0
Lake Tahoe Air Basin	0.09	0.08	0	0	0
Mojave Desert Air Basin	0.14	0.12	93	13	74
Mountain Counties Air Basin	0.15	0.12	56	6	56
North Central Coast Air Basin	0.10	0.09	3	0	2
North Coast Air Basin	0.08	0.07	0	0	0
Northeast Plateau Air Basin	0.08	0.07	0	0	0
Sacramento Valley Air Basin	0.14	0.11	51	5	40
Salton Sea Air Basin	0.14	0.12	66	7	47
San Diego Air Basin	0.12	0.10	23	1	6
San Francisco Bay Area Air Basin	0.13	0.10	19	1	7
San Joaquin Valley Air Basin	0.15	0.12	137	37	134
South Central Coast Air Basin	0.12	0.10	45	2	35
South Coast Air Basin	0.18	0.15	125	64	109

Table 2-7

Top Sites with Peak 1-Hour Indicator Values above the State Ozone Standard

Great Basin Valleys Air Basin
- Death Valley National Monument

Lake Tahoe Air Basin
- Echo Summit

Mojave Desert Air Basin
- Joshua Tree-National Monument
- Lancaster-43301 Division Street
- Phelan-Beekley Rd. & Phelan Rd.
- Hesperia-Olive Street
- Victorville-14306 Park Avenue

Mountain Counties Air Basin
- Cool-Highway 193
- Colfax-City Hall
- Placerville-Gold Nugget Way
- Grass Valley-Litton Building
- San Andreas-Gold Strike Road

North Central Coast Air Basin
- Pinnacles National Monument
- Hollister-Fairview Road

Sacramento Valley Air Basin
- Folsom-Natoma Street
- Sacramento-Del Paso Manor
- Auburn-Dewitt C Avenue
- Roseville-N Sunrise Blvd.
- Sloughhouse

Salton Sea Air Basin
- Palm Springs-Fire Station
- Calexico-Ethel Street
- El Centro-9th Street
- Calexico-Grant Street
- Indio-Jackson Street

San Diego Air Basin
- Alpine-Victoria Drive
- San Diego-Overland Avenue
- Escondido-East Valley Parkway
- El Cajon-Redwood Avenue
- Camp Pendleton

San Francisco Bay Area Air Basin
- Livermore-793 Rincon Avenue
- San Martin-Murphy Avenue
- Los Gatos
- Gilroy-9th Street
- Concord-2975 Treat Blvd.

San Joaquin Valley Air Basin
- Parlier
- Arvin-Bear Mountain Blvd.
- Fresno-1st Street
- Fresno-Sierra Skypark #2
- Clovis-North Villa Avenue

South Central Coast Air Basin
- Simi Valley-Cochran Street
- Ojai-Ojai Avenue
- Piru-3301 Pacific Avenue
- Thousand Oaks-Moorpark Road
- Paradise Rd.-Los Padres Nat'l Forest

South Coast Air Basin
- Fontana-Arrow Highway
- Santa Clarita
- Crestline
- Redlands-Dearborn
- Glendora-Laurel

Sites with 1-hour peak indicator values above the level of the State ozone standard during 2003. The top five sites in each air basin are listed in descending order of their peak indicator value. If an air basin is not listed, the peak indicator values at sites in that air basin were not above the State ozone standard.

Table 2-8

The Nature of Particulate Matter (PM_{10} and $PM_{2.5}$)

PM_{10} is a mixture of particles and droplets that vary in size and chemical composition, depending on each particle's origin. PM_{10} includes the subsets of "coarse" particles, those between 2.5 microns and 10 microns in diameter ($PM_{2.5\text{-}10}$), and "fine" particles, those 2.5 microns or smaller ($PM_{2.5}$). Particulate matter can be directly emitted into the air in the form of dust and soot (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). Primary particles are mostly coarse in size, but include some fine particles, while secondary particles are mostly fine.

Sources of ambient PM include: combustion sources such as trucks and passenger cars, off-road equipment, industrial processes, residential wood burning, and forest/agricultural burning; fugitive dust from paved and unpaved roads, construction, mining, and agricultural activities; and ammonia sources such as livestock operations, fertilizer application, and motor vehicles. In general, combustion processes emit and form fine particles, whereas particles from dust sources tend to fall in the coarse range.

The levels and chemical make-up of ambient PM vary widely from one area to another. In some areas, PM levels vary strongly by season. This is due to seasonal activity increase for some emissions sources and to weather conditions that are conducive to the build-up of PM. Seasonal sources of PM include wildfires, agricultural processes, dust storms, and residential wood burning. Stagnant conditions and cool temperatures during the winter contribute to the formation of secondary ammonium nitrate and ammonium sulfate, leading to higher ambient $PM_{2.5}$ concentrations. Dry weather and windy conditions cause higher coarse PM emissions, resulting in elevated PM_{10} concentrations.

The remainder of the discussion on PM includes summary emission inventory data for directly emitted PM_{10} and $PM_{2.5}$, summary information on ambient PM_{10} and $PM_{2.5}$ concentrations, and description of the link between source emissions and ambient PM concentrations in selected regions of the State.

Consistent with last year's almanac, is the reporting of both State and national annual averages for PM_{10} and $PM_{2.5}$. State and national annual averages may differ for several reasons: 1) the State and national criteria for assessing data completeness are different, 2) different monitors are approved for assessing compliance with each standard, and 3) the State standard uses local conditions while the national standard uses standard conditions for data reporting.

Directly Emitted Particulate Matter (PM_{10})

2004 Statewide Emission Inventory - Directly Emitted PM_{10} by Category

Area-wide sources account for about 88 percent of the statewide emissions of directly emitted PM_{10}. The major area-wide source of PM_{10} is fugitive dust, especially dust from unpaved and paved roads, agricultural operations, and construction and demolition. Fugitive dust emissions from unpaved and paved roads are related to motor vehicle population levels due to vehicular travel on both types of roads. Other sources of PM_{10} emissions include brake and tire wear, residential wood burning, and industrial sources. Exhaust emissions from mobile sources contribute a relatively small portion of directly emitted PM_{10} emissions but are a major source of the ROG and NO_x that form secondary particles. The section titled *PM_{10} and $PM_{2.5}$ - Linking Emissions Sources with Air Quality* describes how emissions from specific sources are linked to measured PM_{10} levels

PM_{10} Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	131	6%
Area-wide Sources	1835	88%
On-Road Mobile	49	2%
Gasoline Vehicles	32	2%
Diesel Vehicles	18	1%
Other Mobile	70	3%
Gasoline Vehicles	15	1%
Diesel Vehicles	47	2%
Other	8	0%
Total Statewide	***2086***	***100%***

Table 2-9

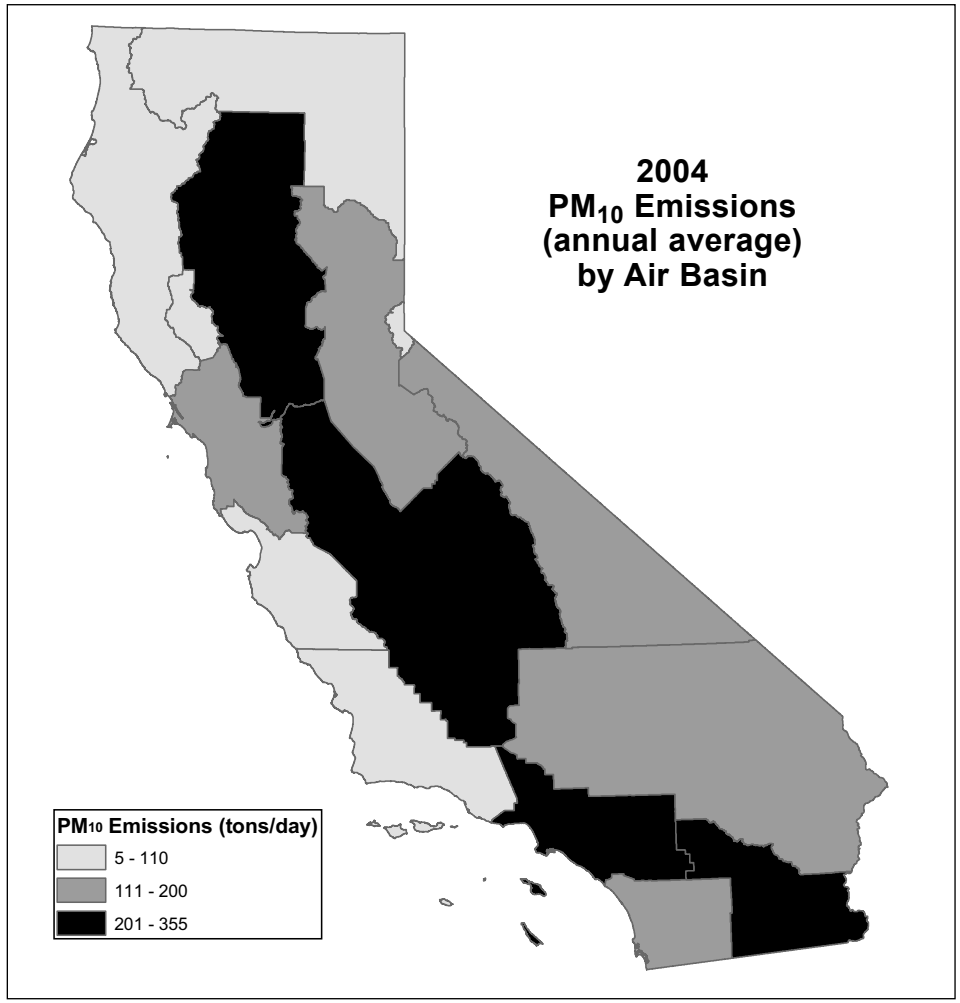

Figure 2-6

Largest Stationary Sources Statewide

Largest Stationary Sources of Directly Emitted PM_{10} Statewide

Air Basin	Facility Name	City	Tons/Year
Mojave Desert	TXI Riverside Cement Company	Oro Grande	1470
Mojave Desert	Antelope Valley Aggregate	Littlerock	757
Mojave Desert	US Borax	Boron	618
Mojave Desert	Mitsubishi Cement 2000	Lucerne Valley	600
Mountain Counties	Sierrapine Ltd Ampine Division	Martell	518
South Coast	AES Alamitos	Long Beach	405
Mojave Desert	National Cement	Lebec	371
San Francisco Bay Area	Shell Martinez Refinery	Martinez	357
Mojave Desert	California Portland Cement	Mojave	329
Mojave Desert	Searles Valley Minerals	Trona	326

Facility totals are the most recent available data. Some facilities may have reduced or increased emissions since these data were collected. These changes will be reflected in subsequent editions of the almanac.
The list of facilities does not include military bases, landfills, or airports.

Table 2-10

Directly Emitted Particulate Matter ($PM_{2.5}$)

2004 Statewide Emission Inventory - Directly Emitted $PM_{2.5}$ by Category

Area-wide sources account for about 76 percent of the statewide emissions of directly emitted $PM_{2.5}$. The major area-wide source of $PM_{2.5}$ is fugitive dust, especially dust from unpaved and paved roads, agricultural operations, and construction and demolition. Fugitive dust emissions from unpaved and paved roads are related to motor vehicle population levels due to vehicular travel on both types of roads. Other sources of $PM_{2.5}$ emissions include brake and tire wear, residential wood burning, and industrial sources. Exhaust emissions from mobile sources contribute only a very small portion of directly emitted $PM_{2.5}$ emissions, but are a major source of the ROG and NO_x that form secondary particles. The section titled *PM_{10} and $PM_{2.5}$ - Linking Emissions Sources with Air Quality* describes how emissions from specific sources are linked to measured $PM_{2.5}$ levels

$PM_{2.5}$ Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	86	11%
Area-wide Sources	582	76%
On-Road Mobile	34	4%
Gasoline Vehicles	19	2%
Diesel Vehicles	15	2%
Other Mobile	63	8%
Gasoline Vehicles	12	2%
Diesel Vehicles	43	6%
Other	8	1%
Total Statewide	***765***	***100%***

Table 2-11

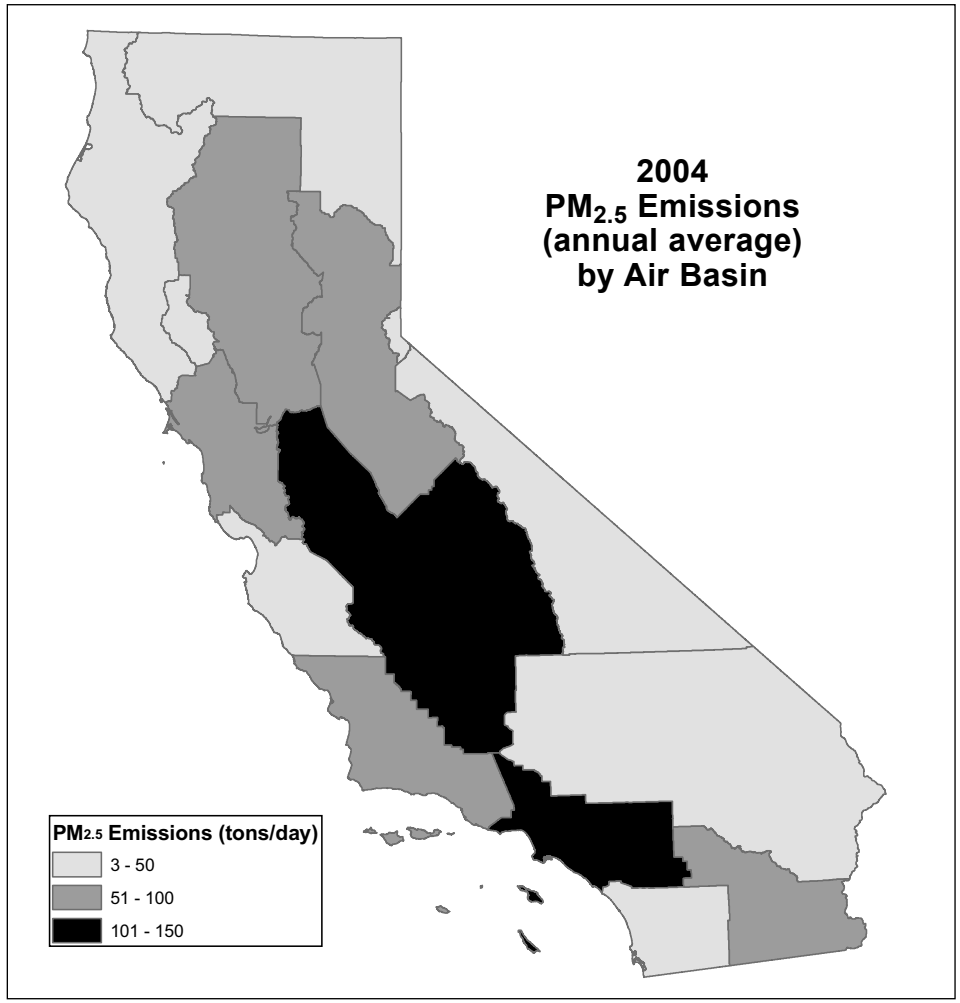

Figure 2-7

Largest Stationary Sources Statewide

Largest Stationary Sources of Directly Emitted $PM_{2.5}$ Statewide

Air Basin	Facility Name	City	Tons/Year
Mountain Counties	Sierrapine Ltd Ampine Division	Martell	414
South Coast	AES Alamitos	Long Beach	405
San Francisco Bay Area	Shell Martinez Refinery	Martinez	346
Mojave Desert	TXI Riverside Cement Company	Oro Grande	316
Mojave Desert	Antelope Valley Aggregate	Littlerock	286
Mountain Counties	Wheelabrator Martell	Martell	285
Mojave Desert	Mitsubishi Cement 2000	Lucerne Valley	277
South Coast	West Coast Products	Carson	246
South Coast	Chevron USA	El Segundo	239
Mojave Desert	Searles Valley Minerals	Trona	226

Facility totals are the most recent available data. Some facilities may have reduced or increased emissions since these data were collected. These changes will be reflected in subsequent editions of the almanac.
The list of facilities does not include military bases, landfills, or airports.

Table 2-12

PM_{10} - 2003 Air Quality

Most areas of California have either 24-hour or annual PM_{10} concentrations that exceed the State standards. Some areas exceed both State standards. Several areas, both urban and rural, also exceed the national standards. The highest annual average values during 2003 occurred in the Salton Sea, Great Basin Valleys, South Coast, San Joaquin Valley, and San Diego Air Basins. The 2003 data are summarized in table 2-13. The highest 24-hour concentrations generally occurred in the desert areas where wind-blown dust contributes to local PM_{10} problems.

Particles resulting from combustion contribute to high PM_{10} in a number of urban areas. While many of the control programs implemented for ozone will also reduce PM_{10}, more controls specifically for PM_{10} will be needed to reach attainment.

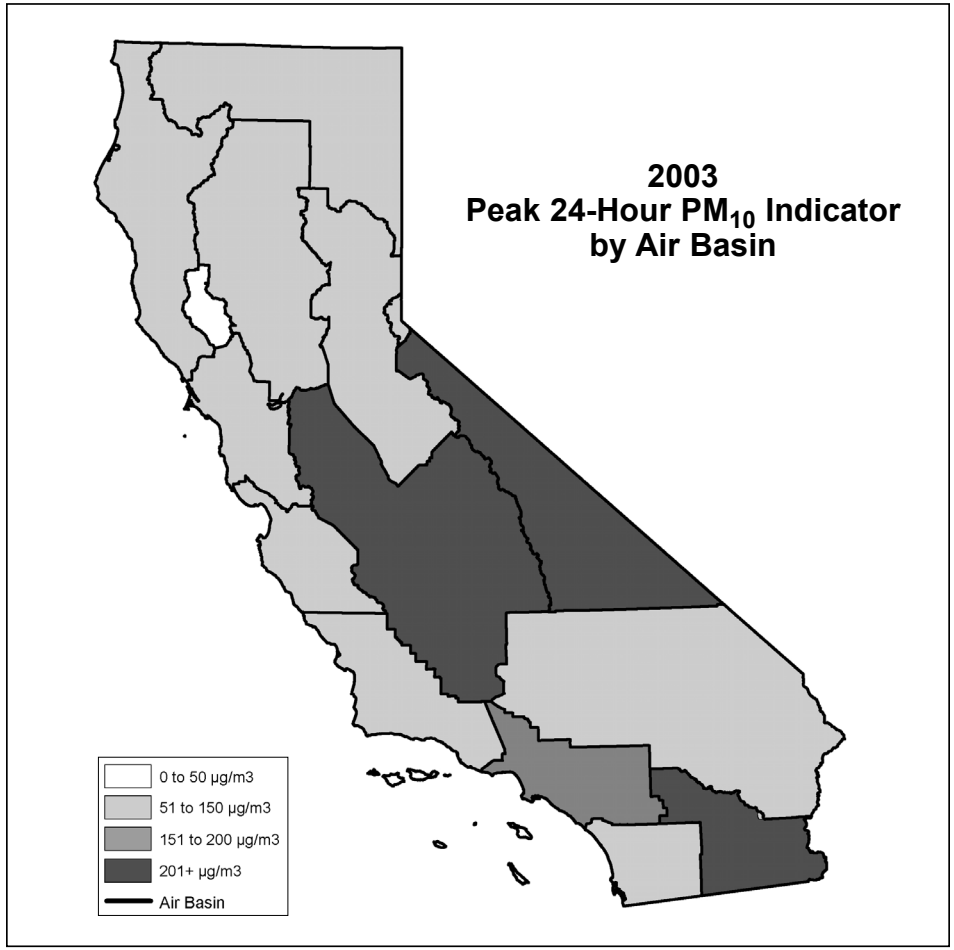

Figure 2-8

PM_{10} - 2003 Air Quality Tables

Maximum 24-Hour and Annual PM_{10} Concentrations by Air Basin

AIR BASIN	2003 Maximum 24-Hour Concentration in micrograms/cubic meter*		2003 Maximum Annual Average of Quarters in micrograms/cubic meter	
	State	National	State	National
Great Basin Valleys Air Basin	15641	16462	130.4	38.8
Lake County Air Basin	32		10.0	
Lake Tahoe Air Basin	52	61	15.0	17.6
Mojave Desert Air Basin	169	181	27.9	33.2
Mountain Counties Air Basin	58	66	21.0	23.1
North Central Coast Air Basin	90	87	31.6	30.1
North Coast Air Basin	71	65	22.2	21.4
Northeast Plateau Air Basin	31	33	12.8	13.3
Sacramento Valley Air Basin	83	81	28.8	28.4
Salton Sea Air Basin	848	840	79.7	80.0
San Diego Air Basin	289	280	52.6	52.1
San Francisco Bay Area Air Basin	60	58	24.8	24.2
San Joaquin Valley Air Basin	150	150	52.3	52.4
South Central Coast Air Basin	169	149	30.0	30.7
South Coast Air Basin	164	164	56.9	55.6

* The table lists the highest value for each statistic. Within an air basin, the highest value for each statistic may reflect a different site.
24-hour data - The table may include data from extreme, exceptional, or unusual concentration events: however, there is a mechanism in place to review for these types of events during the area designation process.
Annual average data - Extreme, exceptional, or unusual concentration events do not generally significantly influence the annual average. However, their exclusion can be considered on a case-by-case basis.

Table 2-13

Top Sites with 24-Hour Concentrations above the State PM_{10} Standard

Great Basin Valleys Air Basin
- Dirty Sox
- Shell Cut-Highway 190
- Mono Lake North Shore
- Olancha-Walker Creek Road
- Keeler-Cerro Gordo Road

Lake Tahoe Air Basin
- South Lake Tahoe-Sandy Way

Mojave Desert Air Basin
- Victorville-14306 Park Avenue
- Ridgecrest-100 W. California Ave.
- Barstow
- Hesperia-Olive Street
- Trona-Athol and Telegraph

Mountain Counties Air Basin
- Yosemite Village-Visitor Center
- Placerville-Gold Nugget Way

North Central Coast Air Basin
- Moss Landing-Sandholt Road
- Davenport
- Salinas-#3

North Coast Air Basin
- Eureka-Health Dept. 6th and I Street
- Fort Bragg-North Franklin Street
- Weaverville-Courthouse

Sacramento Valley Air Basin
- Yuba City-Almond Street
- Sacramento-Branch Center Road
- West Sacramento-15th Street
- Colusa-Sunrise Blvd.
- Sacramento-T Street

Salton Sea Air Basin
- Westmorland-West 1st Street
- Brawley-Main Street
- Niland-English Road
- Indio-Jackson Street
- Calexico-Ethel Street

San Diego Air Basin
- San Diego-Overland Avenue
- El Cajon-Redwood Avenue
- Escondido-East Valley Parkway
- San Diego-12th Avenue
- Otay Mesa-Paseo International

San Francisco Bay Area Air Basin
- San Jose-Jackson Street
- Pittsburg-10th Street
- San Jose-Tully Road
- San Francisco-Arkansas Street
- Bethel Island Road

San Joaquin Valley Air Basin
- Corcoran-Patterson Avenue
- Hanford-South Irwin Street
- Bakersfield-Golden State Highway
- Bakersfield-5558 California Avenue
- Oildale-3311 Manor Street

South Central Coast Air Basin
- Simi Valley-Cochran Street
- El Rio-Rio Mesa School #2
- Vandenberg Air Force Base-STS Power
- Piru-3301 Pacific Avenue
- Nipomo-Regional Park

South Coast Air Basin
- Riverside-Rubidoux
- Ontario-1408 Francis Street
- Perris
- Azusa
- Norco-Norconian

Sites with 24-hour PM_{10} concentrations above the level of the State PM_{10} standard during 2003. The top five sites in each air basin are listed in descending order of their maximum 24-hour concentration. If an air basin is not listed, the 24-hour PM_{10} concentrations at sites in that air basin were not above the State 24-hour PM_{10} standard. If more than 5 sites are listed, there were multiple sites with the same maximum concentration.

Table 2-14

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$PM_{2.5}$ - 2003 Air Quality

As explained in the Introduction section of Chapter 1, the U.S. EPA promulgated new national standards (24-hour and annual average) for $PM_{2.5}$ in July 1997. In June 2002, the ARB established a new, more health-protective State annual average $PM_{2.5}$ standard. The installation of federally approved $PM_{2.5}$ mass monitors throughout California began in 1998 and is now complete, with monitors at 81 sites. Detailed information on California's $PM_{2.5}$ network can be found on the ARB website at *www.arb.ca.gov/aqd/pm25/pmfnet02.htm*.

The majority of sites in California's $PM_{2.5}$ network began sampling in early 1999. The 2003 data are summarized in Table 2-15. Sites in the South Coast and San Joaquin Valley Air Basins recorded the highest 24-hour concentrations, 98th percentile 24-hour concentrations, and annual average concentrations in the State. The annual averages for these areas were about twice the level of the State annual $PM_{2.5}$ standard. High 24-hour $PM_{2.5}$ concentrations were recorded in Southern California in the fall of 2003 due to severe wildfire impacts.

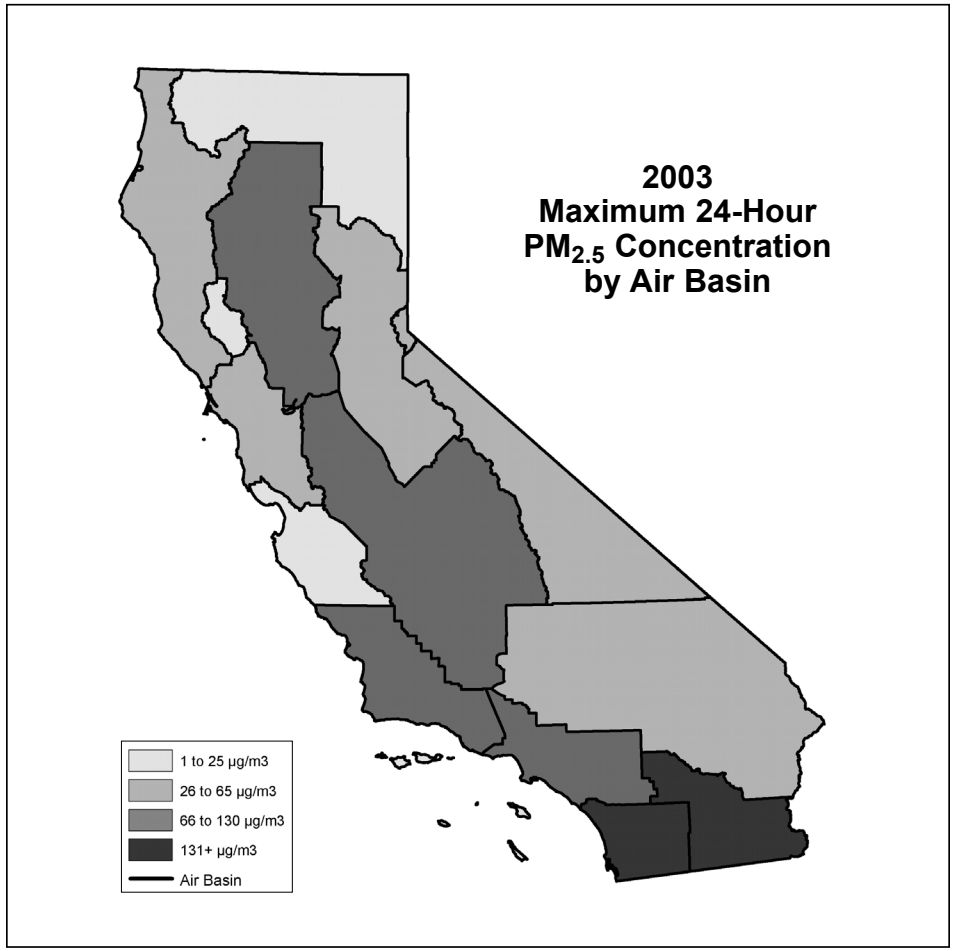

Figure 2-9

$PM_{2.5}$ - 2003 Air Quality Tables

Maximum 24-Hour, 98th Percentile, and Annual $PM_{2.5}$ Concentrations by Air Basin

AIR BASIN	2003 Maximum 24-Hr Concentration in micrograms/cubic meter		98th Percentile 24-Hr Conc. ($\mu g/m^3$)*	2003 Average of Quarterly Means in micrograms/cubic meter*	
	State	National		State	National
Great Basin Valleys Air Basin	44.0	44.0	8.0		
Lake County Air Basin	21.9	21.9	15.1	4.4	4.4
Lake Tahoe Air Basin	27.4	21.0	19.0	7.2	7.2
Mojave Desert Air Basin	28.0	28.0	24.0	9.4	11.4
Mountain Counties Air Basin	54.0	43.0	40.0	8.6	13.3
North Central Coast Air Basin	15.9	15.9	14.0	7.3	7.4
North Coast Air Basin	36.1	36.1	15.2	7.4	7.3
Northeast Plateau Air Basin	10.0	10.0			
Sacramento Valley Air Basin	73.2	65.0	43.0	15.9	12.2
Salton Sea Air Basin	153.6	65.1	24.9	11.4	11.4
San Diego Air Basin	239.2	239.2	46.9	14.4	15.5
San Francisco Bay Area Air Basin	56.1	56.1	37.4	11.7	11.7
San Joaquin Valley Air Basin	84.5	67.8	56.0	24.8	19.7
South Central Coast Air Basin	116.0	116.0	33.4	12.4	14.2
South Coast Air Basin	121.2	121.2	76.6	24.8	24.8

The table lists the highest value for each statistic. Within an air basin, the highest value for each statistic may reflect a different site.

* These statistics and determination of their validity are calculated according to the methods specified in 40 CFR Part 50, Appendix N. Validity is based on the number of measurements available per quarter and therefore, depends on data completeness. Both the 98th percentile concentration and the average of quarters concentration relate to the national $PM_{2.5}$ standards, while only the average of quarters concentration relates to the State $PM_{2.5}$ standard.

Table 2-15

PM_{10} and $PM_{2.5}$ - Linking Emissions Sources with Air Quality

The size, concentration, and chemical composition of PM vary by region and by season. A number of areas exhibit strong seasonal patterns. Other areas have a much more uniform distribution with PM concentrations remaining high throughout the year. In yet other areas, isolated PM exceedances can occur at any time of the year.

In the San Joaquin Valley, the San Francisco Bay Area, and the Sacramento region, there is a strong seasonal variation in PM, with higher PM_{10} and $PM_{2.5}$ concentrations in the fall and winter months (refer to Figure 2-10). In the winter, PM_{10} and $PM_{2.5}$ concentrations remain elevated for extended periods. These higher concentrations are caused by increased activity for some emission sources and meteorological conditions that are conducive to the build-up of PM. During the winter, the $PM_{2.5}$ size fraction drives the PM concentrations, and the major contributor to high levels of ambient $PM_{2.5}$ is the secondary formation of PM caused by the reaction of NO_x and ammonium to form ammonium nitrate. The San Joaquin Valley also records high PM_{10} levels during the fall. During this season, both the coarse fraction and the $PM_{2.5}$ fraction drove the PM concentrations.

In the South Coast region, PM_{10} concentrations remain high throughout the year (refer to Figure 2-11). $PM_{2.5}$ concentrations can reach high levels in the spring, fall, and winter. The more uniform activity patterns of emission sources, as well as less variable weather patterns, leads to this more uniform concentration pattern. In other areas, high PM can be more episodic than seasonal. For example, in the Owens Lake area of the Great Basin Valleys Air Basin, episodic fugitive dust events lead to very high PM_{10} levels, with soil dust as the major contributor to ambient PM_{10}.

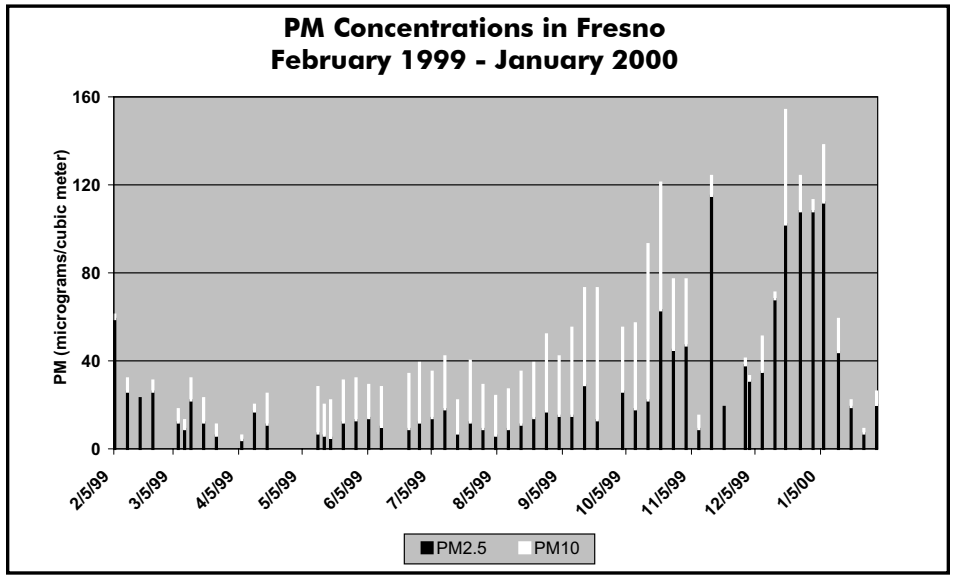

Figure 2-10

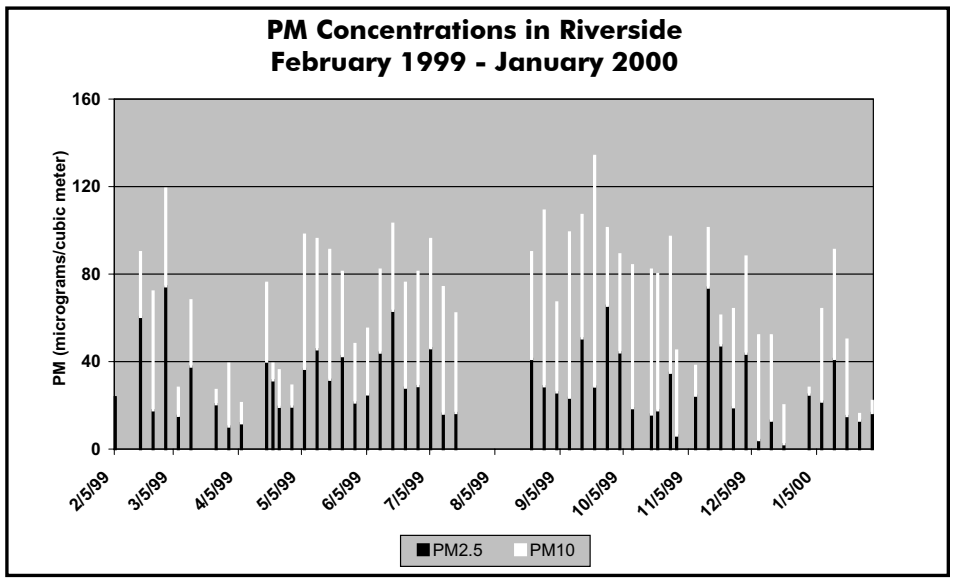

Figure 2-11

Analysis of PM chemical composition data collected from a variety of routine and special monitoring programs provides insight into the fraction of $PM_{2.5}$ that is secondary. Data were obtained from the California $PM_{2.5}$ and PM_{10} monitoring networks, California Regional $PM_{10}/PM_{2.5}$ Air Quality Study, Children's Health Study, Integrated Monitoring and Protected Visual Environments Program, and South Coast Air Quality Management District's PM Technical Enhancement Programs of 1995 and 1998-1999. Secondary $PM_{2.5}$ estimates include ammonium nitrate and ammonium sulfate components, which form through reactions in the atmosphere of nitrogen oxides and sulfur oxides emitted by motor vehicles and other combustion processes. $PM_{2.5}$ also includes secondary organic aerosols (SOA) resulting from atmospheric reactions of organic compounds emitted from combustion sources and biogenic processes. Since only limited information is available on how much of the measured $PM_{2.5}$ organic carbon component is secondary, SOA are not included in the secondary $PM_{2.5}$ estimates. However, available studies suggest that in the South Coast, on an annual average basis, SOA may constitute 6 to 16 percent of $PM_{2.5}$ (Schauer et. al. 1996) and in urban areas of the San Joaquin Valley, during the winter, SOA may contribute up to an average of eight percent of $PM_{2.5}$ (Schauer and Cass, 1998).

Chemical Mass Balance (CMB) models are used to establish which sources and how much of their emissions contribute to ambient PM concentrations. CMB models use chemical composition data from ambient PM samples and from emission sources. These data are often collected during special source attribution studies. The source attribution data presented in this section were derived from a variety of studies with differing degrees of chemical speciation. In general, however, the source categories can be interpreted in the following manner. The road and other dust, wood smoke, cooking, vehicle exhaust, and construction categories represent sources which directly emit particles. Road and other dust represents the combination of mechanically disturbed soil (paved and unpaved roads, agricultural activities) and wind-blown dust. Wood smoke generally represents residential wood combustion, but may also include combustion from other biomass burning such as agricultural or prescribed burning. The vehicle exhaust category represents direct motor vehicle exhaust particles from both gasoline and diesel vehicles. Construction reflects construction and demolition activities. Ammonium nitrate and ammonium sulfate represent secondary species (i.e., they form in the atmosphere from the emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), and ammonia). Combustion sources such as motor vehicles and stationary sources contribute to the NO_x that forms ammonium nitrate. Mobile sources such as diesel vehicles, locomotives, and ships and stationary combustion sources emit the SO_x that forms ammonium sulfate. Ammonia sources include animal feedlots,

Estimated Secondary Portion of $PM_{2.5}$ (annual average)	
Air Basin	Secondary $PM_{2.5}$ (%)
Great Basin Valleys	30
Lake County	30
Lake Tahoe	40
Mojave Desert	40
Mountain Counties	10
North Central Coast	40
North Coast	30
Northeast Plateau	30
Sacramento Valley	30
Salton Sea	40
San Diego	50
San Francisco Bay Area	40
San Joaquin Valley	40
South Central Coast	50
South Coast	60

Table 2-16

fertilizers, and motor vehicles. The other carbon sources category reflects organic sources not included in the source attribution models, such as natural gas combustion, as well as secondary organic carbon formation. The unidentified category represents the mass that cannot be accounted for by the identified source categories. It can include particle-bound water, as well as other unidentified sources.

The figures on the following pages present the best available source attribution data from CMB modeling for selected regions. These presentations are representative of typical days when the State PM_{10} standards are exceeded (refer to Chapter 1, for a review of the State standards). The fractions of the constituents shown can vary daily and from year to year, depending on factors such as meteorology.

San Joaquin Valley Air Basin

Figures 2-12 and 2-13 illustrate contributions to ambient PM in the San Joaquin Valley during the winter and on an annual average basis. These are the results from analysis of data collected during the California Regional PM_{10}/$PM_{2.5}$ Air Quality Study. (San Joaquin Valley Air Pollution Control District, 2003)

During the winter in Fresno secondary ammonium nitrate was the largest contributor to PM_{10}, formed from NOx emissions from mobile and stationary combustion sources, combined with ammonium. Emissions from wood smoke, vehicle exhaust, and road and agricultural sources also contribute significantly to PM_{10} levels. On an annual average basis, elevated concentrations of PM_{10} were associated with high levels of road and agricultural dust. Secondary ammonium nitrate, wood smoke, and vehicle exhaust particles also contributed significantly to annual PM_{10} concentrations.

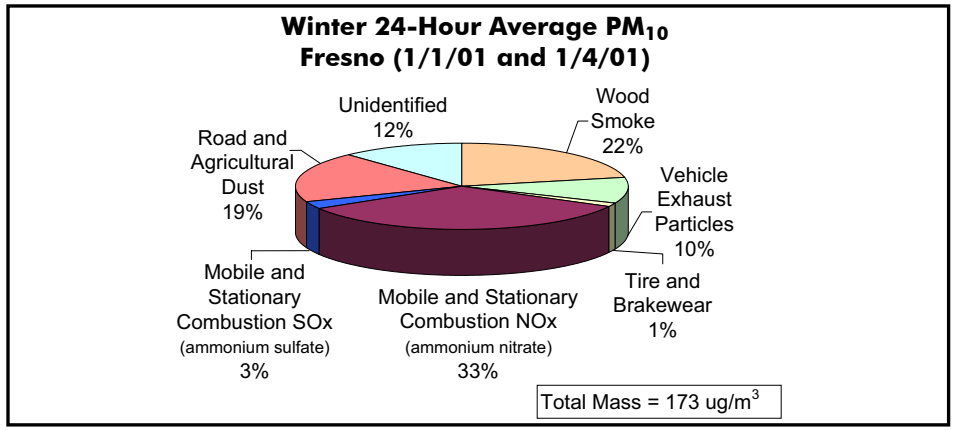

Figure 2-12

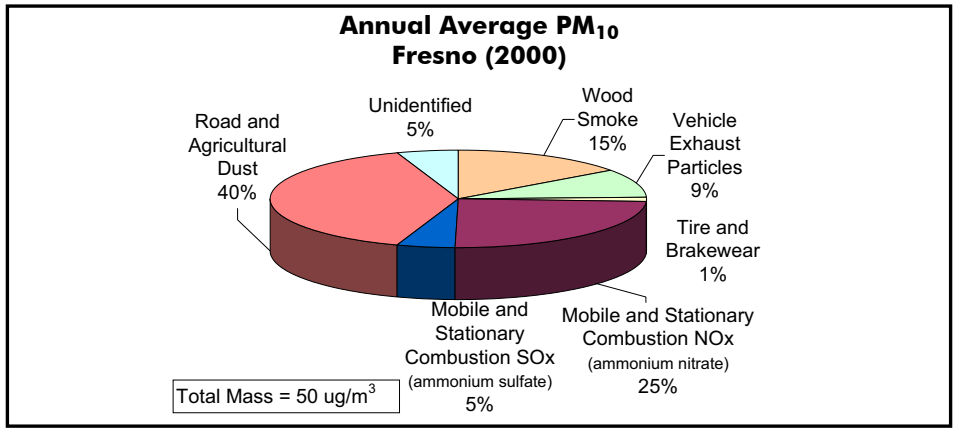

Figure 2-13

San Francisco Bay Area Air Basin

Figures 2-14 and 2-15 illustrate the sources of PM during the winter in the San Franciso Bay Area. The data are from the source apportionment analysis conducted by the Bay Area Air Quality Management District using samples collected during two special studies (Fairley, 1996, 2001).

During the winter, in San Jose, high PM concentrations are associated with high levels of wood smoke, primarily from residential wood combustion, and cooking. NO_x emitted from mobile and stationary combustion sources, in combination with ammonium, contributes about one-fourth of the PM levels in the form of ammonium nitrate. Particle emissions from mobile and stationary combustion sources are also a major contributor to $PM_{2.5}$. Road dust is a significant contributor to PM_{10}, but not $PM_{2.5}$.

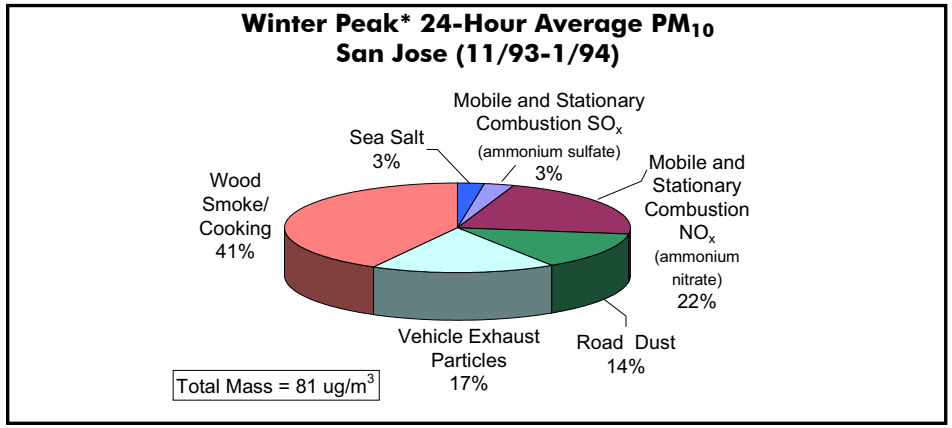

Figure 2-14

* Average of days with PM_{10} > 50 ug/m³

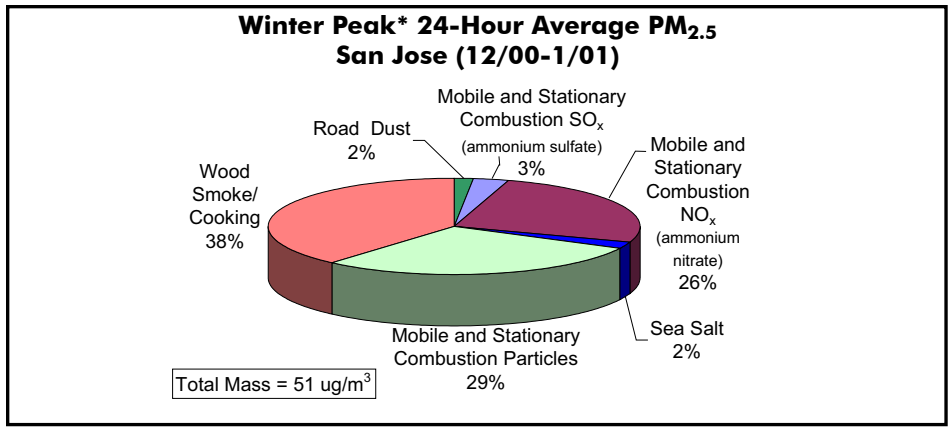

Figure 2-15

* Average of days with $PM_{2.5}$ > 40 ug/m³

Sacramento Valley Air Basin

Figures 2-16 and 2-17 illustrate source contributions to ambient PM_{10} and $PM_{2.5}$ during the winter in Sacramento. The data are from the analysis of ambient air samples collected from November through January, during the six year period of 1991 through 1996 (Motallebi, 1999).

NO_x emissions from mobile and stationary combustion sources, combined with ammonium to form ammonium nitrate, is the largest contributor to ambient PM levels. Vehicle exhaust particle emissions and wood smoke from residential wood combustion also contribute significantly. While road and other dust is a significant component of ambient PM_{10}, its contribution to $PM_{2.5}$ is minor.

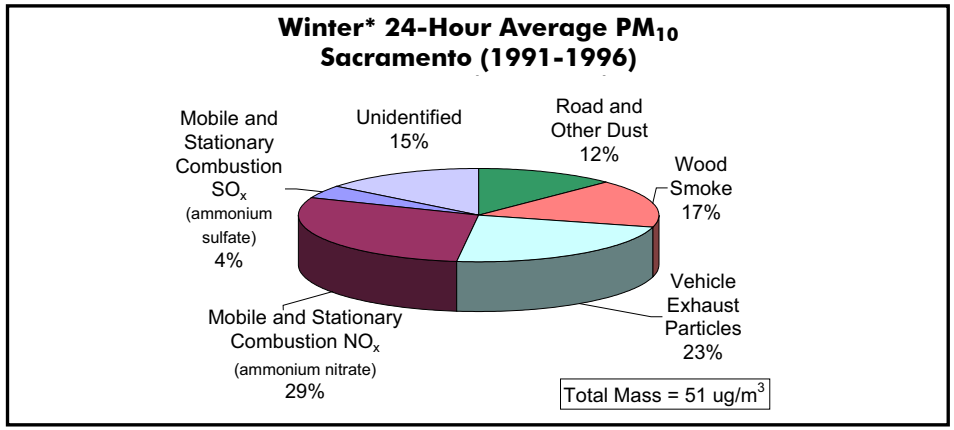

Figure 2-16

* Average of days with PM_{10} > 40 ug/m3

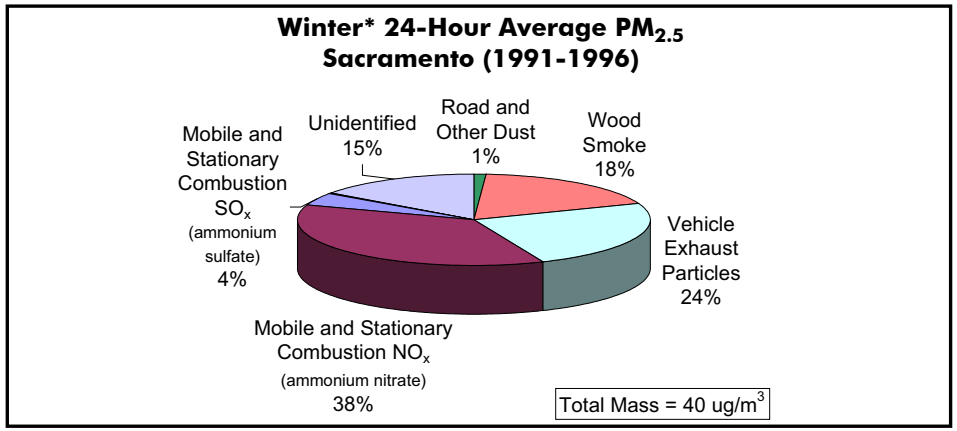

Figure 2-17

* Average of days with PM_{10} > 40 ug/m3

South Coast Air Basin

Data for Figures 2-18, 2-19, 2-20, and 2-21 are from the source apportionment analysis that the South Coast Air Quality Management District (SCAQMD) performed for the 1997 Air Quality Management Plan. SCAQMD collected samples during a one-year special study from January 1995 to February 1996, as part of the PM_{10} Technical Enhancement Program (SCAQMD, 1996).

On an annual basis, in Central Los Angeles, dust from roads and construction is the major contributor to ambient PM_{10}. This is not the case for the episode on November 17, 1995. In both cases, NO_x and SO_x emitted from mobile and stationary combustion sources, combined with ammonium, contribute significantly in the form of ammonium nitrate and sulfate. Vehicle exhaust particles and emissions from other carbon sources also contribute to both annual and episodic ambient PM_{10} levels.

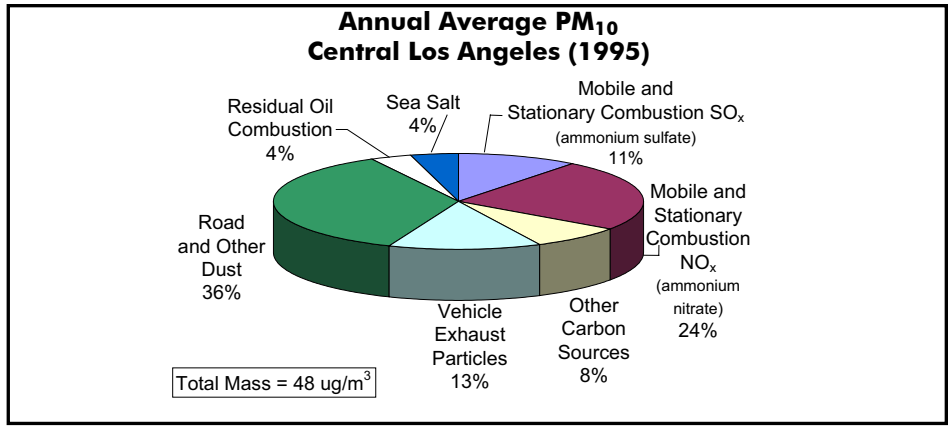

Figure 2-18

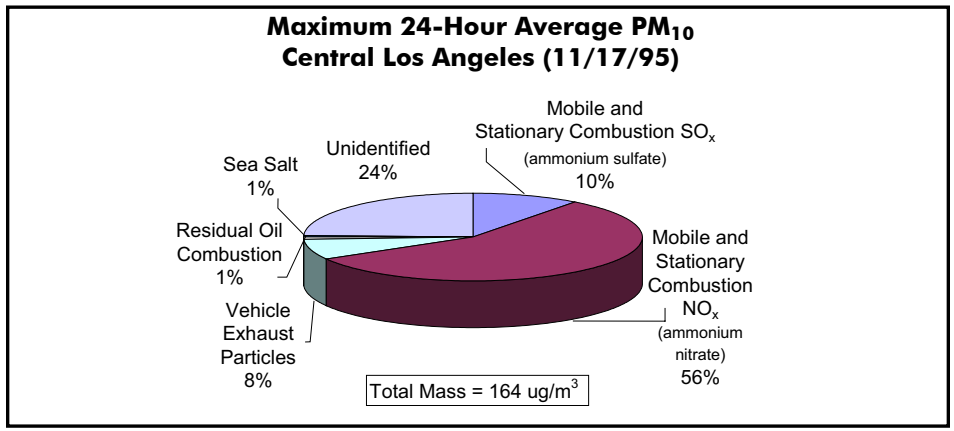

Figure 2-19

On an annual basis, in Rubidoux, dust from roads and construction is the major contributor to ambient PM_{10}. In contrast, dust was a minor contributor to the PM_{10} episode on November 17, 1995. In both cases, ammonium nitrate formed from NO_x emitted from mobile and stationary combustion sources, combined with ammonium, contributes significantly. Vehicle exhaust particles and emissions from other carbon sources also contribute to both annual and episodic ambient PM_{10} levels.

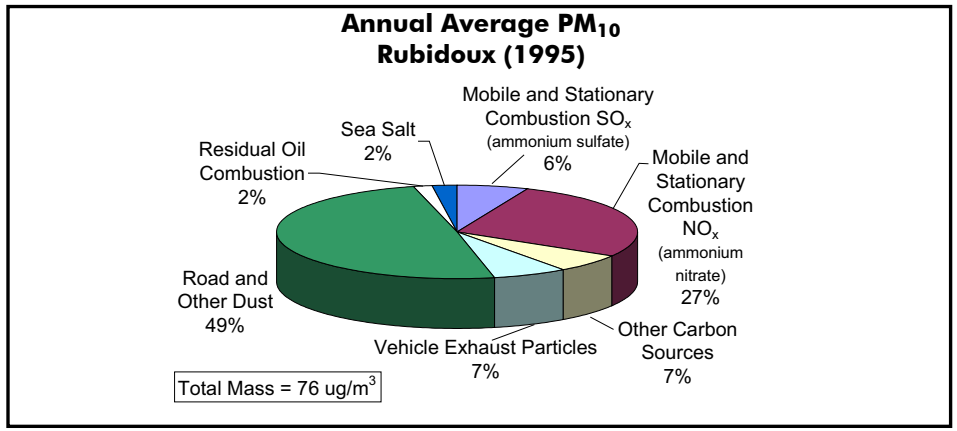

Figure 2-20

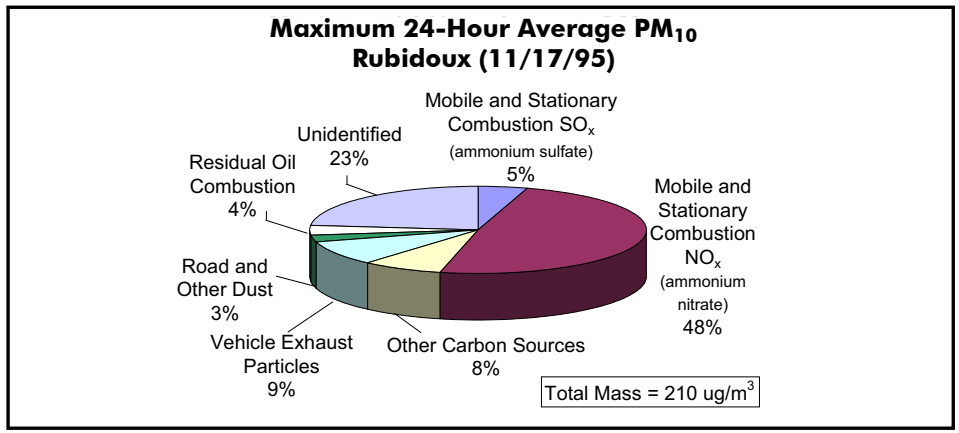

Figure 2-21

References for Particulate Matter:

Fairley, D. *Source Apportionment of Bay Area Particulates.* 1996; Personal communication.

Fairley, D. *$PM_{2.5}$ Source Apportionment for San Jose 4th Street.* 2001; Personal communication.

Motallebi, N. *Wintertime PM_{10} and $PM_{2.5}$ Source Apportionment at Sacramento, California.* Journal of the Air & Waste Management Association 1999; 49:PM-25-34.

South Coast Air Quality Management District. *"Modeling and Attainment Demonstrations"* in 1997 Air Quality Management Plan, Diamond Bar, California. 1996.

Schauer, J. J., Rogge, W. F., Hidemann, L. M., Mazurek, M. A., and Cass, G. R. *Source Apportionment of Airborne Particulate Matter Using Organic Compounds as Tracers.* Atmospheric Environment; 30: 22, 3837-3855, 1996.

San Joaquin Valley Air Pollution Control District. *2003 PM_{10} Plan: San Joaquin Valley Plan to Attain Federal Standards for Particulate Matter 10 Microns and Smaller.* Appendix N.

Carbon Monoxide

2004 Statewide Emission Inventory - Carbon Monoxide by Category

Carbon monoxide (CO) gas is formed as the result of incomplete combustion of fuels and waste materials such as gasoline, diesel fuel, wood, and agricultural debris. Mobile sources generate about 82 percent of the statewide CO emissions. Diesel-powered on-road and other mobile vehicles are small CO contributors. Stationary and area-wide sources of CO are the same types of fuel combustion sources that also generate NO_x. The stationary source contribution to statewide CO is small, due in part to widespread use of natural gas as a fuel and the presence of combustion controls.

CO Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	405	3%
Area-wide Sources	2138	15%
On-Road Mobile	8172	59%
Gasoline Vehicles	8033	58%
Diesel Vehicles	139	1%
Other Mobile	3087	22%
Gasoline Vehicles	2463	18%
Diesel Vehicles	275	2%
Other	349	3%
Total Statewide	***13802***	***100%***

Table 2-17

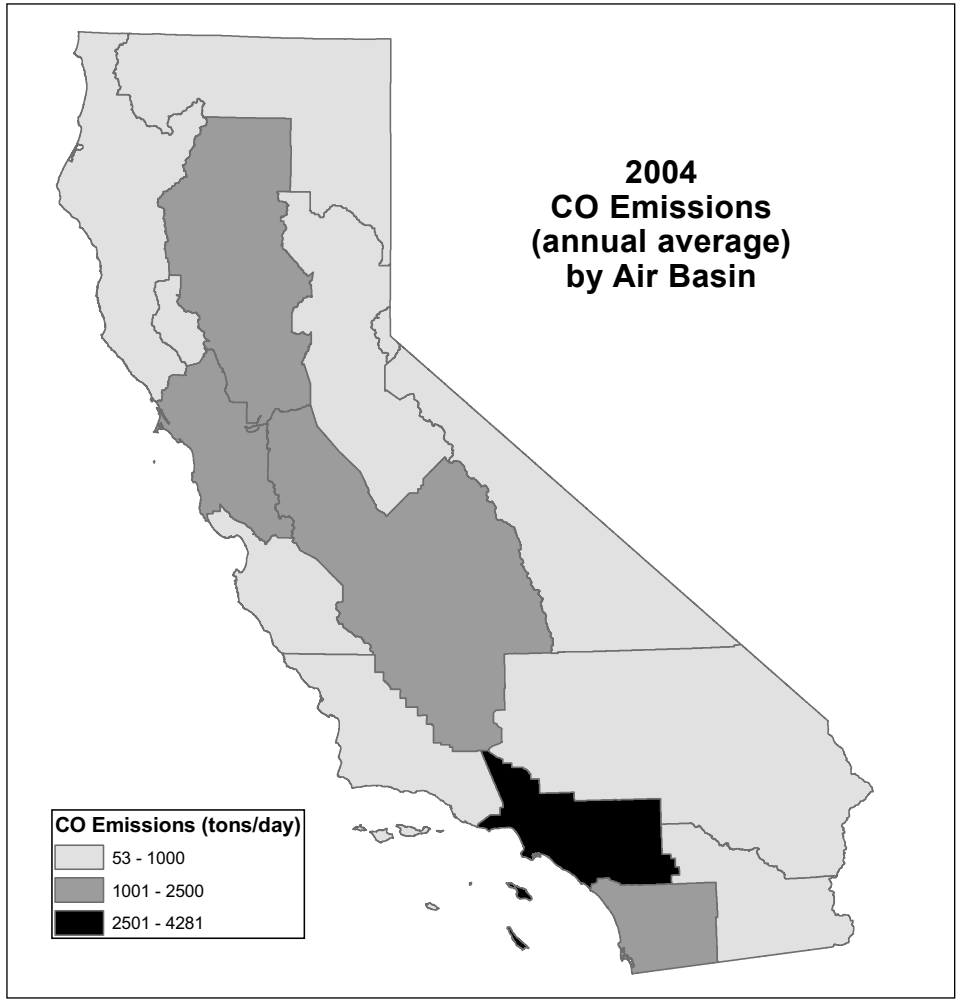

Figure 2-22

Carbon Monoxide - 2003 Air Quality

The State and national carbon monoxide standards are now attained in most areas of California. The requirements for cleaner vehicles and fuels have been primarily responsible for the reductions in CO, despite significant increases in population and the number of vehicle miles traveled each day.

However, there is still one problem area: the City of Calexico in Imperial County. While CO concentrations continue to decrease throughout most of the State, the CO problem in Calexico is unique in that this area shares a border with Mexico. There is a high likelihood that cross-border traffic contributes to the local CO problem in this area, and more study is needed to determine the most effective control strategy. The Calexico area has made progress towards attainment. Peak levels have been declining as have the number of days that State and federal standards are exceeded. In 2003, Calexico did not have any exceedances of the State and federal CO standards.

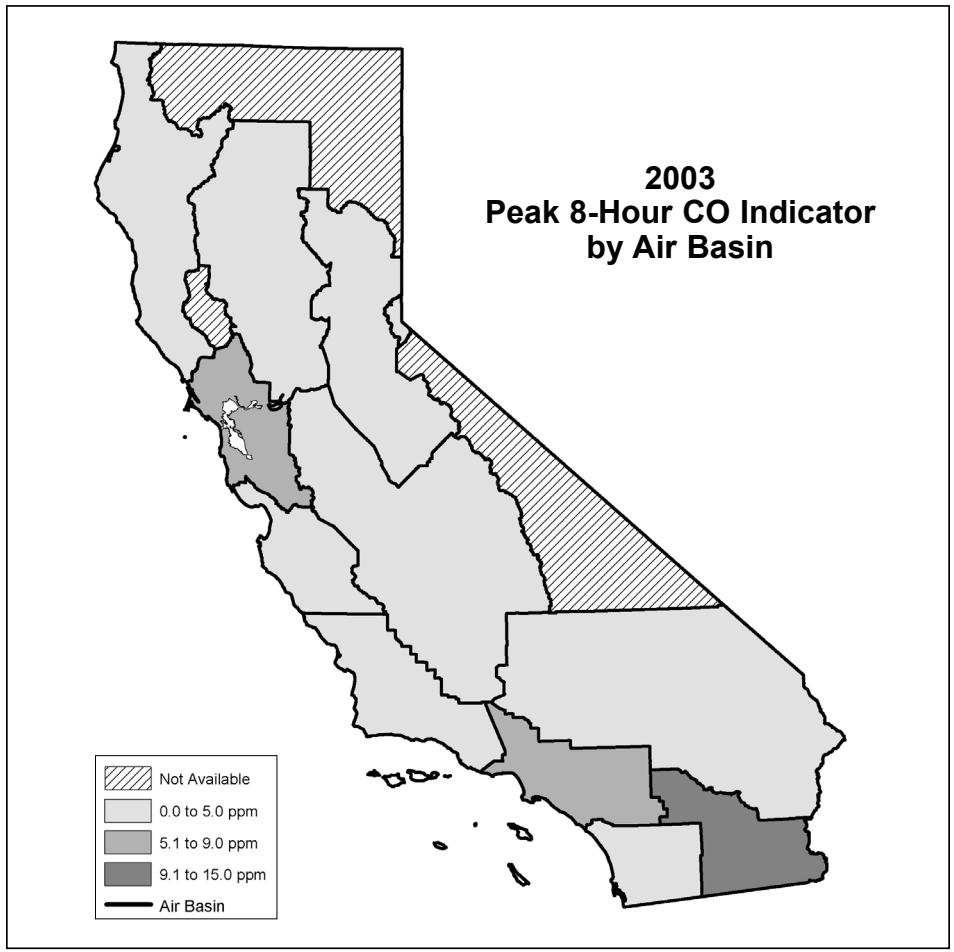

Figure 2-23

Carbon Monoxide - 2003 Air Quality Tables

Maximum Peak 8-Hour Indicator by Air Basin

AIR BASIN	2003 Maximum Peak 8-Hour Indicator in parts per million	Number of Days in 2003 above 8-Hour Standard	
		State	National
Great Basin Valleys Air Basin	Incomplete Data	Incomplete Data	Incomplete Data
Lake County Air Basin	Incomplete Data	Incomplete Data	Incomplete Data
Lake Tahoe Air Basin	1.9	0	0
Mojave Desert Air Basin	2.0	0	0
Mountain Counties Air Basin	1.6	0	0
North Central Coast Air Basin	1.4	0	0
North Coast Air Basin	2.3	0	0
Northeast Plateau Air Basin	Incomplete Data	Incomplete Data	Incomplete Data
Sacramento Valley Air Basin	4.4	0	0
Salton Sea Air Basin	11.5	0	0
San Diego Air Basin	5.0	1	1
San Francisco Bay Area Air Basin	5.5	0	0
San Joaquin Valley Air Basin	4.8	0	0
South Central Coast Air Basin	2.7	0	0
South Coast Air Basin	8.7	0	0

Table 2-18

Sites with Peak 8-Hour Indicator Values above the State CO Standard

Salton Sea Air Basin

- Calexico-Ethel Street

Only one site had peak 8-hour indicator values above the level of the State CO standard during 2003. If an air basin is not listed, the peak indicator values at sites in that air basin were not above the State CO standards.

Table 2-19

Ammonia

2004 Statewide Emission Inventory - Ammonia by Category

Area-wide sources account for 69 percent of the statewide emissions of ammonia. The major area-wide source of ammonia is livestock waste. Ammonia emissions from on-road vehicles are produced by three-way catalyst equipped gasoline vehicles. Ammonia emissions from stationary sources are primarily related to NO_x emission controls and the manufacture of a variety of products.

Ammonia emission sources have strong geographic differences. In the San Joaquin Valley, ammonia emissions are dominated by livestock and other agricultural sources. However, in the South Coast Air Basin, motor vehicle sources are more significant.

NH_3 Emissions (annual average)		
Emissions Source	**tons/day**	**Percent**
Stationary Sources	49	10%
Area-wide Sources	341	69%
On-Road Mobile	103	21%
Gasoline Vehicles	103	21%
Diesel Vehicles	0	0%
Other Mobile	0	0%
Gasoline Vehicles	0	0%
Diesel Vehicles	0	0%
Other	0	0%
Total Statewide	***493***	***100%***

Table 2-20

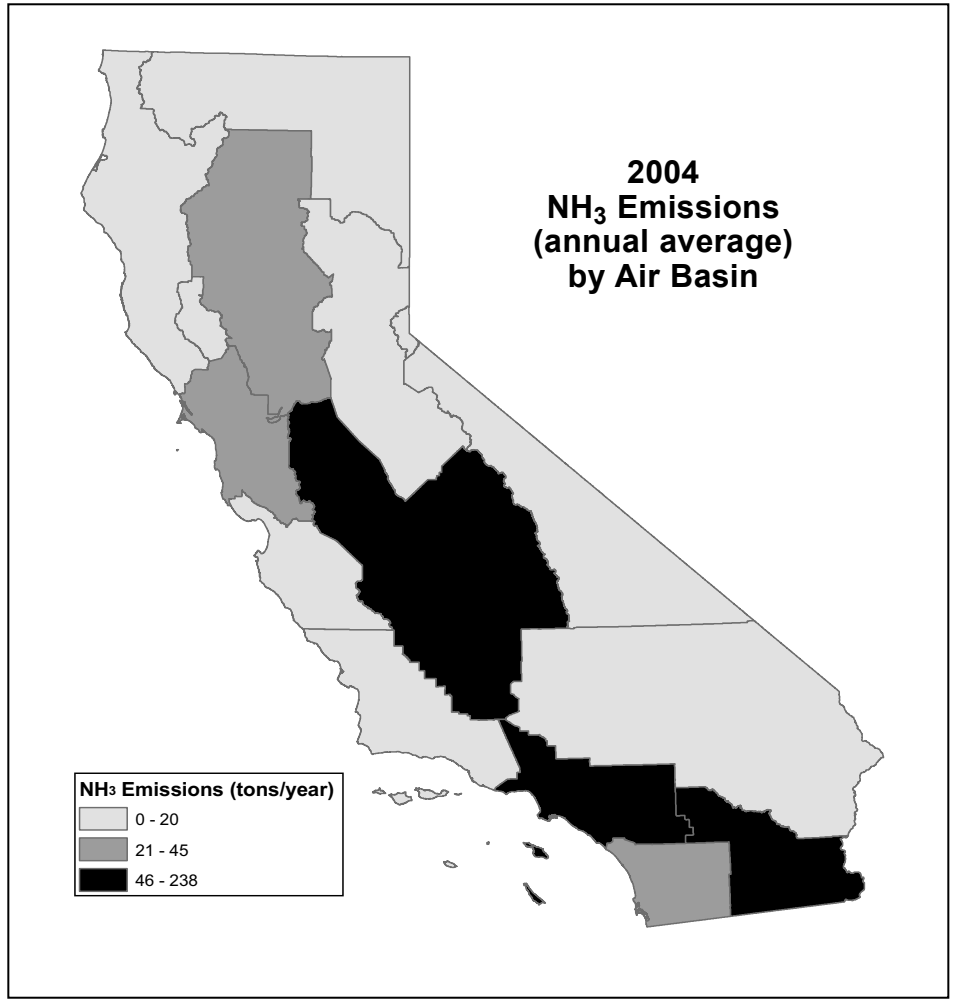

Figure 2-24

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Chapter 3

Statewide Trends and Forecasts -- Criteria Pollutants

Introduction
Emission Trends and Forecasts

The most current emissions data available are from 2004. Any data prior to this year are derived from historical emissions data. Future year data are forecasted from the 2003 base year and control measures reported through September 2004. Forecasts take into account emissions data, projected growth rates, and future control measures to calculate emissions in future years.

On a statewide basis, emissions of NO_x increased between 1975 and 1980, but are forecasted to decline between 1980 and 2020. Emissions of ROG decreased steadily between 1975 and 2020. In addition to being ozone precursors, both NO_x and ROG are secondary contributors to PM_{10} and $PM_{2.5}$. Direct PM_{10} emissions show a slight increase from 1975 to 1990, a slight decrease in 1995, and then a slow increase after 1995. Direct $PM_{2.5}$ emissions decreased from 1975 to 1985, increased from 1985 to 1990, decreased slightly between 1990 and 1995, and are predicted to increase from 1995 to 2020.

Emissions of CO have decreased since 1985 and are forecasted to continue declining. The recent decrease in NO_x, ROG, and CO is occurring even with increases in vehicle miles traveled (VMT) and population.

Statewide Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NO_X	**4811**	**4982**	**4945**	**4871**	**4128**	**3629**	**3026**	**2499**	**2059**	**1811**
ROG	**7131**	**6739**	**6180**	**4748**	**3691**	**3013**	**2402**	**2145**	**2031**	**1993**
PM_{10}	**1901**	**1931**	**2004**	**2144**	**2047**	**2061**	**2113**	**2177**	**2234**	**2298**
$PM_{2.5}$	**803**	**785**	**778**	**816**	**758**	**767**	**779**	**796**	**811**	**829**
CO	**41295**	**37609**	**35588**	**29603**	**22182**	**16906**	**13204**	**10848**	**9213**	**8248**

Table 3-1

Statewide Population and VMT

Airborne pollutants result in large part from human activities, and growth generally has a negative impact on air quality. California is fortunate in that it boasts the world's most progressive emission controls. These controls have resulted in significant air quality improvements, despite substantial growth.

During 1984 through 2003, statewide maximum 1-hour ozone values decreased 43 percent, and maximum 8-hour carbon monoxide values dropped 46 percent. These air quality improvements occurred at the same time the State's population increased 42 percent and the average daily VMT increased 90 percent. Ambient annual average PM_{10} values in the non-desert areas also show improvement: a 39 percent decrease from 1989 to 2003. While the air quality improvements are impressive, additional emission controls will be needed to offset future growth.

Percent Change in Air Quality and Growth

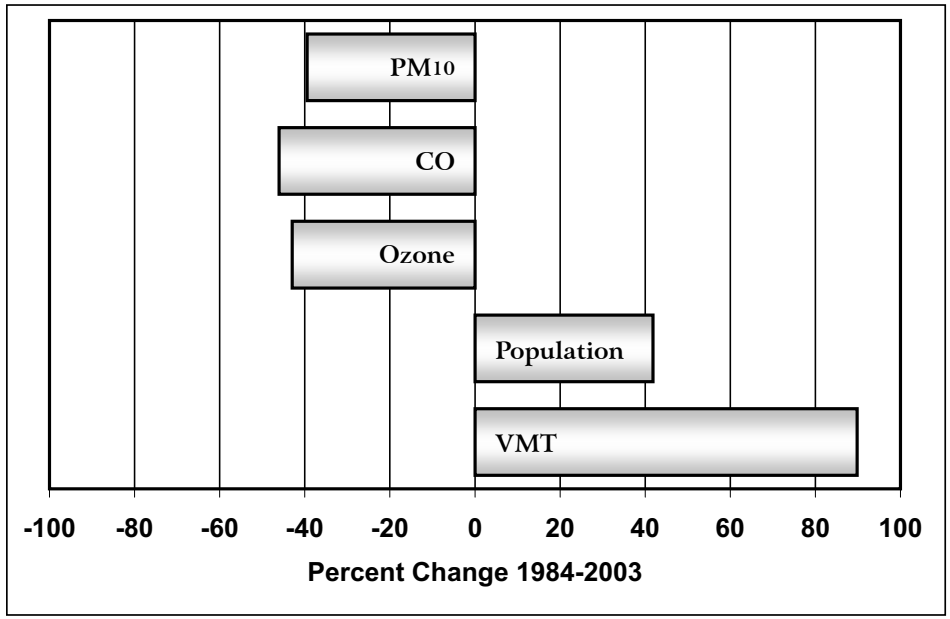

Figure 3-1

Statewide Population and VMT Trends									
Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population (1000s)	23782	26402	29829	31711	34036	37473	40262	42711	45822
Avg. Daily VMT(1000s)	389107	517683	677171	731207	796075	872885	957360	1032915	1109515

Table 3-2

Ozone

Emission Trends and Forecasts - Ozone Precursors

NO_x Emission Trends and Forecasts

NO_x emission standards for on-road motor vehicles were introduced in 1971 and followed in later years by the implementation of more stringent standards and the introduction of three-way catalysts. NO_x emissions from on-road motor vehicles have declined by over 25 percent from 1990 to 2000, and NO_x emissions are projected to decrease by an additional 50 percent between 2000 and 2020. This has occurred as vehicles meeting more stringent emission standards enter the fleet, and all vehicles use cleaner burning gasoline and diesel fuel or alternative fuels. Stationary source NO_x emissions dropped by 44 percent between 1980 and 1995. This decrease has been largely due to a switch from fuel oil to natural gas and the implementation of combustion controls such as low-NO_x burners for boilers and catalytic converters for both external and internal combustion stationary sources. State Implementation Plan (SIP) and conformity inventory forecasts may differ from the forecasts presented in this almanac. For additional information on these forecasts, please refer to the ARB SIP web page at *www.arb.ca.gov/planning/sip/sip.htm*.

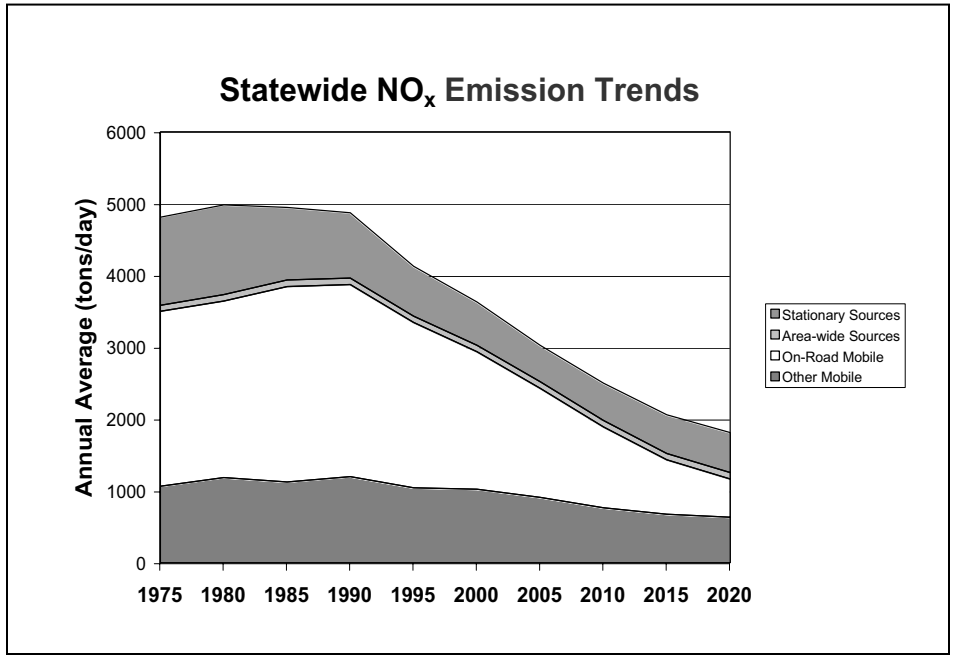

Figure 3-2

ROG Emission Trends and Forecasts

ROG emissions in California are projected to decrease by over 72 percent between 1975 and 2020, largely as a result of the State's on-road motor vehicle emission control program. This includes the use of improved evaporative emission control systems, computerized fuel injection, engine management systems to meet increasingly stringent California emission standards, cleaner gasoline, and the Smog Check program. ROG emissions from other mobile sources are projected to decline between 1990 and 2020 as more stringent emission standards are adopted and implemented. Substantial reductions have also been obtained for area-wide sources through the vapor recovery program for service stations, bulk plants, and other fuel distribution operations. There are also on-going programs to reduce overall solvent ROG emissions from coatings, consumer products, cleaning and degreasing solvents, and other substances used within California. Again, State Implementation Plan (SIP) and conformity inventory forecasts may differ from the forecasts presented in this almanac. For additional information on these forecasts, please refer to the ARB SIP web page at *www.arb.ca.gov/planning/sip/sip.htm*.

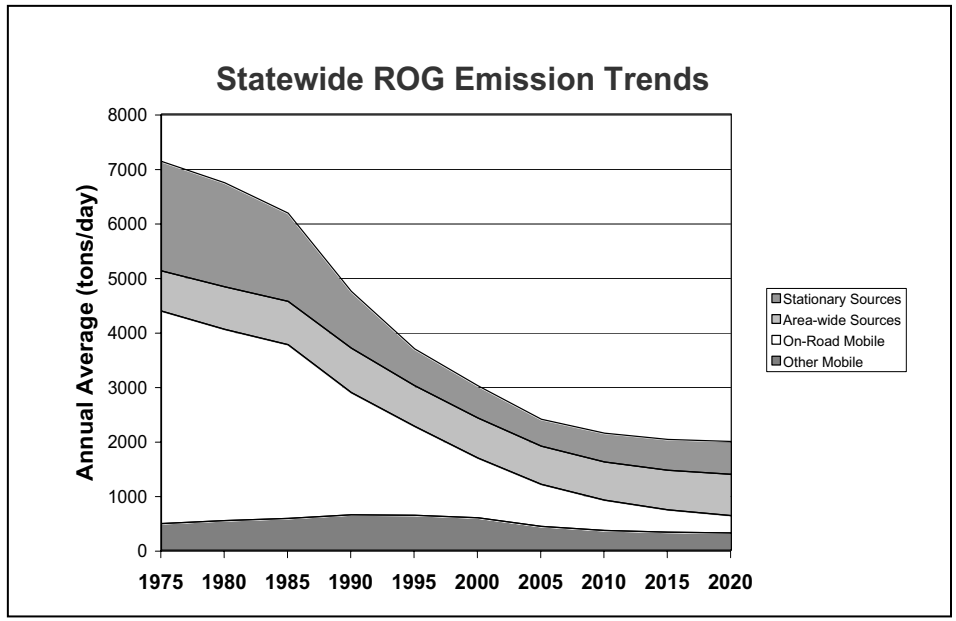

Figure 3-3

Emission Trends and Forecasts - Ozone Precursors

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***4811***	***4982***	***4945***	***4871***	***4128***	***3629***	***3026***	***2499***	***2059***	***1811***
Stationary Sources	1228	1250	1009	909	696	602	506	519	538	556
Area-wide Sources	83	88	91	89	87	90	93	89	88	89
On-Road Mobile	2435	2459	2721	2675	2301	1915	1518	1127	757	532
Gasoline Vehicles	2149	1975	1936	1789	1535	1113	757	536	371	266
Diesel Vehicles	286	484	784	885	766	802	761	590	386	266
Other Mobile	1065	1185	1125	1199	1044	1022	908	764	675	634
Gasoline Fuel	43	48	52	61	60	67	74	68	62	60
Diesel Fuel	941	1052	988	1043	899	868	748	614	528	483
Other Fuel	82	85	85	95	85	87	86	83	85	90

Table 3-3

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***7131***	***6739***	***6180***	***4748***	***3691***	***3013***	***2402***	***2145***	***2031***	***1993***
Stationary Sources	2007	1907	1616	1043	674	589	494	526	564	603
Area-wide Sources	739	783	796	812	745	735	699	701	727	756
On-Road Mobile	3896	3506	3186	2243	1634	1096	772	557	410	318
Gasoline Vehicles	3880	3475	3138	2198	1597	1064	741	530	389	300
Diesel Vehicles	17	31	48	45	36	32	31	27	21	18
Other Mobile	489	543	583	650	639	593	436	362	330	315
Gasoline Fuel	347	392	444	502	512	471	320	258	235	226
Diesel Fuel	88	98	91	97	86	81	72	58	46	40
Other Fuel	54	53	48	51	40	41	44	46	48	50

Table 3-4

Statewide Air Quality - Ozone

Air quality as it relates to ozone has improved greatly in all areas of California over the last 20 years, despite significant growth. The statewide trend, which reflects values for the South Coast Air Basin, shows that the maximum peak 1-hour indicator declined by almost half from 1984 to 2003. During 1984 to 2003, the statewide population grew by 42 percent and the number of vehicle miles traveled each day was up more than 90 percent. Motor vehicles are the largest source category of ozone precursor emissions, and reducing their emissions will continue to be the cornerstone of California's ozone control efforts. New vehicles must meet the ARB's low emission vehicle standards, which equate to about 95 percent fewer smog-forming emissions than vehicles produced in the 1970s. However, increases in population and driving are partially offsetting the benefits of cleaner vehicles. In addition to motor vehicle controls, the ARB is establishing controls for other sources of ozone precursor emissions, such as consumer products. The ARB and other agencies are also looking at new and more efficient ways of doing business and implementing incentive programs to improve air quality.

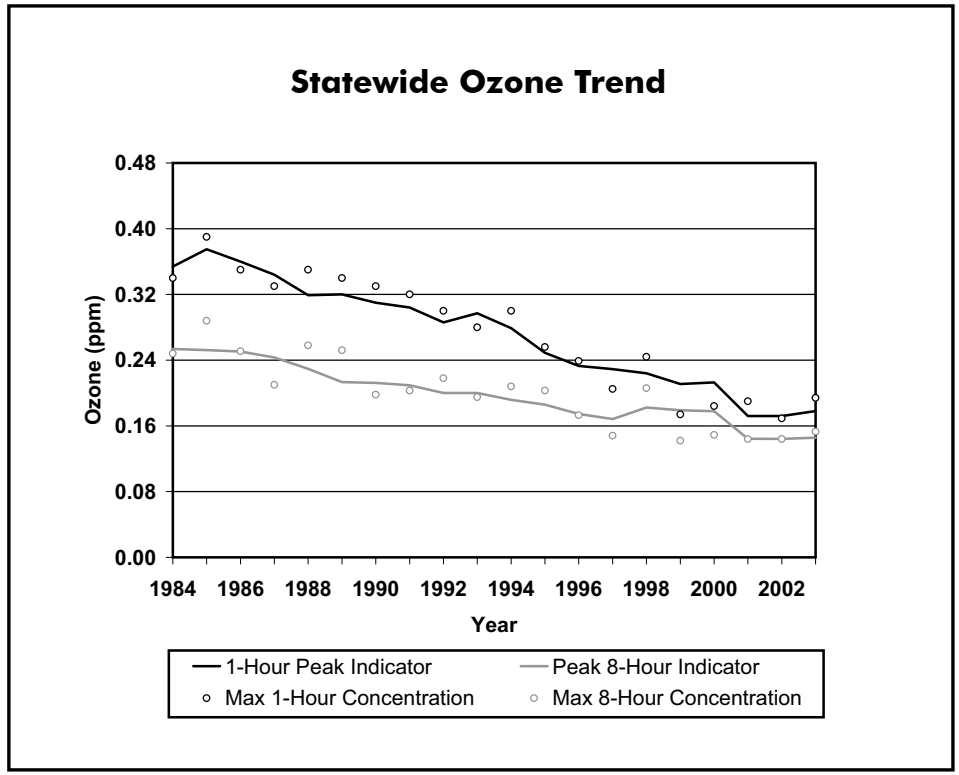

Figure 3-4

Population-Weighted Exposures Over the State Ozone Standard

There are a number of ways to look at how ozone levels have changed over the years. Though simple indicators are most commonly used, complex indicators can offer additional insight concerning air quality. One such indicator is the *population-weighted exposure* indicator. As used here, an "exposure" occurs when a person experiences a one-hour ozone concentration outdoors that is higher than 0.09 ppm, the level of the State standard. The population-weighted exposure indicator considers both the level and the duration of ozone concentrations above the State standard. The annual exposure is the sum of all the hourly exposures during the year and presents the result as an average per exposed person.

In contrast to the peak indicator, which provides an indication of the potential for acute adverse health impacts, the population-weighted exposure provides an indication of the potential for chronic adverse health impacts. For the purposes of computing the exposures in this almanac, individuals are presumed to have been exposed to concentrations measured by the ambient (outdoor) air quality monitoring network. However, daily activity patterns (for example, being inside a building or exercising outdoors) may diminish or increase exposures to some outdoor concentrations that exceed the State standard. While many indicators characterize air quality at an individual monitoring location, the exposure indicator provides an integrated regional perspective. For each hour, the calculations simultaneously consider ozone data from all of the monitors in a region. People living in areas where ozone exceeds the standard are then included in the population-weighted exposure for that hour.

The examples below show two simple exposure calculations. First, a measured ozone concentration of 0.11 ppm for one hour represents an exposure of 0.02 ppm-hours above the State ozone standard of 0.09 ppm:

$$(0.11 \text{ ppm} - 0.09 \text{ ppm}) \times 1 \text{ hour} = 0.02 \text{ ppm-hours}$$

Second, a measured concentration of 0.10 ppm for two hours also equals an exposure of 0.02 ppm-hours:

$$(0.10 \text{ ppm} - 0.09 \text{ ppm}) \times 2 \text{ hours} = 0.02 \text{ ppm-hours}$$

In contrast to these examples, when the concentration is equal to or below the level of the State standard of 0.09 ppm, the exposure is zero. The population associated with these "zero" exposures are not included in the exposure calculations in this almanac because including population with the zero exposures dilutes the real impact of the ozone concentrations that are above the State standard and are, therefore, adversely affecting public health. In all cases, an exposure calculation that excludes the zero values will be higher than one incorporating concentrations at or below the level of the standard (areas of zero exposure).

The population-weighted exposures in Table 3-5 are listed for each year, from 1983 through 2003, for the five most populated areas of California: the South Coast Air Basin, the San Francisco Bay Area Air Basin, the San Joaquin Valley Air Basin, the San Diego Air Basin, and the Sacramento Metropolitan Area (the southern, urbanized portion of the Sacramento Valley Air Basin and a portion of the Mountain Counties Air Basin). While these areas do not encompass all of California's ozone nonattainment areas, they do include the major urban areas where the majority of the State's population lives.

The exposure values listed in Table 3-5 are presented in parts per million to be consistent with the units in which the State standard is expressed. In addition to the exposure values, Table 3-5 also lists the percent of the total population represented in the exposure value. The percent value reflects the percent of the total population in the area that was exposed to an ozone concentration above the level of the State standard for at least one hour during the year. Because the exposure result is an average, it may not accurately portray the exposure of any particular individual or subarea. Some people in the region experience higher exposure while others experience lower exposure. Nevertheless, this method provides a reasonable approach for comparing exposures among various regions and for assessing trends in exposure reductions.

The calculations for the exposure indicators are based on all concentrations measured in the area that satisfy the specified data requirements. The population is based on census tract data, and the calculation is performed at the census tract level and then aggregated to the regional level. Exposures for the years 1983 through 1999 use census information for 1990, while exposures for the years 2000, 2001, 2002 and 2003 use census information for the year 2000. General details about the computational procedure can be found in the ARB publication entitled: *"Guidance for Using Air Quality-Related Indicators in Reporting Progress in Attaining the State Ambient Air Quality Standards"* (September 1993).

Ozone Exposures Over the State Standard: Population-Weighted (ppm-hours / person)																					
	1983	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
South Coast Air Basin																					
Exposure	41.61	36.58	36.90	35.68	31.41	34.28	29.58	22.10	22.21	21.99	17.96	18.90	13.26	10.67	6.28	8.90	3.28	5.33	6.95	7.16	8.92
% Pop. Represented*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97%	100%	92%	98%	99%	100%	88%	78%	91%
San Francisco Bay Area Air Basin																					
Exposure	2.28	2.28	1.45	0.85	1.81	1.24	0.67	0.46	0.48	0.54	0.41	0.26	1.06	1.03	0.10	0.95	0.62	0.33	0.35	0.35	0.32
% Pop. Represented	97%	100%	73%	46%	72%	73%	53%	41%	45%	50%	72%	39%	81%	60%	48%	54%	65%	25%	48%	28%	62%
San Joaquin Valley Air Basin																					
Exposure	5.61	7.25	8.09	10.00	10.09	9.38	7.12	5.21	6.09	5.64	6.18	6.43	6.10	6.96	3.73	6.63	4.51	4.63	4.75	5.84	5.24
% Pop. Represented	97%	97%	97%	95%	98%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
San Diego Air Basin																					
Exposure	9.60	6.94	8.17	5.16	5.64	7.40	7.29	6.35	3.92	3.31	2.74	2.28	2.41	1.19	0.83	1.93	0.60	0.52	0.71	0.38	0.45
% Pop. Represented	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	79%	100%	98%	100%	82%	69%	72%	89%	62%	36%
Broader Sacramento Metropolitan Area																					
Exposure	2.32	3.11	2.88	2.57	3.19	4.22	1.83	2.14	2.47	2.35	1.10	1.76	2.20	1.85	0.51	1.98	1.45	1.15	1.08	1.52	1.15
% Pop. Represented	94%	100%	93%	94%	100%	100%	100%	100%	99%	100%	100%	95%	100%	100%	98%	100%	100%	99%	100%	99%	97%

* *% Population Represented* is the percent of the total population residing in an area exposed to an ozone concentration above the level of the State standard for at least one hour during the year.

Table 3-5

Ozone Transport

Since 1989, the ARB staff has evaluated the impacts of the transport of ozone and ozone precursor emissions from upwind areas to the ozone concentrations in downwind areas. These analyses demonstrate that the air basin boundaries are not true boundaries of air masses. All urban areas are upwind contributors to their downwind neighbors with the exception of San Diego. Figure 3-5 shows the upwind areas that impact downwind areas throughout the State. The ozone problem in some rural areas is caused almost solely by transported pollutants. These areas, although designated as nonattainment, are not required to adopt an air quality plan because local control strategies in these areas would not be effective in reducing ozone concentrations. However, these areas are subject to many statewide control strategies, such as cleaner fuels and low emission vehicles. More detailed information about ozone transport is available on the web at *www.arb.ca.gov/aqd/transport/transport.htm*.

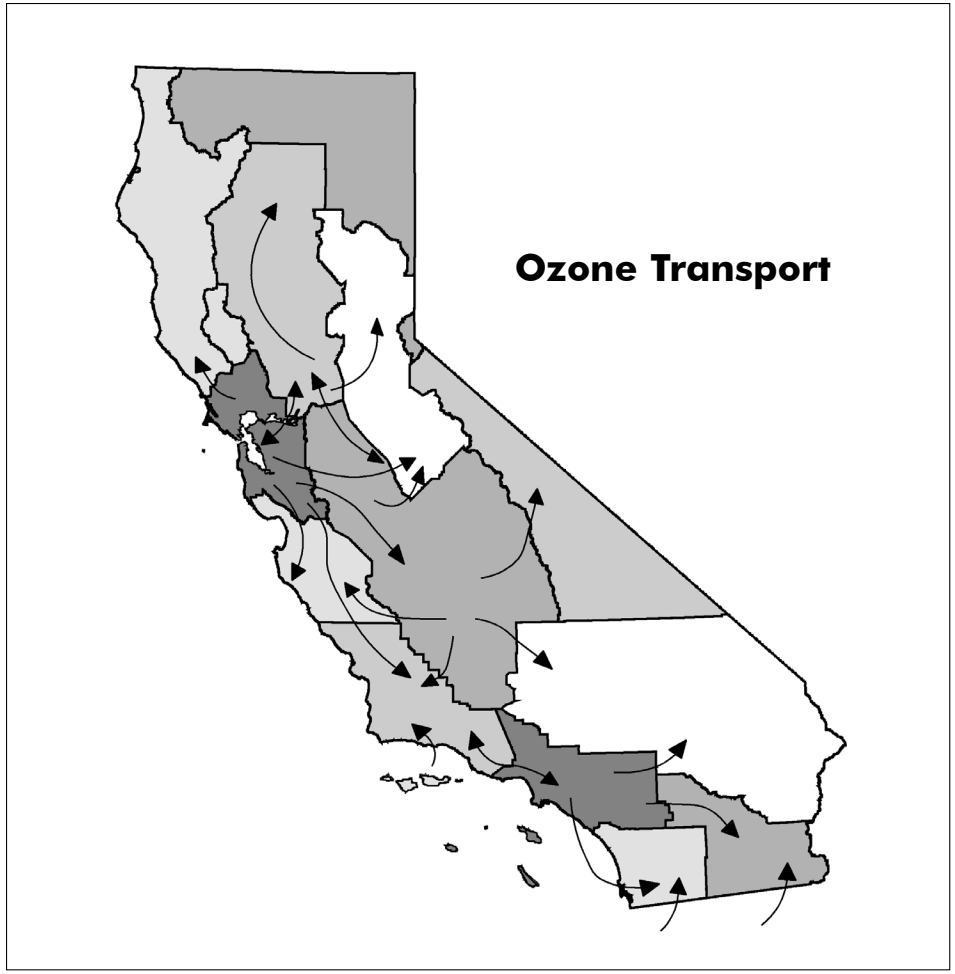

Figure 3-5

Directly Emitted Particulate Matter (PM_{10})

Emission Trends and Forecasts - Directly Emitted PM_{10}

PM_{10} emissions increase from 1975 to 1990, then decrease slightly in 1995 and 2000, and are projected to slowly increase after 2000. PM_{10} emissions are dominated by area-wide sources. Emissions from paved road dust more than double between 1975 and 2000. Unpaved road dust and other area-wide source emissions increase slightly, while other area-wide sources is unchanged. The increase in emissions of unpaved and paved road dust are due to increases in VMT over these roads. Exhaust emissions from diesel mobile sources dropped by 36 percent from 1990 to 2000 due to more stringent emissions standards and the introduction of cleaner burning diesel fuel. PM_{10} emissions from stationary sources are expected to increase slightly in the future due to industrial growth.

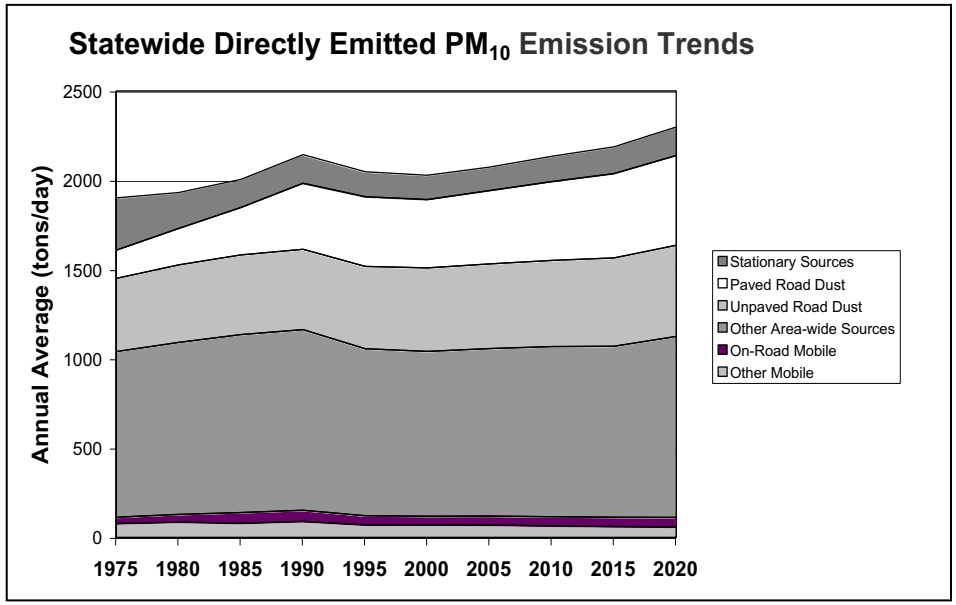

Figure 3-6

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1901***	***1931***	***2004***	***2144***	***2047***	***2061***	***2113***	***2177***	***2234***	***2298***
Stationary Sources	293	201	157	160	140	135	132	141	150	159
Area-wide Sources	1496	1601	1708	1831	1787	1808	1862	1920	1971	2027
Paved Road Dust	159	204	266	370	390	383	411	441	472	503
Unpaved Road Dust	409	434	446	450	461	468	474	483	495	511
Other Area-wide Sources	928	963	996	1011	936	923	938	953	957	1013
On-Road Mobile	36	43	60	63	51	49	50	51	52	54
Gasoline Vehicles	22	19	21	25	27	30	34	39	43	47
Diesel Vehicles	14	24	38	38	24	18	16	12	9	8
Other Mobile	77	85	80	89	70	70	69	64	60	57
Gasoline Fuel	6	7	8	10	11	13	15	17	18	19
Diesel Fuel	62	68	61	67	51	49	46	39	34	30
Other Fuel	10	10	10	13	8	8	8	8	8	9

Table 3-6

Directly Emitted Particulate Matter ($PM_{2.5}$)

Emission Trends and Forecasts - Directly Emitted $PM_{2.5}$

$PM_{2.5}$ emissions decrease from 1975 to 1985 as a result of reduced stationary source emissions. Emissions increase slightly between 1995 and 2000 and are projected to increase through 2020. $PM_{2.5}$ emissions are dominated by area-wide sources. Emissions from paved road dust more than double between 1975 and 2000. Unpaved road dust and other area-wide source emissions increase slightly in the same time period. The increase in emissions of unpaved and paved road dust are due to increases in VMT over these roads. Exhaust emissions from diesel mobile sources dropped by 36 percent from 1990 to 2000 due to more stringent emissions standards and the introduction of cleaner burning diesel fuel. $PM_{2.5}$ emissions from stationary sources are expected to increase slightly in the future due to industrial growth.

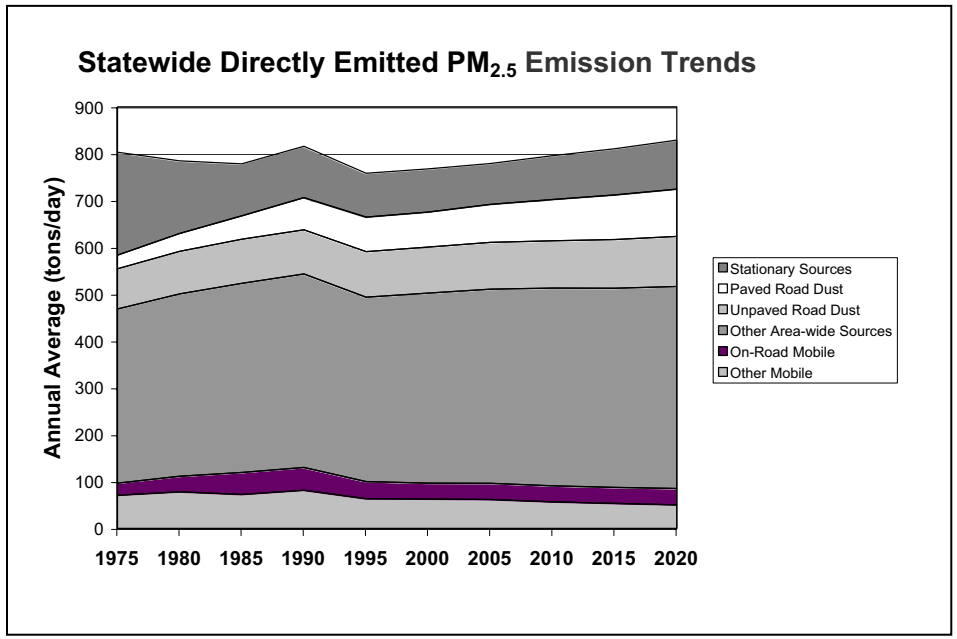

Figure 3-7

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***803***	***785***	***778***	***816***	***758***	***767***	***779***	***796***	***811***	***829***
Stationary Sources	220	155	111	110	93	92	87	94	99	105
Area-wide Sources	487	518	548	576	565	579	596	611	624	639
Paved Road Dust	29	38	50	69	74	75	81	88	95	101
Unpaved Road Dust	86	91	94	94	97	98	100	101	104	107
Other Area-wide Sources	372	389	404	413	394	406	415	422	425	431
On-Road Mobile	26	33	47	48	37	34	34	34	34	35
Gasoline Vehicles	13	11	12	13	15	17	20	23	26	28
Diesel Vehicles	12	22	35	35	22	17	15	11	9	7
Other Mobile	71	78	73	82	63	63	62	57	53	50
Gasoline Fuel	4	5	6	7	8	10	12	13	14	15
Diesel Fuel	57	63	57	62	47	45	42	36	31	27
Other Fuel	10	10	10	13	8	8	8	8	8	8

Table 3-7

Statewide Air Quality - PM_{10}

In contrast to ozone and carbon monoxide, PM_{10} concentrations do not relate as well to growth in population or vehicle usage, and high PM_{10} concentrations do not always occur in high population areas. Activities that contribute directly to high PM_{10} include wood burning, agricultural activities, and driving on unpaved roads. In addition, emissions from stationary sources and motor vehicles form secondary particles that contribute to PM_{10} in many areas. Figure 3-8 shows the statewide annual average of quarters for PM_{10} concentrations for a non-desert area. The trend line reflects, for the most part, the South Coast Air Basin. The low value for the annual average in 1988 is due to the limited number of monitors with complete data for this year during the startup of the PM_{10} monitoring network. The period between 1989 and 2003 provides a better indication of trends. Over this period, the annual average shows a decrease of more than 39 percent. However, there is a great deal of variability, especially during the late 1990's. Much of this variability may be due to meteorology rather than changes in emissions. Currently, over 99 percent of Californians breathe air that violates the State PM_{10} standards during at least part of the year. As a result, PM is commanding greater attention.

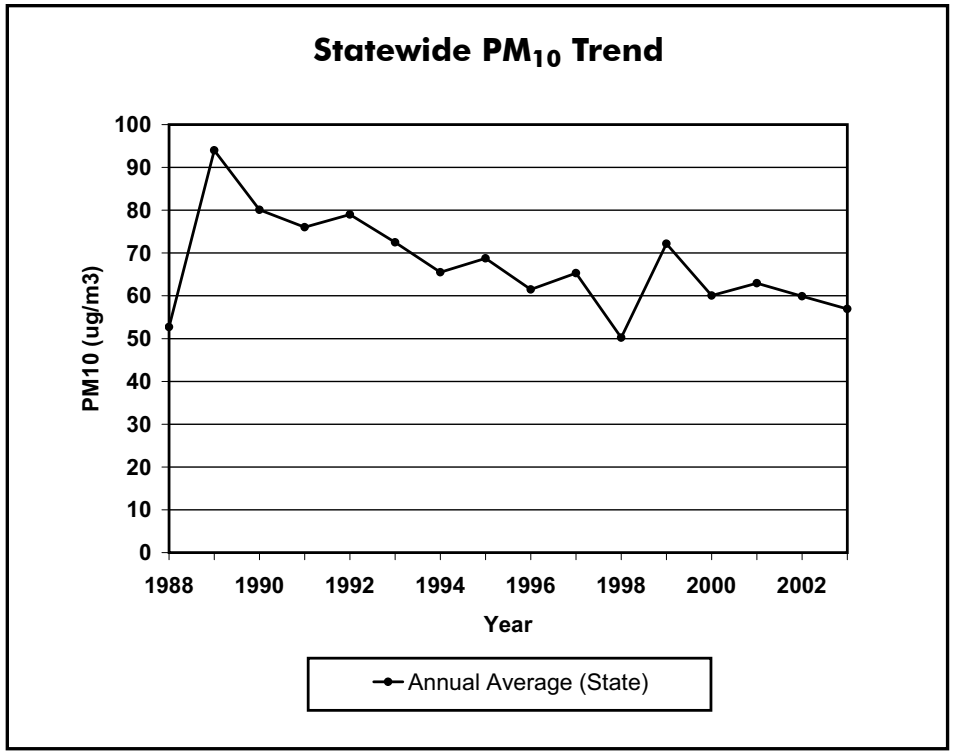

Figure 3-8

In 2003, the Legislature enacted Senate Bill 656 (SB656) to reduce public exposure to PM_{10} and $PM_{2.5}$. SB656 requires the ARB in consultation with local and pollution control districts to develop and adopt a list of the most readily available, feasible, cost-effective control measures that could be employed to reduce PM_{10} and $PM_{2.5}$. The goal is to make progress towards attaining the State and national PM_{10} and $PM_{2.5}$ standards.

Statewide Air Quality - $PM_{2.5}$

Comprehensive monitoring for $PM_{2.5}$ began in 1999, therefore only limited data is available to evaluate statewide trends. Currently, most urban areas in the State, as well as several isolated sub-areas violate the State $PM_{2.5}$ annual average standard. Activities that contribute to high $PM_{2.5}$ concentrations include direct particulate emissions from mobile sources and burning, as well as the formation of $PM_{2.5}$ from the reactions of precursor gases. Figure 3-9 shows the maximum statewide annual average $PM_{2.5}$ concentrations from 1999 through 2003. The trend line reflects for the most part the South Coast Air Basin. Although concentrations in recent years have been relatively stable, over the five year period, the maximum annual average of quarters shows a decrease of approximately 20 percent. Similar to PM_{10}, year to year changes in meteorology can mask the impacts of emission control programs. Several more years are needed before determining longer-term trends. As with PM_{10}, $PM_{2.5}$ represents one of the most formidable health challenges in California. The measures adopted as part of SB656 to reduce PM_{10} and $PM_{2.5}$, as well as programs to reduce ozone and diesel PM will help in reducing public exposure to $PM_{2.5}$.

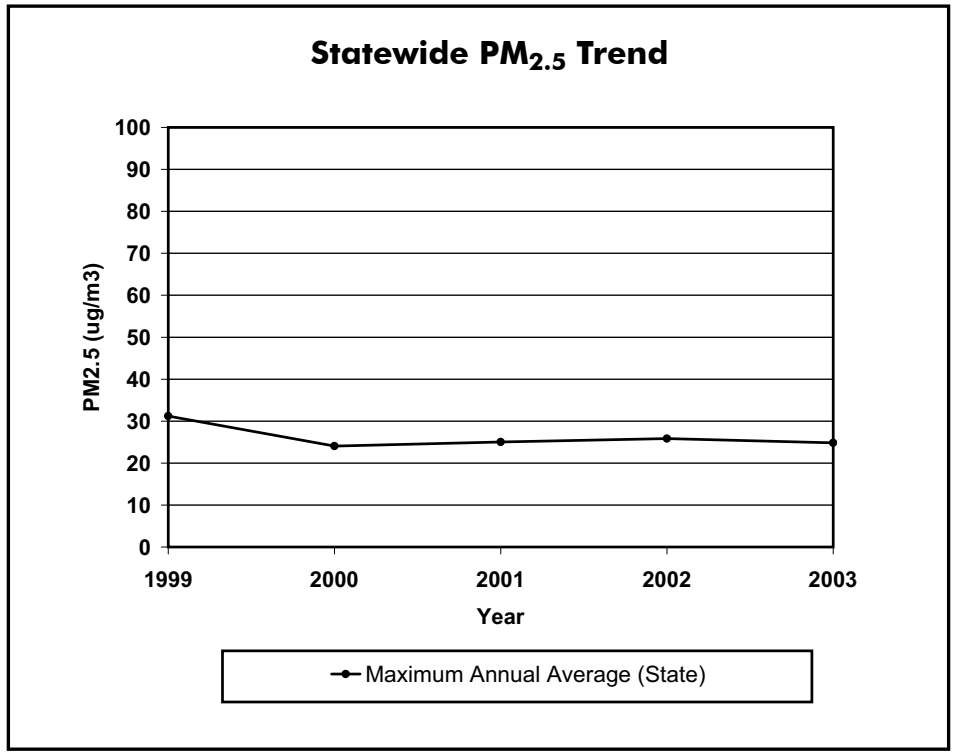

Figure 3-9

Carbon Monoxide (CO)

Emission Trends and Forecasts - Carbon Monoxide

Since 1975, even though VMT have continued to climb, the adoption of more stringent motor vehicle emissions standards has dropped statewide CO emissions from on-road motor vehicles by over 68 percent in 2000. With continued vehicle fleet turnover to cleaner vehicles, including super ultra low emitting vehicles (SULEVs) and zero emission vehicles (ZEVs), and the incorporation of cleaner burning fuels, CO emissions are forecast to continue decreasing through the year 2020. CO emissions from other mobile sources are also projected to decrease through 2015 as more stringent emissions standards are implemented with moderate increases expected after 2015. CO emissions from area-wide sources are expected to increase slightly due to increased waste burning and additional residential fuel combustion resulting from population increases.

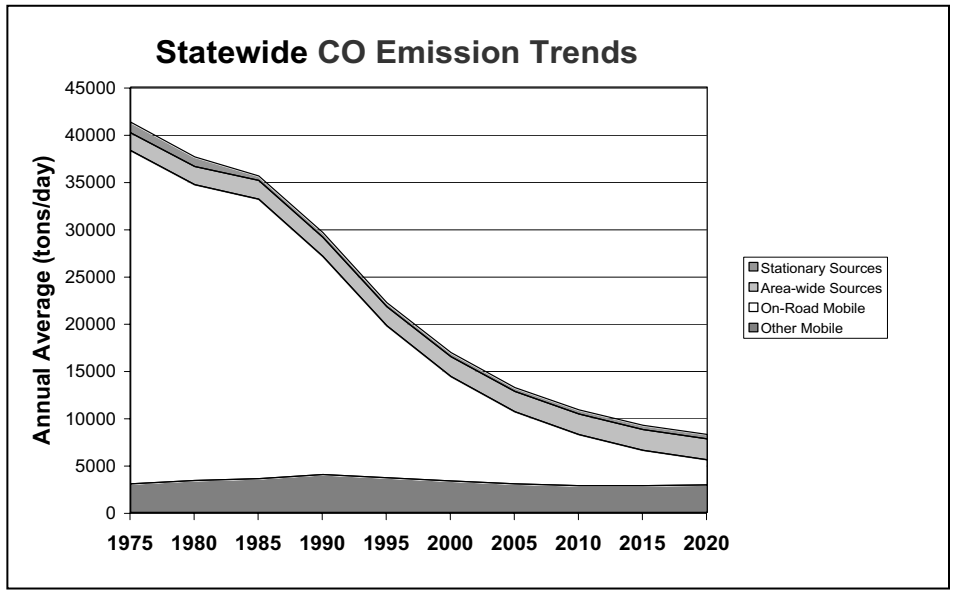

Figure 3-10

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***41295***	***37609***	***35588***	***29603***	***22182***	***16906***	***13204***	***10848***	***9213***	***8248***
Stationary Sources	1138	1013	456	498	415	435	411	442	456	475
Area-wide Sources	1873	1925	1997	2017	2010	2089	2146	2181	2191	2207
On-Road Mobile	35269	31295	29565	23087	16090	11059	7629	5397	3744	2661
Gasoline Vehicles	35199	31171	29359	22878	15915	10909	7487	5272	3636	2561
Diesel Vehicles	69	124	205	209	174	150	143	125	108	101
Other Mobile	3016	3376	3570	4001	3667	3322	3018	2828	2823	2905
Gasoline Fuel	2275	2565	2832	3213	2981	2685	2394	2201	2184	2251
Diesel Fuel	358	410	395	426	357	309	270	252	244	241
Other Fuel	383	401	343	362	329	328	354	375	395	413

Table 3-8

Statewide Air Quality - Carbon Monoxide

Similar to ozone, carbon monoxide concentrations in all areas of California have decreased substantially over the last 20 years, despite significant growth. Statewide, the maximum peak 8-hour indicator declined about 43 percent from 1984 to 2003.

During 2003, measured CO concentrations exceeded the State and national standards only in San Diego County. San Diego experienced unusually high CO values during late October, including levels that exceeded the CO standards on October 28, 2003. These high values were due to extensive wildfires that impacted air quality throughout southern California. These types of exceptional events do not affect the area's attainment status.

The introduction of cleaner fuels has helped bring the entire State into attainment with the exception of the City of Calexico. While cleaner fuels will have a continuing impact on carbon monoxide levels, additional emission reductions will be needed in the future to keep pace with increases in population and vehicle usage. These reductions will come from continued fleet turnover, expanded use of low emission vehicles, and measures to promote less polluting modes of transportation.

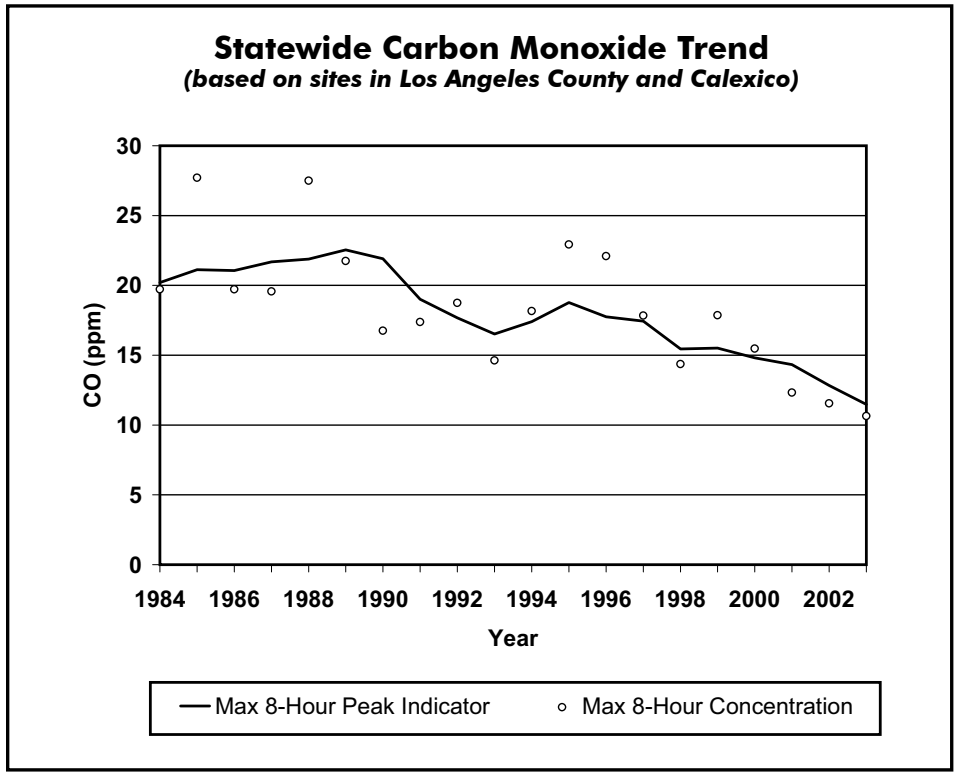

Figure 3-11

Statewide Air Quality - Lead

The decrease in lead emissions and ambient lead concentrations over the past 20 years is California's most dramatic success story. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent ARB regulations have virtually eliminated all lead from the gasoline now sold in California. All areas of the State are currently designated as attainment for the State lead standard (the U.S. EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, the ARB identified lead as a toxic air contaminant in 1997.

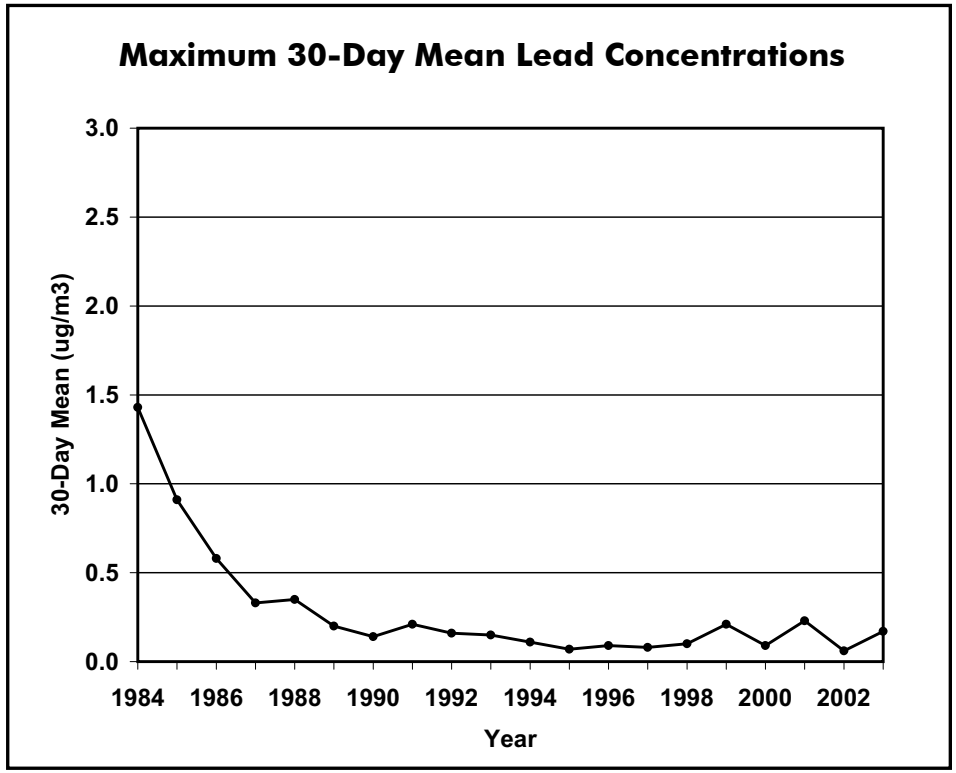

Figure 3-12

Sulfur Dioxide

Emission Trends and Forecasts - Oxides of Sulfur

Oxides of Sulfur (SO_x) is a group of compounds of sulfur and oxygen. A major constituent of SO_x is sulfur dioxide (SO_2). Emissions of SO_x declined tremendously in California between 1975 and 2000. Emissions in 2000 are about 83 percent less than emissions in 1975. Sulfur dioxide emissions from stationary sources decreased between 1975 and 2000 due to improved industrial source controls and switching from fuel oil to natural gas for electric generation and industrial boilers. The SO_x emissions from both gasoline and diesel vehicle exhaust have also decreased due to lower sulfur content in the fuel. SO_x emissions are forecasted to increase slightly by 2020 due to population increases.

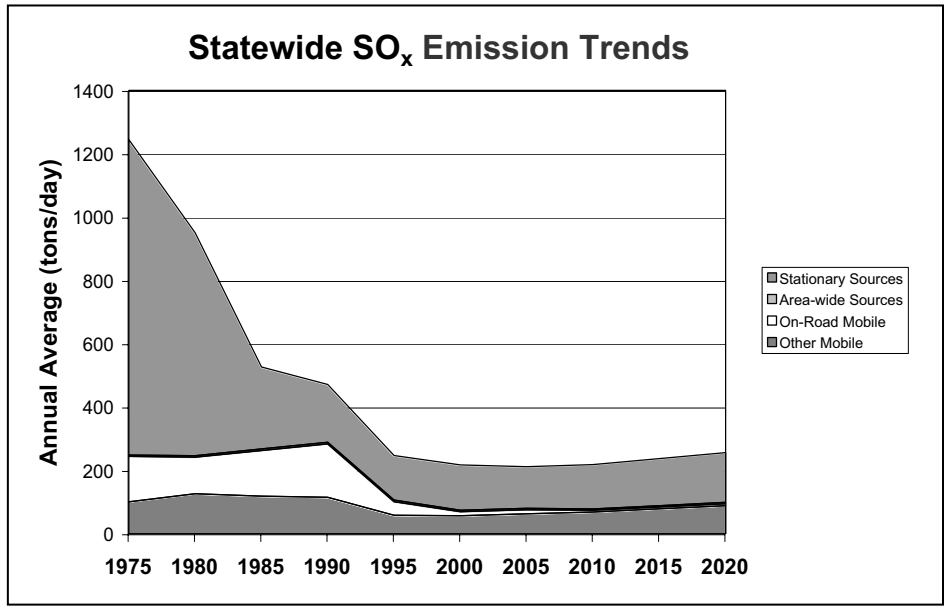

Figure 3-13

SO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1244***	***950***	***526***	***471***	***247***	***217***	***211***	***218***	***237***	***256***
Stationary Sources	996	704	259	182	140	143	131	140	148	157
Area-wide Sources	4	5	5	5	5	5	5	4	4	4
On-Road Mobile	144	115	144	169	43	13	12	5	6	6
Gasoline Vehicles	108	52	55	60	36	5	4	4	5	5
Diesel Vehicles	35	63	89	109	7	7	9	1	1	1
Other Mobile	101	126	119	115	58	57	63	69	79	89
Gasoline Fuel	7	8	9	2	1	1	1	2	2	2
Diesel Fuel	86	111	102	106	50	49	55	61	70	80
Other Fuel	7	7	7	8	7	7	7	6	6	6

Table 3-9

Nitrogen Dioxide

Emission Trends and Forecasts - Oxides of Nitrogen

Nitrogen dioxide (NO_2) is a colorless, tasteless gas that can cause lung damage, chronic lung disease, and respiratory infections. Nitrogen dioxide is a component of oxides of nitrogen (NO_x), and its presence in the atmosphere can be correlated with emissions of NO_x. Statewide emissions of NO_x decreased by 27 percent between 1980 and 200 and are projected to decrease by almost 50 percent from 2000 to 2020 as a result of more stringent emissions standards for stationary source combustion and motor vehicles, and cleaner burning fuels. The introduction of lower emitting vehicles will continue to further reduce NO_x emissions.

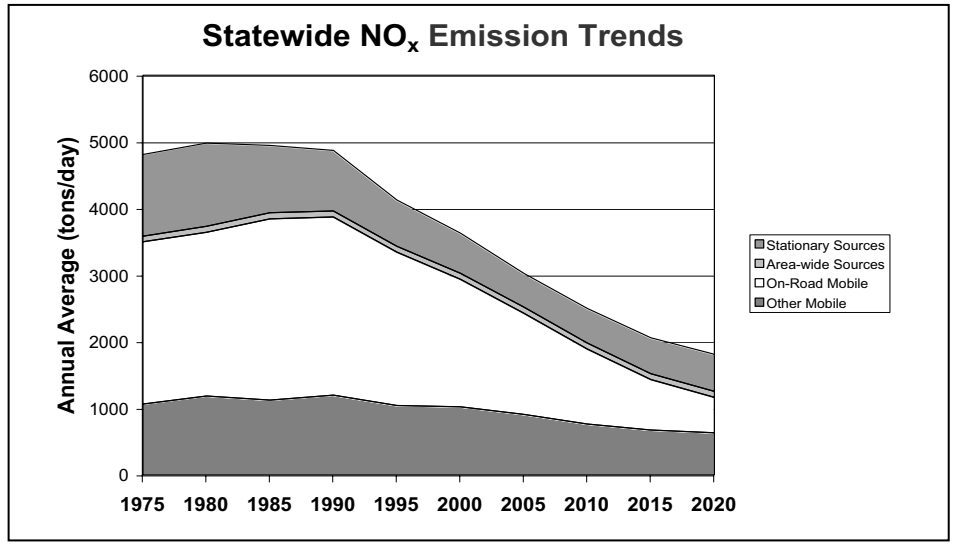

Figure 3-14

NOx Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***4811***	***4982***	***4945***	***4871***	***4128***	***3629***	***3026***	***2499***	***2059***	***1811***
Stationary Sources	1228	1250	1009	909	696	602	506	519	538	556
Area-wide Sources	83	88	91	89	87	90	93	89	88	89
On-Road Mobile	2435	2459	2721	2675	2301	1915	1518	1127	757	532
Gasoline Vehicles	2149	1975	1936	1789	1535	1113	757	536	371	266
Diesel Vehicles	286	484	784	885	766	802	761	590	386	266
Other Mobile	1065	1185	1125	1199	1044	1022	908	764	675	634
Gasoline Fuel	43	48	52	61	60	67	74	68	62	60
Diesel Fuel	941	1052	988	1043	899	868	748	614	528	483
Other Fuel	82	85	85	95	85	87	86	83	85	90

Table 3-10

Statewide Air Quality - Nitrogen Dioxide

Oxides of nitrogen (NO_x) emissions are a by-product of combustion from both mobile and stationary sources, and they contribute to ambient nitrogen dioxide (NO_2) concentrations. Since 1984, maximum NO_2 concentrations have decreased over 53 percent, due primarily to the implementation of tighter controls on both mobile and stationary sources. Although many of these controls were implemented to reduce ozone, they also benefited NO_2. All areas of California are currently designated as attainment for the State nitrogen dioxide standard and unclassified/attainment for the national nitrogen dioxide standard. Projections show NO_x emissions will continue to decline, thereby assuring continued attainment.

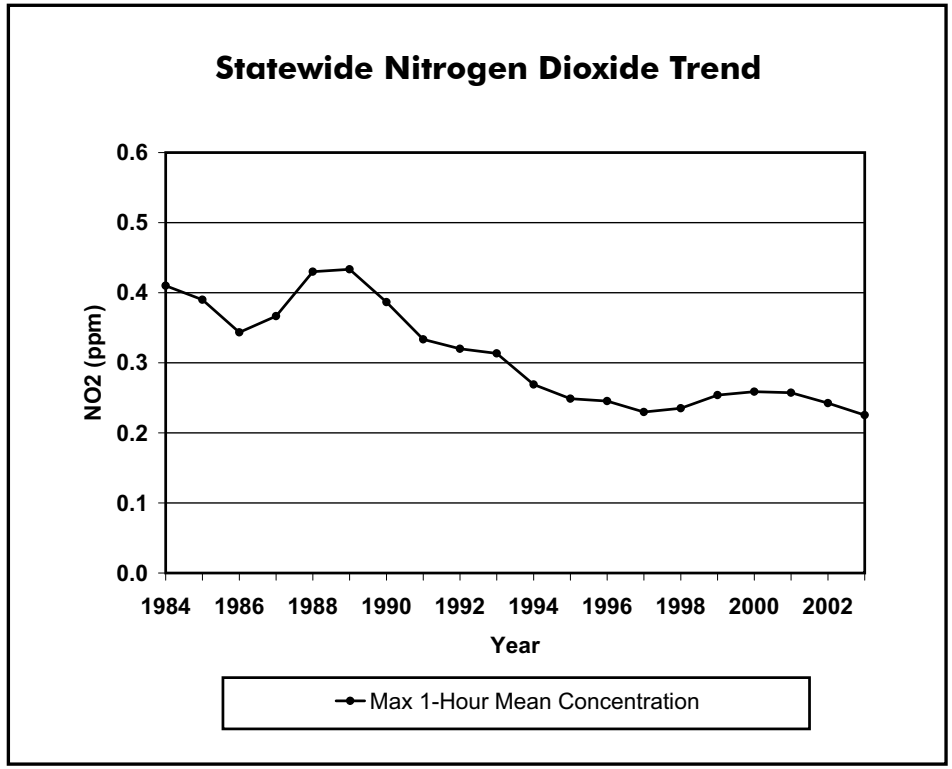

Figure 3-15

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Chapter 4

Air Basin Trends and Forecasts -- Criteria Pollutants

Introduction

In addition to the peak indicator, there are several other air quality statistics provided in this chapter and in the appendices. These include the fourth highest 1-hour ozone concentration in three years, which is summarized from the monitoring data, and the average of the 4th highest 8-hour ozone concentrations in three years, which is a calculated value. These values are provided for the five major air basins in this Chapter and for individual counties in Appendix A.

In many cases, these two statistics represent the national 1-hour and national 8-hour ozone design values, which are used to determine an area's attainment status. These calculations do not reflect data completeness requirements or the boundaries of a nonattainment area, which may differ from county or air basin boundaries in some parts of California. Design values are available on the web at *www.arb.ca.gov/airqualitytoday* under "current year's air quality." When evaluating these statistics, keep in mind that they represent data for a three-year period. For example, the 2003 fourth highest 1-hour ozone concentration in three years represents data for the period 2001-2003.

Days above the State or national standards (exceedance days) often fluctuate when comparing one year to another. When characterizing a percentage increase or decrease in exceedance days, this almanac compares three-year average. For example, exceedance days for 1984, 1985, and 1986 are averaged and then compared to exceedance days for the years 2002, 2003, and 2004, which are also averaged. This gives a much more stable indicator of long-term progress.

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South Coast Air Basin

Introduction - Area Description

The South Coast Air Basin is California's largest metropolitan region. The area includes the southern two-thirds of Los Angeles County, all of Orange County, and the western urbanized portions of Riverside and San Bernardino counties. It covers a total of 6,480 square miles, is home to more than 43 percent of California's population, and generates about 29 percent of the State's total criteria pollutant emissions.

The South Coast Air Basin generally forms a lowland plain, bounded by the Pacific Ocean on the west and by mountains on the other three sides. In terms of air pollution potential, there are probably few areas less suited for urban development. The warm sunny weather associated with a persistent high pressure system is conducive to the formation of ozone, commonly referred to as "smog." The problem is further aggravated by the surrounding mountains, frequent low inversion heights, and stagnant air conditions. All of these factors act together to trap pollutants in the air basin.

Pollutant concentrations in parts of the South Coast Air Basin are among the highest in California. As a result, controlling the contributing emission sources poses a great challenge to State and local air pollution control agencies.

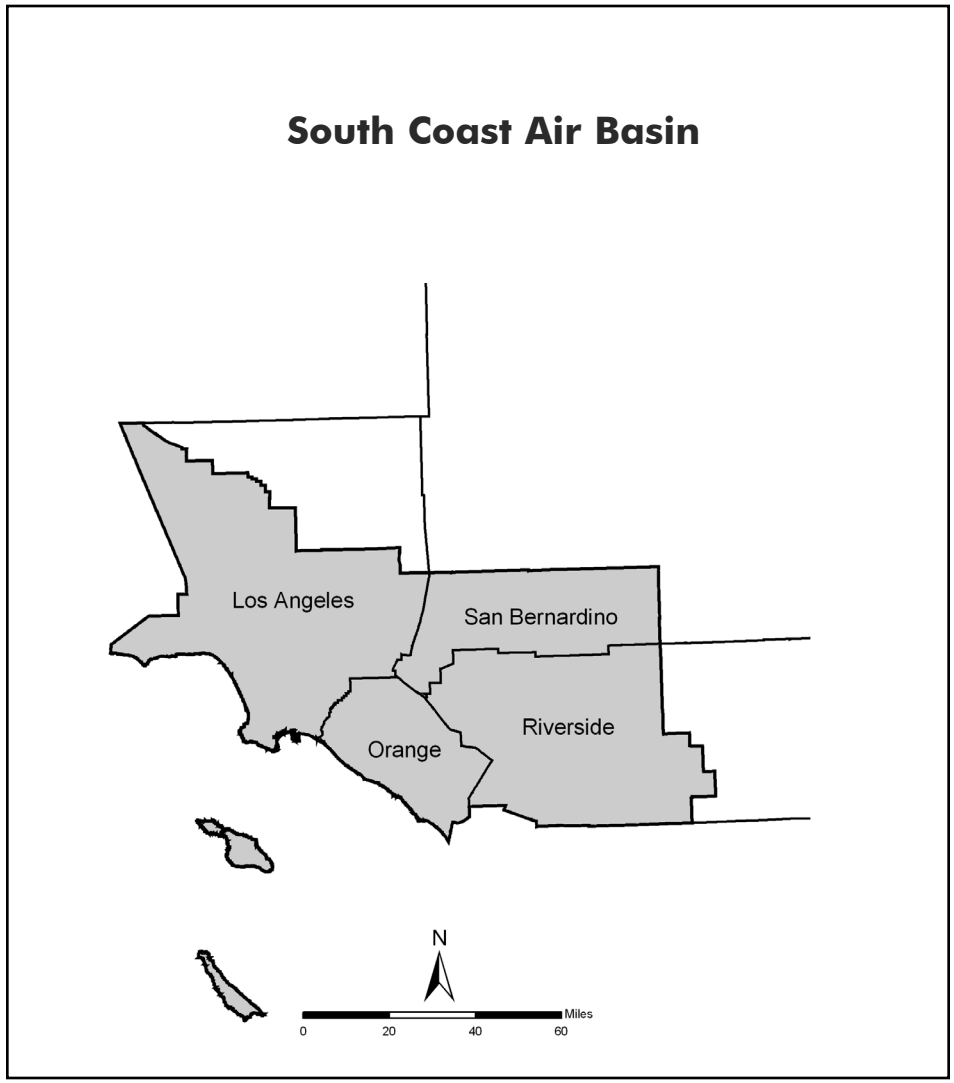

Figure 4-1

South Coast Air Basin

Emission Trends and Forecasts

Overall, since 1975 the emission levels for CO and the ozone precursors NO_x and ROG have been decreasing in the South Coast Air Basin and are projected to continue decreasing through 2020. The decreases are predominantly due to motor vehicle controls and reductions in evaporative emissions. In the South Coast Air Basin, on-road motor vehicles are the largest contributors to CO, NO_x, and ROG emissions. Other mobile sources are also significant contributors to CO and NO_x emissions. State Implementation Plan (SIP) and conformity inventory forecasts may differ from the forecasts presented in this almanac. For more information on these forecasts, please see the ARB SIP web page at *www.arb.ca.gov/sip/sip.htm*.

South Coast Air Basin Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NOX	1723	1641	1741	1588	1331	1195	970	763	600	515
ROG	2725	2364	2324	1775	1288	998	710	602	563	549
PM10	236	247	274	343	325	293	296	303	309	317
PM25	124	116	117	129	112	111	113	114	116	119
CO	16154	13382	13140	10322	7574	5533	3953	3062	2519	2184

Table 4-1

South Coast Air Basin

Population and VMT

Both population and the daily VMT will grow at high rates in the South Coast Air Basin from 1980 to 2020. While high growth rates are often associated with corresponding increases in emissions and pollutant concentrations, aggressive emission control programs in the South Coast Air Basin have resulted in emission decreases and a continuing improvement in air quality.

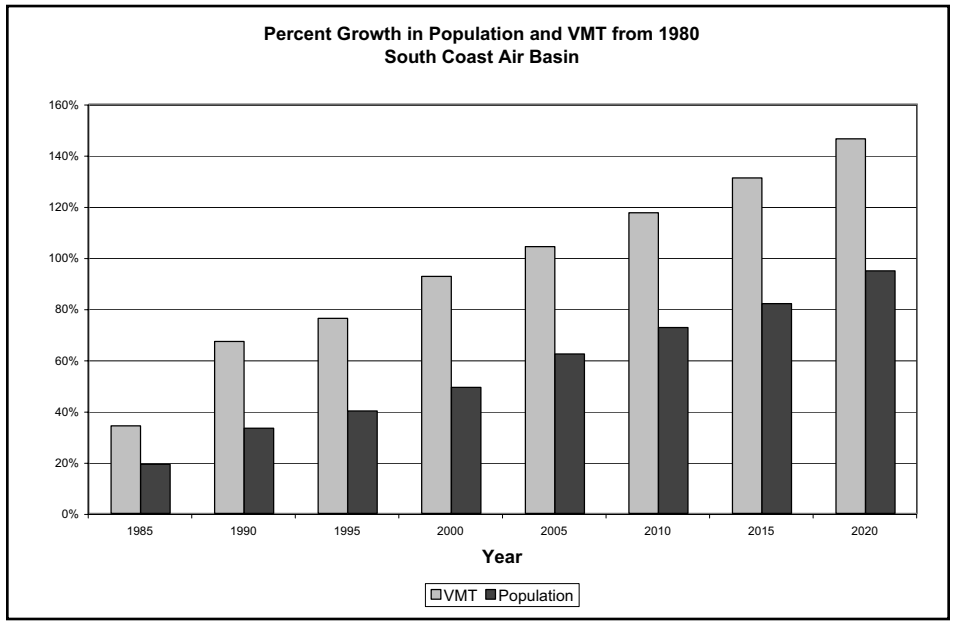

Figure 4-2

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population(1000s)	10605	11698	13084	13745	14654	15933	16946	17862	19122
Avg. Daily VMT(1000s)	158732	221550	275902	290888	317873	337083	358938	381397	406622

Table 4-2

South Coast Air Basin
Ozone Precursor Emission - Trends and Forecasts

Emissions of the ozone precursors NO_x and ROG in the South Coast Air Basin are generally following the statewide downward trend. Motor vehicle miles traveled in the basin are increasing, but NO_x and ROG emissions from on-road vehicles are dropping as more stringent vehicle emission standards have been adopted. These decreases in NO_x and ROG emissions are projected to continue between 2000 and 2020, as even more stringent motor vehicle standards are implemented and as newer, lower-emitting vehicles become a larger percentage of the fleet. NO_x emissions from electric utilities in the air basin have declined substantially since 1975, despite a nationwide increase in emissions from electric utilities in the same time period. These large reductions are primarily due to increased use of natural gas as the principal fuel for power plants, and control rules that limit NO_x emissions.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1723***	***1641***	***1741***	***1588***	***1331***	***1195***	***970***	***763***	***600***	***515***
Stationary Sources	327	291	254	185	120	105	71	68	68	70
Area-wide Sources	31	34	35	29	27	30	32	27	26	26
On-Road Mobile	1026	954	1094	1000	869	751	581	426	282	196
Gasoline Vehicles	921	768	788	700	594	432	270	186	129	92
Diesel Vehicles	105	186	306	299	275	319	311	239	153	103
Other Mobile	339	362	358	374	315	309	286	242	224	223
Gasoline Fuel	20	21	22	24	22	25	26	22	19	19
Diesel Fuel	292	313	307	315	257	247	225	188	170	166
Other Fuel	26	28	29	35	36	37	35	33	34	38

Table 4-3

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***2725***	***2364***	***2324***	***1775***	***1288***	***998***	***710***	***602***	***563***	***549***
Stationary Sources	649	561	559	462	258	195	132	141	154	170
Area-wide Sources	205	218	236	225	197	195	172	161	168	175
On-Road Mobile	1684	1387	1317	860	618	413	276	196	148	115
Gasoline Vehicles	1678	1376	1299	845	606	402	265	187	140	109
Diesel Vehicles	6	12	18	15	12	11	11	9	8	6
Other Mobile	188	198	212	228	215	196	131	104	93	88
Gasoline Fuel	152	161	176	191	183	164	101	77	69	65
Diesel Fuel	29	30	29	30	25	24	22	18	16	14
Other Fuel	7	7	7	7	7	8	8	8	9	10

Table 4-4

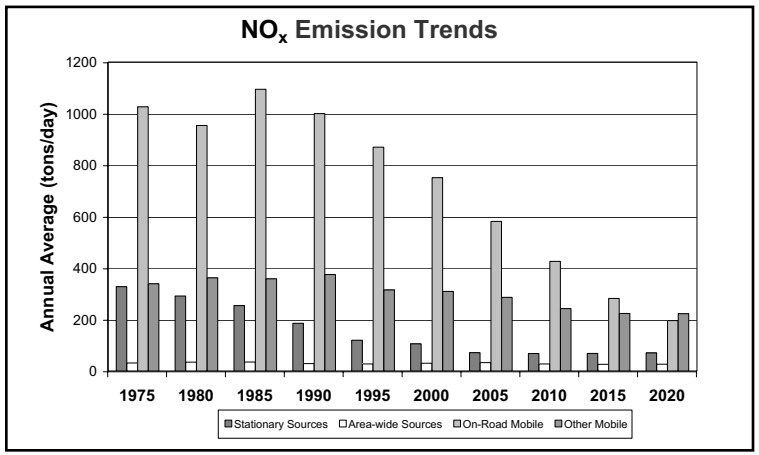

Figure 4-3

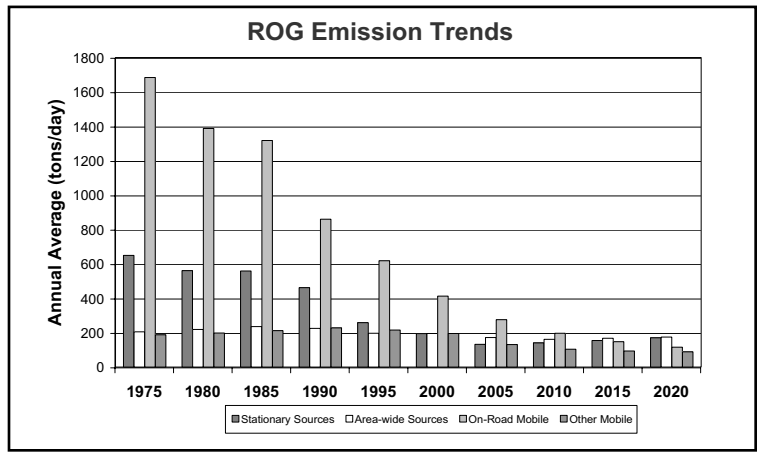

Figure 4-4

South Coast Air Basin

Ozone Air Quality Trend

Air quality as it relates to ozone in the South Coast Air Basin has improved substantially over the last 30 years. During the 1960s, maximum 1-hour concentrations were above 0.60 parts per million. Today, the maximum measured concentrations are less than one-third of that. All of the ozone statistics show an overall, steady decline. Although the 2003 ozone season in the South Coast was severe, the 2003 peak 1-hour indicator value is more than 49 percent lower than the 1984 value. The 2004 three year average of the maximum 1-hour concentration is almost 53 percent lower than 1984. The number of days above the standards has declined dramatically. The downward trend for 8-hour ozone is similar to that for 1-hour.

The ARB has identified the South Coast Air Basin as a transport contributor to several downwind areas -- the Mojave Desert Air Basin, the Salton Sea Air Basin, the San Diego Air Basin, and the South Central Coast Air Basin. As ozone concentrations in the South Coast Air Basin decline further, the transport impact on the downwind areas should also decrease.

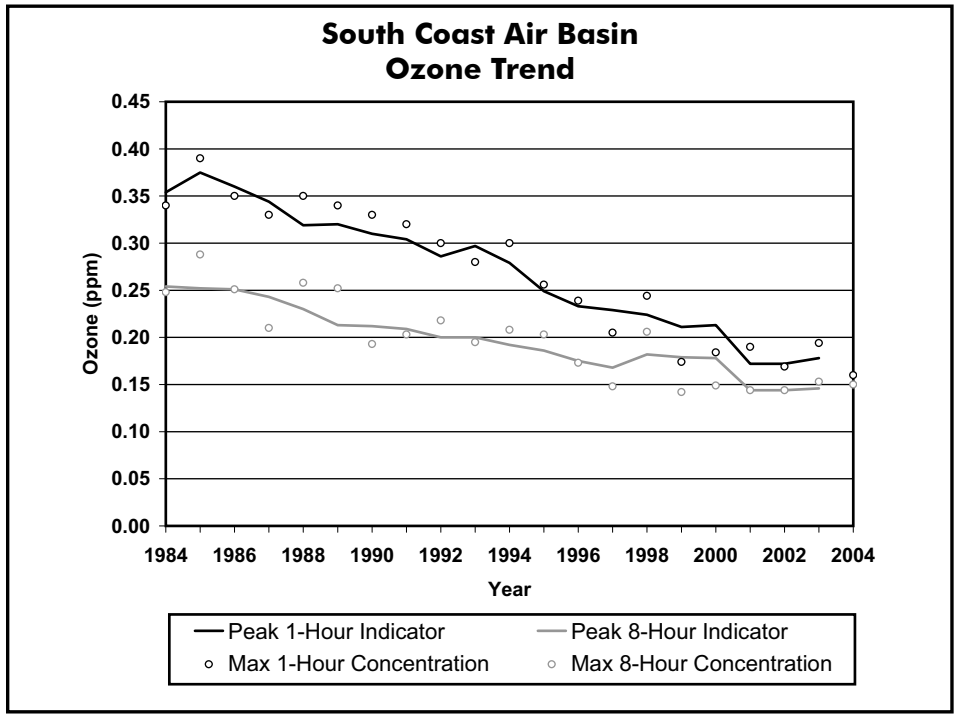

Figure 4-5

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[1]
Peak 1-Hour Indicator	0.354	0.375	0.360	0.344	0.319	0.320	0.310	0.304	0.286	0.297	0.279	0.249	0.233	0.229	0.224	0.211	0.213	0.172	0.172	0.178	
Peak 8-Hour Indicator	0.254	0.252	0.251	0.243	0.230	0.213	0.212	0.209	0.200	0.200	0.192	0.186	0.175	0.168	0.182	0.179	0.178	0.144	0.144	0.146	
4th High 1-Hr. in 3 Yrs	0.360	0.360	0.350	0.350	0.340	0.330	0.330	0.310	0.300	0.300	0.280	0.250	0.231	0.215	0.217	0.211	0.211	0.170	0.169	0.180	
Avg. of 4th High 8-Hr. in 3 Yrs	0.225	0.226	0.222	0.217	0.205	0.192	0.186	0.182	0.180	0.177	0.171	0.165	0.161	0.148	0.154	0.147	0.146	0.129	0.128	0.131	
Maximum 1-Hr. Concentration	0.340	0.390	0.350	0.330	0.350	0.340	0.330	0.320	0.300	0.280	0.300	0.256	0.239	0.205	0.244	0.174	0.184	0.190	0.169	0.194	0.160
Maximum 8-Hr. Concentration	0.248	0.288	0.251	0.210	0.258	0.252	0.193	0.203	0.218	0.195	0.208	0.203	0.173	0.148	0.206	0.142	0.149	0.144	0.144	0.153	0.150
Days Above State Standard	209	207	217	196	216	211	185	184	190	185	165	153	141	144	107	111	115	121	116	125	110
Days Above Nat. 1-Hr. Std.	175	158	167	161	178	157	131	130	142	124	118	98	85	64	60	39	33	36	45	64	27
Days Above Nat. 8-Hr. Std.	190	181	191	179	194	181	161	160	173	161	148	120	115	118	93	93	94	92	96	109	88

[1] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-5

South Coast Air Basin
Directly Emitted PM_{10} Emission Trends and Forecasts

Direct emissions of PM_{10} have been increasing in the South Coast Air Basin since 1975. A decrease in emissions would have been observed, if not for growth in emissions from area-wide sources, primarily fugitive dust from paved and unpaved roads and other sources. The increase in activity of these area-wide sources reflects the increased growth and VMT in the air basin.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The PM_{10} emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted PM_{10} emissions contribute approximately 65 percent of the ambient PM_{10} in the South Coast Air Basin.

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***236***	***247***	***274***	***343***	***325***	***293***	***296***	***303***	***309***	***317***
Stationary Sources	55	38	26	26	17	16	17	18	19	20
Area-wide Sources	143	166	200	269	268	238	239	247	252	259
On-Road Mobile	15	17	24	22	19	19	19	19	20	20
Gasoline Vehicles	10	8	9	10	11	12	13	15	16	17
Diesel Vehicles	5	9	15	12	8	6	6	4	3	3
Other Mobile	24	25	24	26	21	21	21	19	19	18
Gasoline Fuel	3	3	3	4	4	4	5	5	6	6
Diesel Fuel	20	21	20	21	16	15	15	13	12	11
Other Fuel	1	1	1	1	1	1	1	1	1	1

Table 4-6

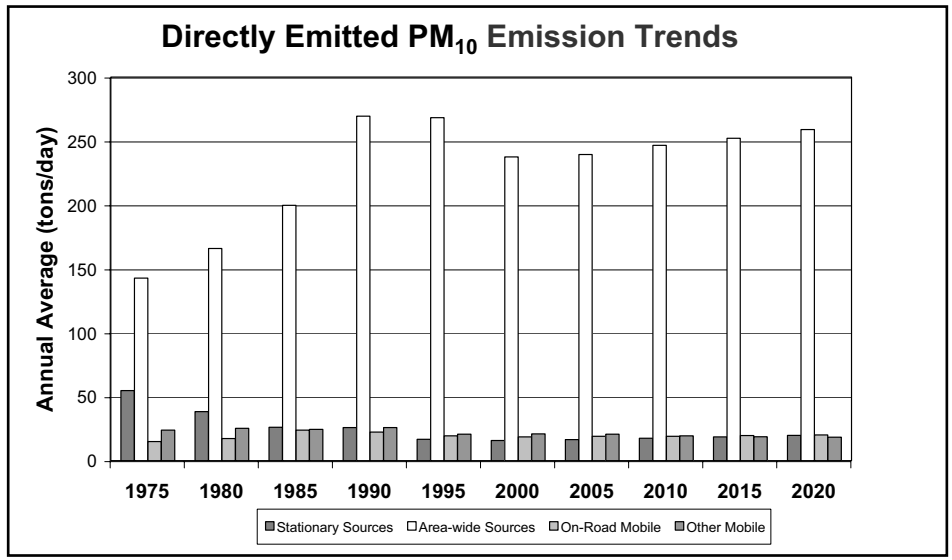

Figure 4-6

South Coast Air Basin
Directly Emitted $PM_{2.5}$ Emission Trends and Forecasts

Direct emissions of $PM_{2.5}$ have decreased slightly in the South Coast Air Basin since 1975. Stationary source emissions have been decreasing, while area-wide emissions have been increasing. A more significant decrease in emissions would have been observed, if not for growth in emissions from area-wide sources, primarily fugitive dust from paved and unpaved roads and other sources. The increase in activity of these area-wide sources reflects the increased growth and VMT in the air basin.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The $PM_{2.5}$ emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted $PM_{2.5}$ emissions contribute approximately 40 percent of the ambient $PM_{2.5}$ in the South Coast Air Basin.

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***124***	***116***	***117***	***129***	***112***	***111***	***113***	***114***	***116***	***119***
Stationary Sources	51	32	21	22	14	13	14	15	15	16
Area-wide Sources	41	47	56	67	66	66	68	70	72	74
On-Road Mobile	11	13	19	17	14	13	13	13	13	13
Gasoline Vehicles	6	5	5	6	6	7	8	9	10	10
Diesel Vehicles	5	9	14	11	8	6	5	4	3	3
Other Mobile	22	23	22	23	18	19	18	17	16	16
Gasoline Fuel	2	2	2	3	3	3	4	4	4	5
Diesel Fuel	19	20	19	20	15	14	13	12	11	10
Other Fuel	1	1	1	1	1	1	1	1	1	1

Table 4-7

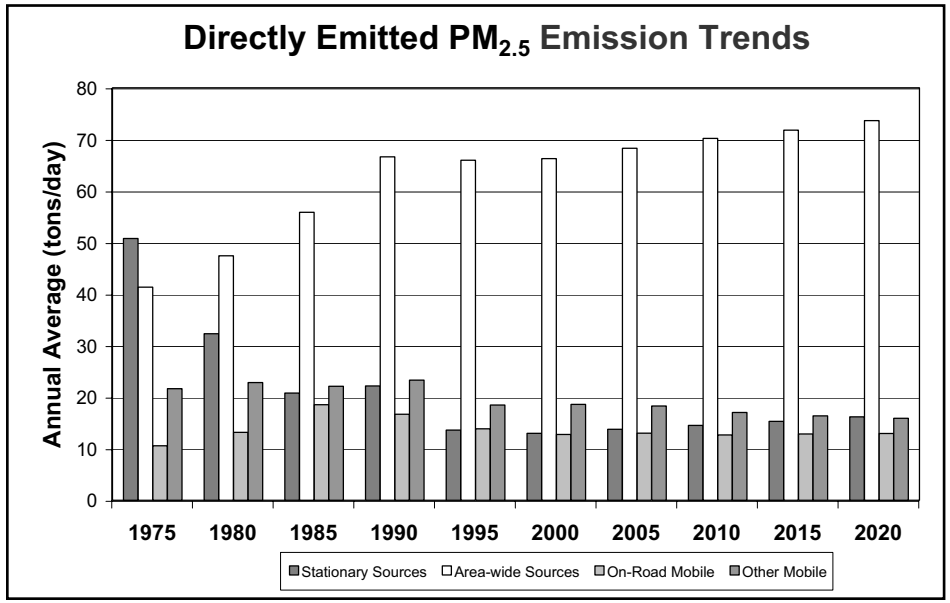

Figure 4-7

South Coast Air Basin

PM_{10} Air Quality Trend

As with other pollutants, the PM_{10} statistics also show overall improvement. During the period for which data are available, the three year average of the annual average of quarters (State) decreased about 28 percent. Although the values in the late 1990's show some variability, this is probably due to meteorology rather than a change in emissions. Despite the overall decrease, ambient concentrations still exceed the State annual and 24-hour PM_{10} standards. Similar to the ambient concentrations, the calculated number of days above the 24-hour PM_{10} standards has also shown an overall drop. During 1988, there were 345 calculated days above the State standard and 44 calculated days above the national standard. By 2003, there were still 252 calculated State standard exceedance days. In contrast, there were only six national standard exceedance days.

Despite these decreases, PM_{10} continues to pose a significant problem in the South Coast Air Basin. While emission controls implemented for ozone will also benefit PM_{10}, more controls aimed specifically at reducing PM_{10} will be needed to reach attainment.

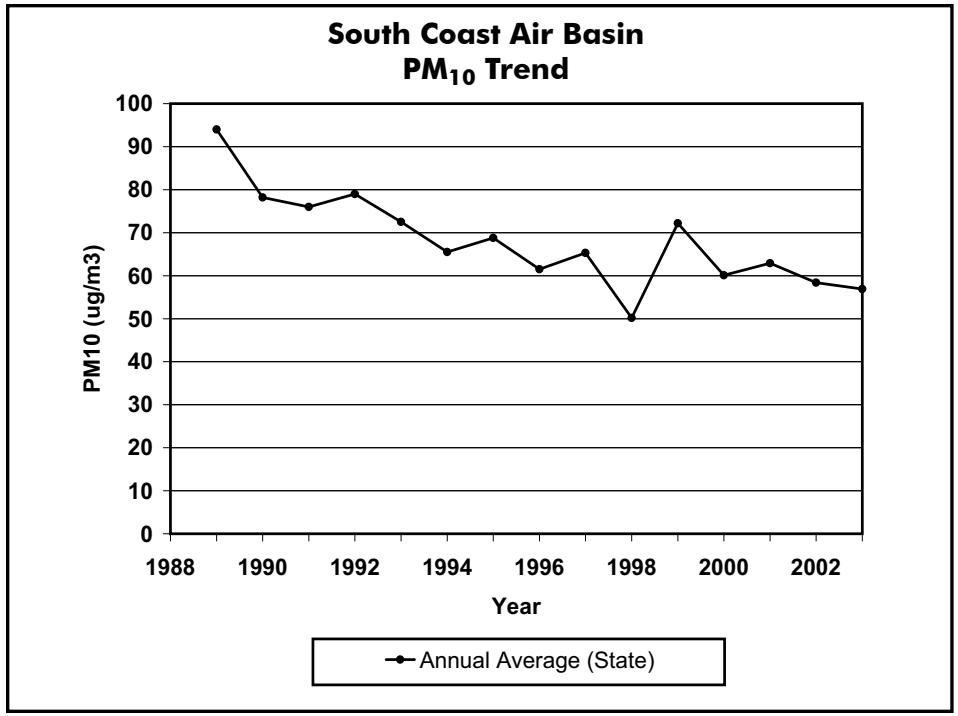

Figure 4-8

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Maximum 24-Hr. Concentration (State)					287	271	475	179	649	231	161	219	162	208	116	183	139	219	130	164
Maximum 24-Hr. Concentration (Nat)					289	271	475	179	649	231	161	219	162	208	116	183	139	219	130	164
Annual Average (State)						94.0	78.2	76.0	79.0	72.5	65.5	68.8	61.5	65.3	50.2	72.2	60.1	62.9	58.4	56.9
Annual Average (Nat)					94.5	93.0	78.2	76.1	79.0	72.5	65.5	68.8	62.8	65.6	50.2	72.2	59.1	63.3	58.1	55.6
Calc Days Above State 24-Hr Std					345	338	301	294	282	293	276	252	276	290	238	288	300	278	297	252
Calc Days Above Nat 24-Hr Std					44	32	33	15	24	12	3	31	6	17	0	6	0	5	0	6

Table 4-8

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South Coast Air Basin
Carbon Monoxide Emission Trends and Forecasts

Emissions of CO have been trending downward since 1975 in the South Coast Air Basin even though motor vehicle miles traveled have increased and industrial activity has grown. On-road motor vehicle controls are primarily responsible for this decline in emissions of CO. Stationary source emissions decreased during the 1970s and 1980s as a result of a decline in the manufacture of carbon black (a material used in the manufacture of tires) and steel in the South Coast Air Basin. CO emissions from other mobile sources are projected to decrease as more stringent emission standards are adopted.

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***16154***	***13382***	***13140***	***10322***	***7574***	***5533***	***3953***	***3062***	***2519***	***2184***
Stationary Sources	296	287	75	100	65	52	88	91	94	97
Area-wide Sources	54	51	82	70	87	142	158	161	166	170
On-Road Mobile	14571	11754	11622	8690	6153	4207	2705	1883	1334	956
Gasoline Vehicles	14546	11708	11545	8623	6093	4154	2654	1839	1295	920
Diesel Vehicles	25	47	78	67	60	52	51	44	39	36
Other Mobile	1233	1289	1361	1463	1269	1132	1003	927	926	961
Gasoline Fuel	1027	1076	1156	1251	1080	952	823	743	735	761
Diesel Fuel	116	121	119	123	97	85	77	73	71	72
Other Fuel	91	92	86	89	92	94	102	111	120	129

Table 4-9

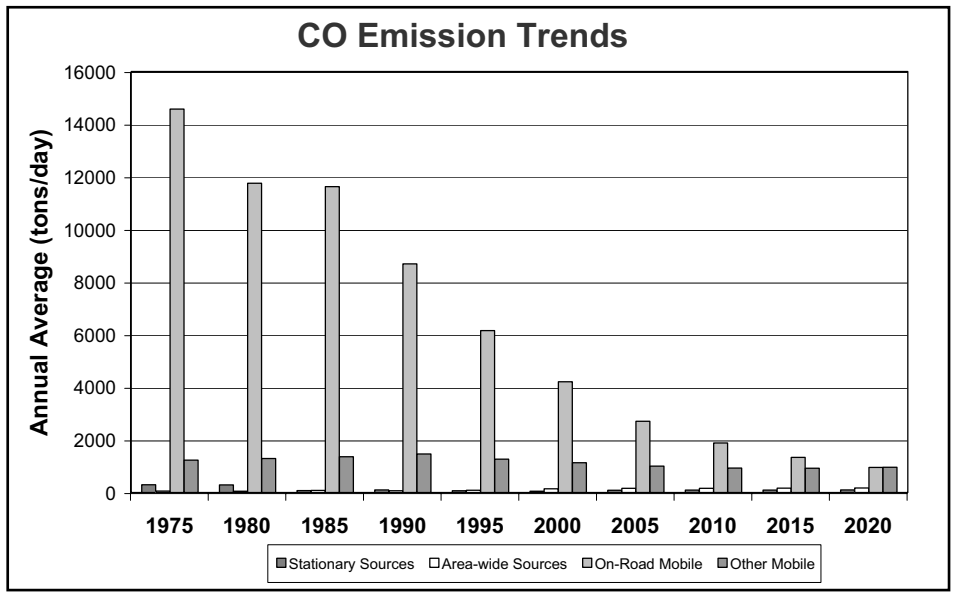

Figure 4-9

South Coast Air Basin

Carbon Monoxide Air Quality Trend

Carbon monoxide concentrations in the South Coast Air Basin have decreased markedly -- a total decrease of more than 56 percent in the maximum peak 8-hour indicator since 1984. The number of exceedance days has also declined. There were 79 days above the State standard and 66 days above the national standard during 1984. However, during 2003, there were no exceedance days for either standard.

While the entire South Coast Air Basin is designated as nonattainment for the national CO standards and Los Angeles County is designated as nonattainment for the State standards, CO violations have been limited to a small portion of Los Angeles County. The South Coast Air Basin now qualifies as attainment for both the national and State CO standards. No violations have occurred in the other three counties since 1992. Continuing reductions from motor vehicle control programs should continue the downward trend in ambient CO concentrations.

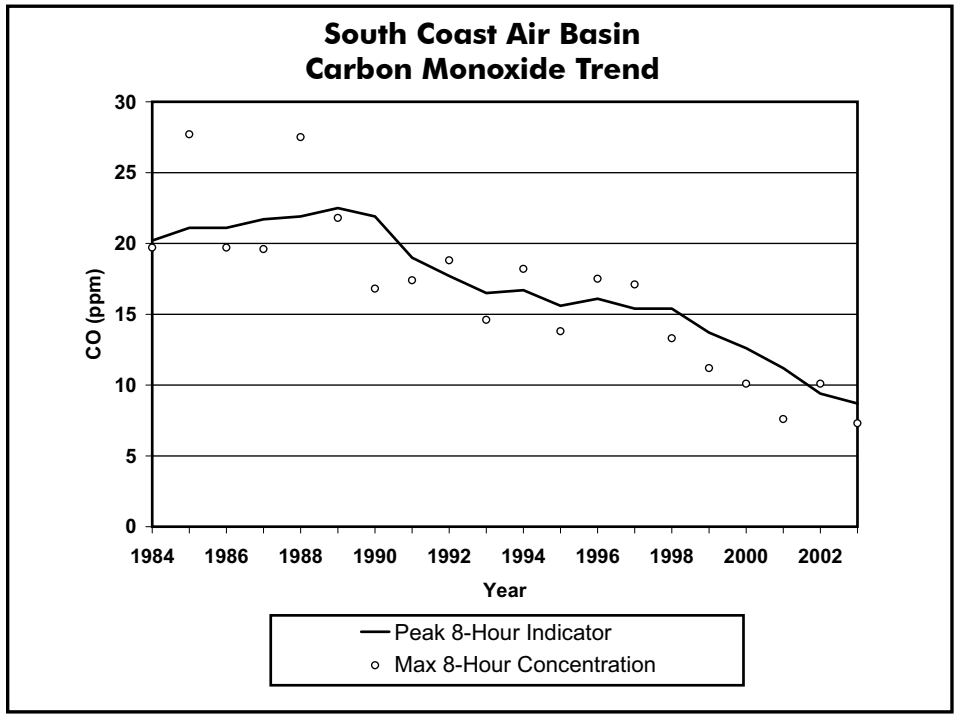

Figure 4-10

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	20.2	21.1	21.1	21.7	21.9	22.5	21.9	19.0	17.7	16.5	16.7	15.6	16.1	15.4	15.4	13.7	12.6	11.2	9.4	8.7
Maximum 1-Hr. Concentration	29.0	33.0	27.0	26.0	32.0	31.0	24.0	30.0	28.0	21.0	24.9	16.8	22.5	19.2	17.0	19.0	13.8	11.7	15.8	12.2
Maximum 8-Hr. Concentration	19.7	27.7	19.7	19.6	27.5	21.8	16.8	17.4	18.8	14.6	18.2	13.8	17.5	17.1	13.3	11.2	10.1	7.6	10.1	7.3
Days Above State 8-Hr. Std.	79	64	58	50	73	71	50	51	39	29	27	17	26	18	13	11	6	0	1	0
Days Above Nat. 8-Hr. Std.	66	54	49	40	65	67	42	41	34	19	19	14	19	13	10	7	3	0	1	0

Table 4-10

South Coast Air Basin

Nitrogen Dioxide

Oxides of Nitrogen Emission Trends and Forecasts

Oxides of Nitrogen (NO_x) and Nitrogen Dioxide (NO_2) emissions in the South Coast Air Basin have been trending downward since 1985. This decline should continue as more stringent motor vehicle and stationary source emission standards are adopted and implemented.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1723***	***1641***	***1741***	***1588***	***1331***	***1195***	***970***	***763***	***600***	***515***
Stationary Sources	327	291	254	185	120	105	71	68	68	70
Area-wide Sources	31	34	35	29	27	30	32	27	26	26
On-Road Mobile	1026	954	1094	1000	869	751	581	426	282	196
Gasoline Vehicles	921	768	788	700	594	432	270	186	129	92
Diesel Vehicles	105	186	306	299	275	319	311	239	153	103
Other Mobile	339	362	358	374	315	309	286	242	224	223
Gasoline Fuel	20	21	22	24	22	25	26	22	19	19
Diesel Fuel	292	313	307	315	257	247	225	188	170	166
Other Fuel	26	28	29	35	36	37	35	33	34	38

Table 4-11

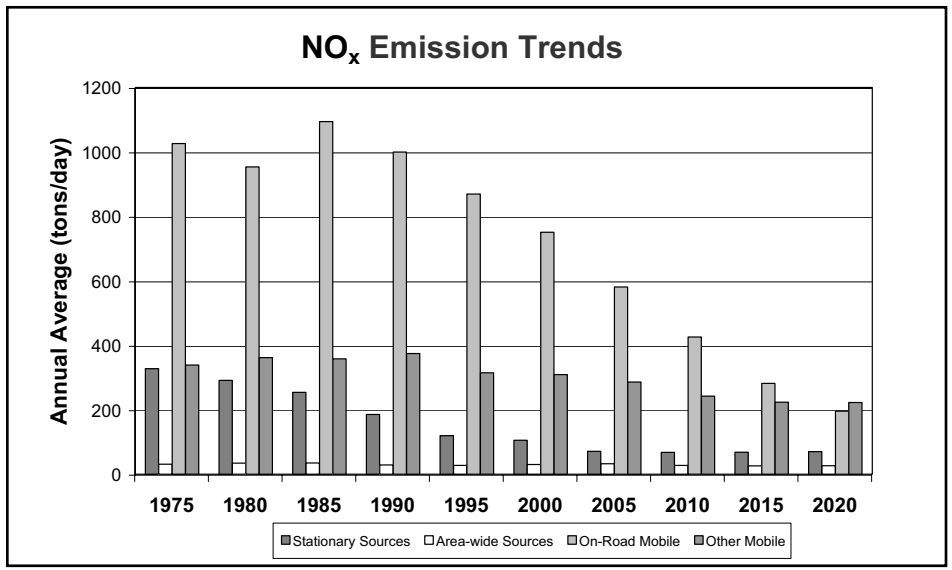

Figure 4-11

South Coast Air Basin

Nitrogen Dioxide Air Quality Trend

The South Coast Air Basin is one of only a few areas in California where nitrogen dioxide (NO_2) has been a problem. The South Coast Air Basin attained the State 1-hour NO_2 standard in 1994, bringing the entire State into attainment. The federal standard has not been exceeded since 1991.

Over the last 20 years, NO_2 values have decreased significantly in the South Coast Air Basin. The peak 1-hour indicator for 2003 was half of what it was during 1984. However, since the early 1990's, maximum 1-hour NO_2 concentrations that exceed the level of the State standard have occasionally occurred but have not affected the area's attainment status. These exceedances have been very infrequent and limited to either the Banning Airport or the Burbank-West Palm Avenue monitoring sites. Additional years of data will be needed to determine if there is any long-term change in NO_2 trends in the South Coast Air Basin.

Nitrogen dioxide is formed from emissions of oxides of nitrogen, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's oxides of nitrogen emissions.

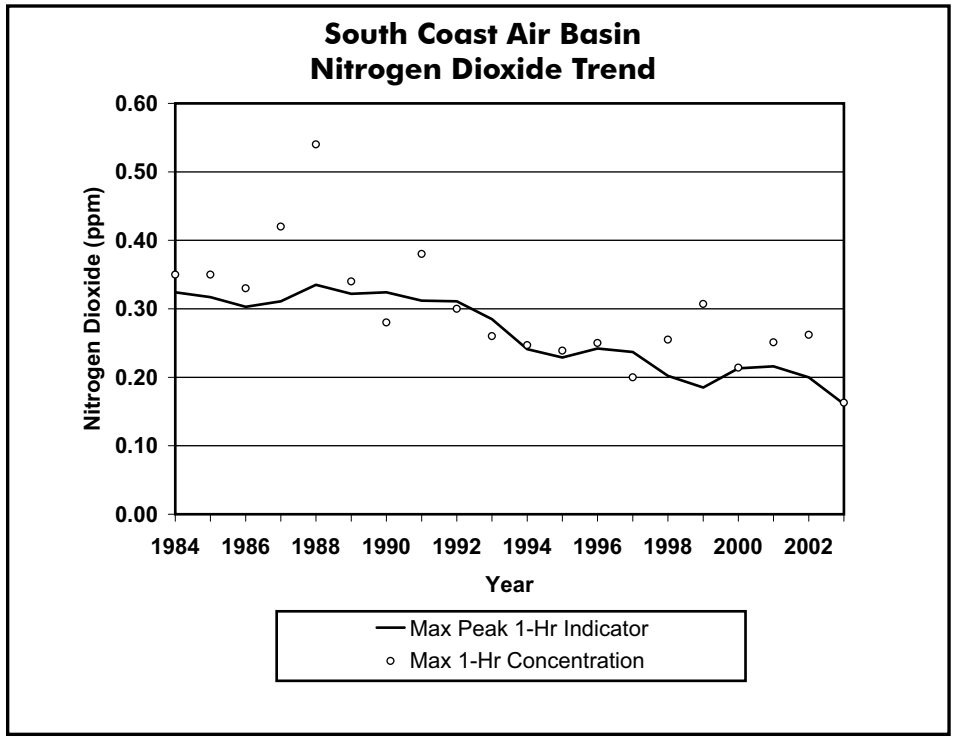

Figure 4-12

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.324	0.317	0.303	0.311	0.335	0.322	0.324	0.312	0.311	0.285	0.241	0.229	0.242	0.237	0.202	0.185	0.213	0.216	0.200	0.161
Maximum 1-Hr. Concentration	0.350	0.350	0.330	0.420	0.540	0.340	0.280	0.380	0.300	0.260	0.247	0.239	0.250	0.200	0.255	0.307	0.214	0.251	0.262	0.163
Maximum Annual Average	0.057	0.060	0.061	0.055	0.061	0.057	0.055	0.055	0.051	0.050	0.050	0.046	0.042	0.043	0.043	0.051	0.044	0.041	0.040	0.035

Table 4-12

San Francisco Bay Area Air Basin

Introduction - Area Description

The San Francisco Bay Area is California's second largest metropolitan area and is the focal point of northern California. The nine county area comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern half of Sonoma County, and the southwestern portion of Solano County. The unifying feature of the area is the Bay itself, which is oriented north-south and covers about 400 square miles of the area's total 5,340 square miles.

Over 19 percent of California's population resides in the San Francisco Bay Area, and pollution sources in the region account for about 16 percent of the total statewide criteria pollutant emissions. The climate in the San Francisco Bay Area varies from one location to the next. Along the coast, temperatures are mild year-round. However, as one moves inland, temperatures show larger diurnal and seasonal variations. Overall air quality in the San Francisco Bay Area Air Basin is better than in the South Coast Air Basin. This is due to a more favorable climate, with cooler temperatures and better ventilation. However, exceedances of the ozone standards continue to occur in the San Francisco Bay Area Air Basin, and still pose challenges to State and local air pollution control agencies.

Figure 4-13

San Francisco Bay Area Air Basin

Emission Trends and Forecasts

The emission levels for the ozone precursors NO_x and ROG have been trending downward in the San Francisco Bay Area Air Basin since 1975. CO emissions have also been trending downward since 1975. On-road motor vehicles are the largest contributors to CO, ROG, and NO_x emissions in the air basin. The implementation of stricter mobile source (both on-road and other) emission standards will continue to decrease vehicle emissions in this air basin. Controls on stationary source solvent evaporation and fugitive emissions will also continue to reduce ROG emissions.

San Francisco Bay Area Air Basin Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NO_X	975	968	905	876	741	632	535	446	363	316
ROG	1426	1360	1105	791	635	510	392	340	307	289
PM_{10}	168	169	182	181	170	184	191	193	196	200
$PM_{2.5}$	84	81	81	82	75	78	78	78	78	79
CO	8956	8293	7078	5241	3829	2793	2200	1766	1417	1205

Table 4-13

San Francisco Bay Area Air Basin

Population and VMT

Compared with the statewide totals, population and the number of vehicle miles traveled each day is projected to grow at a slower rate in the San Francisco Bay Area Air Basin from 1980 to 2020. During that 40-year period, the population is projected to increase about 57 percent, from about 5.1 million in 1980 to more than 8 million in 2020. During the same period, the daily VMT is projected to increase 136 percent, from 90 million miles per day in 1980 to over 213 million miles per day in 2020. While these growth rates are lower than the growth rates seen in other areas, they still represent substantial increases.

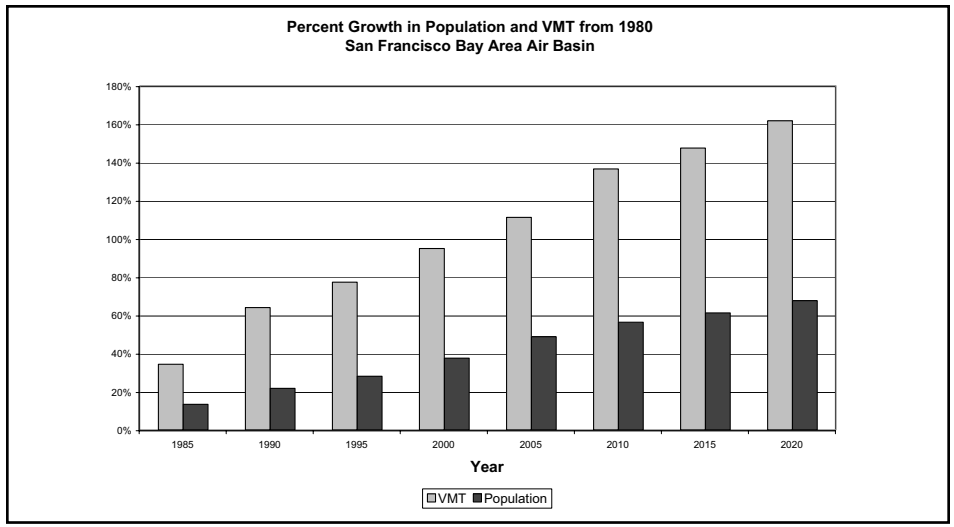

Figure 4-14

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	5095400	5473900	5874400	6182500	6639400	7180000	7544800	7779600	8088700
Avg. Daily VMT(1000s)	90066	109789	133990	144854	159271	172581	193300	202212	213900

Table 4-14

San Francisco Bay Area Air Basin
Ozone Precursor Emission Trends and Forecasts

Emissions of ozone precursors have decreased in the San Francisco Bay Area Air Basin since 1975 and are projected to continue declining through 2020. The Bay Area has a significant motor vehicle population, and the implementation of stricter motor vehicle controls has resulted in significant emissions reductions for NO_x and ROG. Stationary source emissions of ROG have declined over the last 20 years due to new controls for oil refinery fugitive emissions and new rules for control of ROG from various industrial coatings and solvent operations.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***975***	***968***	***905***	***876***	***741***	***632***	***535***	***446***	***363***	***316***
Stationary Sources	231	208	137	132	103	83	67	70	74	77
Area-wide Sources	14	15	16	19	20	20	20	20	20	21
On-Road Mobile	552	570	566	524	437	352	286	217	146	101
Gasoline Vehicles	497	478	417	348	294	208	155	114	78	54
Diesel Vehicles	55	92	149	176	142	144	131	103	68	47
Other Mobile	178	175	186	201	182	177	163	139	123	117
Gasoline Fuel	8	8	9	11	12	13	13	10	10	10
Diesel Fuel	136	133	143	155	142	138	124	101	86	79
Other Fuel	33	33	34	35	28	26	27	27	28	29

Table 4-15

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1426***	***1360***	***1105***	***791***	***635***	***510***	***392***	***340***	***307***	***289***
Stationary Sources	311	299	209	125	119	117	88	89	92	95
Area-wide Sources	149	142	133	133	101	94	88	87	89	90
On-Road Mobile	873	822	658	421	309	208	152	113	81	62
Gasoline Vehicles	869	816	649	413	303	202	146	108	77	58
Diesel Vehicles	3	6	9	8	6	6	6	5	4	3
Other Mobile	94	96	104	112	105	92	64	50	45	43
Gasoline Fuel	69	71	77	83	82	71	44	33	29	27
Diesel Fuel	13	12	13	15	14	14	12	9	7	6
Other Fuel	12	13	13	14	9	7	8	8	9	9

Table 4-16

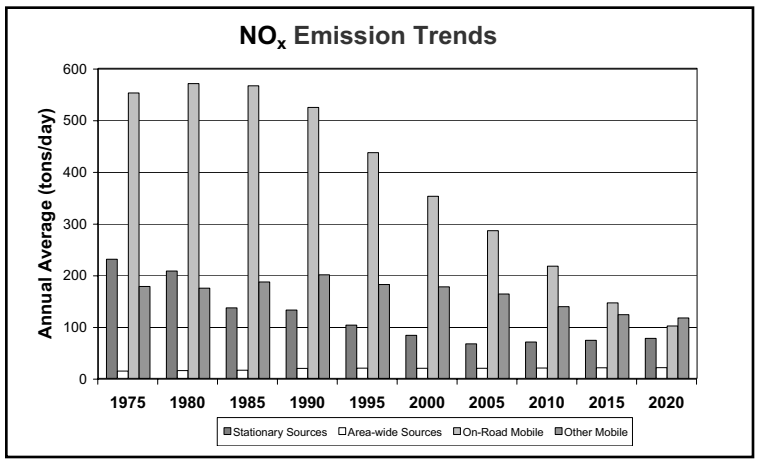

Figure 4-15

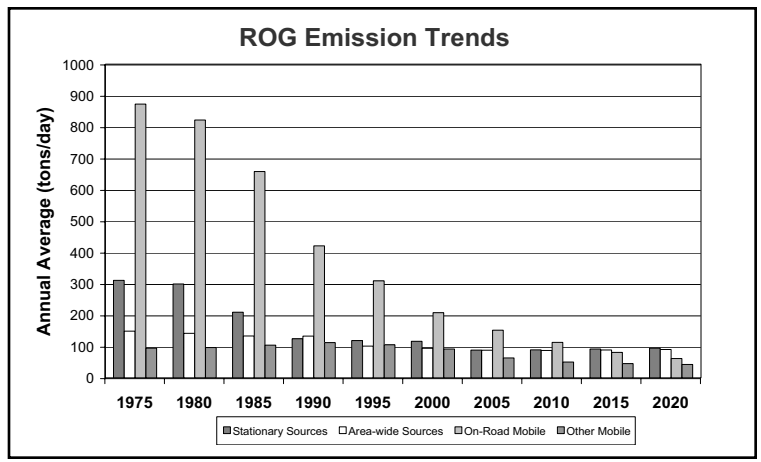

Figure 4-16

San Francisco Bay Area Air Basin

Ozone Air Quality Trend

Ozone concentrations in the San Francisco Bay Area are much lower than in the South Coast and San Joaquin Air Basins. The peak 1-hour and 8-hour indicators have declined by 21 percent during the last 20 years. The number of days when State and federal standards are exceeded also show a similar trend. Another measure of progress is that the Bay Area now qualifies for attainment of the federal 1-hour ozone standard, although they still exceed the more stringent State 1-hour and federal 8-hour standards. Although the long-term trends indicate improving air quality, since 1994 the peak indicators have been somewhat elevated. However, it is not yet clear whether these data represent a significant change in the overall trend.

Meteorology can cause ozone and ozone precursor emissions to be transported from one air basin to another. The ARB has identified the San Francisco Bay Area Air Basin as a transport contributor to the following six areas: the Sacramento region, the Mountain Counties Air Basin, the North Central Coast Air Basin, the North Coast Air Basin, the San Joaquin Valley Air Basin, and the South Central Coast Air Basin. The amount of transport impact varies from day to day, depending in large part on meteorology. To the extent that the Bay Area continues to reduce ozone precursor emissions, the transport impact on downwind areas should also decrease.

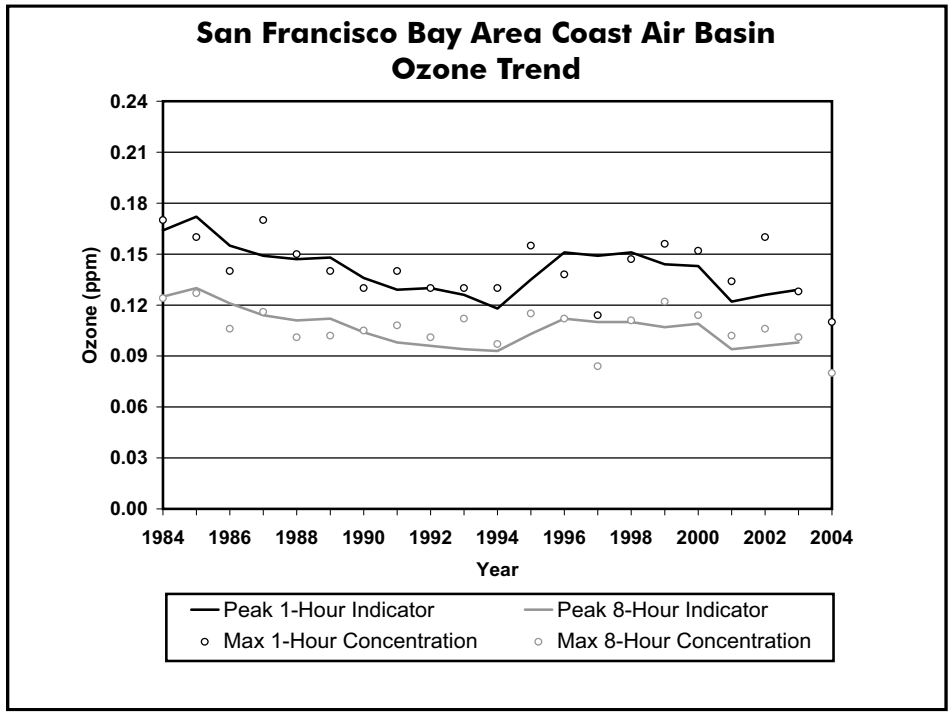

Figure 4-17

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[1]
Peak 1-Hour Indicator	0.164	0.172	0.155	0.149	0.147	0.148	0.136	0.129	0.130	0.126	0.118	0.135	0.151	0.149	0.151	0.144	0.143	0.122	0.126	0.129	
Peak 8-Hour Indicator	0.125	0.130	0.121	0.114	0.111	0.112	0.104	0.098	0.096	0.094	0.093	0.103	0.112	0.110	0.110	0.107	0.109	0.094	0.096	0.098	
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.150	0.140	0.140	0.140	0.130	0.130	0.120	0.120	0.121	0.138	0.138	0.138	0.138	0.139	0.139	0.126	0.124	0.123	
Avg. of 4th High 8-Hr. in 3 Yrs	0.100	0.103	0.097	0.092	0.092	0.097	0.088	0.084	0.082	0.081	0.082	0.087	0.093	0.090	0.089	0.086	0.087	0.082	0.082	0.086	
Maximum 1-Hr. Concentration	0.170	0.160	0.140	0.170	0.150	0.140	0.130	0.140	0.130	0.130	0.130	0.155	0.138	0.114	0.147	0.156	0.152	0.134	0.160	0.128	0.110
Maximum 8-Hr. Concentration	0.124	0.127	0.106	0.116	0.101	0.102	0.105	0.108	0.101	0.112	0.097	0.115	0.112	0.084	0.111	0.122	0.114	0.102	0.106	0.101	0.080
Days Above State Standard	55	45	39	46	41	22	14	23	23	19	13	28	34	8	29	20	12	15	16	19	7
Days Above Nat. 1-Hr. Std.	22	9	5	14	5	4	2	2	2	3	2	11	8	0	8	3	3	1	2	1	0
Days Above Nat. 8-Hr. Std.	32	17	13	29	20	13	7	6	6	5	4	18	14	0	16	9	4	7	7	7	0

[1] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-17

San Francisco Bay Area Air Basin

Directly Emitted PM_{10} Emission Trends and Forecasts

Direct emissions of PM_{10} increased in the San Francisco Bay Area Air Basin between 1975 and 2000 and are projected to continue increasing through 2020. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust sources. Emissions of directly emitted PM_{10} from diesel motor vehicles have been decreasing since 1990 even though population and VMT are growing, due to adoption of more stringent emission standards.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The PM_{10} emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted PM_{10} emissions contribute approximately 75 percent of the ambient PM_{10} in the San Francisco Bay Area Air Basin.

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***168***	***169***	***182***	***181***	***170***	***184***	***191***	***193***	***196***	***200***
Stationary Sources	36	24	21	17	18	18	16	17	17	18
Area-wide Sources	114	124	137	138	131	145	153	156	159	162
On-Road Mobile	7	9	12	12	9	9	10	10	10	11
Gasoline Vehicles	5	4	4	5	5	6	7	8	9	9
Diesel Vehicles	2	5	7	7	4	3	3	2	2	1
Other Mobile	12	12	12	14	11	11	11	10	10	9
Gasoline Fuel	1	1	1	1	2	2	2	2	3	3
Diesel Fuel	10	9	10	11	9	9	8	7	6	5
Other Fuel	1	1	2	2	1	1	1	1	1	1

Table 4-18

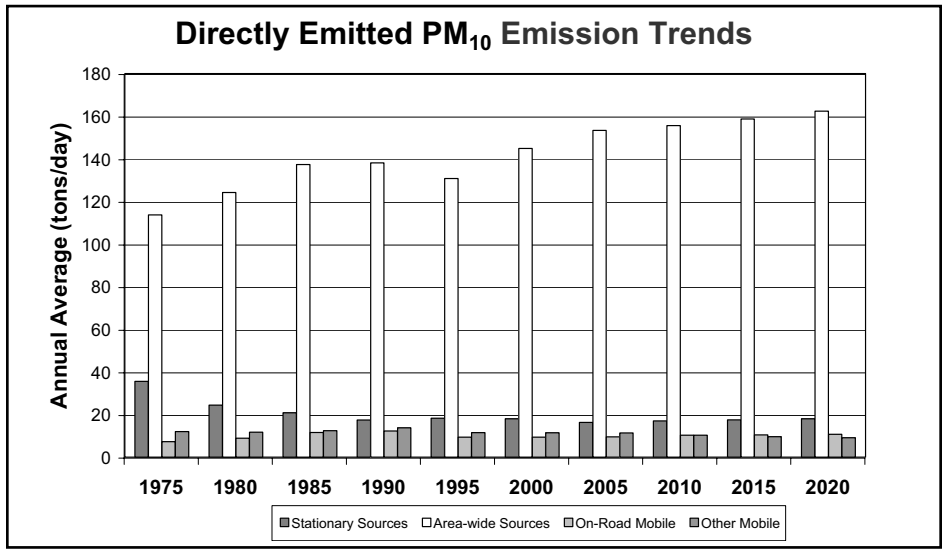

Figure 4-18

San Francisco Bay Area Air Basin
Directly Emitted $PM_{2.5}$ Emission Trends and Forecasts

Direct emissions of $PM_{2.5}$ declined slightly in the San Francisco Bay Area Air Basin between 1975 and 2000 and are projected to remain constant through 2020. Emissions from stationary sources declined slightly, while area-wide sources increased. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust sources. Emissions of directly emitted $PM_{2.5}$ from diesel motor vehicles have been decreasing since 1990 even though population and VMT are growing, due to adoption of more stringent emission standards.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The $PM_{2.5}$ emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted $PM_{2.5}$ emissions contribute approximately 60 percent of the ambient $PM_{2.5}$ in the San Francisco Bay Area Air Basin.

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***84***	***81***	***81***	***82***	***75***	***78***	***78***	***78***	***78***	***79***
Stationary Sources	26	20	14	12	14	14	13	13	13	14
Area-wide Sources	41	44	46	48	44	47	49	49	49	50
On-Road Mobile	5	7	9	9	7	6	7	7	7	7
Gasoline Vehicles	3	3	2	3	3	3	4	5	5	6
Diesel Vehicles	2	4	7	7	4	3	3	2	2	1
Other Mobile	11	11	11	13	10	10	10	9	8	8
Gasoline Fuel	1	1	1	1	1	1	2	2	2	2
Diesel Fuel	9	8	9	10	8	8	8	6	5	5
Other Fuel	1	1	2	2	1	1	1	1	1	1

Table 4-19

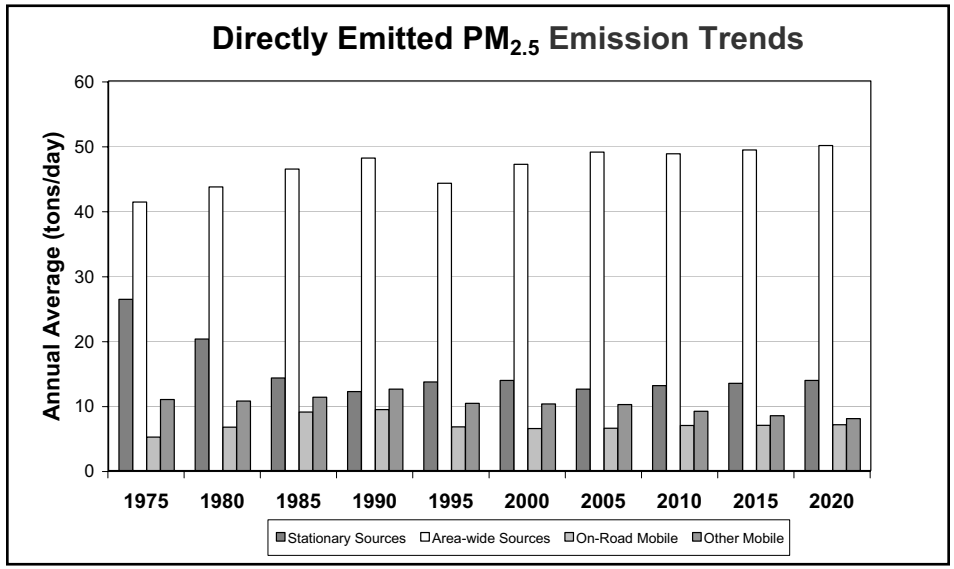

Figure 4-19

San Francisco Bay Area Air Basin

PM_{10} Air Quality Trend

As with other pollutants, the PM_{10} statistics also show overall improvement. During the period for which data are available, the three year average of the annual average of quarters (State) decreased about 32 percent.

Calculated exceedance days for the State 24-hour standard dropped from a high of 123 days during 1988 to 30 days during 2003. The national 24-hour standard was last exceeded in 1991. Because many of the same sources contribute to both ozone and PM_{10}, future ozone precursor emission controls should help ensure continued PM_{10} improvements.

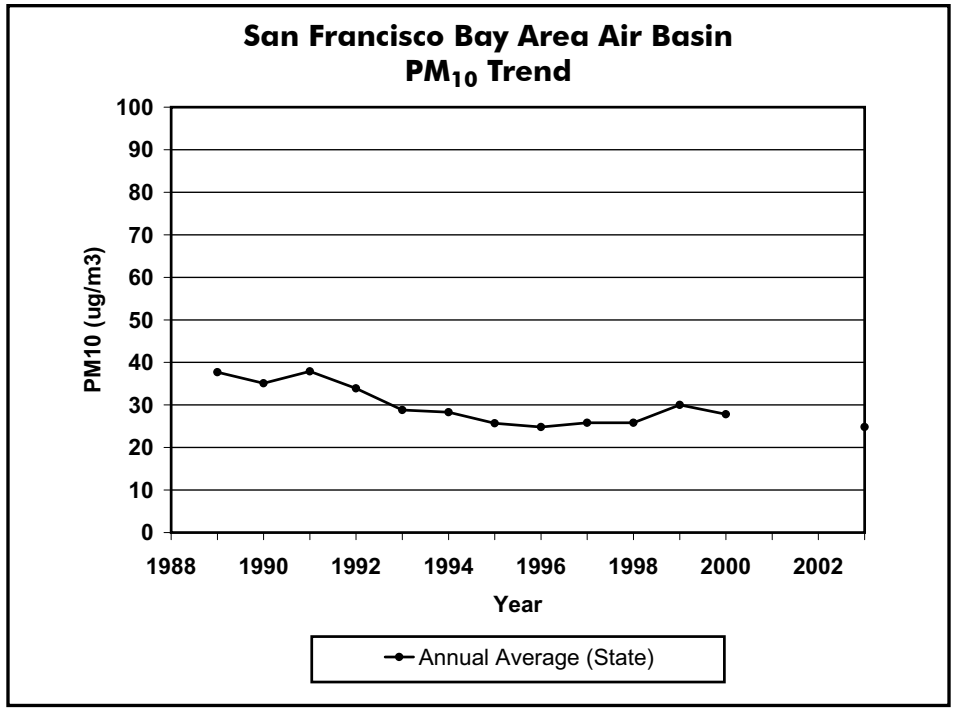

Figure 4-20

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Maximum 24-Hr. Concentration (State)					146	147	165	155	112	93	97	74	76	85	100	117	80	114	84	60
Maximum 24-Hr. Concentration (Nat)					146	150	173	155	112	101	97	74	76	95	92	114	76	109	80	58
Annual Average (State)						37.7	35.1	37.9	33.9	28.8	28.3	25.7	24.8	25.8	25.8	30.0	27.8			24.8
Annual Average (Nat)					38.3	40.8	40.4	38.3	33.7	28.8	28.3	25.7	24.9	25.8	25.1	28.7	26.8	28.9	25.4	24.2
Calc Days Above State 24-Hr Std					123	137	93	125	108	59	54	42	18	20	25	63	42	51	30	30
Calc Days Above Nat 24-Hr Std					0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-20

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San Francisco Bay Area Air Basin
Carbon Monoxide Emission Trends and Forecasts

Emissions of CO have been declining in the San Francisco Bay Area Air Basin since 1975. Motor vehicles and other mobile sources are the largest sources of CO emissions in the air basin. Emissions from motor vehicles have been declining, with the introduction of new automotive emission controls, despite increases in VMT. Oil refineries, manufacturing, and electric generation contribute a significant portion of the stationary source CO emissions. Area-wide CO emissions are primarily from residential fuel combustion (including wood), waste burning, and fires.

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***8956***	***8293***	***7078***	***5241***	***3829***	***2793***	***2200***	***1766***	***1417***	***1205***
Stationary Sources	49	58	76	69	60	50	44	47	49	51
Area-wide Sources	173	175	176	174	164	170	175	171	170	169
On-Road Mobile	8155	7477	6190	4310	2965	2029	1496	1105	752	522
Gasoline Vehicles	8142	7454	6152	4270	2934	2001	1470	1082	733	505
Diesel Vehicles	13	23	38	39	31	27	26	23	19	17
Other Mobile	580	583	636	688	640	545	484	442	446	462
Gasoline Fuel	448	457	500	548	517	434	375	332	332	344
Diesel Fuel	54	54	61	67	61	53	47	44	44	45
Other Fuel	78	72	75	73	62	58	62	66	71	74

Table 4-21

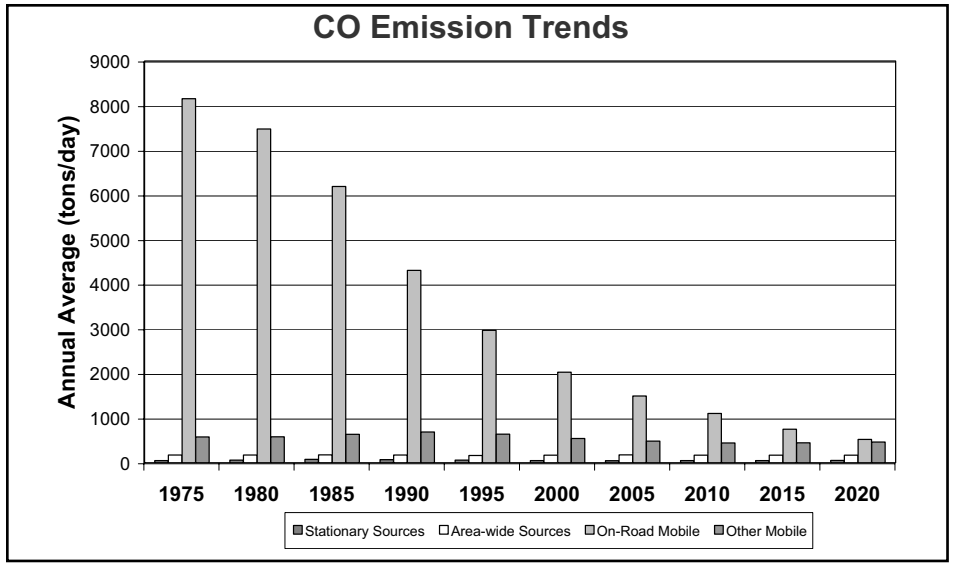

Figure 4-21

San Francisco Bay Area Air Basin

Carbon Monoxide Air Quality Trend

As in other areas of the State, carbon monoxide concentrations in the San Francisco Bay Area Air Basin have declined substantially over the last 20 years. The peak 8-hour indicator value during 2003 is less than half of what it was during 1984 and is now well below the level of the standards. In fact, neither the State nor the national standards have been exceeded in this area since 1991.

Much of the decline in ambient carbon monoxide concentrations can be attributed to the introduction of clean fuels and newer, cleaner motor vehicles. The San Francisco Bay Area Air Basin is currently designated as attainment for both the State and national CO standards. Based on emission projections, the area is expected to maintain its attainment status in the coming years.

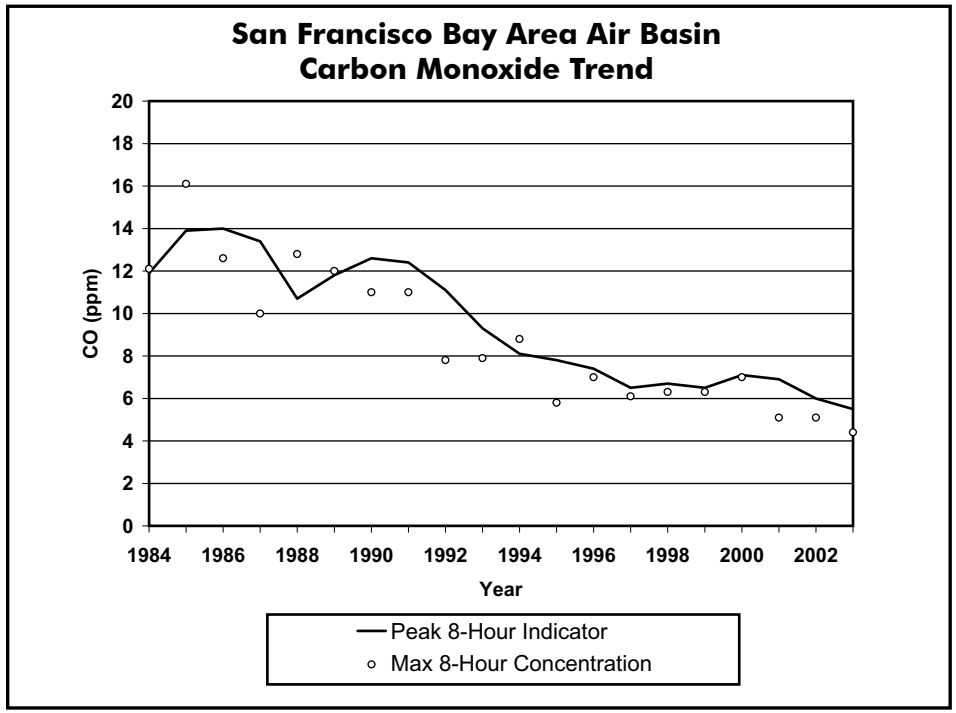

Figure 4-22

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	11.9	13.9	14.0	13.4	10.7	11.8	12.6	12.4	11.1	9.3	8.1	7.8	7.4	6.5	6.7	6.5	7.1	6.9	6.0	5.5
Maximum 1-Hr. Concentration	20.0	21.0	20.0	17.0	15.0	19.0	18.0	15.0	12.0	14.0	12.0	10.1	8.8	10.7	8.7	9.0	9.8	7.6	7.7	8.6
Maximum 8-Hr. Concentration	12.1	16.1	12.6	10.0	12.8	12.0	11.0	11.0	7.8	7.9	8.8	5.8	7.0	6.1	6.3	6.3	7.0	5.1	5.1	4.4
Days Above State 8-Hr. Std.	8	24	8	2	4	10	4	5	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	7	21	8	1	4	9	2	4	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-22

San Francisco Bay Area Air Basin

Nitrogen Dioxide

Oxides of Nitrogen Emission Trends and Forecasts

Emissions of NO_x and NO_2 have decreased in the San Francisco Bay Area Air Basin since 1975 and are projected to continue declining through 2020. The Bay Area has a significant motor vehicle population, and the implementation of stricter motor vehicle controls has resulted in significant emissions reductions for NO_x.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***975***	***968***	***905***	***876***	***741***	***632***	***535***	***446***	***363***	***316***
Stationary Sources	231	208	137	132	103	83	67	70	74	77
Area-wide Sources	14	15	16	19	20	20	20	20	20	21
On-Road Mobile	552	570	566	524	437	352	286	217	146	101
Gasoline Vehicles	497	478	417	348	294	208	155	114	78	54
Diesel Vehicles	55	92	149	176	142	144	131	103	68	47
Other Mobile	178	175	186	201	182	177	163	139	123	117
Gasoline Fuel	8	8	9	11	12	13	13	10	10	10
Diesel Fuel	136	133	143	155	142	138	124	101	86	79
Other Fuel	33	33	34	35	28	26	27	27	28	29

Table 4-23

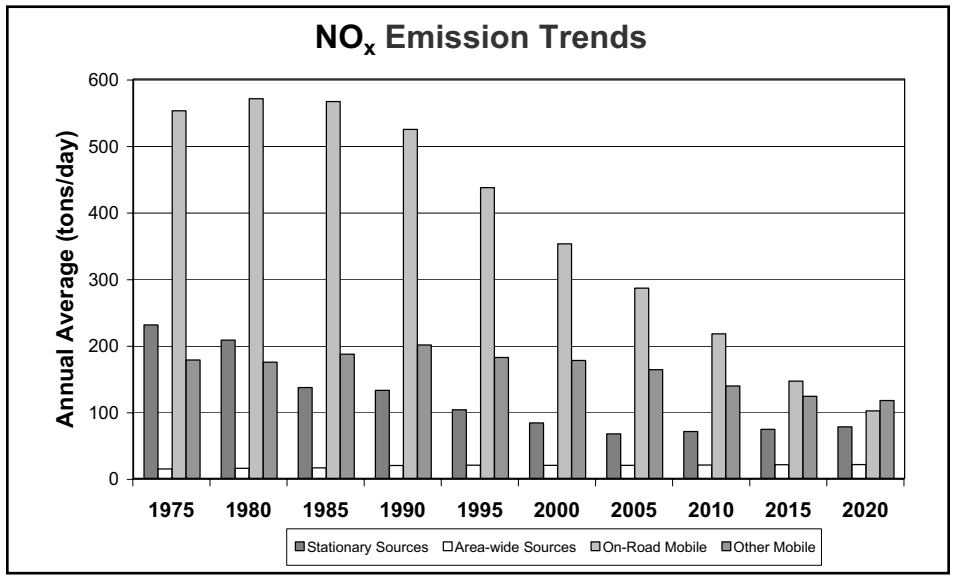

Figure 4-23

San Francisco Bay Area Air Basin

Nitrogen Dioxide Air Quality Trend

The San Francisco Bay Area has attained both the State and national nitrogen dioxide standards for more than twenty years. During this time-period, there have been no concentrations that exceeded the level of the State 1-hour or the national annual standard. Ambient concentrations continue to be well below the level of both standards. The peak 1-hour indicator has declined by almost 60 percent in the San Francisco Bay Area since 1984. This downward trend is expected to continue.

Nitrogen dioxide is formed from emissions of oxides of nitrogen, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's oxides of nitrogen emissions.

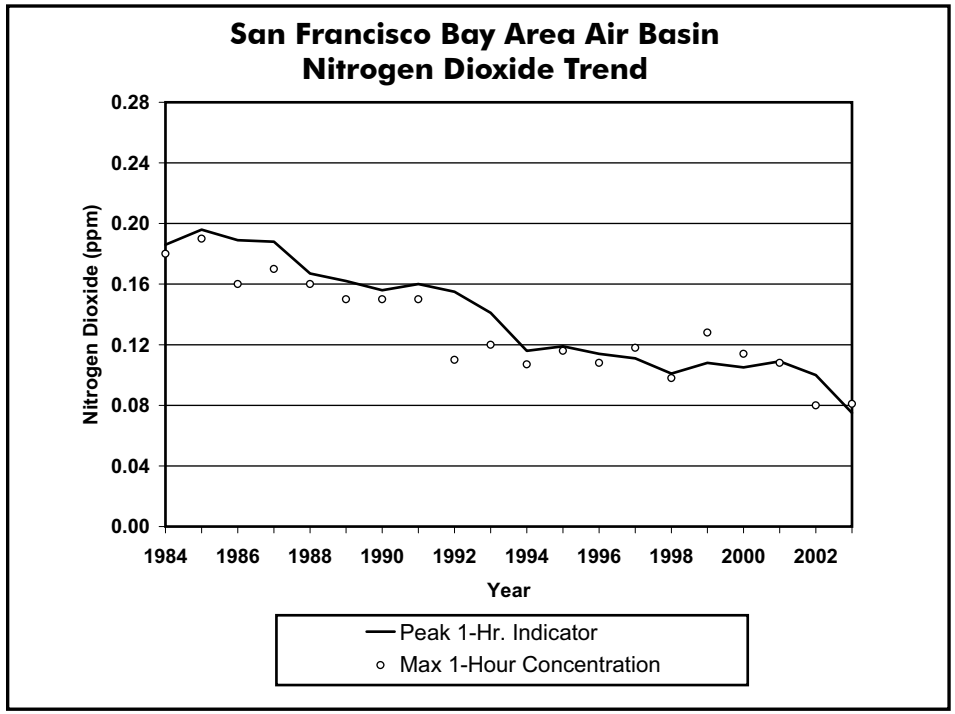

Figure 4-24

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.186	0.196	0.189	0.188	0.167	0.162	0.156	0.160	0.155	0.141	0.116	0.119	0.114	0.111	0.101	0.108	0.105	0.109	0.100	0.075
Maximum 1-Hr. Concentration	0.180	0.190	0.160	0.170	0.160	0.150	0.150	0.150	0.110	0.120	0.107	0.116	0.108	0.118	0.098	0.128	0.114	0.108	0.080	0.081
Maximum Annual Average	0.032	0.035	0.033	0.031	0.032	0.032	0.030	0.031	0.027	0.027	0.028	0.027	0.025	0.025	0.025	0.026	0.025	0.024	0.019	0.018

Table 4-24

San Joaquin Valley Air Basin

Introduction - Area Description

The San Joaquin Valley Air Basin occupies the southern two-thirds of California's Central Valley. The eight-county area comprises Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties and the western portion of Kern County. The Valley covers nearly 23,490 square miles. With very few exceptions, the San Joaquin Valley is flat and unbroken, with most of the area lying below 400 feet in elevation. The Valley floor slopes downward from east to west, and the San Joaquin River winds its way along the western side from south to north.

Similar to other inland areas, the San Joaquin Valley has cool wet winters and hot dry summers. Generally, the temperature increases and rainfall decreases from north to south.

In contrast to other California areas, air quality in the San Joaquin Valley is not dominated by emissions from one large urban area. Instead, there are a number of moderately sized urban areas spread along the main axis of the Valley. This wide distribution of emissions complicates the challenge faced by air quality control agencies. Overall, about 10 percent of California's population lives in the San Joaquin Valley, and pollution sources in the region account for about 14 percent of the total statewide criteria pollutant emissions.

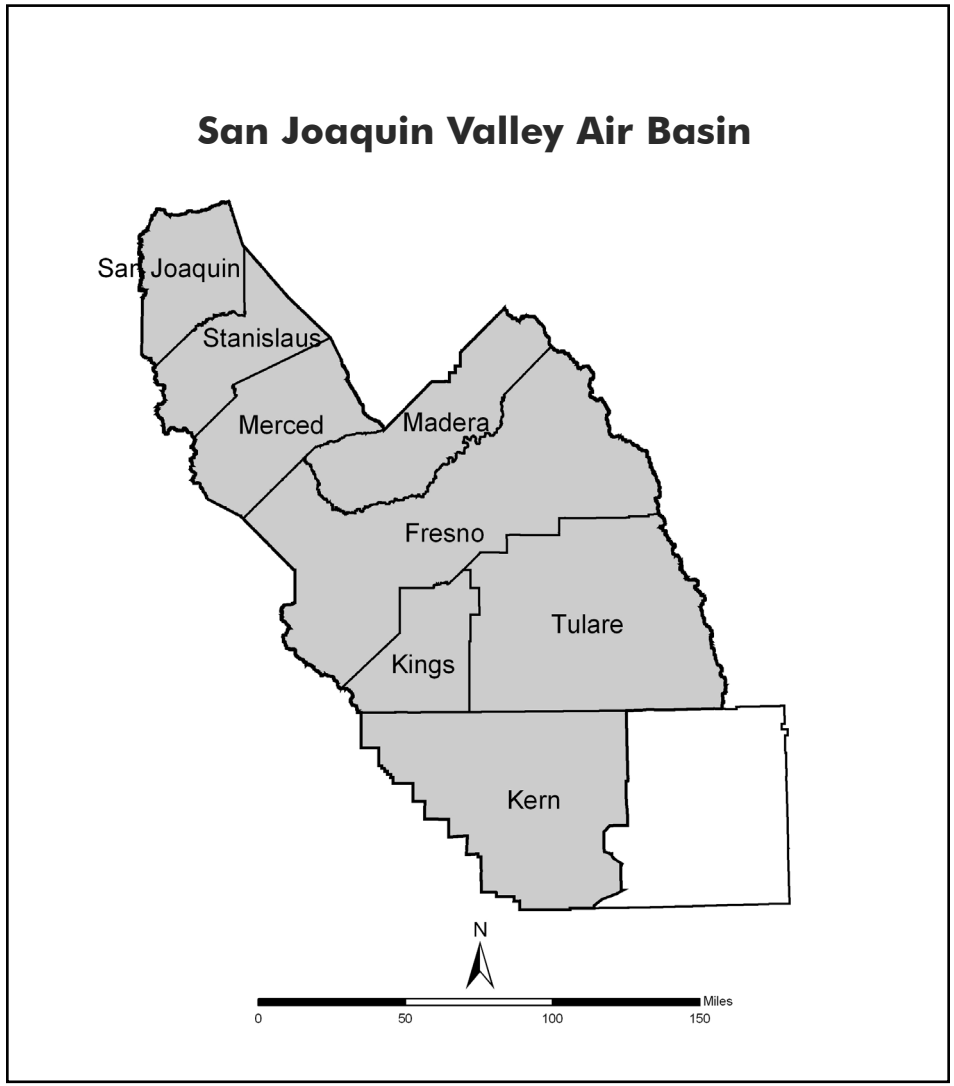

Figure 4-25

San Joaquin Valley Air Basin
Emission Trends and Forecasts

With the exception of PM_{10}, the emission levels in the San Joaquin Valley Air Basin have been decreasing since 1990. The decreases are predominantly due to motor vehicle controls and reductions in evaporative and fugitive emissions. On-road motor vehicles are the largest contributors to CO emissions in the San Joaquin Valley. On-road motor vehicles, other mobile sources, and stationary sources are all significant contributors to NO_x emissions. A significant portion of the stationary source ROG emissions is fugitive emissions from the extensive oil and gas production operations in the lower San Joaquin Valley. PM_{10} emissions are mostly fugitive dust from paved and unpaved roads, agricultural operations, and waste burning.

San Joaquin Valley Air Basin Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NO_X	677	842	842	811	686	568	479	400	335	294
ROG	1176	1235	1060	642	506	441	386	364	357	360
PM_{10}	352	342	343	351	345	352	358	375	385	397
$PM_{2.5}$	163	155	150	149	145	148	149	153	157	161
CO	3852	3879	3659	3336	2617	2076	1670	1384	1187	1073

Table 4-25

San Joaquin Valley Air Basin
Population and VMT

Compared to California's other urban areas, the population and number of vehicle miles traveled each day in the San Joaquin Valley Air Basin is projected to grow at a much faster rate during the 1980 to 2020 time period. The population is projected to increase about 150 percent, from nearly 2 million in 1980 to nearly 5 million in 2020. During the same period, the daily VMT is projected to increase by 312 percent, from nearly 33 million miles per day in 1980 to over 135 million miles per day in 2020. These growth rates are so much higher than the growth rates in other areas.

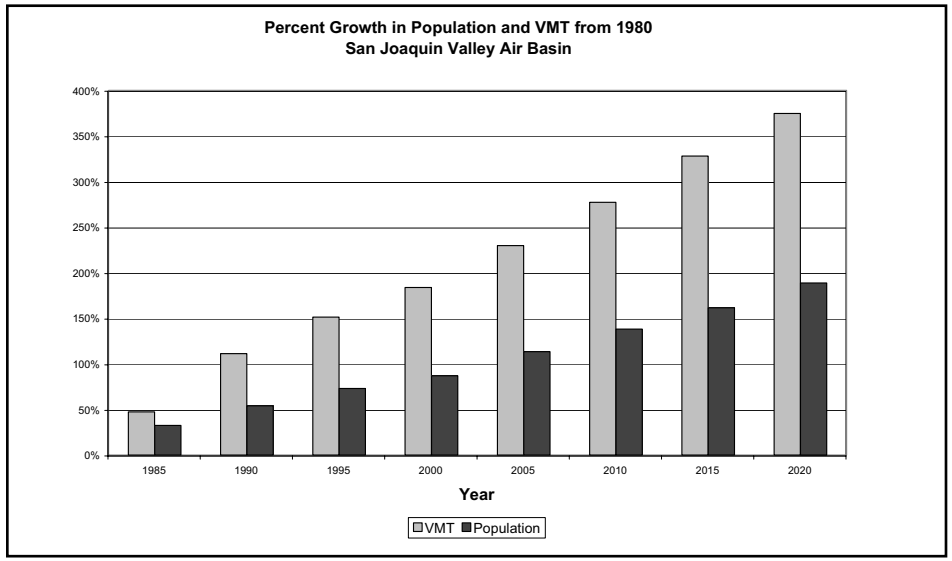

Figure 4-26

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1979800	2275800	2645200	2972600	3210800	3666300	4090900	4492900	4959900
Avg. Daily VMT(1000s)	32884	42075	60357	71772	81055	94209	107741	122270	135618

Table 4-26

San Joaquin Valley Air Basin
Ozone Precursor Emission Trends and Forecasts

Emissions of the ozone precursors NO_x and ROG are decreasing in the San Joaquin Valley Air Basin. Both stationary source and motor vehicle NO_x emissions have been reduced by the adoption of more stringent emission standards. Stricter standards have reduced ROG emissions from motor vehicles since 1980, even though VMT have been increasing. Stationary and area-wide sources of ROG include petroleum production operations and the use of solvents. Stricter emission standards and new controls have reduced the ROG emissions from these sources. Also, declining crude oil prices have resulted in cutbacks in oil production activities and an attendant decrease in ROG fugitive emissions. Future increases in oil prices could result in higher levels of production, which could again increase emissions.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***677***	***842***	***842***	***811***	***686***	***568***	***479***	***400***	***335***	***294***
Stationary Sources	265	354	353	289	220	161	139	136	138	139
Area-wide Sources	13	13	13	12	12	11	11	11	11	11
On-Road Mobile	219	252	292	320	288	239	196	145	98	68
Gasoline Vehicles	169	171	168	174	161	121	83	58	40	29
Diesel Vehicles	50	81	124	145	127	118	113	87	57	39
Other Mobile	180	223	184	191	167	157	133	108	88	76
Gasoline Fuel	4	5	5	6	6	6	7	7	6	6
Diesel Fuel	168	210	174	181	157	145	121	97	77	65
Other Fuel	8	8	5	5	5	5	5	5	5	5

Table 4-27

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***1176***	***1235***	***1060***	***642***	***506***	***441***	***386***	***364***	***357***	***360***
Stationary Sources	690	740	580	197	103	98	88	91	95	98
Area-wide Sources	134	141	148	154	161	158	161	168	178	188
On-Road Mobile	292	286	268	224	174	119	84	59	43	34
Gasoline Vehicles	289	281	260	216	168	114	79	55	40	31
Diesel Vehicles	3	5	8	8	6	5	5	5	4	3
Other Mobile	60	68	64	68	68	65	52	46	42	40
Gasoline Fuel	23	30	35	39	42	40	28	23	21	20
Diesel Fuel	16	21	16	17	16	14	12	9	7	5
Other Fuel	20	17	13	11	10	11	12	13	14	14

Table 4-28

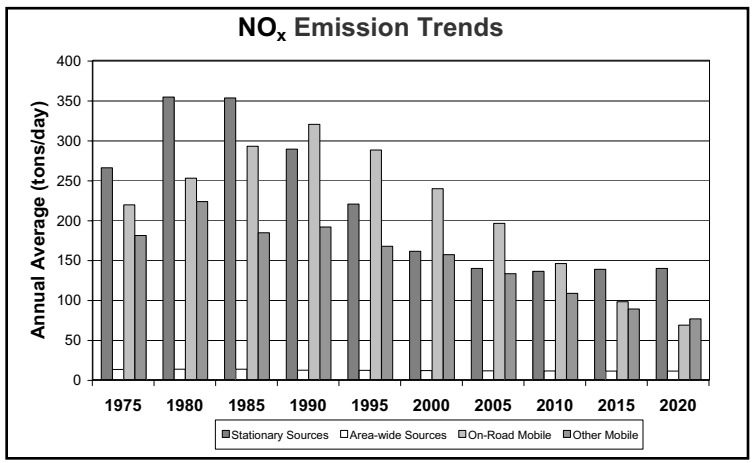

Figure 4-27

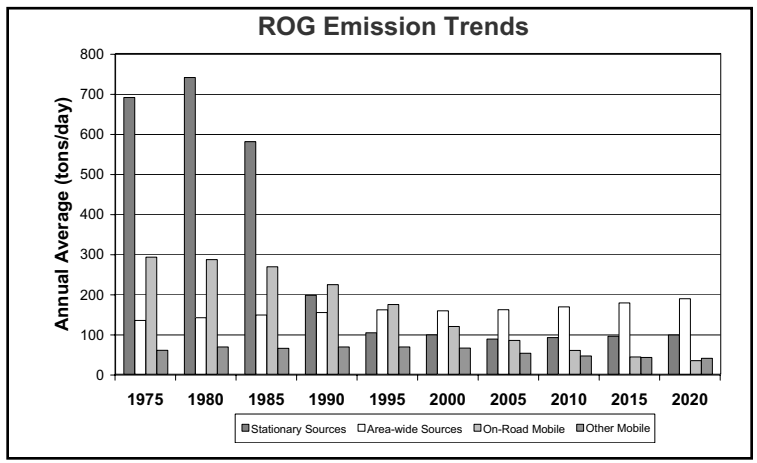

Figure 4-28

San Joaquin Valley Air Basin

Ozone Air Quality Trend

The ozone problem in the San Joaquin Valley ranks among the most severe in the State. Peak levels have not declined as much as the number of days that standards are exceeded. From 1984 to 2003, the maximum peak 1-hour indicator decreased only eight percent. The number of national 1-hour standard exceedance days has been quite variable over the years. This variability is due, in part, to the influence of meteorology as well as changes to the monitoring network. The monitoring network was not as extensive during the 1980's as it has been during the last 14 years. For this reason, the period between 1990 to 2004 provides a better indication of trends. During this period, there has been a 55 percent decrease in the three year average of the number of exceedance days of the national 1-hour standard.

The ARB has identified the San Joaquin Valley Air Basin as both a contributor and a receptor for ozone transport. The Valley is a transport contributor to the Sacramento region, the Great Basin Valleys Air Basin, the Mountain Counties Air Basin, the Mojave Desert Air Basin, the North Central Coast Air Basin, and the South Central Coast Air Basin. In contrast, the San Joaquin Valley Air Basin is a receptor area for ozone transported from the Broader Sacramento Area and the San Francisco Bay Area Air Basin.

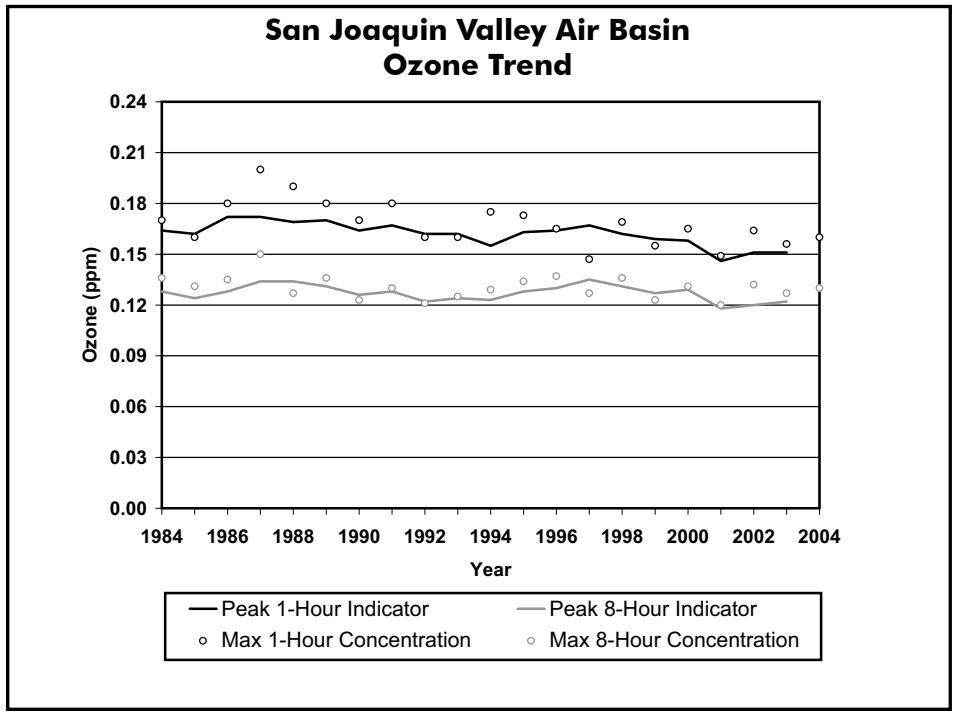

Figure 4-29

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[1]
Peak 1-Hour Indicator	0.164	0.162	0.172	0.172	0.169	0.170	0.164	0.167	0.162	0.162	0.155	0.163	0.164	0.167	0.162	0.159	0.158	0.146	0.151	0.151	
Peak 8-Hour Indicator	0.128	0.124	0.128	0.134	0.134	0.131	0.126	0.128	0.122	0.124	0.123	0.128	0.130	0.135	0.131	0.127	0.129	0.118	0.120	0.122	
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.170	0.170	0.170	0.170	0.160	0.160	0.160	0.160	0.160	0.165	0.165	0.164	0.161	0.161	0.161	0.146	0.151	0.151	
Avg. of 4th High 8-Hr. in 3 Yrs	0.114	0.111	0.117	0.118	0.121	0.120	0.119	0.118	0.115	0.112	0.111	0.119	0.119	0.115	0.115	0.113	0.111	0.109	0.115	0.115	
Maximum 1-Hr. Concentration	0.170	0.160	0.180	0.200	0.190	0.180	0.170	0.180	0.160	0.160	0.175	0.173	0.165	0.147	0.169	0.155	0.165	0.149	0.164	0.156	0.160
Maximum 8-Hr. Concentration	0.136	0.131	0.135	0.150	0.127	0.136	0.123	0.130	0.121	0.125	0.129	0.134	0.137	0.127	0.136	0.123	0.131	0.120	0.132	0.127	0.130
Days Above State Standard	135	149	147	156	156	148	131	133	127	125	118	124	120	110	90	123	114	123	127	137	105
Days Above Nat. 1-Hr. Std.	61	53	59	65	74	54	45	51	29	43	43	44	56	16	39	28	30	32	31	37	9
Days Above Nat. 8-Hr. Std.	120	127	134	148	140	133	104	121	119	104	108	109	114	95	84	117	103	109	125	134	104

[1] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-29

San Joaquin Valley Air Basin
Directly Emitted PM_{10} Emission Trends and Forecasts

Direct emissions of PM_{10} have remained unchanged between 1975 and 2000 and are projected to increase through 2020. PM_{10} emissions in the San Joaquin Valley are dominated by emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion (including wood).

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The PM_{10} emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted PM_{10} emissions contribute approximately 75 percent of the ambient PM_{10} in the San Joaquin Valley Air Basin.

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***352***	***342***	***343***	***351***	***345***	***352***	***358***	***375***	***385***	***397***
Stationary Sources	58	42	35	28	27	28	24	25	26	28
Area-wide Sources	278	279	289	301	301	309	319	336	346	357
On-Road Mobile	4	6	8	9	7	6	6	6	6	7
Gasoline Vehicles	2	2	2	2	3	3	4	4	5	6
Diesel Vehicles	2	4	6	6	4	3	3	2	2	1
Other Mobile	12	15	12	13	10	10	9	8	7	6
Gasoline Fuel	0	1	1	1	1	1	1	1	2	2
Diesel Fuel	11	14	11	12	9	8	7	6	5	4
Other Fuel	1	1	0	1	0	0	0	0	0	0

Table 4-30

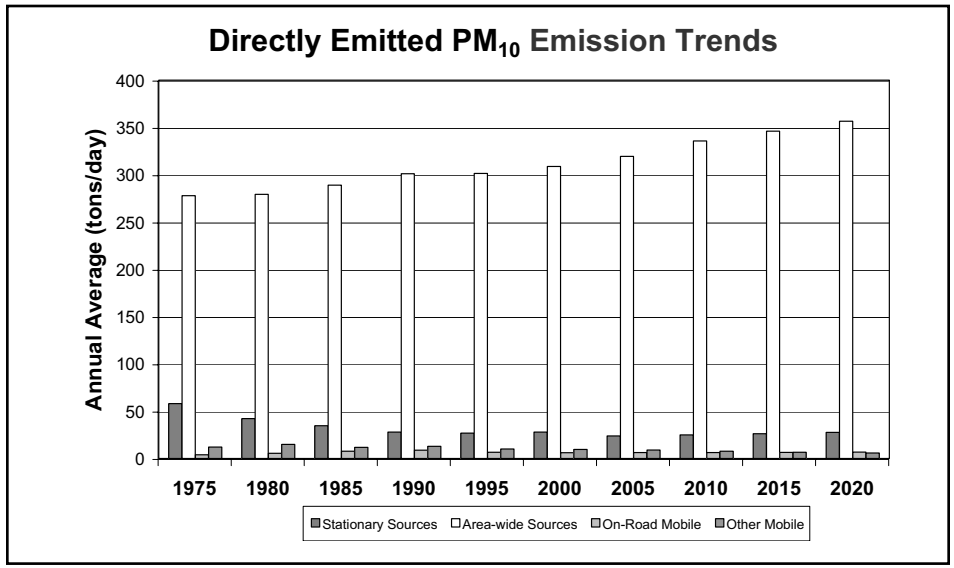

Figure 4-30

San Joaquin Valley Air Basin
Directly Emitted $PM_{2.5}$ Emission Trends and Forecasts

Direct emissions of $PM_{2.5}$ decreased from 1975 to 2000 but are projected to increase through 2020. $PM_{2.5}$ emissions in the San Joaquin Valley are dominated by emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion (including wood).

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The $PM_{2.5}$ emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted $PM_{2.5}$ emissions contribute approximately 60 percent of the ambient $PM_{2.5}$ in the San Joaquin Valley Air Basin.

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***163***	***155***	***150***	***149***	***145***	***148***	***149***	***153***	***157***	***161***
Stationary Sources	47	33	25	19	18	19	17	18	18	19
Area-wide Sources	102	104	108	112	113	116	119	124	128	132
On-Road Mobile	3	5	6	7	5	4	4	4	4	4
Gasoline Vehicles	1	1	1	1	2	2	2	2	3	3
Diesel Vehicles	2	4	6	6	4	3	2	2	1	1
Other Mobile	11	14	11	12	9	9	8	7	6	5
Gasoline Fuel	0	0	0	1	1	1	1	1	1	1
Diesel Fuel	10	13	10	11	8	7	7	5	4	3
Other Fuel	1	1	0	1	0	0	0	0	0	0

Table 4-31

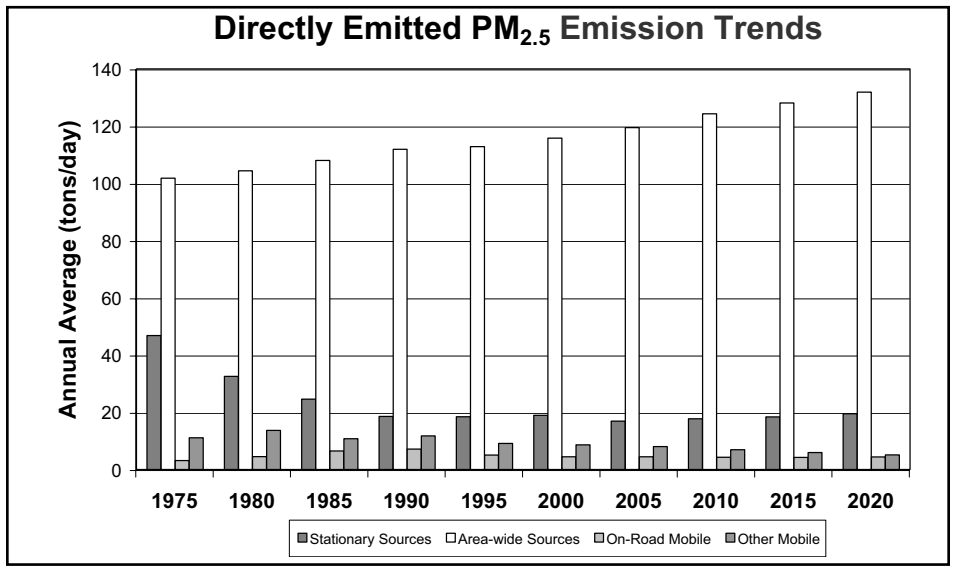

Figure 4-31

San Joaquin Valley Air Basin

PM_{10} Air Quality Trend

The available PM_{10} data show some variation during the trend period, but overall, there has been a downward trend. Part of the variation can be attributed to meteorology. Long periods of stagnation during the winter months allow PM to accumulate over many days with resulting high concentrations. The low values for the annual average in 1988 and 1989 are due to the limited number of monitors with complete data for these years during the startup of the PM monitoring network. The period between 1990 and 2003 provides a better indication of trends. Over this period, the three year average of the annual average of quarters (State) shows a decrease of 17 percent. The calculated number of days exceeding the State and national 24-hour standards also shows a decrease. There were 300 calculated State standard exceedance days and 40 calculated national standard exceedance days during 1988. During 2003, there were 242 calculated State standard exceedance days and no national standard exceedance days.

Although PM_{10} air quality has improved overall in the San Joaquin Valley Air Basin, values for 1999 through 2003 were higher than those for 1998. We will need several more years of data before we can determine whether this trend is a result of meteorology or a change in emissions. However, based on the ambient data, it will still be a number of years before this area reaches attainment.

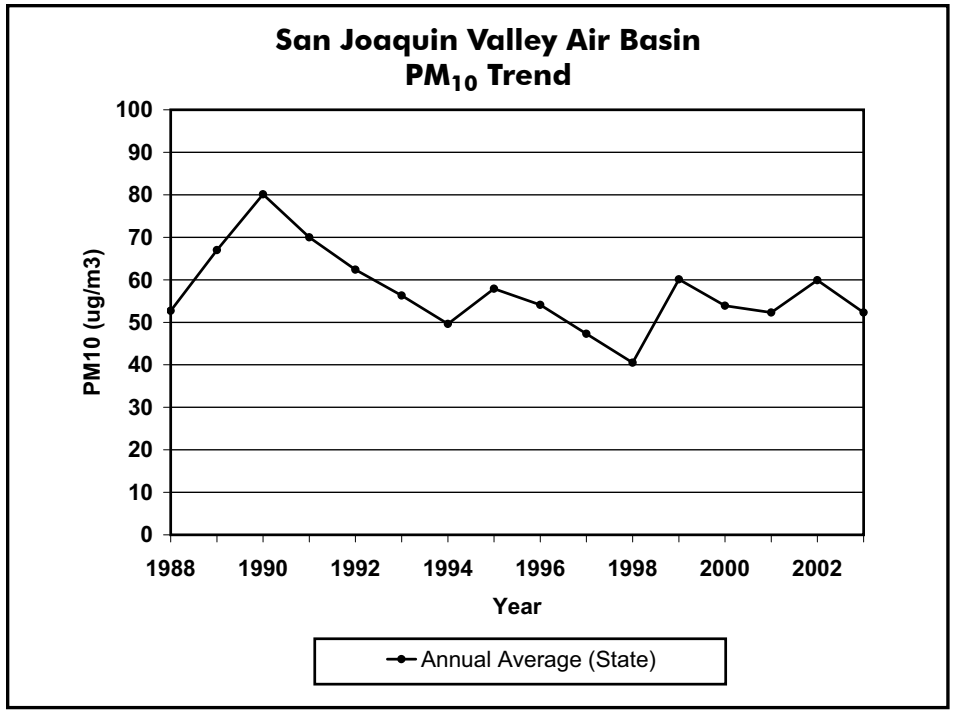

Figure 4-32

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Maximum 24-Hr. Concentration (State)					206	237	439	279	186	239	192	279	153	199	167	186	153	221	194	150
Maximum 24-Hr. Concentration (Nat)					244	250	439	279	183	239	190	279	153	199	160	183	145	205	189	150
Annual Average (State)					52.7	67.0	80.1	70.0	62.4	56.3	49.6	57.9	54.1	47.3	40.5	60.1	53.9	52.3	59.9	52.3
Annual Average (Nat)					67.4	79.3	79.3	69.9	62.9	56.3	50.1	58.2	54.1	48.2	39.9	59.5	53.1	57.4	59.2	52.4
Calc Days Above State 24-Hr Std					300	302	313	285	273	233	253	246	225	188	185	216	237	236	267	242
Calc Days Above Nat 24-Hr Std					40	40	56	40	3	11	8	8	0	3	6	12	0	12	8	0

Table 4-32

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San Joaquin Valley Air Basin
Carbon Monoxide Emission Trends and Forecasts

Emissions of CO decreased between 1975 and 2000 and are projected to continue decreasing through 2020. Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1975, despite increases in VMT, with the introduction of new automotive emission controls and fleet turnover.

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***3852***	***3879***	***3659***	***3336***	***2617***	***2076***	***1670***	***1384***	***1187***	***1073***
Stationary Sources	197	169	74	78	65	58	54	55	56	57
Area-wide Sources	408	408	409	406	397	394	392	391	389	387
On-Road Mobile	2895	2869	2784	2428	1751	1252	874	606	416	297
Gasoline Vehicles	2883	2848	2750	2391	1721	1227	851	585	397	280
Diesel Vehicles	12	21	34	37	30	25	24	21	18	18
Other Mobile	352	433	391	425	404	372	349	332	327	332
Gasoline Fuel	176	233	242	276	268	247	228	213	209	214
Diesel Fuel	68	88	76	80	70	58	48	42	38	37
Other Fuel	108	112	74	69	67	67	73	77	79	81

Table 4-33

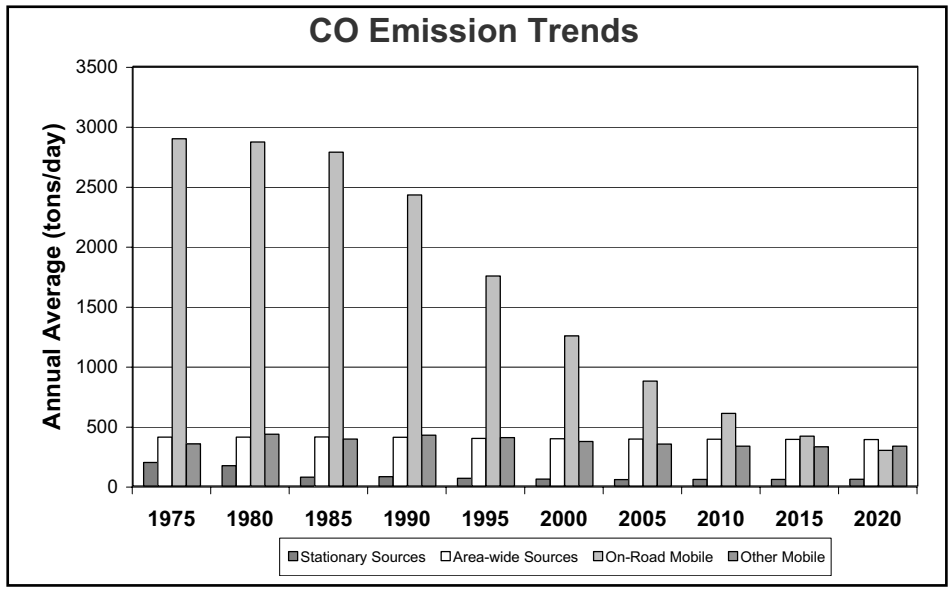

Figure 4-33

San Joaquin Valley Air Basin

Carbon Monoxide Air Quality Trend

Carbon monoxide concentrations show a fairly consistent downward trend from 1984 through 2003. Similar to other areas of the State, the trend line for the San Joaquin Valley Air Basin shows a slight increase during the late 1980s, probably related to meteorology. The maximum peak 8-hour indicator for 2003 is almost 65 percent lower than that for 1984. Measured concentrations in the San Joaquin Valley Air Basin have not exceeded the national CO standards since 1991, and concentrations have not exceeded the State standards for the last eight years. Much of the decline in ambient CO concentrations can be attributed to the introduction of clean fuels and newer, cleaner motor vehicles.

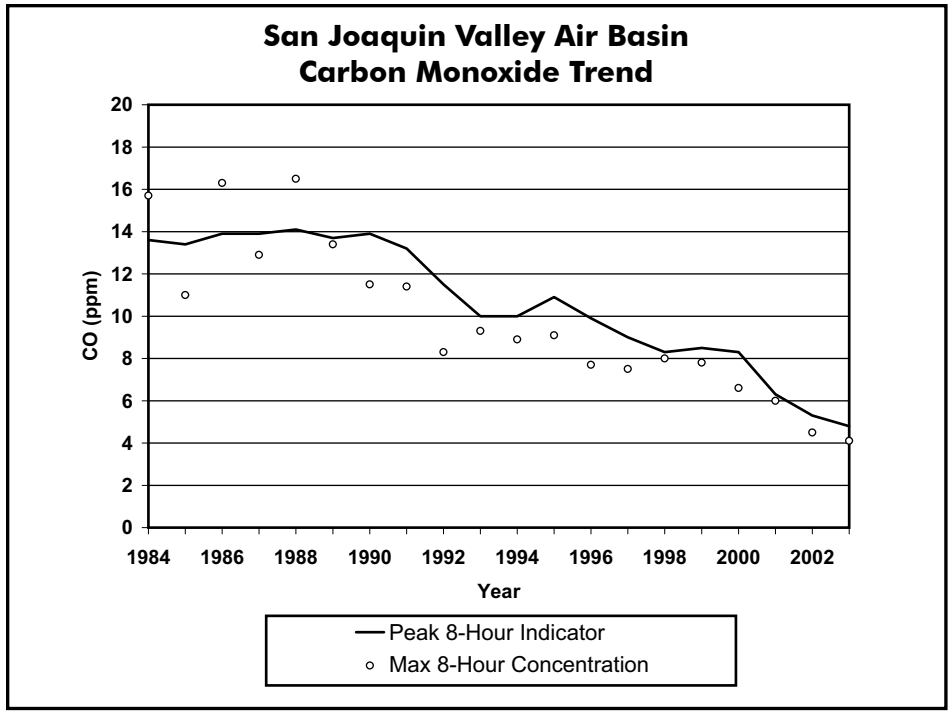

Figure 4-34

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	13.6	13.4	13.9	13.9	14.1	13.7	13.9	13.2	11.5	10.0	10.0	10.9	9.9	9.0	8.3	8.5	8.3	6.3	5.3	4.8
Maximum 1-Hr. Concentration	24.0	18.0	21.0	16.0	19.0	23.0	17.0	19.0	13.0	13.0	15.0	12.0	11.0	9.9	10.3	11.9	10.1	16.0	6.1	5.8
Maximum 8-Hr. Concentration	15.7	11.0	16.3	12.9	16.5	13.4	11.5	11.4	8.3	9.3	8.9	9.1	7.7	7.5	8.0	7.8	6.6	6.0	4.5	4.1
Days Above State 8-Hr. Std.	7	7	13	4	5	24	10	3	0	2	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	6	7	11	4	6	18	9	3	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-34

San Joaquin Valley Air Basin

Nitrogen Dioxide

Oxides of Nitrogen Emission Trends and Forecasts

Emissions of NO_x and NO_2 increased between 1975 and 1985. Since 1985, however, emissions decreased and are projected to continue declining in the San Joaquin Valley Air Basin. Both stationary source and motor vehicle NO_x emissions have been reduced by the adoption of more stringent emission standards.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***677***	***842***	***842***	***811***	***686***	***568***	***479***	***400***	***335***	***294***
Stationary Sources	265	354	353	289	220	161	139	136	138	139
Area-wide Sources	13	13	13	12	12	11	11	11	11	11
On-Road Mobile	219	252	292	320	288	239	196	145	98	68
Gasoline Vehicles	169	171	168	174	161	121	83	58	40	29
Diesel Vehicles	50	81	124	145	127	118	113	87	57	39
Other Mobile	180	223	184	191	167	157	133	108	88	76
Gasoline Fuel	4	5	5	6	6	6	7	7	6	6
Diesel Fuel	168	210	174	181	157	145	121	97	77	65
Other Fuel	8	8	5	5	5	5	5	5	5	5

Table 4-35

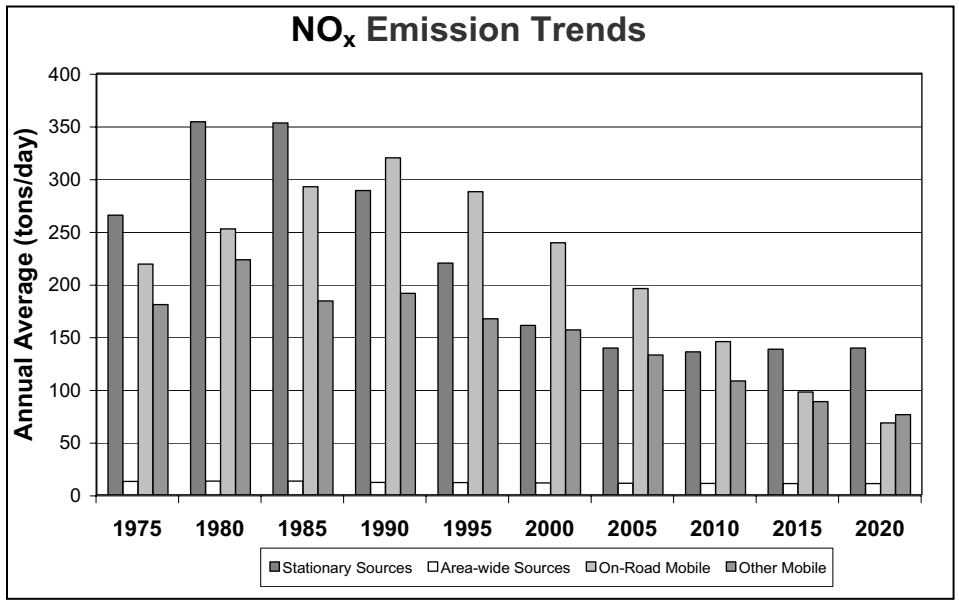

Figure 4-35

San Joaquin Valley Air Basin

Nitrogen Dioxide Air Quality Trend

The San Joaquin Valley has attained both the State and national nitrogen dioxide standards for more than twenty years. During this time-period, there have been no concentrations that exceeded the level of the State 1-hour or the national annual standard. Ambient concentrations continue to be well below the level of both standards. From 1984 through 1989 ambient levels increased somewhat but remained below the level of the standards, and have been significantly decreasing since 1990. The peak 1-hour indicator has declined by more than 32 percent since 1990. This downward trend is expected to continue.

Nitrogen dioxide is formed from emissions of oxides of nitrogen, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's oxides of nitrogen emissions.

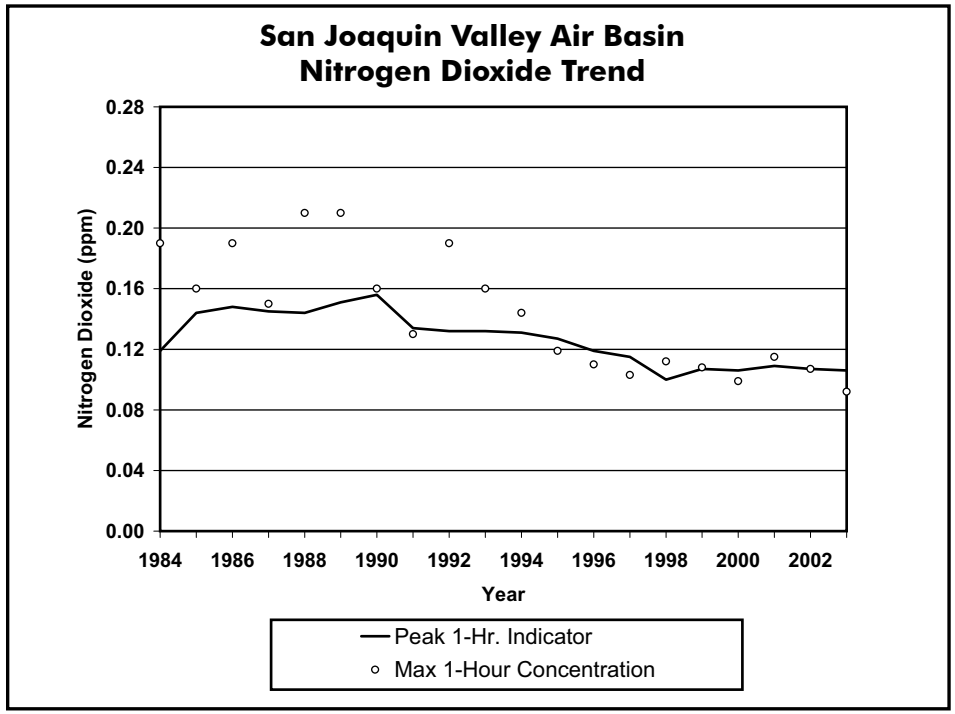

Figure 4-36

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.119	0.144	0.148	0.145	0.144	0.151	0.156	0.134	0.132	0.132	0.131	0.127	0.119	0.115	0.100	0.107	0.106	0.109	0.107	0.106
Maximum 1-Hr. Concentration	0.190	0.160	0.190	0.150	0.210	0.210	0.160	0.130	0.190	0.160	0.144	0.119	0.110	0.103	0.112	0.108	0.099	0.115	0.107	0.092
Maximum Annual Average	0.028	0.031	0.030	0.030	0.032	0.033	0.031	0.030	0.027	0.024	0.024	0.029	0.029	0.024	0.023	0.027	0.024	0.022	0.024	0.020

Table 4-36

San Diego Air Basin

Introduction - Area Description

The San Diego Air Basin lies in the southwest corner of California and comprises all of San Diego County. However, the population and emissions are concentrated mainly in the western portion of the County. The air basin covers 4,200 square miles, includes about eight percent of the State's population, and produces about seven percent of the State's criteria pollutant emissions. Because of its southerly location and proximity to the ocean, much of the San Diego Air Basin has a relatively mild climate.

Air quality in the San Diego Air Basin is impacted not only by local emissions, but also by pollutants transported from other areas -- in particular, ozone and ozone precursor emissions transported from the South Coast Air Basin and Mexico. Although the impact of transport is particularly important on days with high ozone concentrations, transported pollutants and emissions cannot be blamed entirely for the ozone problem in the San Diego area. Studies show that emissions from the San Diego Air Basin are sufficient, on their own, to cause ozone violations.

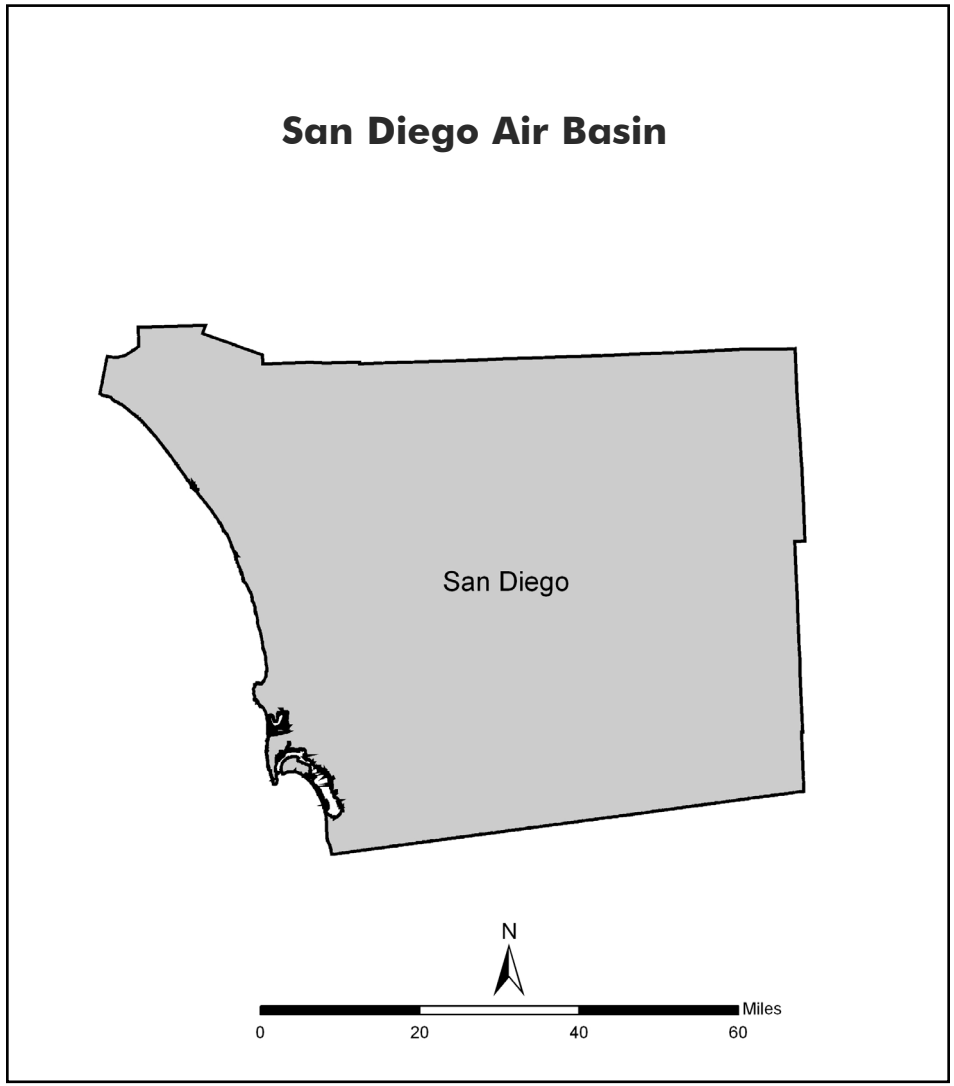

Figure 4-37

San Diego Air Basin

Emission Trends and Forecasts

Emissions of NO_x, ROG, PM_{10}, and CO in the San Diego Air Basin have been following the statewide trends since 1975. These trends are largely due to motor vehicle controls and reductions in evaporative emissions. Mobile sources (both on-road and other) are by far the largest contributors to NO_x, ROG, and CO emissions in the San Diego Air Basin. The majority of the PM_{10} emissions are from area-wide sources.

San Diego Air Basin Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NO_X	272	264	276	309	262	221	177	142	110	91
ROG	445	442	419	348	271	228	188	175	171	172
PM_{10}	72	81	89	107	104	110	118	125	131	138
$PM_{2.5}$	33	36	34	40	38	40	42	46	47	49
CO	3331	3066	2963	2499	1755	1316	983	798	666	599

Table 4-37

San Diego Air Basin

Population and VMT

Population in the San Diego Air Basin during the 1980-2020 period is projected to more than double: from almost 1.9 million in 1980 to almost 3.9 million in 2020. During this same time period, the number of vehicle miles traveled each day is projected to triple, from almost 32 million miles per day in 1980 to over 97 million miles per day in 2020. As in other parts of California, overall air quality in the San Diego Air Basin has improved, despite high growth rates, indicating the benefits of cleaner technologies.

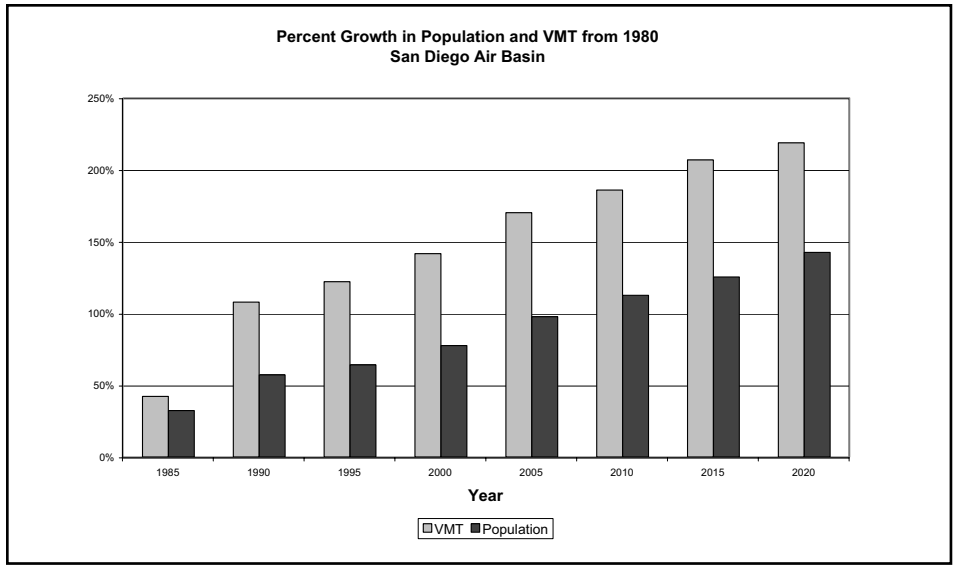

Figure 4-38

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1873300	2109300	2504900	2615200	2830100	3149900	3388400	3591300	3863500
Avg. Daily VMT(1000s)	31707	43517	63591	67943	73909	82660	87481	93886	97542

Table 4-38

San Diego Air Basin
Ozone Precursor Emission Trends and Forecasts

Emissions of the ozone precursor NO_x increase between 1975 and 1990 and decrease thereafter. ROG emissions have been decreasing overall since 1975. These decreases are mostly due to decreased emissions from motor vehicles, brought about by stricter motor vehicle emission standards. Stationary and area-wide source emissions of ROG have remained mostly unchanged over the last 20 years, with stricter emission standards offsetting industrial and population growth.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***272***	***264***	***276***	***309***	***262***	***221***	***177***	***142***	***110***	***91***
Stationary Sources	48	32	17	19	17	14	9	12	12	14
Area-wide Sources	3	3	3	3	3	3	3	3	3	3
On-Road Mobile	178	174	195	216	185	149	113	83	57	41
Gasoline Vehicles	168	155	156	157	133	96	62	43	30	22
Diesel Vehicles	10	19	39	59	52	52	51	40	27	20
Other Mobile	44	57	61	71	57	56	52	44	37	33
Gasoline Fuel	3	3	4	5	5	6	6	6	6	5
Diesel Fuel	37	48	51	59	46	43	38	31	24	20
Other Fuel	5	5	6	6	6	7	7	7	7	7

Table 4-39

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***445***	***442***	***419***	***348***	***271***	***228***	***188***	***175***	***171***	***172***
Stationary Sources	40	58	55	53	45	51	56	64	71	77
Area-wide Sources	36	41	45	48	42	43	40	42	44	46
On-Road Mobile	338	306	274	196	133	89	60	43	33	26
Gasoline Vehicles	337	305	271	193	130	86	58	41	31	25
Diesel Vehicles	1	1	3	3	3	2	2	2	2	1
Other Mobile	31	37	44	51	50	46	32	26	23	22
Gasoline Fuel	24	29	36	41	41	38	25	20	18	16
Diesel Fuel	4	5	5	6	5	5	4	3	3	2
Other Fuel	3	3	3	3	3	3	3	3	3	3

Table 4-40

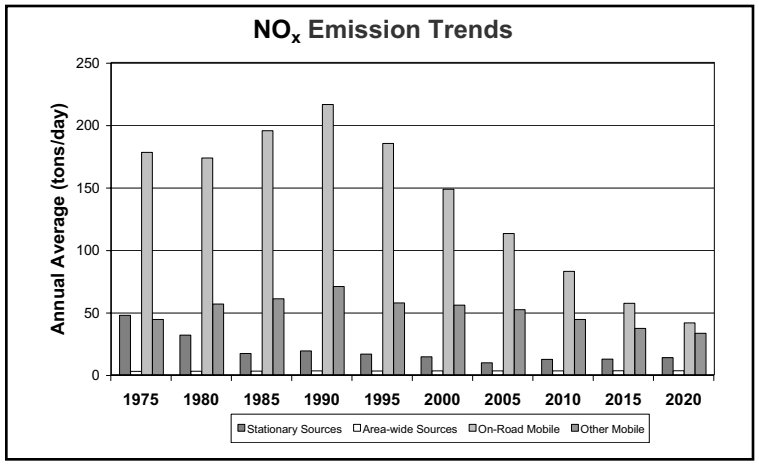

Figure 4-39

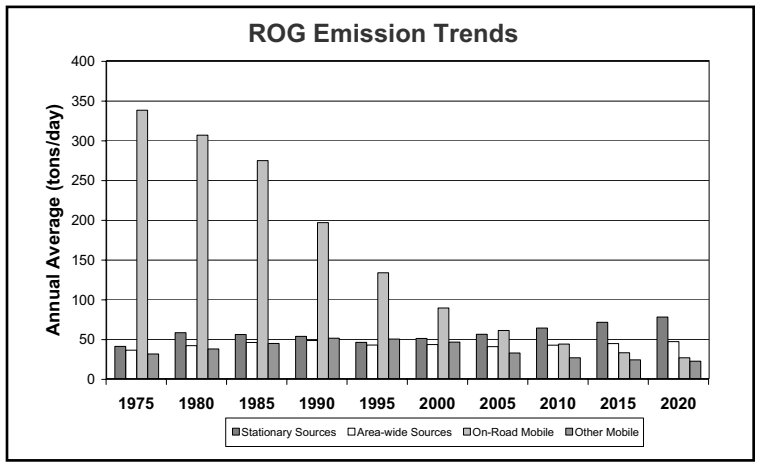

Figure 4-40

San Diego Air Basin

Ozone Air Quality Trend

Both the peak indicator and the number of days above the State and national ozone standards have decreased substantially over the last 20 years. The peak 1-hour ozone indicator shows an overall decline of 41 percent from 1984 to 2003. The number of State and national 1-hour standard exceedance days has dropped even more. There were 146 State standard exceedance days during 1984 compared with 12 during 2004. This represents a decrease of about 87 percent in the three year average of the State standard exceedance days. During 1984, there were 51 national 1-hour standard exceedance days compared with one during 2004. However, there were still eight national 8-hour standard exceedance days during 2004. Another measure of progress is that San Diego now qualifies for attainment of the federal 1-hour standard.

The San Diego Air Basin is the only one of the five major air basins the ARB has not identified as a transport contributor to a downwind area. The San Diego area is, however, a transport receptor. While it is clear that additional local emission controls will be needed to reach attainment of the ozone standards in the San Diego area, because of transport, future air quality in this area will also be affected by emission controls and growth in the South Coast Air Basin and, to some extent, Mexico.

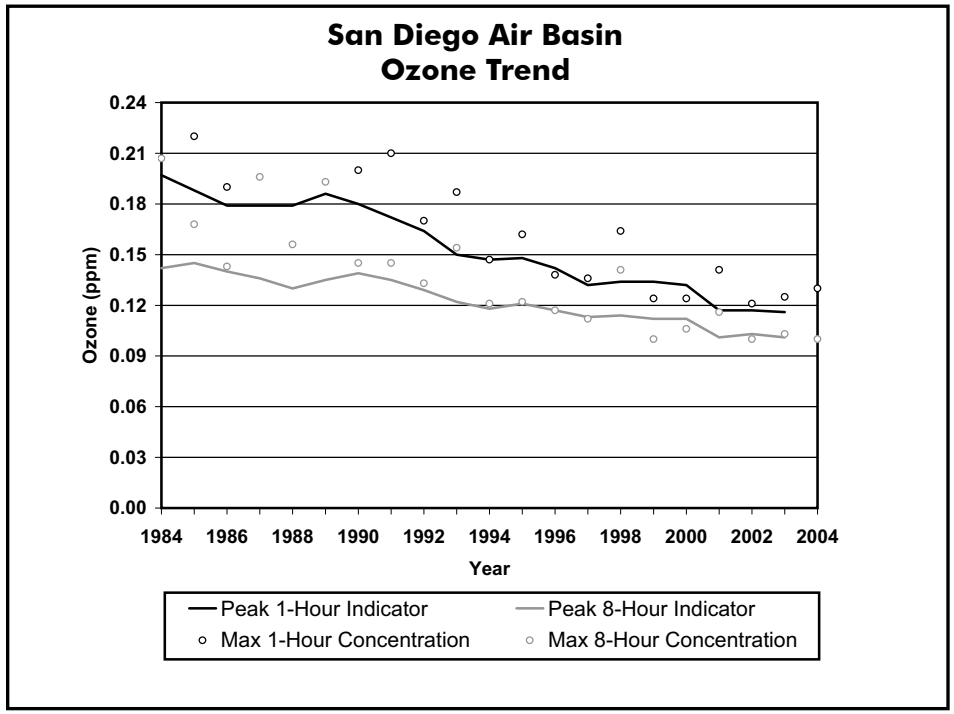

Figure 4-41

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[1]
Peak 1-Hour Indicator	0.197	0.188	0.179	0.179	0.179	0.186	0.180	0.172	0.164	0.150	0.147	0.148	0.142	0.132	0.134	0.134	0.132	0.117	0.117	0.116	
Peak 8-Hour Indicator	0.142	0.145	0.140	0.136	0.130	0.135	0.139	0.135	0.129	0.122	0.118	0.121	0.117	0.113	0.114	0.112	0.112	0.101	0.103	0.101	
4th High 1-Hr. in 3 Yrs	0.200	0.210	0.190	0.180	0.180	0.190	0.190	0.170	0.170	0.154	0.150	0.146	0.141	0.138	0.135	0.135	0.131	0.118	0.118	0.118	
Avg. of 4th High 8-Hr. in 3 Yrs	0.126	0.132	0.125	0.124	0.121	0.125	0.129	0.125	0.118	0.112	0.109	0.108	0.104	0.099	0.102	0.099	0.100	0.094	0.095	0.093	
Maximum 1-Hr. Concentration	0.280	0.220	0.190	0.290	0.250	0.250	0.200	0.210	0.170	0.187	0.147	0.162	0.138	0.136	0.164	0.124	0.124	0.141	0.121	0.125	0.130
Maximum 8-Hr. Concentration	0.207	0.168	0.143	0.196	0.156	0.193	0.145	0.145	0.133	0.154	0.121	0.122	0.117	0.112	0.141	0.100	0.106	0.116	0.100	0.103	0.100
Days Above State Standard	146	148	131	127	160	159	139	106	97	90	79	96	51	43	54	27	24	29	15	23	12
Days Above Nat. 1-Hr. Std.	51	50	42	40	45	56	39	27	19	14	9	12	2	1	9	0	0	2	0	1	1
Days Above Nat. 8-Hr. Std.	98	109	81	99	119	122	96	67	66	58	46	48	31	16	35	17	16	17	13	6	8

[1] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-41

San Diego Air Basin
Directly Emitted PM_{10} Emission Trends and Forecasts

Direct emissions of PM_{10} are projected to almost double in the San Diego Air Basin between 1975 and 2020. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, dust from construction and demolition operations, and particulates from residential fuel combustion (including wood). The growth in these area-wide sources is primarily due to population growth and increases in VMT.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x ROG, and ammonia (secondary PM). The PM_{10} emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted PM_{10} emissions contribute approximately 70 percent of the ambient PM_{10} in the San Diego Air Basin.

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***72***	***81***	***89***	***107***	***104***	***110***	***118***	***125***	***131***	***138***
Stationary Sources	17	12	5	7	10	7	8	11	11	12
Area-wide Sources	48	60	73	88	84	92	99	104	110	116
On-Road Mobile	3	3	4	5	4	4	5	5	5	5
Gasoline Vehicles	2	2	2	2	3	3	3	4	4	4
Diesel Vehicles	1	1	2	3	2	1	1	1	1	1
Other Mobile	5	6	6	7	6	6	6	6	5	5
Gasoline Fuel	0	1	1	1	1	1	1	1	1	2
Diesel Fuel	3	4	4	4	3	3	3	2	2	2
Other Fuel	2	2	2	2	2	2	2	2	2	2

Table 4-42

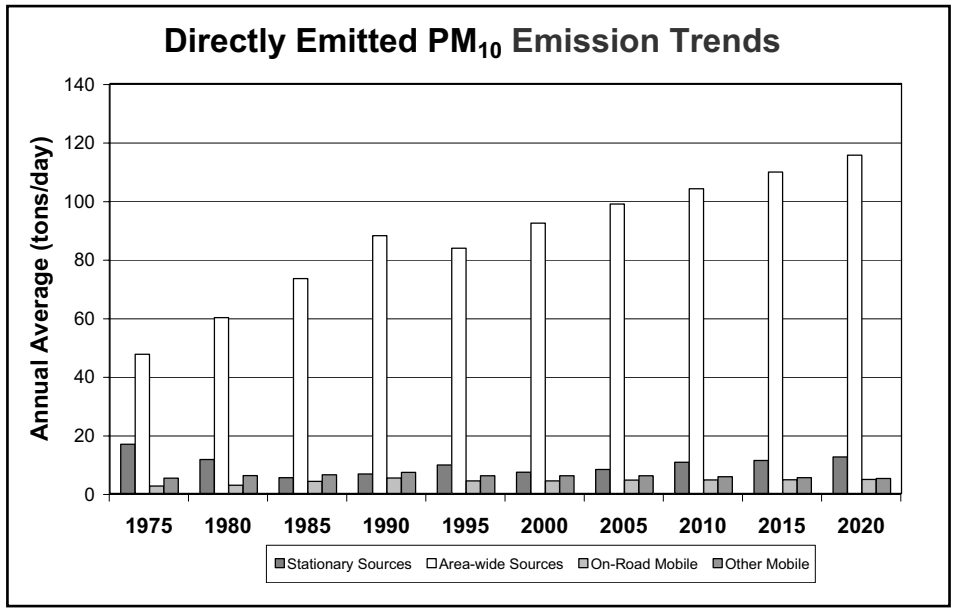

Figure 4-42

San Diego Air Basin
Directly Emitted $PM_{2.5}$ Emission Trends and Forecasts

Direct emissions of $PM_{2.5}$ increased steadily in the San Diego Air Basin between 1975 and 2000 and are projected to continue increasing through 2020. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, dust from construction and demolition operations, and particulates from residential fuel combustion (including wood). The growth in these area-wide sources is primarily due to population growth and increases in VMT.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NOx, SOx, ROG, and ammonia (secondary PM). The $PM_{2.5}$ emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted $PM_{2.5}$ emissions contribute approximately 50 percent of the ambient $PM_{2.5}$ in the San Diego Air Basin.

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***33***	***36***	***34***	***40***	***38***	***40***	***42***	***46***	***47***	***49***
Stationary Sources	11	9	3	4	6	6	7	9	9	11
Area-wide Sources	16	19	22	25	24	26	27	28	30	31
On-Road Mobile	2	2	3	4	3	3	3	3	3	3
Gasoline Vehicles	1	1	1	1	1	2	2	2	2	3
Diesel Vehicles	0	1	2	3	2	1	1	1	1	1
Other Mobile	5	6	6	7	6	6	5	5	5	5
Gasoline Fuel	0	0	1	1	1	1	1	1	1	1
Diesel Fuel	3	3	3	4	3	3	3	2	2	1
Other Fuel	2	2	2	2	2	2	2	2	2	2

Table 4-43

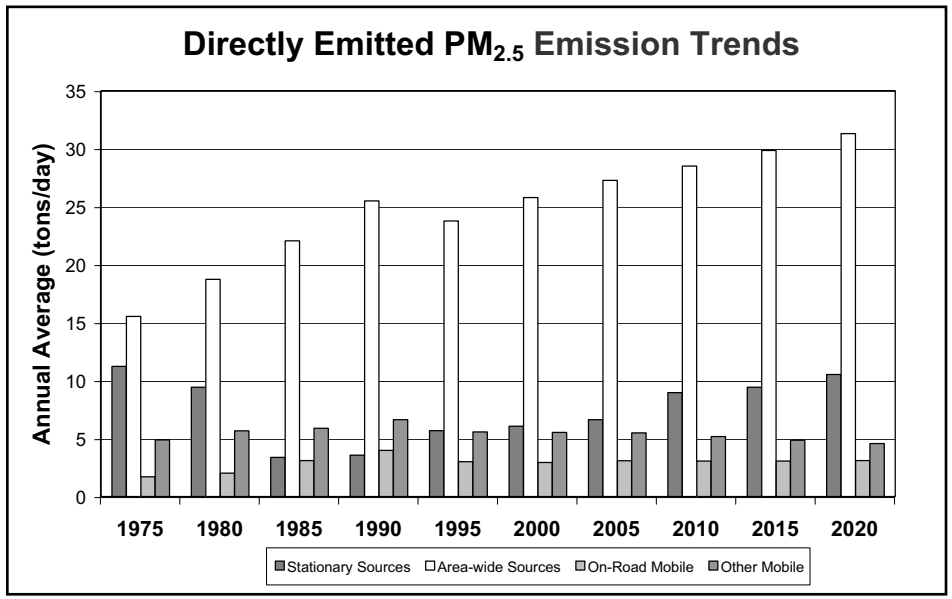

Figure 4-43

San Diego Air Basin

PM_{10} Air Quality Trend

PM_{10} concentrations in the San Diego Air Basin have changed little during the years for which reliable data are available. The annual average for 2003 exceeds the State annual standard and is actually higher than it was during 1989. This apparent lack of progress is a result of monitoring that began at a new site, with higher concentrations, during 1993. The maximum 24-hour concentration also exceeds the State standard. During 2003, the maximum 24-hour concentration (state) was 289 $\mu g/m^3$. This value was due to the severe wildfires that occurred in Southern California in October of 2003.

During 1988, there were 105 calculated State standard exceedance days, compared with 147 during 2003. Again, some of this apparent increase is attributable to the new site that began operating in 1993. There is a substantial amount of variability from year-to-year in the 24-hour statistics. This variability is a reflection of meteorology, the 1-in-6-day sampling schedule, and changes in monitoring location. Although ambient PM_{10} concentrations in the San Diego Air Basin are not as high as in some other areas of the State, additional emission controls will be needed to bring this area into attainment.

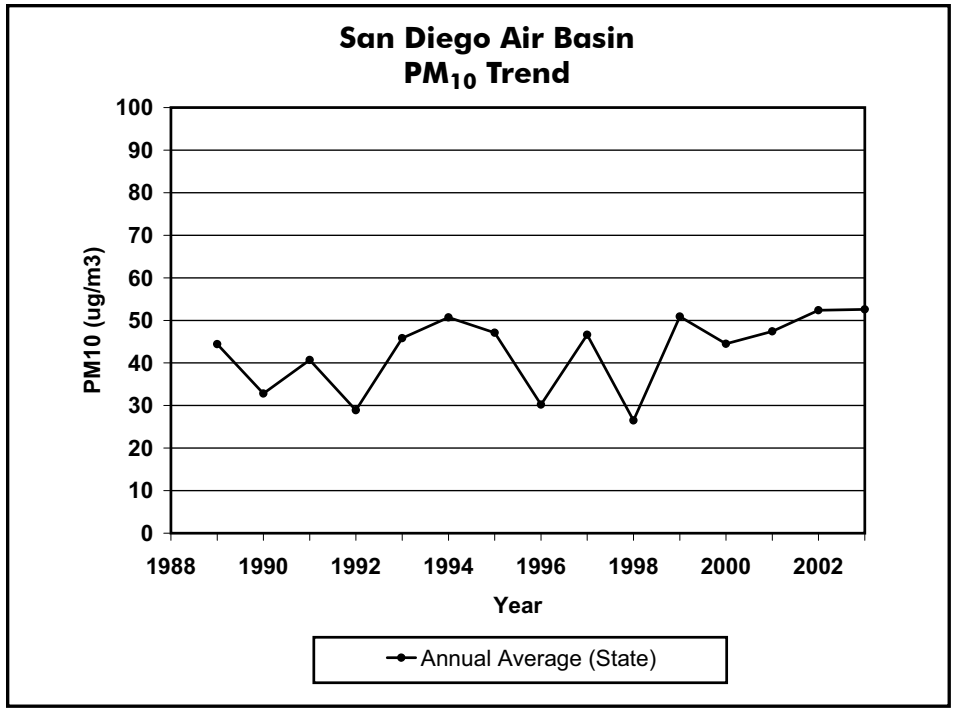

Figure 4-44

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Maximum 24-Hr. Concentration (State)					80	90	115	81	67	159	129	121	93	125	57	119	136	106	131	289
Maximum 24-Hr. Concentration (Nat)					81	90	115	81	67	159	129	121	93	125	89	121	139	107	130	280
Annual Average (State)						44.4	32.8	40.7	28.9	45.8	50.7	47.1	30.2	46.6	26.5	50.9	44.5	47.4	52.4	52.6
Annual Average (Nat)					40.0	43.8	37.6	40.6	35.9	45.9	50.7	46.8	30.0	46.6	42.5	52.2	45.2	49.1	54.9	52.1
Calc Days Above State 24-Hr Std					105	146	60	90	42	143.5	131	117	96	125	108	140	144	146	186	147
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	9

Table 4-44

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San Diego Air Basin
Carbon Monoxide Emission Trends and Forecasts

CO emissions in the San Diego Air Basin mirror the decreasing statewide trend from 1975 to 2020, even though the VMT are increasing. This is yet another example of how California's motor vehicle control program is having a positive impact on CO emissions.

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***3331***	***3066***	***2963***	***2499***	***1755***	***1316***	***983***	***798***	***666***	***599***
Stationary Sources	30	29	28	28	26	40	33	48	48	53
Area-wide Sources	56	62	68	72	64	66	68	70	72	75
On-Road Mobile	3059	2740	2586	2067	1360	930	626	438	306	225
Gasoline Vehicles	3056	2735	2575	2052	1347	918	616	429	298	217
Diesel Vehicles	3	6	11	15	13	11	11	9	8	8
Other Mobile	186	235	281	333	305	280	256	241	240	246
Gasoline Fuel	148	189	235	280	258	238	215	200	199	205
Diesel Fuel	16	22	24	28	22	19	17	16	15	14
Other Fuel	23	24	23	25	25	24	25	26	26	26

Table 4-45

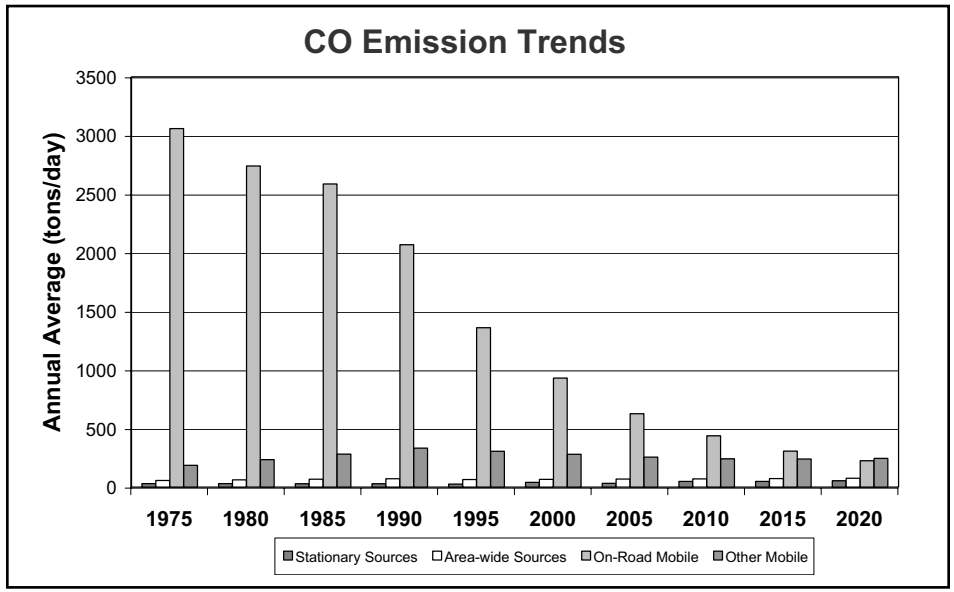

Figure 4-45

San Diego Air Basin

Carbon Monoxide Air Quality Trend

The peak 8-hour indicator for carbon monoxide in the San Diego Air Basin decreased substantially over the trend period: a 46 percent decrease from 1984 to 2003. As a result of these decreases, the national CO standards had not been exceeded in the San Diego Air Basin since 1989. In 2003, the CO standards were exceeded due to extensive wildfires that impacted air quality throughout Southern California. This exceedance does not impact San Diego's attainment status.

With existing and anticipated motor vehicle and clean fuels regulations, ambient CO concentrations should continue to decline. This should be sufficient to maintain a healthful level of carbon monoxide in this area.

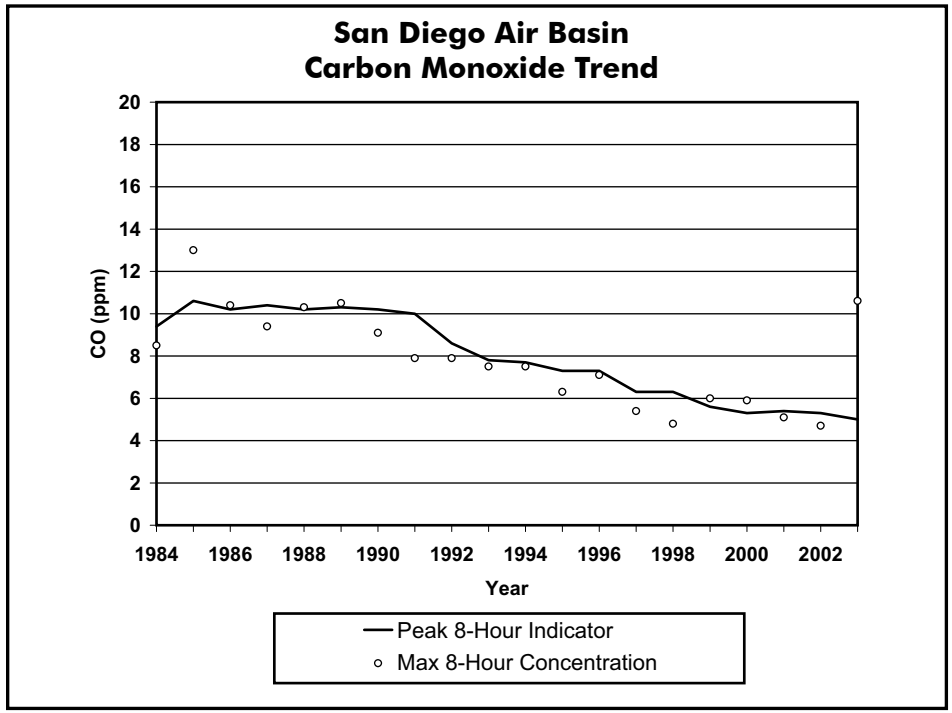

Figure 4-46

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	9.4	10.6	10.2	10.4	10.2	10.3	10.2	10.0	8.6	7.8	7.7	7.3	7.3	6.3	6.3	5.6	5.3	5.4	5.3	5.0
Maximum 1-Hr. Concentration	16.0	17.0	16.0	14.0	17.0	17.0	18.0	14.0	14.0	11.4	11.0	9.9	12.4	9.3	10.2	9.9	9.3	8.5	8.5	12.7
Maximum 8-Hr. Concentration	8.5	13.0	10.4	9.4	10.3	10.5	9.1	7.9	7.9	7.5	7.5	6.3	7.1	5.4	4.8	6.0	5.9	5.1	4.7	10.6
Days Above State 8-Hr. Std.	0	5	2	1	5	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Days Above Nat. 8-Hr. Std.	0	3	1	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 4-46

San Diego Air Basin

Nitrogen Dioxide

Oxides of Nitrogen Emission Trends and Forecasts

NO_x and NO_2 emissions in the San Diego Air Basin follow the declining statewide trend from 1990 to 2020. The continued adoption of more stringent motor vehicle and stationary source emission standards should continue to reduce nitrogen dioxide emissions.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***272***	***264***	***276***	***309***	***262***	***221***	***177***	***142***	***110***	***91***
Stationary Sources	48	32	17	19	17	14	9	12	12	14
Area-wide Sources	3	3	3	3	3	3	3	3	3	3
On-Road Mobile	178	174	195	216	185	149	113	83	57	41
Gasoline Vehicles	168	155	156	157	133	96	62	43	30	22
Diesel Vehicles	10	19	39	59	52	52	51	40	27	20
Other Mobile	44	57	61	71	57	56	52	44	37	33
Gasoline Fuel	3	3	4	5	5	6	6	6	6	5
Diesel Fuel	37	48	51	59	46	43	38	31	24	20
Other Fuel	5	5	6	6	6	7	7	7	7	7

Table 4-47

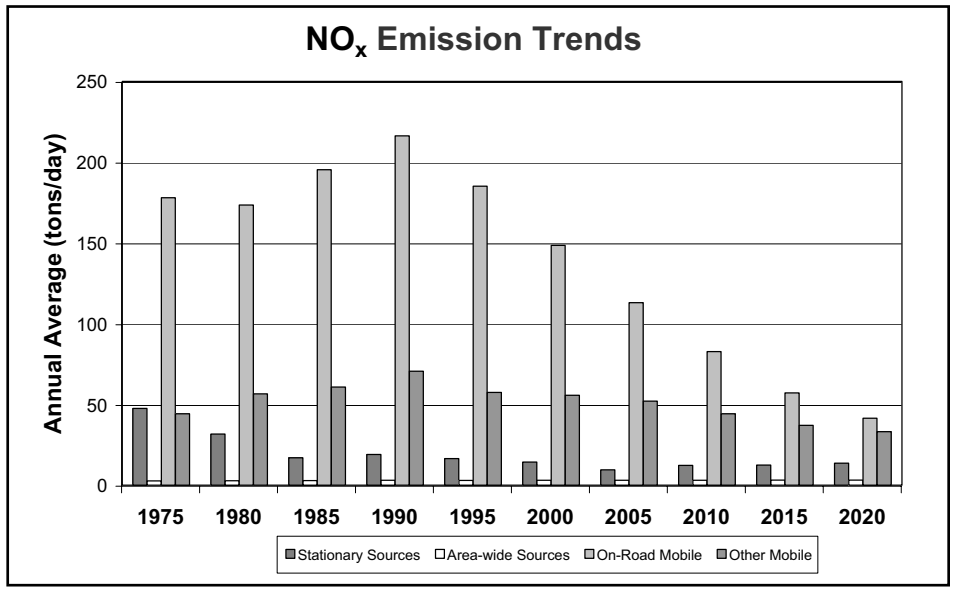

Figure 4-47

San Diego Air Basin

Nitrogen Dioxide Air Quality Trend

The San Diego Air Basin attains the State and national nitrogen dioxide standard. Maximum 1-hour concentrations during the 1980s occasionally exceeded the level of the State 1-hour standard. However, these exceedances did not affect the area's attainment status. Ambient concentrations are now well below the levels of both the State and national standards. Data show that the maximum peak 1-hour indicator decreased almost 29 percent from 1984 to 2003.

Because NO_x emissions contribute to ozone, as well as to NO_2, many of the ozone control measures help reduce ambient NO_2 concentrations. Furthermore, NO_x emission controls are a critical part of the ozone control strategy and are not expected to be relaxed in the future. As a result, these controls should ensure continued attainment of the State and national nitrogen dioxide standards.

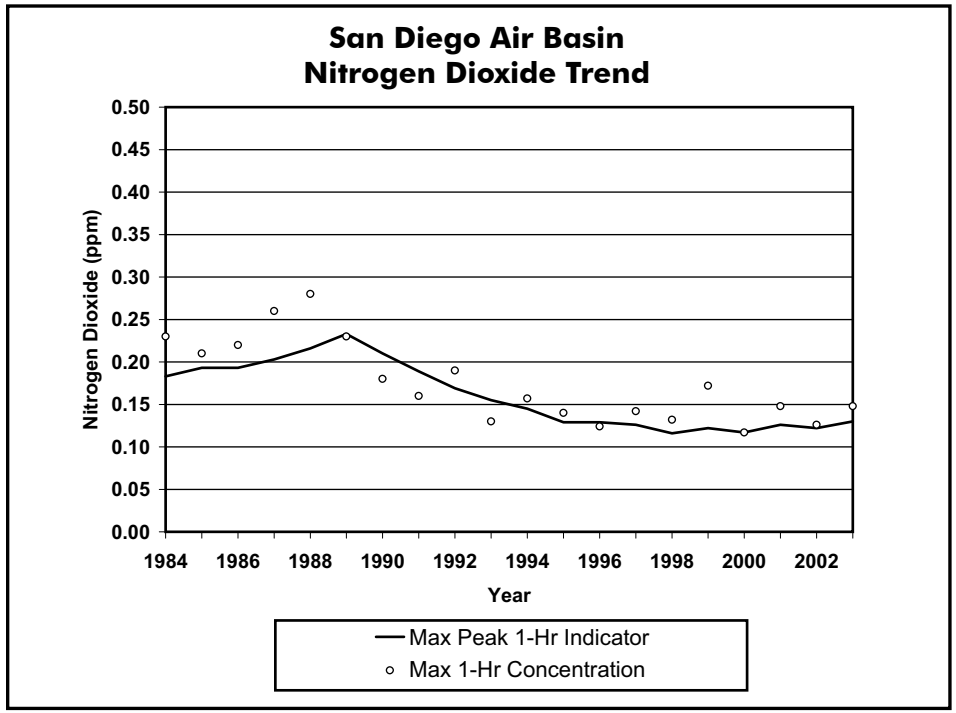

Figure 4-48

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.183	0.193	0.193	0.203	0.216	0.233	0.210	0.189	0.169	0.155	0.145	0.129	0.129	0.126	0.116	0.122	0.117	0.126	0.122	0.130
Maximum 1-Hr. Concentration	0.230	0.210	0.220	0.260	0.280	0.230	0.180	0.160	0.190	0.130	0.157	0.140	0.124	0.142	0.132	0.172	0.117	0.148	0.126	0.148
Maximum Annual Average	0.031	0.032	0.030	0.032	0.035	0.031	0.029	0.029	0.027	0.023	0.024	0.026	0.022	0.024	0.023	0.026	0.024	0.022	0.022	0.021

Table 4-48

Sacramento Valley Air Basin

Introduction - Area Description

The Sacramento Valley Air Basin is home to California's capital. Located in the northern portion of the Central Valley, the Sacramento Valley Air Basin includes Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba counties, the western urbanized portion of Placer County, and the northeastern portion of Solano County. The Sacramento Valley Air Basin occupies 14,994 square miles and has a population of more than two million people.

Because of its inland location, the climate of the Sacramento Valley Air Basin is more extreme than the climate in the San Francisco Bay Area Air Basin or South Coast Air Basin. The winters are generally cool and wet, while the summers are hot and dry.

Emissions from the urbanized portion of the basin (Sacramento, Yolo, Solano, and Placer Counties) dominate the emission inventory for the Sacramento Valley Air Basin, and on-road motor vehicles are the primary source of emissions in the metropolitan area. While pollutant concentrations have generally declined over the years, additional regulations will be needed to attain the State and national ambient air quality standards in this air basin.

Figure 4-49

Sacramento Valley Air Basin
Emission Trends and Forecasts

The emission levels in the Sacramento Valley Air Basin are trending downward from 1990 to 2020 for NO_x, and downward from 1975 to 2020 for ROG and CO. The decreases in NO_x, ROG, and CO are largely due to motor vehicle controls and reductions in evaporative emissions. Mobile sources are by far the largest contributors to NO_x, ROG, and CO emissions in the Sacramento Valley Air Basin. PM_{10} and $PM_{2.5}$ emissions are increasing from 1975 to 2020.

Sacramento Valley Air Basin Emissions (tons/day, annual average)										
Pollutant	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
NO_X	329	356	351	384	337	295	246	200	162	137
ROG	454	442	412	366	302	244	207	187	177	174
PM_{10}	195	203	210	223	216	225	231	239	247	253
$PM_{2.5}$	85	85	87	93	87	89	91	92	94	96
CO	2970	2981	2851	2517	1902	1482	1224	1035	909	833

Table 4-49

Sacramento Valley Air Basin
Population and VMT

Between 1980 and 2020, population in the Sacramento Valley Air Basin is projected to grow at a higher rate than the statewide average--a 125 percent increase compared with a 93 percent increase statewide. Population is projected to grow from 15 million in 1980 to 34 million in 2020. During this same period, the increase in the number of vehicle miles traveled each day is projected to be higher than the overall statewide value: a 201 percent increase in the Sacramento Valley Air Basin. VMT are projected to increase from nearly 28 million miles in 1980 to 84 million miles in 2020.

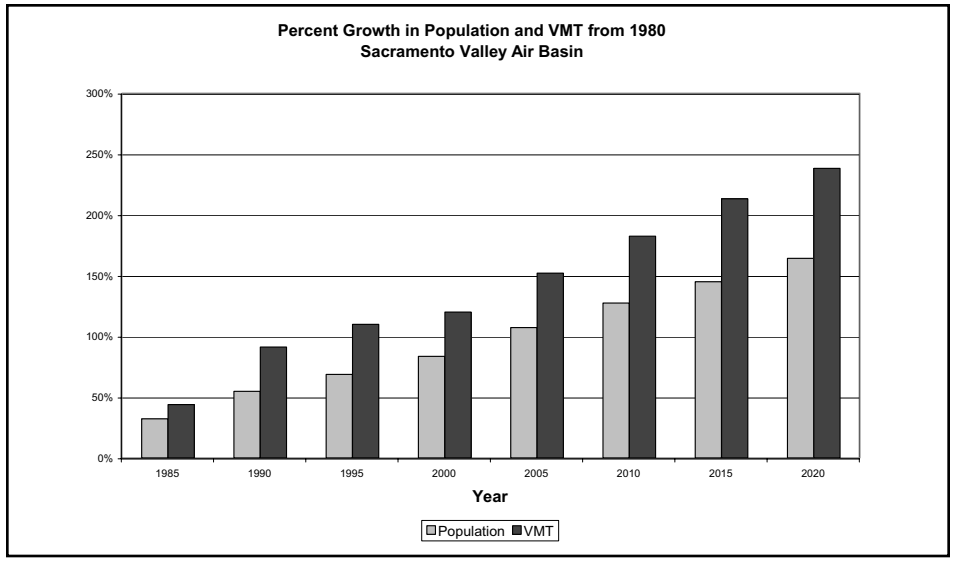

Figure 4-50

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1500900	1688200	1977600	2155550	2344950	2647200	2904700	3128100	3374700
Avg. Daily VMT(1000s)	27881	35762	47540	52178	54681	62630	70184	77831	84078

Table 4-50

Sacramento Valley Air Basin
Ozone Precursor Emission Trends and Forecasts

Emissions of NO_x decreased from 1990 to 2000 and are projected to continue decreasing from 2000 to 2020. On-road motor vehicles and other mobile sources are by far the largest contributors to NO_x emissions. More stringent mobile source emission standards and cleaner burning fuels have largely contributed to the decline in NO_x emissions. ROG emissions have been decreasing for the last 30 years due to more stringent motor vehicle standards and new rules for control of ROG from various industrial coating and solvent operations.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***329***	***356***	***351***	***384***	***337***	***295***	***246***	***200***	***162***	***137***
Stationary Sources	36	30	29	43	45	41	38	40	40	40
Area-wide Sources	7	8	8	9	8	8	8	8	8	9
On-Road Mobile	179	194	208	216	182	147	113	80	53	36
Gasoline Vehicles	147	148	143	132	112	78	54	38	25	18
Diesel Vehicles	32	46	65	84	70	68	59	43	27	18
Other Mobile	107	124	107	115	102	99	86	72	61	53
Gasoline Fuel	3	3	4	5	5	6	7	7	6	6
Diesel Fuel	103	118	100	108	95	91	76	62	52	44
Other Fuel	2	2	2	2	2	3	3	3	3	3

Table 4-51

ROG Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***454***	***442***	***412***	***366***	***302***	***244***	***207***	***187***	***177***	***174***
Stationary Sources	88	64	58	59	48	39	39	43	47	51
Area-wide Sources	61	68	66	74	70	68	66	68	70	73
On-Road Mobile	272	268	243	180	130	86	62	44	32	24
Gasoline Vehicles	270	265	239	176	126	83	59	42	30	23
Diesel Vehicles	2	3	4	4	3	3	3	2	2	1
Other Mobile	33	42	45	52	54	52	39	32	28	26
Gasoline Fuel	22	29	34	41	44	42	30	24	21	20
Diesel Fuel	9	11	9	10	9	8	7	6	4	3
Other Fuel	1	3	2	2	2	2	2	2	2	2

Table 4-52

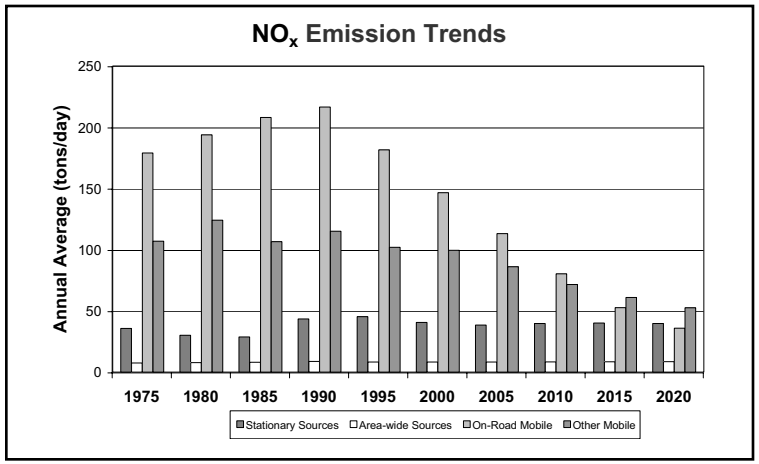

Figure 4-51

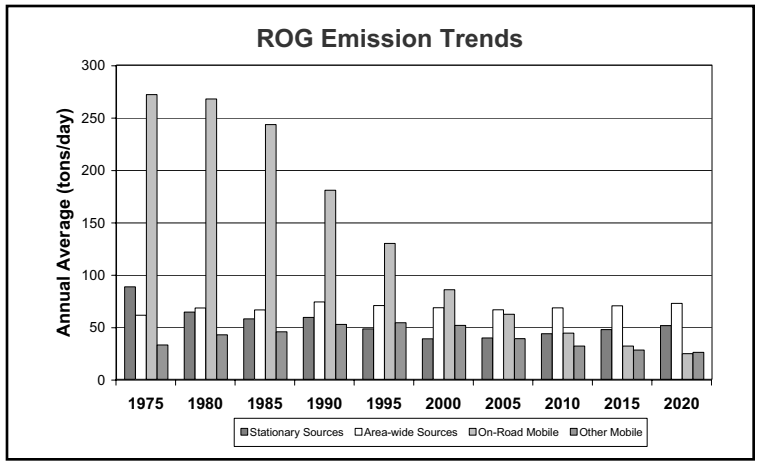

Figure 4-52

Sacramento Valley Air Basin

Ozone Air Quality Trend

Peak ozone values in the Sacramento Valley Air Basin have not declined as quickly over the last several years as they have in other urban areas. The maximum peak 1-hour indicator remained fairly constant from 1984 to 1988. Since 1988, the peak 1-hour indicator has decreased slightly, and the overall decline for the 20-year period is about 15 percent. Looking at the number of days above the State and national standards, the trend is much more variable. However, the number of exceedance days has declined since 1988. The maximum measured 1-hour concentrations have also decreased, but with more year-to-year variation.

Similar to the San Joaquin Valley, the urbanized portion of the Sacramento Valley Air Basin, along with urbanized portions of El Dorado and Placer Counties in the Mountain Counties Air Basin, is identified as both a transport contributor and receptor. The region is a transport contributor to the Mountain Counties, San Joaquin Valley, and San Francisco Bay Area Air Basins, and a receptor for the San Francisco Bay Area and San Joaquin Valley Air Basins.

The data for the Sacramento Metropolitan Area, on the following page, reflects the portion of the region that is nonattainment for the national ozone standards.

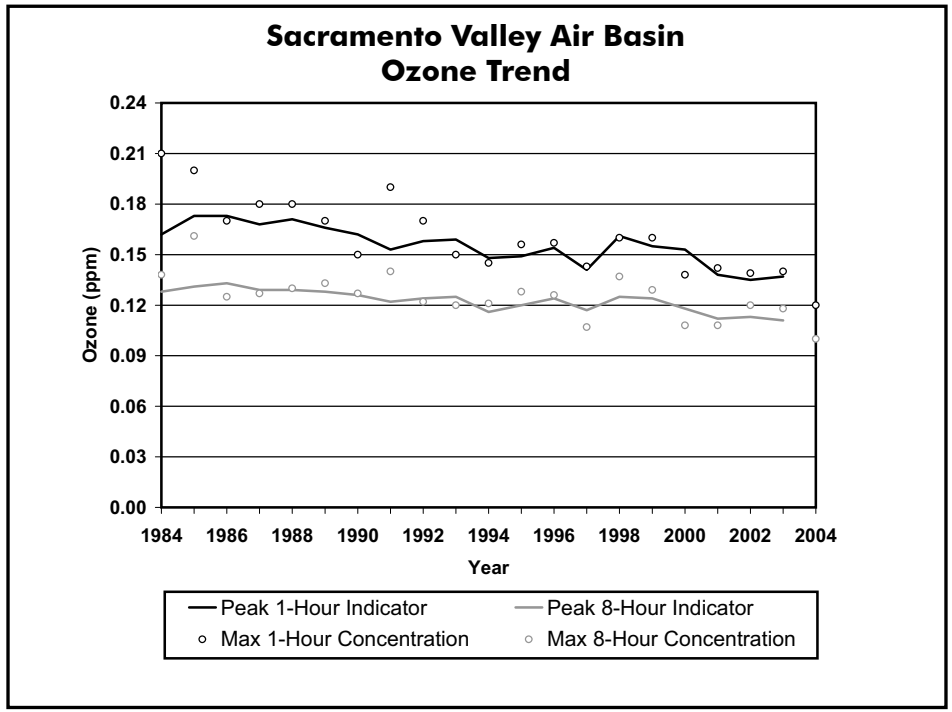

Figure 4-53

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[1]
Peak 1-Hour Indicator	0.162	0.173	0.173	0.168	0.171	0.166	0.162	0.153	0.158	0.159	0.148	0.149	0.154	0.141	0.161	0.155	0.153	0.138	0.135	0.137	
Peak 8-Hour Indicator	0.128	0.131	0.133	0.129	0.129	0.128	0.126	0.122	0.124	0.125	0.116	0.120	0.124	0.117	0.125	0.124	0.118	0.112	0.113	0.111	
4th High 1-Hr. in 3 Yrs	0.180	0.180	0.180	0.160	0.160	0.160	0.160	0.150	0.150	0.150	0.143	0.145	0.145	0.133	0.148	0.148	0.148	0.133	0.132	0.138	
Avg. of 4th High 8-Hr. in 3 Yrs	0.115	0.118	0.118	0.114	0.114	0.114	0.107	0.105	0.105	0.110	0.104	0.106	0.106	0.097	0.097	0.101	0.105	0.101	0.101	0.100	
Maximum 1-Hr. Concentration	0.210	0.200	0.170	0.180	0.180	0.170	0.150	0.190	0.170	0.150	0.145	0.156	0.157	0.143	0.160	0.160	0.138	0.142	0.139	0.140	0.120
Maximum 8-Hr. Concentration	0.138	0.161	0.125	0.127	0.130	0.133	0.127	0.140	0.122	0.120	0.121	0.128	0.126	0.107	0.137	0.129	0.108	0.108	0.120	0.118	0.100
Days Above State Standard	64	59	66	94	98	68	50	68	74	34	60	50	58	25	62	59	41	45	46	51	35
Days Above Nat. 1-Hr. Std.	23	19	24	24	35	8	16	14	14	7	9	11	9	3	14	7	5	2	7	5	0
Days Above Nat. 8-Hr. Std.	46	42	50	73	68	37	44	60	56	22	48	40	44	15	60	43	35	37	34	40	26

[1] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-53

Sacramento Metropolitan Area[1]

Ozone Air Quality Table

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004[2]
Peak 1-Hour Indicator	0.162	0.173	0.173	0.168	0.171	0.166	0.162	0.153	0.158	0.159	0.148	0.149	0.154	0.141	0.161	0.155	0.153	0.139	0.143	0.146	
Peak 8-Hour Indicator	0.128	0.131	0.133	0.129	0.129	0.128	0.126	0.122	0.124	0.125	0.116	0.120	0.124	0.117	0.125	0.124	0.118	0.112	0.113	0.111	
4th High 1-Hr in 3 Yrs	0.180	0.180	0.180	0.160	0.160	0.160	0.160	0.150	0.150	0.150	0.143	0.145	0.145	0.133	0.148	0.148	0.148	0.133	0.143	0.143	
Avg of 4th Hi 8-Hr in 3 Yrs	0.115	0.118	0.118	0.114	0.114	0.114	0.107	0.105	0.105	0.110	0.104	0.106	0.106	0.099	0.103	0.103	0.107	0.104	0.106	0.107	
Maximum 1-Hr. Concentration	0.210	0.200	0.170	0.180	0.180	0.170	0.150	0.190	0.170	0.150	0.145	0.156	0.157	0.145	0.163	0.160	0.138	0.148	0.156	0.145	0.120
Maximum 8-Hr. Concentration	0.138	0.161	0.125	0.127	0.138	0.133	0.127	0.140	0.122	0.120	0.121	0.128	0.126	0.107	0.137	0.129	0.113	0.109	0.137	0.122	0.100
Days Above State Standard	63	54	57	86	97	74	47	65	76	36	54	52	58	25	49	56	46	52	59	53	35
Days Above Nat. 1-Hr. Std.	22	19	23	22	35	9	14	14	14	7	9	11	11	4	13	7	7	3	10	6	0
Days Above Nat. 8-Hr. Std.	46	37	49	64	72	53	43	57	55	24	42	42	48	19	34	48	37	41	47	43	26

[1] The Sacramento Metropolitan Area includes urbanized portions of the Sacramento Valley Air Basin (Sacramento, Yolo, Placer, and Solano Counties, and part of Sutter County) and all of El Dorado and Placer Counties in the Mountain Counties Air Basin.

[2] Preliminary data for January through October 2004 are shown here, however they are subject to change. 2003 is the last year for which complete and approved data is available, thus annual statistics are not included.

Table 4-54

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Sacramento Valley Air Basin
Directly Emitted PM_{10} Emission Trends and Forecasts

Direct emissions of PM_{10} increased in the Sacramento Valley Air Basin between 1975 and 2000 and are projected to continue increasing through 2020. Emissions are dominated by contributions from area-wide sources, primarily fugitive dust from paved and unpaved roads, fugitive dust from construction and demolition, and particulates from residential fuel combustion. Emissions of directly emitted PM_{10} from mobile sources and stationary sources in the Sacramento Valley Air Basin have remained relatively steady.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The PM_{10} emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted PM_{10} emissions contribute approximately 75 percent of the ambient PM_{10} in the Sacramento Valley Air Basin.

Directly Emitted PM_{10} Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***195***	***203***	***210***	***223***	***216***	***225***	***231***	***239***	***247***	***253***
Stationary Sources	25	19	17	21	17	18	18	19	20	21
Area-wide Sources	160	172	181	189	189	197	204	211	217	223
On-Road Mobile	3	4	5	5	4	4	4	4	4	4
Gasoline Vehicles	1	1	1	2	2	2	2	3	3	3
Diesel Vehicles	2	2	3	4	2	2	1	1	1	1
Other Mobile	7	8	7	7	6	6	6	6	5	5
Gasoline Fuel	0	1	1	1	1	1	2	2	2	2
Diesel Fuel	6	7	6	6	5	5	4	4	3	2
Other Fuel	0	0	0	0	0	0	0	0	0	0

Table 4-55

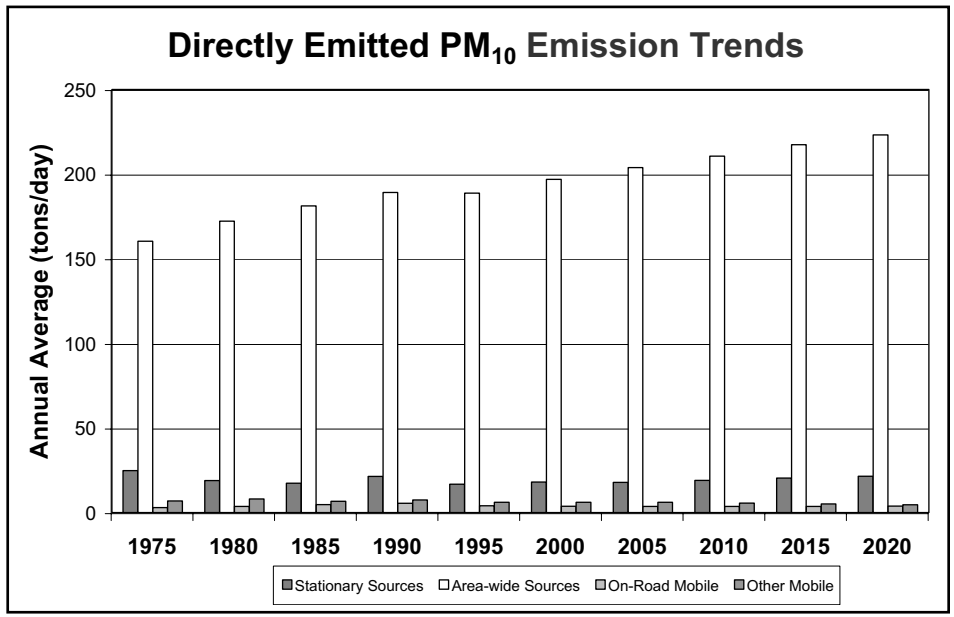

Figure 4-54

Sacramento Valley Air Basin
Directly Emitted $PM_{2.5}$ Emission Trends and Forecasts

Direct emissions of $PM_{2.5}$ increased slightly in the Sacramento Valley Air Basin between 1975 and 2000 and are projected to increase through 2020. Emissions are dominated by contributions from area-wide sources, primarily fugitive dust from paved and unpaved roads, fugitive dust from construction and demolition, and particulates from residential fuel combustion. Emissions of directly emitted $PM_{2.5}$ from mobile sources and stationary sources in the Sacramento Valley Air Basin have remained relatively steady.

Particulate matter can be directly emitted into the air (primary PM) or, similar to ozone, it can be formed in the atmosphere from the reaction of gaseous precursors such as NO_x, SO_x, ROG, and ammonia (secondary PM). The $PM_{2.5}$ emission inventory includes only directly emitted particulate emissions. On an annual average basis, directly emitted $PM_{2.5}$ emissions contribute approximately 70 percent of the ambient $PM_{2.5}$ in the Sacramento Valley Air Basin.

Directly Emitted $PM_{2.5}$ Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***85***	***85***	***87***	***93***	***87***	***89***	***91***	***92***	***94***	***96***
Stationary Sources	18	12	11	14	10	11	11	12	13	13
Area-wide Sources	59	63	66	69	68	70	72	73	75	76
On-Road Mobile	2	3	4	4	3	3	3	2	2	2
Gasoline Vehicles	1	1	1	1	1	1	1	2	2	2
Diesel Vehicles	1	2	3	3	2	2	1	1	1	0
Other Mobile	6	7	6	7	5	5	5	5	4	4
Gasoline Fuel	0	0	1	1	1	1	1	1	2	2
Diesel Fuel	6	7	5	6	5	4	4	3	3	2
Other Fuel	0	0	0	0	0	0	0	0	0	0

Table 4-56

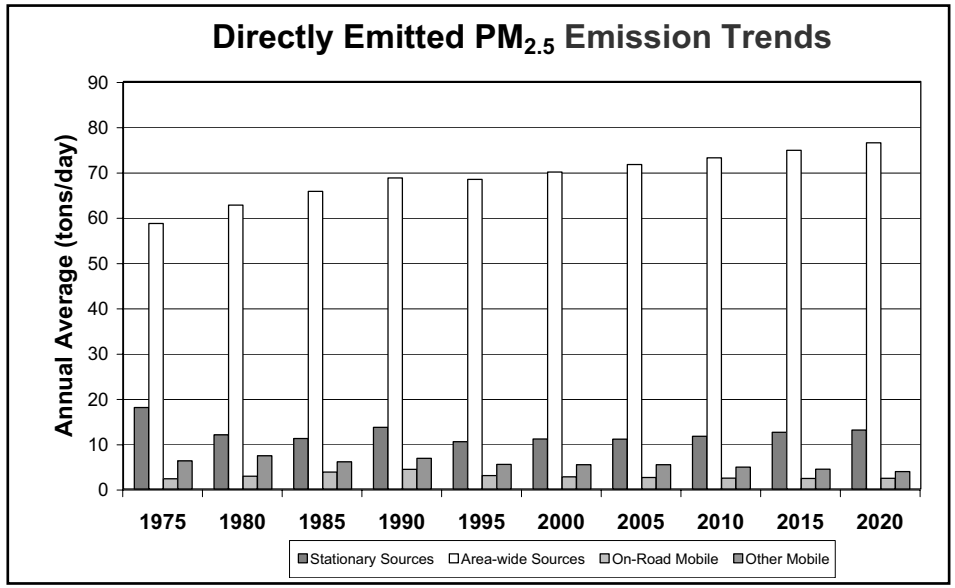

Figure 4-55

Sacramento Valley Air Basin

PM_{10} Air Quality Trend

The annual average of quarters (State) in the Sacramento Valley Air Basin shows a fairly steady decline over the trend period, with some variability over the last several years. The three year average of the annual average of quarters (State) shows a decrease of about 24 percent from 1989 to 2003. The number of exceedance days also decreased. During 1988, there were 183 calculated exceedance days of the State 24-hour standard, compared with 66 days during 2003. Because many of the sources that contribute to ozone also contribute to PM_{10}, future ozone emission controls should improve PM_{10} air quality.

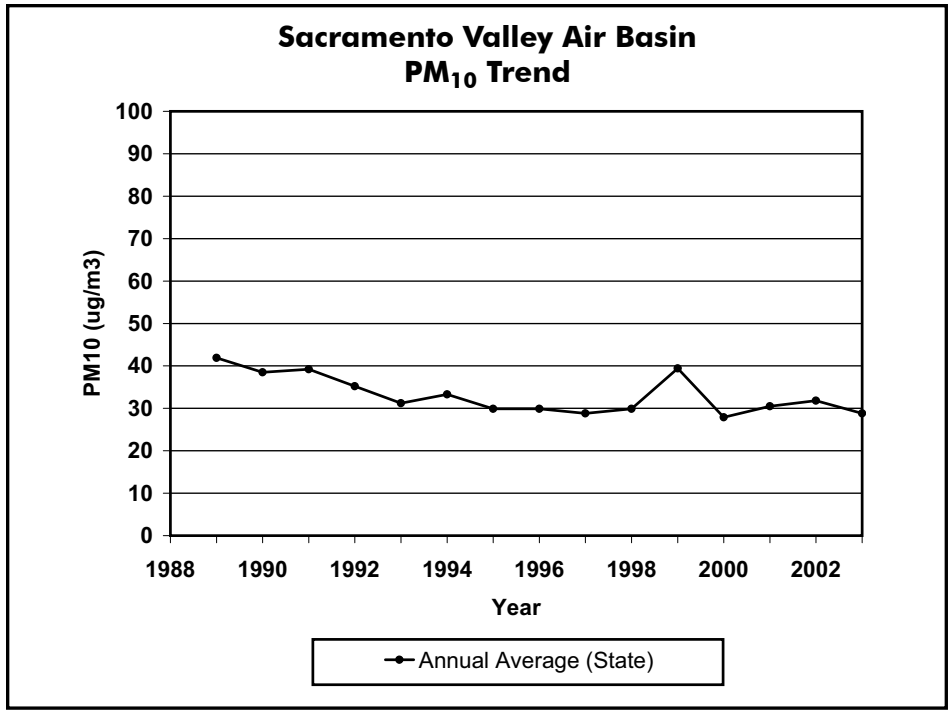

Figure 4-56

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Maximum 24-Hr. Concentration (State)					100	147	153	136	111	113	154	145	98	126	130	179	90	112	96	83
Maximum 24-Hr. Concentration (Nat)					115	139	153	136	111	110	154	145	98	126	130	179	86	105	92	81
Annual Average (State)						41.9	38.5	39.2	35.2	31.2	33.3	29.9	29.9	28.8	29.9	39.4	27.9	30.5	31.8	28.8
Annual Average (Nat)					42.8	41.9	41.7	42.3	34.7	31.8	34.5	30.1	29.8	28.6	29.0	38.4	27.9	30.2	30.9	28.4
Calc Days Above State 24-Hr Std					183	134	175	189	177	92	108	108	129	65	97	144	81	96	126	66
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0

Table 4-57

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Sacramento Valley Air Basin
Carbon Monoxide Emission Trends and Forecasts

Emissions of CO declined in the Sacramento Valley Air Basin between 1980 and 2000 and are projected to decrease through 2020. Motor vehicles are the largest source of CO emissions. With the introduction of new automotive emission controls to meet more stringent emission standards, motor vehicle CO emissions have been declining since 1975, despite increases in VMT. Stationary and area-wide source CO emissions have remained relatively steady, with additional emission controls offsetting growth.

CO Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***2970***	***2981***	***2851***	***2517***	***1902***	***1482***	***1224***	***1035***	***909***	***833***
Stationary Sources	27	28	16	51	39	42	46	48	52	54
Area-wide Sources	294	309	320	333	330	331	334	337	341	346
On-Road Mobile	2450	2389	2246	1813	1225	822	576	398	268	187
Gasoline Vehicles	2442	2377	2228	1793	1210	808	565	389	260	180
Diesel Vehicles	8	12	17	20	16	13	12	9	8	7
Other Mobile	199	255	269	321	307	288	268	252	248	246
Gasoline Fuel	147	192	215	263	255	240	221	206	202	201
Diesel Fuel	36	44	37	41	36	31	28	26	25	23
Other Fuel	16	20	17	16	16	17	19	21	22	22

Table 4-58

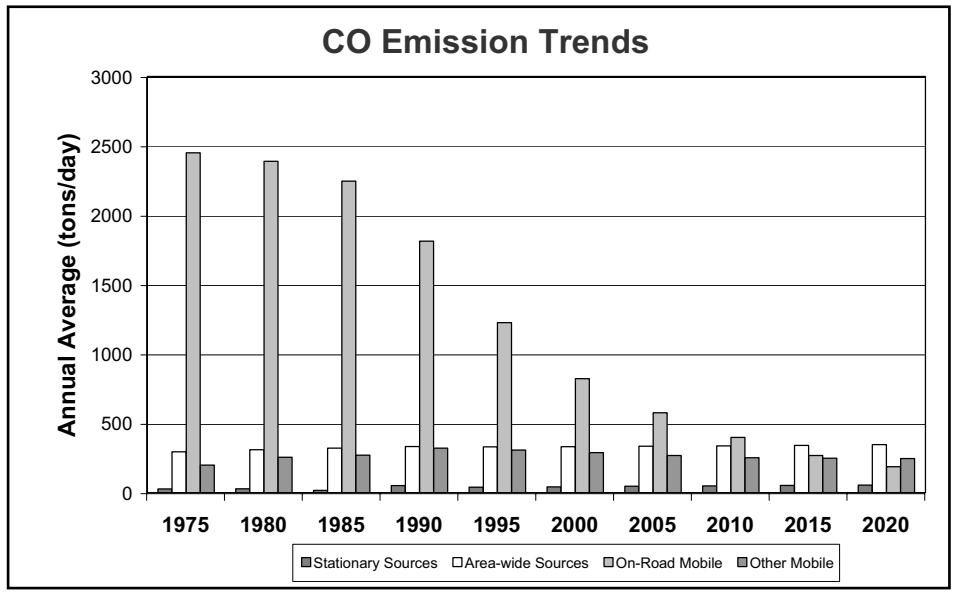

Figure 4-57

Sacramento Valley Air Basin

Carbon Monoxide Air Quality Trend

The trend of the maximum peak 8-hour indicator for carbon monoxide for the Sacramento Valley Air Basin was relatively flat from 1984 to 1991, with some year-to-year variability that was probably caused by meteorology. Since 1991, indicator values have decreased substantially. The 2003 value was 70 percent lower than the 1991 value. The national CO standards have not been exceeded since 1991, and the State standards were last exceeded in 1993. Much of the decline in ambient carbon monoxide concentrations is attributable to the introduction of cleaner fuels and newer, cleaner motor vehicles. These controls will help keep the area in attainment for both the State and national CO standards.

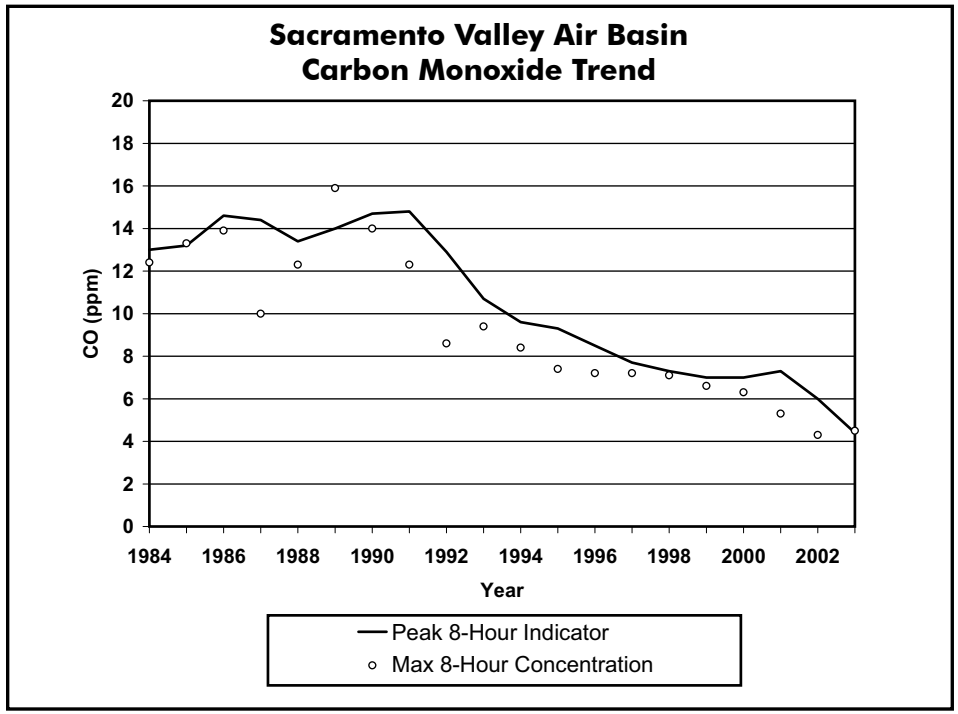

Figure 4-58

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	13.0	13.2	14.6	14.4	13.4	14.0	14.7	14.8	12.9	10.7	9.6	9.3	8.5	7.7	7.3	7.0	7.0	7.3	6.0	4.4
Maximum 1-Hr. Concentration	18.0	17.0	20.0	15.0	17.0	18.0	17.0	15.0	14.0	12.0	10.8	9.8	8.7	9.5	7.9	7.7	10.0	19.1	7.8	8.5
Maximum 8-Hr. Concentration	12.4	13.3	13.9	10.0	12.3	15.9	14.0	12.3	8.6	9.4	8.4	7.4	7.2	7.2	7.1	6.6	6.3	5.3	4.3	4.5
Days Above State 8-Hr. Std.	6	12	13	5	12	22	14	9	0	2	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	12	12	3	9	22	12	6	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-59

Sacramento Valley Air Basin
Nitrogen Dioxide
Oxides of Nitrogen Emission Trends and Forecasts

Emissions of NO_x show a steady decrease from 1990 to 2020. On-road motor vehicles and other mobile sources are by far the largest contributors to NO_x emissions. More stringent mobile source emission standards and cleaner burning fuels have largely contributed to the decline in NO_x emissions.

NO_x Emission Trends (tons/day, annual average)										
Emission Source	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
All Sources	***329***	***356***	***351***	***384***	***337***	***295***	***246***	***200***	***162***	***137***
Stationary Sources	36	30	29	43	45	41	38	40	40	40
Area-wide Sources	7	8	8	9	8	8	8	8	8	9
On-Road Mobile	179	194	208	216	182	147	113	80	53	36
Gasoline Vehicles	147	148	143	132	112	78	54	38	25	18
Diesel Vehicles	32	46	65	84	70	68	59	43	27	18
Other Mobile	107	124	107	115	102	99	86	72	61	53
Gasoline Fuel	3	3	4	5	5	6	7	7	6	6
Diesel Fuel	103	118	100	108	95	91	76	62	52	44
Other Fuel	2	2	2	2	2	3	3	3	3	3

Table 4-60

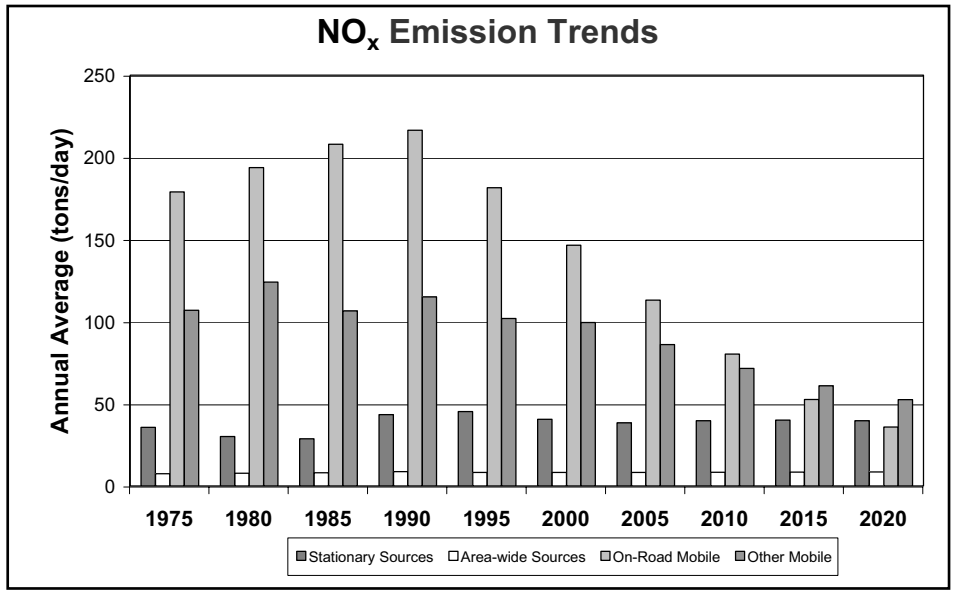

Figure 4-59

Sacramento Valley Air Basin

Nitrogen Dioxide Air Quality Trend

The Sacramento Valley Air Basin has attained both the State and national nitrogen dioxide standards for more than twenty years. The peak 1-hour indicator increased from 1984 through 1993, and has declined by almost 30 percent since 1993. There is more variability in maximum 1-hour concentrations as compared to other areas. This variability may be due to changes in emission sources or also may reflect year to year changes in meteorology. However, ambient concentrations are well below the level of the two standards, and a continuing decline in NO_2 concentrations is expected to continue.

Nitrogen dioxide is formed from emissions of oxides of nitrogen, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's oxides of nitrogen emissions.

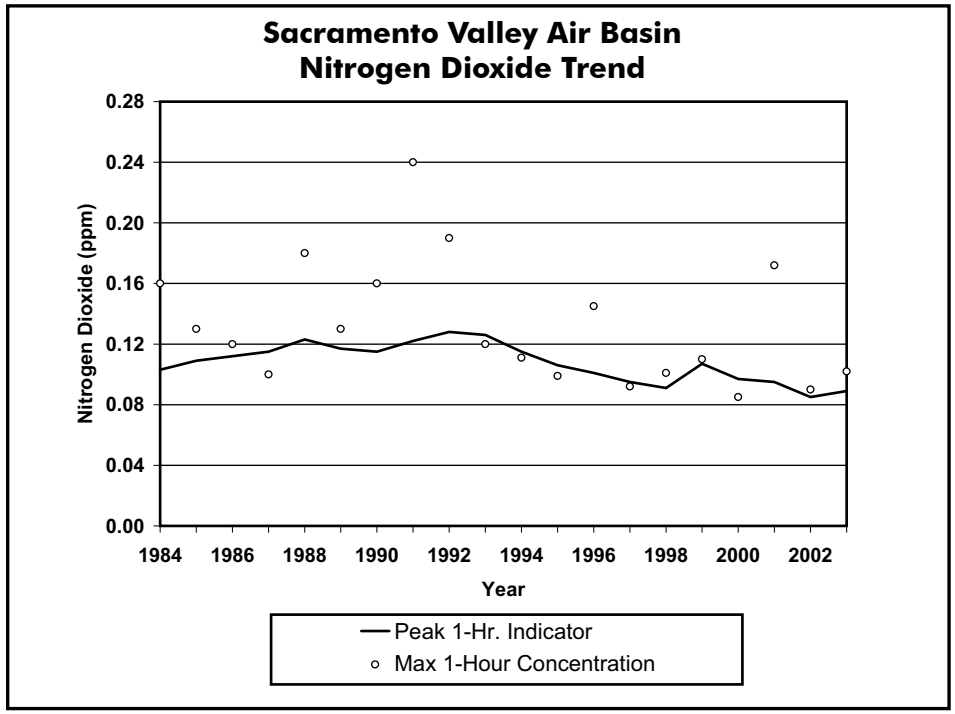

Figure 4-60

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.103	0.109	0.112	0.115	0.123	0.117	0.115	0.122	0.128	0.126	0.115	0.106	0.101	0.095	0.091	0.107	0.097	0.095	0.085	0.089
Maximum 1-Hr. Concentration	0.160	0.130	0.120	0.100	0.180	0.130	0.160	0.240	0.190	0.120	0.111	0.099	0.145	0.092	0.101	0.110	0.085	0.172	0.090	0.102
Maximum Annual Average	0.019	0.021	0.022	0.022	0.025	0.019	0.023	0.024	0.021	0.017	0.022	0.022	0.022	0.019	0.021	0.021	0.019	0.019	0.020	0.015

Table 4-61

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Chapter 5

Toxic Air Contaminant Emissions, Air Quality, and Health Risk

Introduction

This chapter presents a summary of the emissions and air quality data available for selected toxic air contaminants, or TACs. The Health and Safety Code defines a TAC as an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. There are approximately 192 TACs identified in California. Some of these TACs are groups of compounds which contain many individual substances (e.g. copper compounds, polycyclic organgic matter). The summary information includes available data for the ten TACs posing the greatest health risk in California, based primarily on ambient air quality data. These TACs are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (diesel PM). Information is summarized for the State as a whole and for each of the five most populous air basins. It is important to note that the summarized data reflect a spatial average, and the ambient concentrations and health risks for individual locations may be higher or lower.

This section provides general background information on toxic air contaminants, their emissions, and air quality. The following section provides information on a statewide level. The information includes summaries of statewide emissions, statewide annual average concentrations (calculated as a mean of the monthly means), and statewide average health risks, for the ten selected TACs. The final sections of this chapter provide similar information for California's five most populous air basins: the South Coast Air Basin, the San Francisco Bay Area Air Basin, the San Joaquin Valley Air Basin, the San Diego Air Basin, and the Sacramento Valley Air Basin (concentration and health risk data for individual sites within these air basins can be found in Appendix C). It is important to note that the ambient concentration and health risk information presented here reflect data collected only at sites operated by the ARB, and the information presented in this chapter reflects only the ten TACs for which available data indicate the most substantial health risk. There may be other TACs that pose a substantial risk, but for which data are not available (dioxins, for example), or which have not been identified as a concern. Additional information on interpreting air quality data for toxic air contaminants can be found in Chapter 1.

Sources of Toxic Air Contaminant Emissions in California. Similar to the criteria pollutants, toxic air contaminants are emitted from stationary sources, area-wide sources, and mobile sources. The stationary source emissions inventory was developed by the ARB in cooperation with affected industries and the air pollution control and air quality management districts (districts) as part of Assembly Bill 2588, the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Program). The ARB developed the emission estimates for area-wide sources and mobile sources.

Emissions of the selected TACs are reported on a statewide basis and for the ten highest-emitting counties in California. Emissions are also included for the five most populous air basins. In general, the inventory base year is 2004. Note, however, that the stationary source emissions inventory uses the best available information for the emission source, although the data may not have been specifically collected for 2004.

Air Quality Monitoring for Toxic Air Contaminants. The ARB maintains a statewide air quality monitoring network for toxic air contaminants. The network was originally designed to measure selected sub-

stances in the ambient air to determine if levels were sufficiently high to be of concern. As a result of this monitoring, the ARB has determined atmospheric concentrations for over 60 individual substances. As shown in Figure 5-1, the ARB currently maintains a network of 18 air quality monitoring stations, measuring ambient concentrations of 64 substances. ARB's Monitoring and Laboratory Division began monitoring four new compounds in 2003, three were TACs: acrolein, acetonitrile, and acrylonitrile; one was a non-TAC: acetone. The number of sites is smaller than in previous years and reflects the closure of several sites during 2000. By closing these sites, additional resources were made available to support monitoring for the ARB community health program. The sites selected for closure generally showed concentrations similar to the statewide average, so their closure has a small overall impact on the statewide annual averages. Other factors considered in selecting sites for closure included the total number of sites in the area and the continuity of the data record.

TAC samples are generally collected once every 12 days, throughout the year. This results in 20,000 to 35,000 individual TAC measurements annually. The TAC data are typically sampled, analyzed, and reported as 24-hour averages. These 24-hour averages provide the basis for the annual average concentrations. These annual average concentrations are then used to support statewide risk assessment.

The TAC monitoring network is currently designed to provide air quality data in support of general population exposures. Therefore, the data do not provide information on localized impacts, often referred to as near-source or neighborhood exposures. The ARB is currently participating in several studies to address localized impacts and community health issues. For example, during October 1999, the ARB initiated a monitoring and evaluation study in the Barrio Logan and Logan Heights neighborhoods of San Diego. In addition, the ARB has conducted monitoring in five other communities in support of the community health program as required by SB 25. Efforts

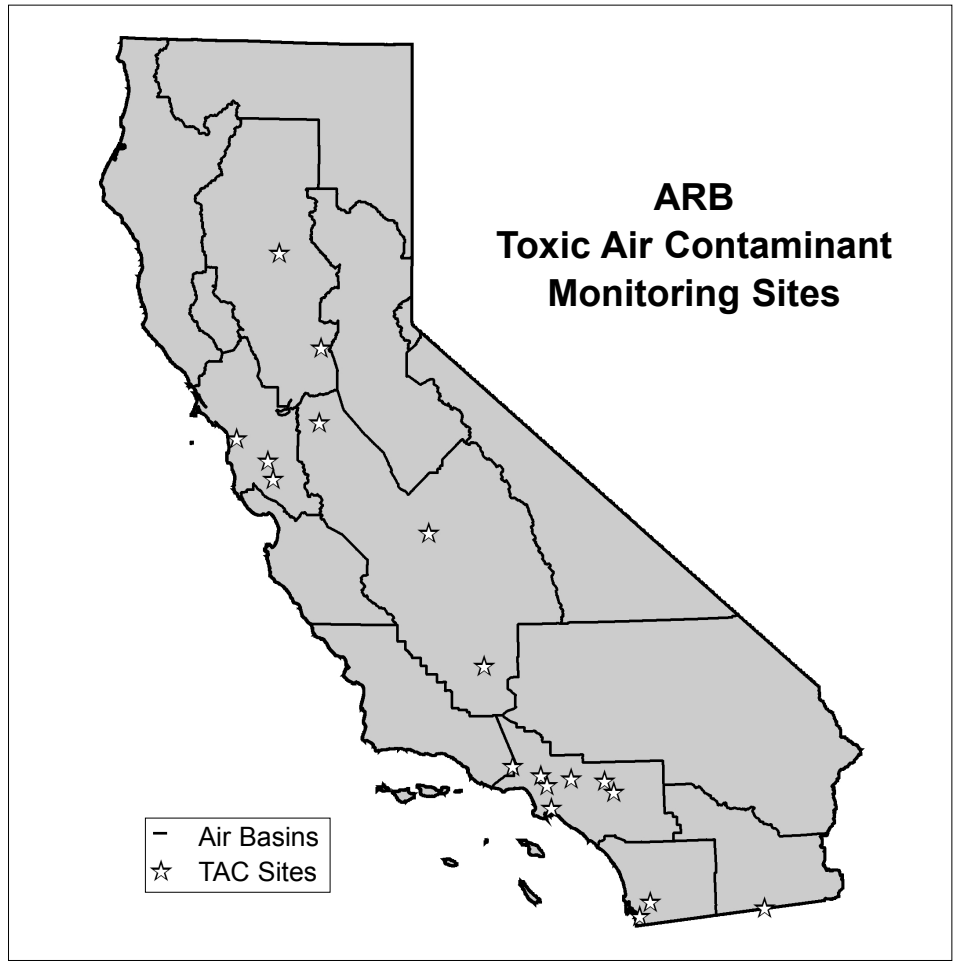

Figure 5-1

such as these will supplement our existing statewide TAC monitoring network, which was designed for regional rather than neighborhood assessments. Information on these and other studies are available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm*. The ambient TAC air quality trends included in this chapter are based on ambient data collected during 1990 through 2003. At this time, ambient air quality data for diesel PM are not available. However, the ARB has made some estimates of ambient diesel PM concentrations, based on receptor modeling techniques. These estimates are included for comparison.

Statewide Health Risk and Community Health. In this almanac, health risk is presented on a pollutant-by-pollutant basis and on a cumulative basis, with a focus on cancer risk. Because the monitoring data represent general population exposures, the risk estimates represent general population impacts. Localized impacts may involve exposure to different toxic air contaminants with higher or lower concentrations than those represented by the ambient air monitoring data. The SB 25 study characterizes community health risks by focusing on localized impacts.

The cancer risk estimates presented in this almanac are calculated using an annual average concentration calculated as an average of the monthly means multiplied by a unit risk factor. The unit risk factor is expressed as the probability, or risk, of contracting cancer as a result of constant exposure to an ambient concentration of 1 microgram per cubic meter over a 70-year lifetime. The potential impacts for cancer are expressed as the risk of contracting cancer (or excess cancer cases) per million people exposed over a 70-year period. Table 5-1 lists the unit risk factor for each of the ten TACs presented in this almanac. The factors reflect only the inhalation pathway.

For all TACs except diesel PM (for which trends are based on modeling), trends were examined using monitoring data. To minimize the influences of weather on the trends, three-year average statewide concentrations were calculated. The resulting average statewide concentrations were calculated. The resulting averages at the beginning and end of the period of data were compared to determine the trends. For most TACs, this meant that the average concentration for 1990-1992 was compared to that for 2001-2003. However, for acetaldehyde and formaldehyde the data prior to 1996 are not reliable, so for those compounds the average concentration for 1996-1998 was compared to that for 2001-2003. For carbon tetrachloride, hexavalent chromium, and *para*-dichlorobenzene, there may be only one or two years in the three year average between 1990 and 1992.

The downward concentration trends for the TACs are real, as there have been many control measures implemented to reduce emissions. However, the overall downward trend for some compounds may be different than shown here, for several reasons. First, low concentrations are under-reported for some compounds using the U.S. EPA-approved

Toxic Air Contaminant Unit Risk Factors

Toxic Air Contaminant	Unit Risk/Million People*
Acetaldehyde	2.7
Benzene	29
1,3-Butadiene	170
Carbon Tetrachloride	42
Chromium, Hexavalent	150,000
para-Dichlorobenzene	11
Formaldehyde	6
Methylene Chloride	1
Perchloroethylene	5.9
Diesel Particulate Matter	300**

* The Unit Risk represents the number of excess cancers per million people per microgram per cubic meter TAC concentration over a 70-year, lifetime exposure.

** A diesel particulate matter unit risk value of 300 is used as a reasonable estimate in the *"Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles"* (ARB, October 2000).

Table 5-1

calibration method. For example, prior to 1996, ambient formaldehyde and acetaldehyde concentrations were under-reported. A method change in 1996 corrected the bias. Because the earlier data as reported in this almanac have not been corrected, the trends appear discontinuous. This may hold true for other gaseous compounds, as well. In contrast, benzene and 1,3-butadiene concentrations during previous years were also likely under-reported, especially at low concentrations. The ARB staff resolved this problem beginning in 1999. The ARB staff developed correction factors for these two TACs, and the pre-1999 data presented in this almanac reflect the correction. Finally, variations in meteorology affect the trends. For example, the latter years of the trend period had more rain than the earlier drought years (1990-1992), and the presence of rainfall tends to lower the ambient concentrations. This may further affect the downward trends.

Additional Information. Additional emissions and air quality data for the ten TACs in this almanac, as well as many other TACs, may be found by accessing the ARB website at *www.arb.ca.gov/html/aqe&m.htm*. The web data are updated periodically, as new information becomes available. More detailed information on the health effects of these compounds, as well as other TACs, can be found in an ARB report entitled: *"Toxic Air Contaminant Identification List - Summaries,"* dated September 1997. This report can be obtained from the ARB Public Information Office at (916) 322-2990 or by accessing the ARB website at *www.arb.ca.gov/toxics/id.htm*.

Acetaldehyde

2004 Statewide Emission Inventory

Acetaldehyde is a federal hazardous air pollutant (HAP). The ARB identified acetaldehyde as a TAC in April 1993 under Assembly Bill 2728. This bill required the ARB to identify all federal HAPs as TACs. In California, acetaldehyde is identified as a carcinogen. This compound also causes chronic non-cancer toxicity in the respiratory system.

Acetaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Sources of acetaldehyde include emissions from combustion processes such as exhaust from mobile sources and fuel combustion from stationary internal combustion engines, boilers, and process heaters. In California, photochemical oxidation is the largest source of acetaldehyde concentrations in the ambient air. Approximately 24 percent of the statewide acetaldehyde emissions can be attributed to on-road motor vehicles, with an additional 50 percent attributed to other mobile sources such as construction and mining equipment, aircraft, recreational boats, and agricultural equipment. Area-wide sources of emissions, which contribute 23 percent of the statewide acetaldehyde emissions, include the burning of wood in residential fireplaces and wood stoves. Stationary sources contribute three percent of the statewide acetaldehyde emissions. The primary stationary sources are manufacturers of miscellaneous food and kindred products and crude oil and natural gas extraction. The emissions from these sources are from fuel combustion.

Acetaldehyde		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	234	3%
Area-wide Sources	1671	23%
On-Road Mobile	1745	24%
Gasoline Vehicles	773	10%
Diesel Vehicles	972	13%
Other Mobile	3721	50%
Gasoline Fuel	806	11%
Diesel Fuel	2295	31%
Other Fuel	621	8%
Natural Sources	0	0%
Total Statewide	***7372***	***100%***

Table 5-2

2004 Top Ten Counties - Acetaldehyde

The top ten counties account for approximately 46 percent of the statewide acetaldehyde emissions. The South Coast Air Basin has four of the top ten counties: South Coast portion of Los Angeles County (13 percent of the emissions of acetaldehyde statewide), Orange County (four percent), South Coast portion of San Bernardino County (three percent), and South Coast portion of Riverside County (three percent). Collectively, approximately 23 percent of statewide acetaldehyde emissions occur in the South Coast Air Basin. San Diego County accounts for approximately seven percent. The five other counties in the top ten for acetaldehyde emissions are: Alameda, Santa Clara, Fresno, Sacramento and Kern (San Joaquin Valley portion). These five counties account for approximately 17 percent of statewide acetaldehyde emissions.

Acetaldehyde			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	922	13%
San Diego	San Diego	508	7%
Orange	South Coast	317	4%
Alameda	San Francisco Bay Area	303	4%
Santa Clara	San Francisco Bay Area	262	4%
Fresno	San Joaquin Valley	252	3%
Sacramento	Sacramento Valley	221	3%
Riverside	South Coast	205	3%
San Bernardino	South Coast	202	3%
Kern	San Joaquin Valley	195	3%

Table 5-3

Acetaldehyde

Air Quality and Health Risk

The ARB routinely monitors acetaldehyde concentrations in the ambient air at its network of toxic monitoring sites. The trend graph for acetaldehyde for the years 1990 through 2003 is shown in Figure 5-2. Except for a sharp drop in acetaldehyde levels during 1995, and a corresponding increase the following year, the trend graph shows a general downward trend throughout the period. There is, however, a slight upturn during 2000 to 2003.

Although data are shown for all years during 1990 through 2003, the values prior to 1996 are uncertain because the ARB analyzed ambient samples using a method that underestimated the actual concentrations. A method change in 1996 corrected this bias, however, the ARB was unable to develop a correction factor for the earlier data. While the data prior to the method change are included here for completeness, they are not directly comparable to data collected during the later years.

For all TACs except diesel PM (for which trends are based on modeling), trends were examined using monitoring data. To minimize the influences of weather on the trends, three-year average statewide concentrations were calculated. The resulting average statewide concentrations were calculated. The resulting averages at the beginning and end of the period of data were compared to determine the trends. For most TACs, this meant that the average concentration for 1990-1992 was compared to that for 2001-2003. However, for acetaldehyde and formaldehyde the data prior to 1996 are not reliable, so for those compounds the average concentration for 1996-1998 was compared to that for 2001-2003. As discussed above, years prior to 1996 were not used because they are uncertain. The result is a three percent decrease in acetaldehyde concentration and health risk. Health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years. During 2003, there was an estimated six excess cancer cases per million people. On an individual basis, the health risks from acetaldehyde are much lower than they are for some of the other toxic air contaminants. Among the ten compounds presented in this almanac, the health risk from acetaldehyde ranks eighth out of ten.

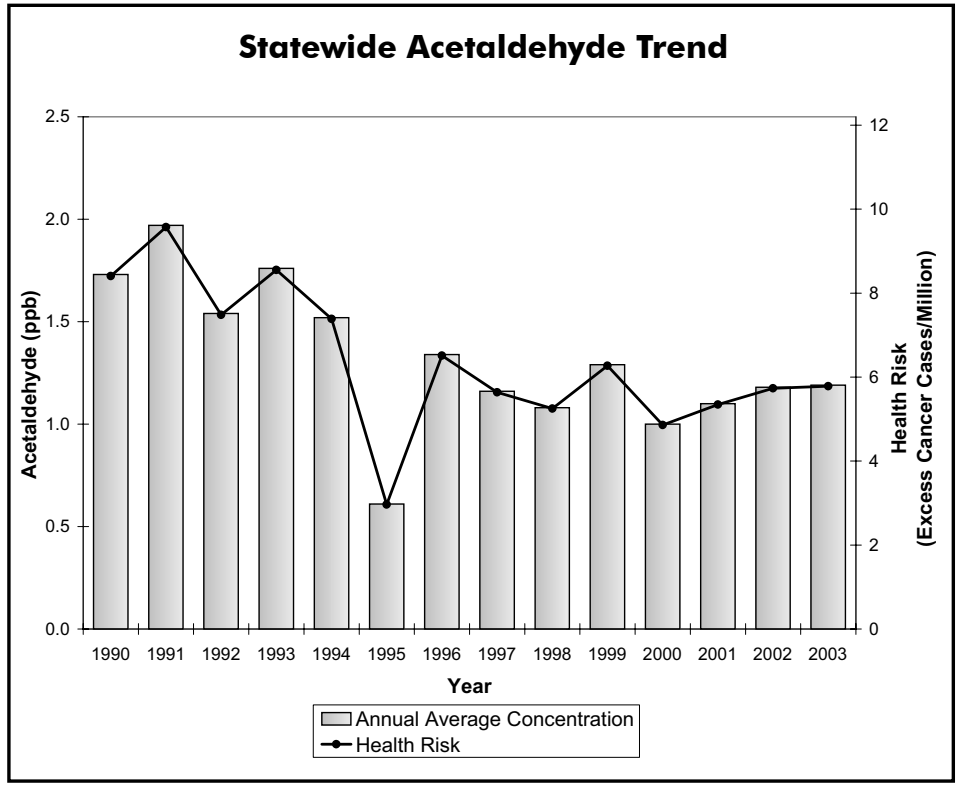

Figure 5-2

It is important to note that the health risk to acetaldehyde is not spread evenly throughout the State. This is common for almost all pollutants. The data reflect statewide averages, and do not consider local impacts. Therefore, some Californians may be exposed to near-source, or "hot spot" concentrations of acetaldehyde which are above the statewide annual average concentrations. "Hot spot" exposure may increase the potential cancer risk to individuals living near large combustion sources. Information collected under Assembly Bill 2588 (the Air Toxics "Hot Spots" Program) will be used during the risk management phase to help determine the priority and need for control of sources of acetaldehyde.

Another factor to consider is that the statewide averages reflect ambient outdoor concentrations. In general, acetaldehyde concentrations are higher indoors than outdoors, due in part to the abundance of combustion sources, such as cigarettes, fireplaces, and woodstoves.

Acetaldehyde is directly emitted and also occurs as a result of the photochemical oxidation of reactive organic gases (ROG). Over the years, stringent emission standards for new vehicles have resulted in steady declines in vehicular ROG emissions, including acetaldehyde, and NO_X emissions. Further reductions in ROG and NO_X are expected to result in a decline in directly emitted acetaldehyde due to vehicular emissions.

Benzene

2004 Statewide Emission Inventory

Benzene is highly carcinogenic and occurs throughout California. The ARB identified benzene as a TAC in January 1985 under California's TAC program (Assembly Bill 1807). In addition to being a carcinogen, benzene also has non-cancer health impacts. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness.

Current estimates show that approximately 84 percent of the benzene emitted in California comes from motor vehicles, including evaporative leakage and unburned fuel exhaust. The predominant sources of total benzene emissions in the atmosphere are gasoline fugitive emissions and gasoline motor vehicle exhaust. Approximately 49 percent of the statewide benzene emissions can be attributed to on-road motor vehicles, with an additional 35 percent attributed to other mobile sources such as recreational boats, off-road recreational vehicles, and lawn and garden equipment. Currently, the benzene content of gasoline is less than one percent. Some of the benzene in the fuel is emitted from vehicles as unburned fuel. Benzene is also formed as a partial combustion product of larger aromatic fuel components. Industry-related stationary sources contribute 15 percent and area-wide sources contribute one percent of the statewide benzene emissions. The primary stationary sources of reported benzene emissions are crude petroleum and natural gas mining, petroleum refining, and electric generation. The primary area-wide sources include residential combustion of various types such as cooking and water heating. The primary natural sources are petroleum seeps that form where oil or natural gas emerge from subsurface sources to the ground or water surface.

Benzene		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	1929	15%
Area-wide Sources	115	1%
On-Road Mobile	6511	49%
Gasoline Vehicles	6246	47%
Diesel Vehicles	265	2%
Other Mobile	4594	35%
Gasoline Fuel	3707	28%
Diesel Fuel	624	5%
Other Fuel	262	2%
Natural Sources	35	0%
Total Statewide	***13183***	***100%***

Table 5-4

2004 Top Ten Counties - Benzene

The top ten counties account for approximately 56 percent of the statewide benzene emissions. The South Coast Air Basin has four of the top ten counties emitting benzene: South Coast portion of Los Angeles County (19 percent of the emissions of benzene statewide), Orange County (seven percent), South Coast portion of San Bernardino County (three percent), and South Coast portion of Riverside County (three percent). Collectively, approximately 32 percent of statewide benzene emissions occur in the South Coast Air Basin. Three counties in the San Francisco Air Basin contribute approximately 10 percent: Santa Clara County (four percent), Contra Costa County (three percent), and Alameda County (three percent). The three other counties in the top ten for benzene emissions are: San Diego, Kern, and Sacramento. These three counties account for approximately 16 percent of statewide benzene emissions.

Benzene			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	2446	19%
San Diego	San Diego	899	7%
Orange	South Coast	874	7%
Kern	San Joaquin Valley	757	6%
Santa Clara	San Francisco Bay Area	513	4%
San Bernardino	South Coast	413	3%
Alameda	San Francisco Bay Area	410	3%
Riverside	South Coast	396	3%
Sacramento	Sacramento Valley	355	3%
Contra Costa	San Francisco Bay Area	336	3%

Table 5-5

Benzene

Air Quality and Health Risk

The ARB has routinely monitored benzene concentrations in the ambient air for more than a decade. To examine the trend in benzene while minimizing the influences of weather on the trend, the statewide average benzene concentration for 1990-1992 was compared to that for 2001-2003. The result is a 72 percent decrease in both concentration and health risk. Figure 5-3 shows the annual average statewide benzene concentrations and the associated health risk from benzene alone. Ambient levels have shown generally steady improvement since 1990.

Health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration level over a 70-year lifetime. From these data, it is apparent that benzene poses a substantial health risk. In fact, based on the statewide averages, benzene ranks second highest among the ten TACs presented in this almanac. During 2003, there was an estimated risk of 52 excess cancer cases per million people due to benzene. However, as with all air pollutants, the health risk is not spread evenly throughout the State. In some areas, the health risk is higher than the statewide average, while in other areas the health risk is lower. In general, ambient benzene concentrations and associated health risks tend to be higher in the more urbanized areas.

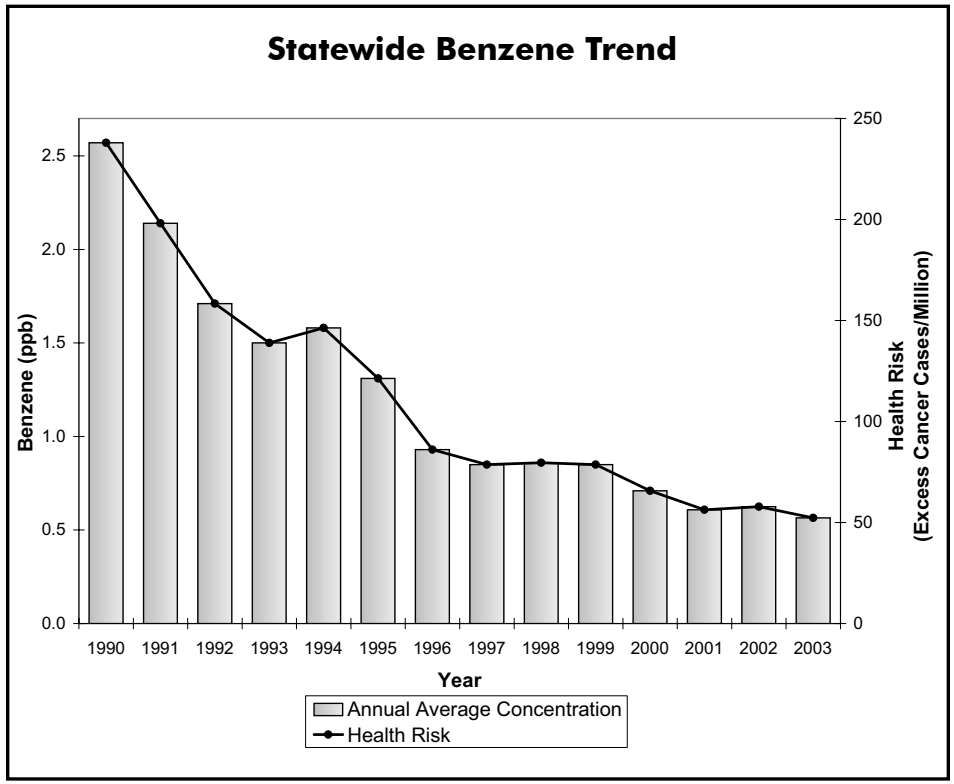

Figure 5-3

It is important to note that the ambient benzene concentrations have been corrected to provide a consistent long-term data record. Prior to 1999, the ARB analyzed samples using a single-point calibration of the gas chromatograph analyzers. While this method was approved by the U.S. EPA, it resulted in low concentrations being under-reported. Beginning January 1, 1999, new and more sophisticated computer software allowed the ARB to switch to a 3-point calibration of the analyzers. This improved measurement technique more accurately characterizes the ambient benzene, especially at low concentrations. However, concentrations measured using the 3-point calibration method are higher than those measured with the single-point calibration method. A year long study showed that the two measurement methods were highly correlated, and the ARB was able to develop a predictive relationship between the two. To avoid discontinuity in the trend data, the pre-1999 benzene data shown in Figure 5-3 have

been adjusted according to these predictive equations, and they now reflect the results that would have been produced using the 3-point calibration method. Information about the specific study process and adjustment equations can be found on the "Laboratory Standard Operating Procedures for Ambient Air" page on the ARB website at *www.arb.ca.gov/aaqm/sop/summary/summary.htm*.

The ARB started to use a gas chromatography/mass spectrometry based method to analyze benzene in 2001 to fulfill a lower detection limit requirement for the SB 25 and Neighborhood Assessment Programs. The new method is also in line with the new U.S. EPA Urban Air Toxic Program being developed nationally. Measurements do not change substantially using the GC/MS method, so that no adjustment is needed to prior years' data.

Although the health risk from benzene is still substantial, emissions have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures and control technologies. The Low Emission Vehicle (LEV) regulations have resulted in a significant reduction in exhaust and evaporative hydrocarbon emissions, including benzene. As the fleet turns over and new LEV technology vehicles are introduced into the fleet, emission reductions will continue. In 1996, the California Phase II Reformulated Gasoline Program was implemented statewide. Fuel reformulation has led to substanial decrease in the level of benzene from gasoline and vehicle exhaust emissions. Since motor vehicles continue to be the major source of benzene in the State, future efforts to improve fuel formulations, reduce vehicle exhaust emissions, and promote less polluting modes of transportation will likely continue to help reduce benzene emissions.

1,3-Butadiene

2004 Statewide Emission Inventory

The ARB identified 1,3-butadiene as a TAC in 1992. In California, 1,3-butadiene has been identified as a carcinogen. In addition, 1,3-butadiene vapors are mildly irritating to the eyes and mucous membranes and cause neurological effects at very high levels.

Most of the emissions of 1,3-butadiene are from incomplete combustion of gasoline and diesel fuels. Mobile sources account for approximately 83 percent of the total statewide emissions. Vehicles that are not equipped with functioning exhaust catalysts emit greater amounts of 1,3-butadiene than vehicles with functioning catalysts. Approximately 44 percent of the statewide 1,3-butadiene emissions can be attributed to on-road motor vehicles, with an additional 39 percent attributed to other mobile sources such as recreational boats, off-road recreational vehicles, and aircraft. Area-wide sources such as agricultural waste burning and open burning associated with forest management contribute approximately 13 percent. Stationary sources contribute less than one percent of the statewide 1,3-butadiene emissions. The primary stationary sources with reported 1,3-butadiene emissions include petroleum refining, manufacturing of synthetics and man-made materials, and oil and gas extraction. The primary natural sources are wildfires.

1,3-Butadiene		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	23	1%
Area-wide Sources	391	13%
On-Road Mobile	1347	44%
Gasoline Vehicles	1322	44%
Diesel Vehicles	25	1%
Other Mobile	1186	39%
Gasoline Fuel	893	29%
Diesel Fuel	59	2%
Other Fuel	234	8%
Natural Sources	82	3%
Total Statewide	***3030***	***100%***

Table 5-6

2004 Top Ten Counties - 1,3-Butadiene Emissions

The top ten counties account for approximately 49 percent of the statewide 1,3-butadiene emissions. The South Coast Air Basin contribute approximately 26 percent: Los Angeles County (16 percent), Orange County (five percent), Riverside County (three percent), and South Coast portion of San Bernardino County (three percent). San Diego County accounts for approximately seven percent. Two counties in the San Joaquin Valley Air Basin contribute seven percent of the 1,3-butadiene: Tulare County (four percent), and Fresno County (three percent). The other counties in the top ten for 1,3-butadiene emissions are: Santa Clara, Alameda and Sacramento.

1,3-Butadiene			
County	Air Basin	tons/year	Percent
Los Angeles	South Coast	477	16%
San Diego	San Diego	215	7%
Orange	South Coast	159	5%
Tulare	San Joaquin Valley	107	4%
Santa Clara	San Francisco Bay Area	102	3%
San Bernardino	South Coast	93	3%
Alameda	San Francisco Bay Area	88	3%
Riverside	South Coast	86	3%
Fresno	San Joaquin Valley	80	3%
Sacramento	Sacramento Valley	72	2%

Table 5-7

1,3-Butadiene

Air Quality and Health Risk

The ARB routinely monitors for 1,3-butadiene at its statewide air toxics monitoring network. Figure 5-4 shows the annual average statewide 1,3-butadiene concentrations and the associated health risk from this TAC alone. The data show a general downward trend, with some variability. To examine the trend in 1,3-butadiene while minimizing the influences of weather on the trend, the statewide average 1,3-butadiene concentration for 1990-1992 was compared to that for 2001-2003. The result is a 57 percent decrease in both concentration and health risk. Despite this substantial drop, the health risk from this compound remains relatively high. In 2003, there was an estimated risk of 44 excess cancer cases per million people. Of the ten compounds presented in this almanac, the average statewide health risk from 1,3-butadiene ranks third. Again, it is important to note that the data shown here reflect statewide averages. They do not consider local impacts, which may be higher or lower.

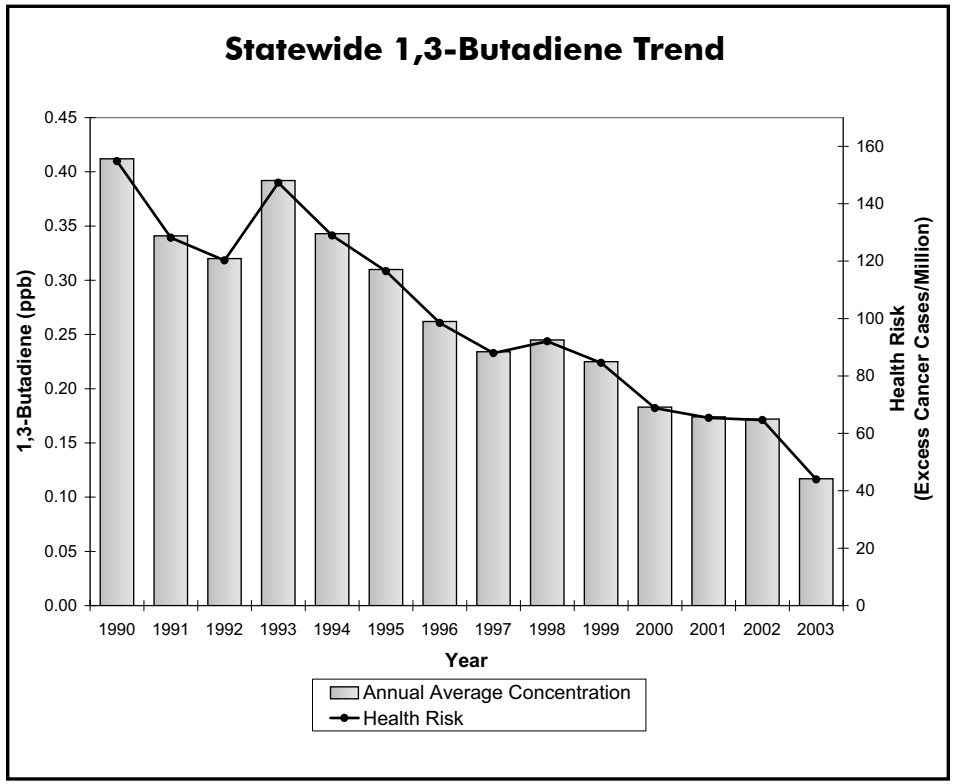

Figure 5-4

Similar to benzene, the ARB analyzed 1,3-butadiene samples using a single-point calibration of the gas chromatograph analyzers prior to 1999. While this method was approved by the U.S. EPA, it resulted in low concentrations being under-reported. Beginning January 1, 1999, new and more sophisticated computer software allowed the ARB to switch to a 3-point calibration of the analyzers. This improved measurement technique more accurately characterizes the ambient 1,3-butadiene, especially at low concentrations. However, concentrations measured using the 3-point calibration method are higher than those measured with the single-point calibration method. A year-long ARB study showed that the two measurement methods were highly correlated, and the ARB was able to develop a predictive relationship between them. To avoid discontinuity in the trend data, the pre-1999 1,3-butadiene data shown in Figure 5-4 have been adjusted according to these predictive equations and now reflect the results that would have been produced using the 3-point calibration method. Information about the specific study process and adjustment equations can be found on the "Laboratory Standard Operating Procedures for Ambient Air" page on the ARB website at *www.arb.ca.gov/aaqm/sop/summary/summary.htm*.

Similar to benzene, the ARB started to use a gas chromatography/mass spectrometry based method to analyze 1,3-butadiene in 2001 to fulfill a lower detection limit requirement for the SB 25 and Neighborhood Assessment Programs. The new method is also in line with the new U.S. EPA Urban Air Toxic Program being developed nationally. Measurements do not change substantially using the GC/MS method, so that no adjustment is needed to prior years' data.

In California, the majority of 1,3-butadiene emissions are from incomplete combustion of gasoline and diesel fuels. The ARB adopted Low Emission Vehicles (LEV)/Clean Fuels regulations in 1990 and Phase II reformulated gasoline regulations in 1991. The LEV regulations are expected to continue to reduce 1,3- butadiene emissions from cars and light-duty trucks as the fleet turns over and new low emission vehicles are introduced into the fleet.

Carbon Tetrachloride

2004 Statewide Emission Inventory

The ARB identified carbon tetrachloride as a Toxic Air Contaminant in 1987 under California's TAC program (AB 1807). In California, carbon tetrachloride has been identified as a carcinogen. Carbon tetrachloride is also a central nervous system depressant and mild eye and respiratory tract irritant.

The primary stationary sources reporting emissions of carbon tetrachloride include chemical and allied product manufacturers and petroleum refineries. In the past, carbon tetrachloride was used for dry cleaning and as a grain-fumigant. Usage for these purposes is no longer allowed in the United States. Carbon tetrachloride has not been registered for pesticidal use in California since 1987. Also, the use of carbon tetrachloride in products to be used indoors has been discontinued in the United States. The statewide emissions of carbon tetrachloride are small (about 2.30 tons per year), and background concentrations account for most of the health risk.

Carbon Tetrachloride		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	2.30	100%
Area-wide Sources	0	0%
On-Road Mobile	0	0%
Gasoline Vehicles	0	0%
Diesel Vehicles	0	0%
Other Mobile	0	0%
Gasoline Fuel	0	0%
Diesel Fuel	0	0%
Other Fuel	0	0%
Natural Sources	0	0%
Total Statewide	***2.30***	***100%***

Table 5-8

2004 Top Ten Counties - Carbon Tetrachloride

The top two counties account for 80 percent of the statewide carbon tetrachloride emissions. Contra Costa County (San Francisco Bay Area Air Basin) accounts for approximately 64 percent, and Los Angeles County (South Coast Air Basin Portion) accounts for approximately 16 percent of the emissions of carbon tetrachloride statewide. Carbon tetrachloride emissions in the South Coast Air Basin portion of Los Angeles County have decreased from previous editions of the almanac due to the closure of a major facility in that area. Although the percentages for these two counties are high, the emissions are very small (two tons or less per year in each county). The eight other counties in the top ten contribute approximately 18 percent of statewide carbon tetrachloride emissions.

Carbon Tetrachloride			
County	**Air Basin**	**tons/year**	**Percent**
Contra Costa	San Francisco Bay Area	1.46	64%
Los Angeles	South Coast	0.37	16%
San Diego	San Diego	0.12	5%
San Bernardino	Mojave Desert	0.10	4%
Ventura	South Central Coast	0.05	2%
Sacramento	Sacramento Valley	0.05	2%
Riverside	Mojave Desert	0.04	2%
Alameda	San Francisco Bay Area	0.03	1%
Sonoma	San Francisco Bay Area	0.02	1%
Kern	Mojave Desert	0.02	1%

Table 5-9

Carbon Tetrachloride

Air Quality and Health Risk

The ARB routinely monitors carbon tetrachloride at its statewide air toxics monitoring network. Figure 5-5 shows the annual average statewide concentrations and the associated health risk from carbon tetrachloride alone. As with a number of other TACs, there are several years of incomplete data for carbon tetrachloride. Based on the data that are available, the ambient concentrations and health risk dropped between 1990 and 1996, and then there was a substantial increase in values for 1998. During 2000 through 2003, values fluctuated slightly, and that may be due in part to meteorological fluctuations rather than changes in emissions.

Based on data from sites in the TAC monitoring network, the 2003 statewide average carbon tetrachloride concentration and the associated health risk were about 30 percent lower than the peak in 1990. Health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years. During 2003, there was an estimated risk of 25 excess cancer cases per million people. The health risk of this TAC ranks fourth among the ten compounds presented in this almanac. As with all air pollutants, the health risk is not spread evenly throughout the State. In some areas, the health risk is higher than the statewide average, while in other areas the health risk is lower.

Unlike many of the other TACs, carbon tetrachloride is emitted primarily by sources other than motor vehicles, and there are virtually no emissions within California. However, because carbon tetrachloride persists in the atmosphere for many years (the estimated atmospheric lifetime is 50 years), background concentrations still pose a health risk.

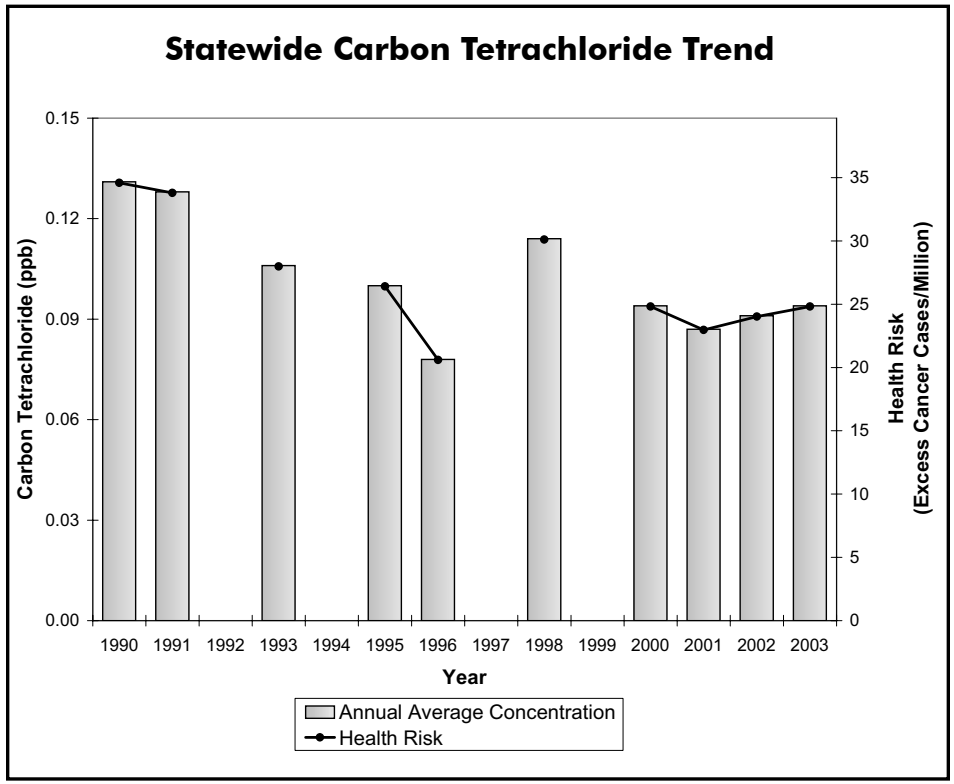

Figure 5-5

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Chromium, Hexavalent

2004 Statewide Emission Inventory

Hexavalent chromium was identified as a Toxic Air Contaminant in 1986 under California's TAC program (AB 1807). In California, hexavalent chromium has been identified as a carcinogen. There is epidemiological evidence that exposure to inhaled hexavalent chromium may result in lung cancer. The principal acute effects of hexavalent chromium are renal toxicity, gastrointestinal hemorrhage, and intravascular hemolysis.

Chrome plating is a primary source of hexavalent chromium emissions in the State. Hexavalent chromium emissions from plating have declined significantly from previous editions of the almanac due to many platers switching to the use of trivalent chromium in place of hexavalent chromium. Chromic acid anodizing is another industrial metal finishing process which uses hexavalent chromium. A third source of hexavalent chromium emissions is the firebrick lining of glass furnaces. In California, stationary sources are estimated to emit slightly less than one ton annually of hexavalent chromium. Emissions from these sources were obtained from facilities under the Air Toxics Hot Spots Act of 1987. This act required facilities to estimate toxics and potential toxics emissions, including hexavalent chromium. Approximately 0.13 tons of hexavalent chromium are emitted by gasoline motor vehicles. Other mobile sources such as trains and ships contribute approximately 0.79 tons of hexavalent chromium annually.

Chromium, Hexavalent		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	0.82	48%
Area-wide Sources	0	0%
On-Road Mobile	0.13	7%
Gasoline Vehicles	0.12	7%
Diesel Vehicles	< .01	0%
Other Mobile	0.79	46%
Gasoline Fuel	0.15	9%
Diesel Fuel	< .01	0%
Other Fuel	0.63	37%
Natural Sources	0	0%
Total Statewide	***1.73***	***100%***

Table 5-10

2004 Top Ten Counties - Chromium, Hexavalent

Four counties account for approximately 57 percent of the statewide hexavalent chromium emissions: Los Angeles County portion of the South Coast Air Basin (21 percent), Mojave Desert portion of Kern County (17 percent of the emissions of hexavalent chromium statewide), San Diego County (14 percent), and Toulumne County (five percent). Collectively, approximately 29 percent of statewide hexavalent chromium emissions occur in the South Coast Air Basin. Two counties in the San Joaquin Valley Air Basin contribute approximately six percent: Fresno County (three percent), and the San Joaquin Valley portion of Kern County (two percent).

Chromium, Hexavalent			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	0.37	21%
Kern	Mojave Desert	0.29	17%
San Diego	San Diego	0.24	14%
Tuolumne	Mountain Counties	0.08	5%
Orange	South Coast	0.05	3%
Fresno	San Joaquin Valley	0.05	3%
San Bernardino	South Coast	0.04	3%
Kern	San Joaquin Valley	0.04	2%
Sonoma	North Coast	0.04	2%
Riverside	South Coast	0.04	2%

Table 5-11

Chromium, Hexavalent

Air Quality and Health Risk

Unlike the other TACs discussed in this almanac, hexavalent chromium is the cation of a metal salt rather than a gas. Statewide annual averages and health risk estimates are available for 1992 through 2003. Prior to 1992, a different measurement method was used. With this method, some of the hexavalent chromium was transformed into trivalent chromium on the collection filter. As a result, the hexavalent chromium concentrations were underestimated, and these data are not included in this almanac. Since 1992, a new and more accurate method has been used.

The statewide annual average concentrations and associated health risks are shown in Figure 5-6. Both show a general downward trend, with the exception of 1995. The high 1995 value is driven in part by an extremely high annual average for the Burbank site in the South Coast Air Basin. However, a number of other sites also had higher concentrations in 1995 than in other years. Hexavalent chromium values dropped substantially after 1995, and the decrease coincided with the complete implementation of the chrome plating and the chromate-treated cooling tower control measures. Between 1996 and 1999, slight improvements continued, and values in 2000 and 2001 were slightly elevated over 1999 and 2002 levels.

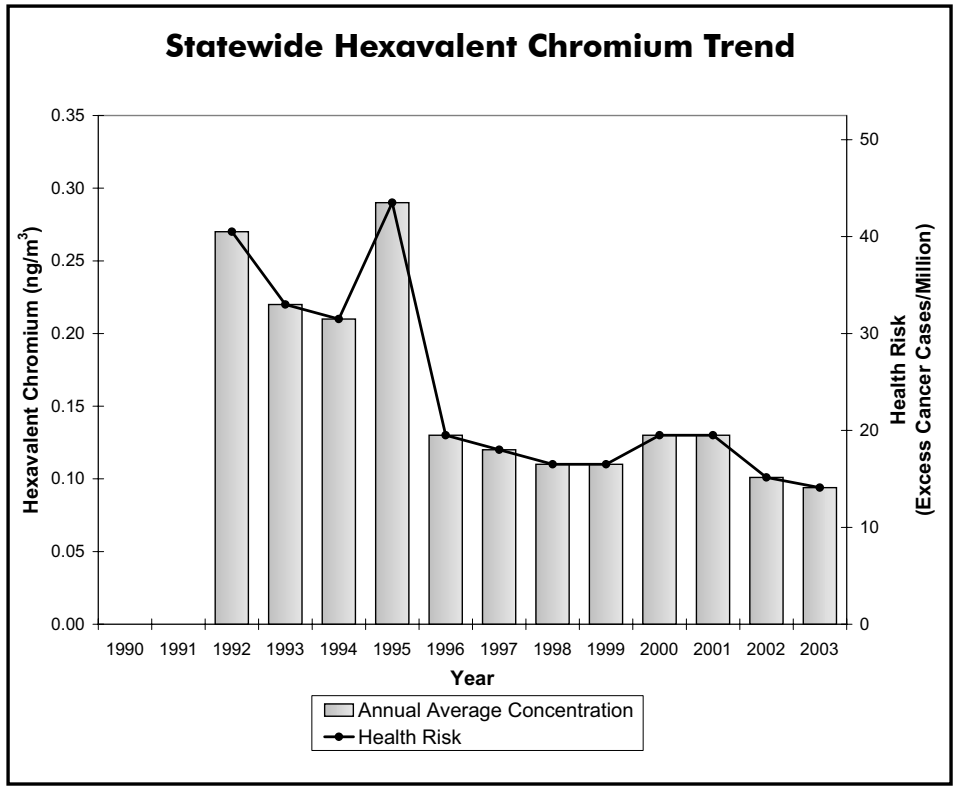

Figure 5-6

To examine the trend in hexavalent chromium while minimizing the influences of weather on the trend, the average hexavalent chromium concentration for 1990-1992 was compared to that for 2001-2003. The result is a 60 percent decrease in both concentration and health risk. In 2003, there was an estimated 14 excess cancer cases per million people, based on the annual average concentration. Based on data for all ten TACs presented in this almanac, hexavalent chromium ranks sixth in terms of health risk. Health risk is based on the annual average concentration and represents the estimated risk of excess cancer cases per million people exposed over a 70-year lifetime at the specified concentration level. It is important to remember that since hexavalent chromium exposure and health impact occur on a neighborhood scale, actual health risk can be higher in some areas than the statewide average, and lower in other areas.

During 1998 through 2001, a very high percentage of the measured values were below the Limit of Detection (LOD), which is the lowest concentration that can be reliably measured. In calculating an annual average, values below the LOD are assumed equal to 0.1 nanograms per cubic meter (ng/m^3), which is one-half the LOD of 0.2 ng/m^3. The one-half of LOD approach applies to all other TACs when their measurements are below their respective LODs. It is a good estimate for some TACs, however, it is uncertain for hexavalent chromium due to the high number of very low concentrations. This approach continues to apply to hexavalent chromium for consistency. Starting on January 1, 2002, hexavalent chromium is being analyzed by compositing quarterly samples by site. Although the new method decreases the number of samples, it increases the sensitivity of the instrument by lowering the LOD from 0.2 ng/m^3 to 0.06 ng/m^3.

Implementation of a series of control measures has helped reduce ambient concentrations and associated health risks from hexavalent chromium. In 1988, the ARB adopted an airborne toxic control measure to reduce emissions of hexavalent chromium from chrome plating and chromic acid anodizing operations. The control measure reduced hexavalent chromium emissions from these operations by over 90 percent. In the past, compounds containing hexavalent chromium, such as sodium dichromate or lead chromate, were added to cooling tower water to control corrosion in the towers and associated heat exchangers. The ARB adopted a statewide airborne toxic control measure in 1989 that prohibits the use of hexavalent chromium in cooling towers. In September 2001, the ARB approved an air toxic control measure banning the use of both hexavalent chromium and cadmium in motor vehicle and mobile equipment coatings. The measure became effective January 1, 2003, and allows a sell-through period to deplete existing inventories. Statewide, ARB estimates that 99 percent of auto body repair and refinishing facilities already use chromium-free and cadmium-free coatings. However, this rule will ensure additional reductions in hexavalent chromium exposures near those remaining facilities that do not use chromium-free and cadmium-free coatings.

para-Dichlorobenzene

2004 Statewide Emission Inventory

The ARB identified *para*-dichlorobenzene as a TAC in April 1993 under AB 2728. This bill required the ARB to identify, by regulation, all federal hazardous air pollutants as TACs. In California, *para*-dichlorobenzene has been identified as a carcinogen. In addition to the carcinogenic impact, long-term inhalation exposure may affect the liver, skin, and central nervous system in humans.

The primary area-wide sources that have reported emissions of *para*-dichlorobenzene include consumer products such as non-aerosol insect repellants and solid/gel air fresheners. These sources contribute approximately 99 percent of the statewide *para*-dichlorobenzene emissions. Stationary sources contribute approximately 1 percent. The primary stationary sources include plating and polishing of fabricated metal products, crude petroleum and natural gas extraction, and sanitary services.

para-DiChlorobenzene		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	15	1%
Area-wide Sources	1864	99%
On-Road Mobile	0	0%
Gasoline Vehicles	0	0%
Diesel Vehicles	0	0%
Other Mobile	0	0%
Gasoline Fuel	0	0%
Diesel Fuel	0	0%
Other Fuel	0	0%
Natural Sources	0	0%
Total Statewide	***1879***	***100%***

Table 5-12

2004 Top Ten Counties - *para*-Dichlorobenzene

The top ten counties account for approximately 69 percent of the statewide *para*-dichlorobenzene emissions. The South Coast Air Basin has four of the top ten counties: South Coast portion of Los Angeles County (26 percent of the emissions of *para*-dichlorobenzene statewide), Orange County (eight percent), South Coast portion of San Bernardino County (four percent), and South Coast portion of Riverside County (four percent). Collectively, approximately 42 percent of statewide *para*-dichlorobenzene emissions occur in the South Coast Air Basin. San Diego County contributes approximately nine percent. Three counties in the San Francisco Bay Area Air Basin contribute approximately 12 percent: Santa Clara County (five percent), Alameda County (four percent), and Contra Costa County (three percent). The two other counties in the top ten for *para*-dichlorobenzene emissions are Sacramento and Fresno.

para-DiChlorobenzene			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	497	26%
San Diego	San Diego	161	9%
Orange	South Coast	156	8%
Santa Clara	San Francisco Bay Area	93	5%
Alameda	San Francisco Bay Area	78	4%
San Bernardino	South Coast	72	4%
Riverside	South Coast	70	4%
Sacramento	Sacramento Valley	67	4%
Contra Costa	San Francisco Bay Area	51	3%
Fresno	San Joaquin Valley	46	2%

Table 5-13

para-Dichlorobenzene

Air Quality and Health Risk

The ARB routinely monitors *para*-dichlorobenzene in ambient air, and statewide annual average concentrations and health risk estimates are available for 1991 through 2003, with the exception of 1998 and 1999. No summary data are available for these years because of problems with laboratory equipment and associated data reliability. The trend graph for *para*-dichlorobenzene, shown in Figure 5-7, shows generally constant values throughout 1991 to 2003, with slightly lower values in 1994, 1996, and 2000, and an upturn in 2001 through 2003.

Health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years. During 2003, there was an estimated risk of 11 excess cancer cases per million people from this compound alone. Based on this, *para*-dichlorobenzene ranks seventh out of the ten compounds presented in this almanac. It is important to remember that, as with all air pollutants, the data shown here reflect statewide averages. They do not consider local impacts, which may be higher or lower.

Similar to hexavalent chromium, a very high percentage of the measured values were below the Limit of Detection (LOD), which is the lowest concentration that can be reliably measured. In calculating an annual average, values below the LOD are assumed equal to 0.15 parts per billion (ppb), which is one-half the LOD of 0.3 ppb. The one-half of LOD approach applies to all other TACs when their measurements are below the LOD. It is a good estimate for some TACs, however, it is uncertain for *para*-dichlorobenzene due to the large number of samples with very low concentrations. However, for consistency, this approach continues to apply to *para*-dichlorobenzene.

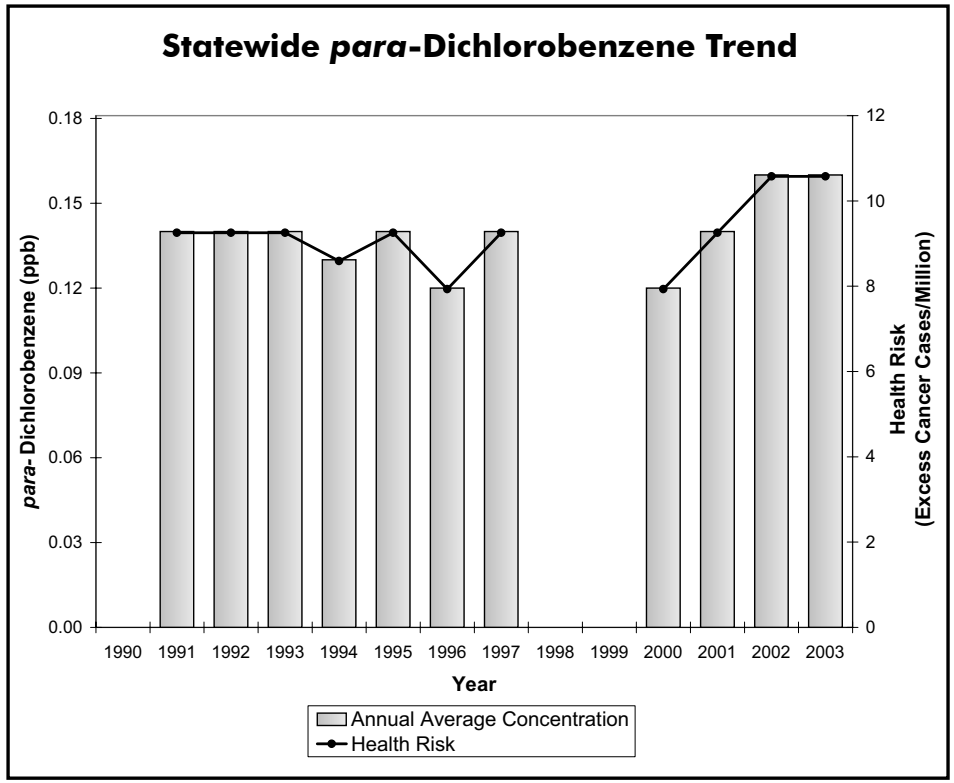

Figure 5-7

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Formaldehyde

2004 Statewide Emission Inventory

The ARB identified formaldehyde as a TAC in 1992 under California's TAC program (AB 1807). In California, formaldehyde has been identified as a carcinogen. Chronic exposure is associated with respiratory symptoms and eye, nose, and throat irritation.

Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Photochemical oxidation is the largest source of formaldehyde concentrations in California ambient air. Formaldehyde is a product of incomplete combustion. One of the primary sources of directly-emitted formaldehyde is vehicular exhaust. Formaldehyde is used in resins, can be found in many consumer products as an antimicrobial agent, and is also used in fumigants and soil disinfectants. About 76 percent of direct formaldehyde emissions are estimated to come from the combustion of fossil fuels from mobile sources. Approximately 27 percent of the total statewide formaldehyde emissions can be attributed to on-road motor vehicles, with an additional 49 percent attributed to other mobile sources such as aircraft, recreational boats, and construction and mining equipment. Area-wide sources contribute approximately 10 percent and stationary sources contribute approximately 14 percent of the statewide formaldehyde emissions. The primary area-wide sources in California of formaldehyde emissions include the wood burning in residential fireplaces and wood stoves.

Formaldehyde		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	2828	14%
Area-wide Sources	2015	10%
On-Road Mobile	5459	27%
Gasoline Vehicles	3514	17%
Diesel Vehicles	1946	10%
Other Mobile	9949	49%
Gasoline Fuel	3338	16%
Diesel Fuel	4593	23%
Other Fuel	2018	10%
Natural Sources	0	0%
Total Statewide	***20251***	***100%***

Table 5-14

2004 Top Ten Counties - Formaldehyde

The top ten counties account for approximately 51 percent of the statewide formaldehyde emissions. The South Coast Air Basin has four of the top ten counties emitting formaldehyde: South Coast portion of Los Angeles County (15 percent of the emissions of formaldehyde statewide), Orange County (five percent), South Coast portion of San Bernardino County (three percent), and South Coast portion of Riverside County (three percent). Collectively, approximately 26 percent of statewide formaldehyde emissions occur in the South Coast Air Basin. The six other counties in the top ten for formaldehyde emissions are: San Diego, Kern, Santa Clara, Alameda, Fresno, and Sacramento. These six counties account for approximately 25 percent of statewide formaldehyde emissions.

Formaldehyde			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	3098	15%
San Diego	San Diego	1324	7%
Kern	San Joaquin Valley	1210	6%
Orange	South Coast	1020	5%
Santa Clara	San Francisco Bay Area	709	4%
Alameda	San Francisco Bay Area	636	3%
Riverside	South Coast	599	3%
Fresno	San Joaquin Valley	590	3%
San Bernardino	South Coast	564	3%
Sacramento	Sacramento Valley	541	3%

Table 5-15

Formaldehyde

Air Quality and Health Risk

The ARB routinely monitors formaldehyde concentrations in the ambient air, and statewide annual average concentrations and associated health risk are available for 1990 through 2003. However, values prior to 1996 are uncertain because the data were based on a method that underestimated the actual concentrations. A method change in 1996 corrected this problem, but a correction factor could not be developed for the earlier data. While the data prior to the method change are included here for completeness, they are not directly comparable to data collected during the later years.

The trend graph for formaldehyde, shown in Figure 5-8, shows a great deal of variability. During 1990 through 1992, there is a general drop in ambient concentrations, and then values steadily increase from 1993 through 1996. During 1996 through 2003, values fluctuate, but do not change substantially. It may take a few years to see if a long-term trend exists. To examine the trend in formaldehyde using available data while minimizing the influences of weather on the trend, the statewide average formaldehyde concentration for 1996-1998 was compared to that for 2001-2003 (note that formaldehyde data prior to 1996 are not reliable). The result is a 10 percent increase in both concentration and health risk. Note that health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years. During 2003, there was an estimated risk of 23 excess cancer cases per million people from formaldehyde alone. Based on data for all ten TACs presented in this almanac, formaldehyde ranks fifth in terms of health risk. As with other TACs, the health risk is not spread evenly throughout the State, so in some areas the health risk is higher than the statewide average while in other areas, the health risk is lower.

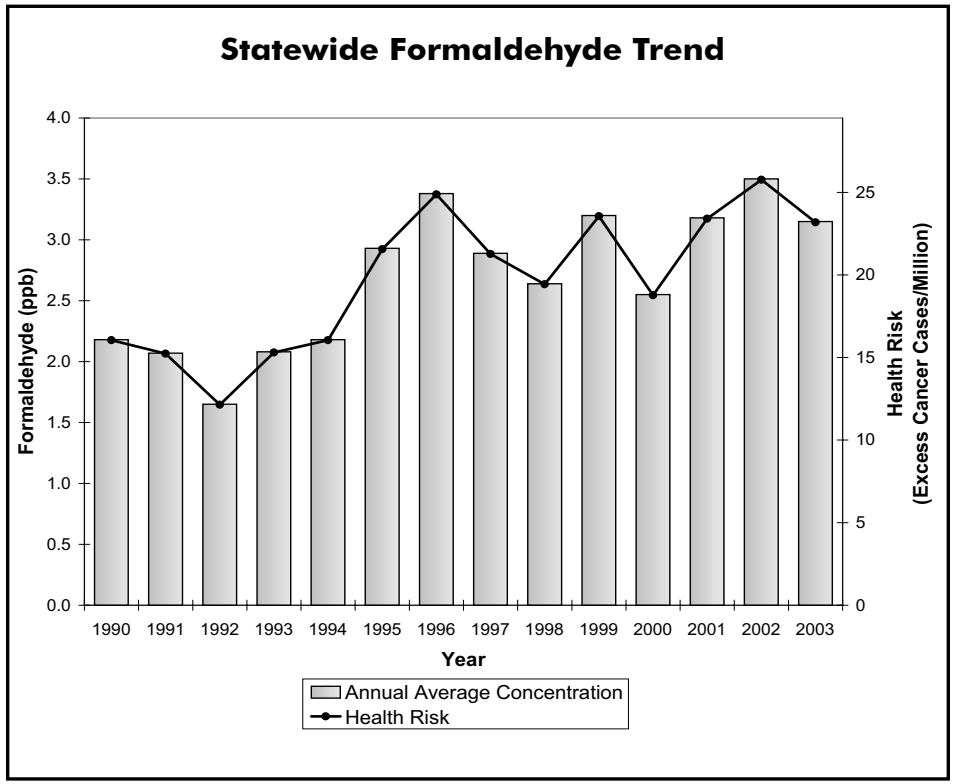

Figure 5-8

Although formaldehyde is emitted by both stationary and mobile sources, mobile sources are, by far, the largest contributors. The ARB adopted the Low Emissions/Clean Fuels Regulations in 1990, and these regulations are expected to continue to reduce formaldehyde emissions from cars and light-duty trucks.

While ambient outdoor formaldehyde concentrations are expected to decline, formaldehyde concentrations indoors are generally higher.

This is because many building materials, consumer products, and fabrics emit formaldehyde. As a result, indoor formaldehyde levels are expected to remain higher than outdoor levels because of new materials brought into homes, as a consequence of remodeling or purchasing new furnishings. Other indoor combustion sources such as wood and gas stoves, kerosene heaters, and cigarettes also contribute to indoor formaldehyde levels, although intermittently.

Methylene Chloride

2004 Statewide Emission Inventory

The ARB identified methylene chloride as a Toxic Air Contaminant in 1987 under California's TAC program. In California, methylene chloride has been identified as a carcinogen. In addition, chronic exposure can lead to bone marrow, hepatic, and renal toxicity.

Methylene chloride is used as a solvent, a blowing and cleaning agent in the manufacture of polyurethane foam and plastic fabrication, and as a solvent in paint stripping operations. Although methylene chloride is used in some aerosol consumer products (e.g., aerosol paints and automotive products), most consumer product manufacturers have voluntarily phased out its use. Paint removers account for the largest use of methylene chloride in California, where methylene chloride is the main ingredient in many paint stripping formulations. Plastic product manufacturers, manufacturers of synthetics, and aircraft and parts manufacturers are stationary sources reporting emissions of methylene chloride. These sources contribute approximately 52 percent of the statewide methylene chloride emissions. Area-wide sources contribute approximately 48 percent. The primary area-wide sources include consumer products such as paint removers and strippers and automotive brake cleaners.

Methylene Chloride		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	3995	52%
Area-wide Sources	3642	48%
On-Road Mobile	0	0%
Gasoline Vehicles	0	0%
Diesel Vehicles	0	0%
Other Mobile	0	0%
Gasoline Fuel	0	0%
Diesel Fuel	0	0%
Other Fuel	0	0%
Natural Sources	0	0%
Total Statewide	***7637***	***100%***

Table 5-16

2004 Top Ten Counties - Methylene Chloride

The top ten counties account for approximately 76 percent of the statewide methylene chloride emissions. The South Coast Air Basin has four of the top ten counties emitting methylene chloride: South Coast portion of Los Angeles County (35 percent of the emissions of methylene chloride statewide), Orange County (14 percent), South Coast portion of San Bernardino County (six percent), and South Coast portion of Riverside County (three percent). Collectively, approximately 58 percent of statewide methylene chloride emissions occur in the South Coast Air Basin. Three counties in the San Francisco Bay Area Air Basin contribute approximately nine percent: Santa Clara County (four percent), Alameda County (three percent), and Contra Costa (two percent). The three other counties in the top ten for methylene chloride emissions are: San Diego, Sacramento, and Ventura. Together, these three counties account for approximately nine percent of statewide methylene chloride emissions.

Methylene Chloride			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	2647	35%
Orange	South Coast	1083	14%
San Bernardino	South Coast	472	6%
San Diego	San Diego	378	5%
Santa Clara	San Francisco Bay Area	324	4%
Riverside	South Coast	266	3%
Alameda	San Francisco Bay Area	259	3%
Sacramento	Sacramento Valley	176	2%
Ventura	South Central Coast	158	2%
Contra Costa	San Francisco Bay Area	131	2%

Table 5-17

Methylene Chloride

Air Quality and Health Risk

The ARB routinely monitors methylene chloride in the ambient air. The trend graph in Figure 5-9 shows some variability, particularly during the early years. However, there is an overall downward trend, and the drop during 2001 through 2003 is substantial. To examine the trend in methylene chloride while minimizing the influences of weather on the trend, the statewide average methylene chloride concentration for 1990-1992 was compared to that for 2001-2003. The result is a 70 percent decrease in both concentration and health risk. Of the ten compounds presented in this almanac, methylene chloride presents the lowest health risk, on a statewide basis. However, any level of risk is a concern from a public health standpoint. During 2003, there was an estimated risk of one excess cancer case per million people. Health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years.

In California, paint removers account for the largest use of methylene chloride, which is the primary ingredient in paint stripping formulations used for industrial, commercial, military, and domestic applications. Because methylene chloride is also a constituent in many consumer products, including aerosol paints and automotive products, short-term indoor concentrations may be several orders of magnitude higher than the ambient outdoor concentrations. Many manufacturers of consumer products are voluntarily phasing-out their use of methylene chloride. In addition, in the case of aerosol paints, use will be restricted by a provision in the ARB's "Regulation for Reducing Volatile Organic Compound (VOC) Emissions from Aerosol Coating Products," adopted in March 1995. These regulations should help to further reduce ambient outdoor concentrations and health risks.

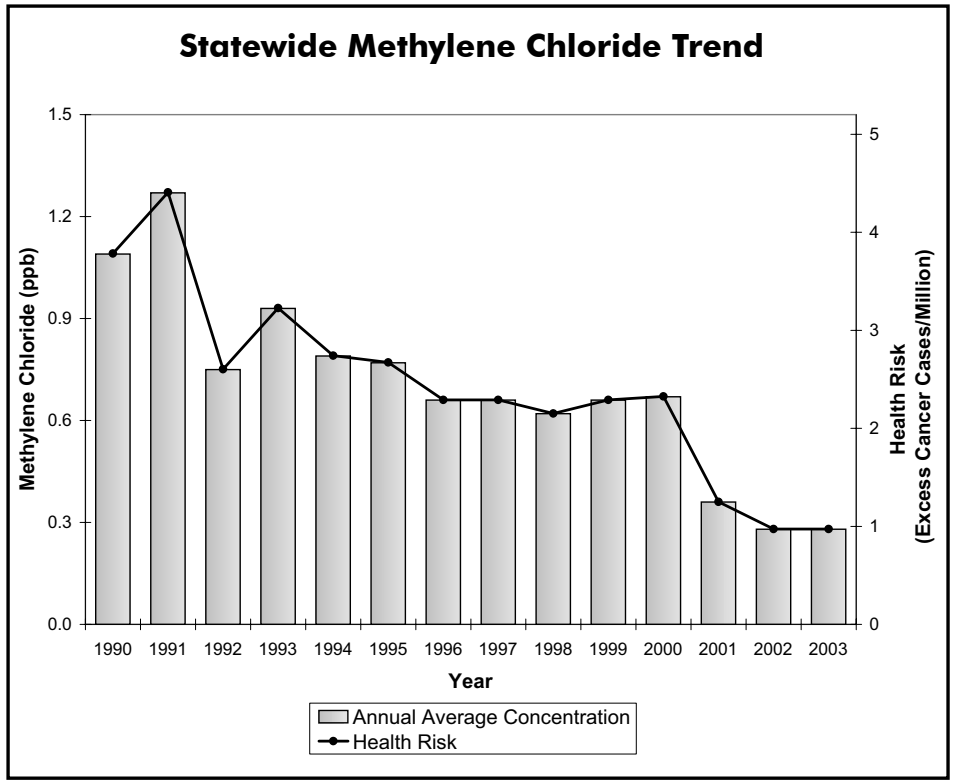

Figure 5-9

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Perchloroethylene

2004 Statewide Emission Inventory

The ARB identified perchloroethylene as a Toxic Air Contaminant in 1991 under California's TAC program (AB 1807). In California, perchloroethylene has been identified as a carcinogen. Perchloroethylene vapors are irritating to the eyes and respiratory tract. Following chronic exposure, workers have shown signs of liver toxicity, as well as kidney dysfunction and neurological effects.

Perchloroethylene is used as a solvent, primarily in dry cleaning operations. Perchloroethylene is also used in degreasing operations, paints and coatings, adhesives, aerosols, specialty chemical production, printing inks, silicones, rug shampoos, and laboratory solvents. In California, the stationary sources that have reported emissions of perchloroethylene are dry cleaning plants, aircraft part and equipment manufacturers, and fabricated metal product manufacturers. These stationary sources account for 68 percent of the statewide emissions of perchloroethylene. Area-wide sources contribute approximately 32 percent. The primary area-wide sources include consumer products such as automotive brake cleaners and tire sealants and inflators.

Perchloroethylene		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	4217	68%
Area-wide Sources	2028	32%
On-Road Mobile	0	0%
Gasoline Vehicles	0	0%
Diesel Vehicles	0	0%
Other Mobile	0	0%
Gasoline Fuel	0	0%
Diesel Fuel	0	0%
Other Fuel	0	0%
Natural Sources	0	0%
Total Statewide	***6244***	***100%***

Table 5-18

2004 Top Ten Counties - Perchloroethylene

The top ten counties account for approximately 71 percent of the statewide perchloroethylene emissions. The South Coast Air Basin has four of the top ten counties emitting perchloroethylene: South Coast portion of Los Angeles County (29 percent of the emissions of perchloroethylene statewide), Orange County (nine percent), South Coast portion of San Bernardino County (four percent), and South Coast portion of Riverside County (three percent). Collectively, approximately 45 percent of statewide perchloroethylene emissions occur in the South Coast Air Basin. San Diego County contributes approximately 10 percent. The five other counties in the top ten for perchloroethylene emissions are: Sacramento, Santa Clara, Alameda, Fresno, and San Joaquin. These five counties account for approximately 16 percent of statewide perchloroethylene emissions.

Perchloroethylene			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	1819	29%
San Diego	San Diego	638	10%
Orange	South Coast	566	9%
Sacramento	Sacramento Valley	255	4%
San Bernardino	South Coast	243	4%
Santa Clara	San Francisco Bay Area	226	4%
Alameda	San Francisco Bay Area	199	3%
Riverside	South Coast	183	3%
Fresno	San Joaquin Valley	179	3%
San Joaquin	San Joaquin Valley	117	2%

Table 5-19

Perchloroethylene

Air Quality and Health Risk

The ARB routinely monitors perchloroethylene concentrations in the ambient air. Although the trend graph for perchloroethylene shows some variability, there is an overall downward trend. To examine the trend in perchloroethylene while minimizing the influences of weather on the trend, the statewide average perchloroethylene concentration for 1990-1992 was compared to that for 2001-2003. The result is a 71 percent decrease in both concentration and health risk. Figure 5-10 shows annual average statewide perchloroethylene concentrations and the associated health risk for 1990 through 2003. No data are shown for 1999 because complete and representative data are not available. During 2003, there was an estimated risk of two excess cancer cases per million people. Based on this, perchloroethylene ranks ninth out of the ten compounds presented in this almanac. Health risk is based on the annual average concentration and represents the estimated risk of excess cancer cases per million people exposed over a 70-year lifetime at the specified concentration level.

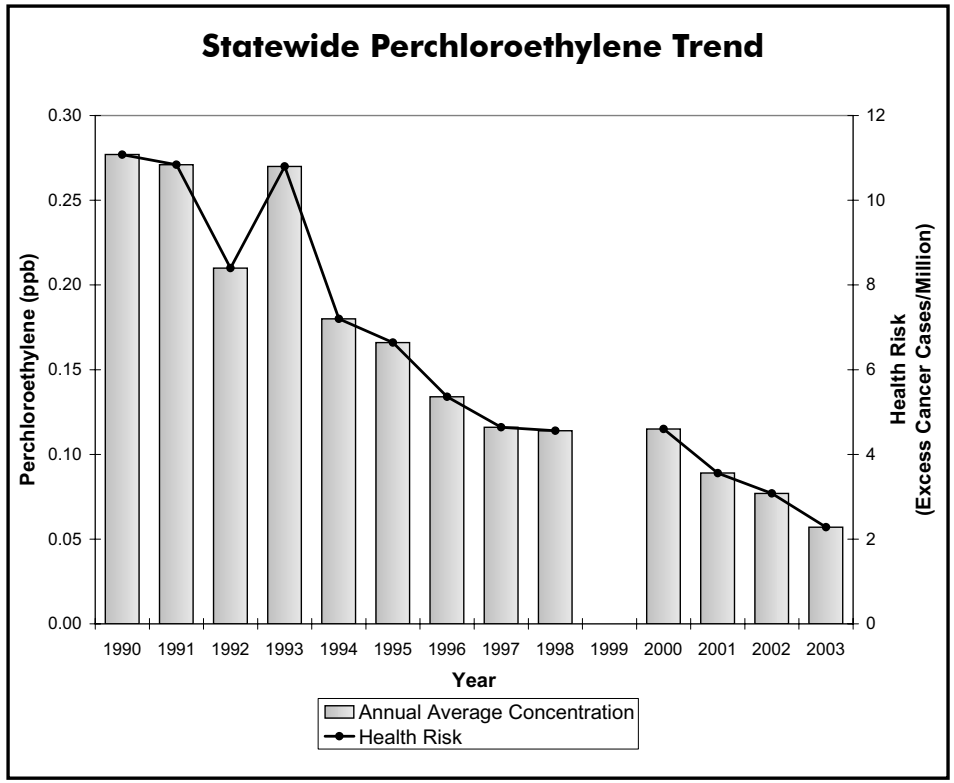

Figure 5-10

When the ARB identified perchloroethylene as a TAC in October 1991, the ARB estimated that 60 percent of perchloroethylene came from dry cleaning operations. Examination of industry practices suggested the potential for significant reductions of emissions. The ARB focused control efforts on that industry and adopted a control measure governing the use of perchloroethylene in dry cleaning operations in October, 1993. The final deadline for compliance was 1998. In addition to requiring emission controls, the ARB has worked with industry to provide training for industry personnel on improved practices and methods for reducing emissions. In the near future, the most significant factor affecting emissions will most likely be a continued reduction as more dry cleaning operations modify or replace older equipment. In the long-term, increasing population in California may lead to increased demand for services and products using perchloroethylene, which may increase emissions from dry cleaners. However, the ARB has developed control measures that prohibit the use of perchloroethene in automotive products, aerosol adhesives, and aerosol coatings.

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Diesel Particulate Matter

2004 Statewide Emission Inventory

The ARB identified the particulate matter (PM) emissions from diesel-fueled engines as a TAC in August 1998 under California's TAC program. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk.

Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about five percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report diesel PM emissions also include heavy construction (except highway), manufacturers of asphalt paving materials and blocks, and electrical generation.

Readers may note that the stationary source diesel PM emission estimates differ from those presented in previous editions of the almanac and in the ARB's October 2000 report entitled: *"Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles"* (Diesel Risk Reduction Plan). This is because they incorporate more recent data and have been calculated with updated methodologies developed for new regulations. These regulations are those that were recommended in the Diesel Risk Reduction Plan. The on-road mobile source emissions cited in the Diesel Risk Reduction Plan are based on an earlier version of EMFAC 2001 (EMFAC 1.99(f) 6/26/00) and the other mobile inventory includes revised estimates for ship diesel PM emissions.

Diesel PM		
Emissions Source	**tons/year**	**Percent State**
Stationary Sources	1299	5%
Area-wide Sources	0	0%
On-Road Mobile	5917	24%
Gasoline Vehicles	0	0%
Diesel Vehicles	5917	24%
Other Mobile	17282	71%
Gasoline Fuel	0	0%
Diesel Fuel	17282	71%
Other Fuel	0	0%
Natural Sources	0	0%
Total Statewide	***24497***	***100%***

Table 5-20

2004 Top Ten Counties - Diesel Particulate Matter

The top ten counties account for approximately 56 percent of the statewide diesel particulate matter emissions. The South Coast Air Basin has four of the top ten counties emitting diesel particulate matter: South Coast portion of Los Angeles County (18 percent of the emissions of diesel particulate matter statewide), Orange County (seven percent), South Coast portion of Riverside County (four percent), and the South Coast portion of San Bernardino County (three percent). Collectively, approximately 32 percent of statewide diesel particulate matter emissions occur in the South Coast Air Basin. San Diego County contributes approximately six percent, and Fresno County contributes approximately four percent. Three counties in the San Francisco Bay Area Air Basin contribute 11 percent: Alameda (four percent), Santa Clara (four percent), and San Francisco (three percent).

Diesel PM			
County	**Air Basin**	**tons/year**	**Percent**
Los Angeles	South Coast	4490	18%
Orange	South Coast	1670	7%
San Diego	San Diego	1527	6%
Fresno	San Joaquin Valley	1006	4%
Riverside	South Coast	996	4%
Alameda	San Francisco Bay Area	914	4%
Santa Clara	San Francisco Bay Area	904	4%
San Bernardino	South Coast	795	3%
San Francisco	San Francisco Bay Area	764	3%
Kern	San Joaquin Valley	749	3%

Table 5-21

Diesel Particulate Matter

Air Quality and Health Risk

The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. More than 40 diesel exhaust components are listed by the State and federal governments as toxic air contaminants or hazardous air pollutants. Most researchers believe that diesel PM contributes the majority of the risk from exposure to diesel exhaust because the particles carry many of the harmful organics and metals present in the exhaust.

Unlike the other toxic air contaminants presented in this almanac, the ARB does not monitor diesel PM because there is no routine method for monitoring ambient concentrations. However, the ARB made a preliminary estimation of diesel PM concentrations for the State's 15 air basins and for the State as a whole using a PM-based exposure method. The method uses the ARB emission inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies with chemical speciation of ambient data. These data were used, along with receptor modeling techniques, to estimate statewide outdoor concentrations of diesel PM. The ARB subsequently updated the original statewide estimates based on the ratio between the previous estimate for 1990 and the most recent diesel PM emission inventory for the year 1990. The details of the methodology are described in Appendix VI to the ARB report entitled: *"Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles,"* (Risk Reduction Plan or Plan) dated October, 2000.

The updated statewide population-weighted average diesel PM concentrations and health risk for various years are shown in Figure 5-11. The average statewide concentration for 1990 was estimated at 3.0 micrograms per cubic meter ($\mu g/m^3$). This is associated with a health risk of 900 excess cancer cases per million people exposed over a 70-year lifetime. The estimates for 2000 show a 40 percent drop from 1990, with a concentration of 1.8 $\mu g/m^3$ and an associated health risk of 540 excess cancer cases per million people. In addition, the ARB estimated population-weighted concentrations for 2010 and 2020. Two estimates are given for 2010 and 2020: one reflecting the estimated ambient concentrations without implementing the Risk Reduction Plan and one reflecting the estimated ambient concentra-

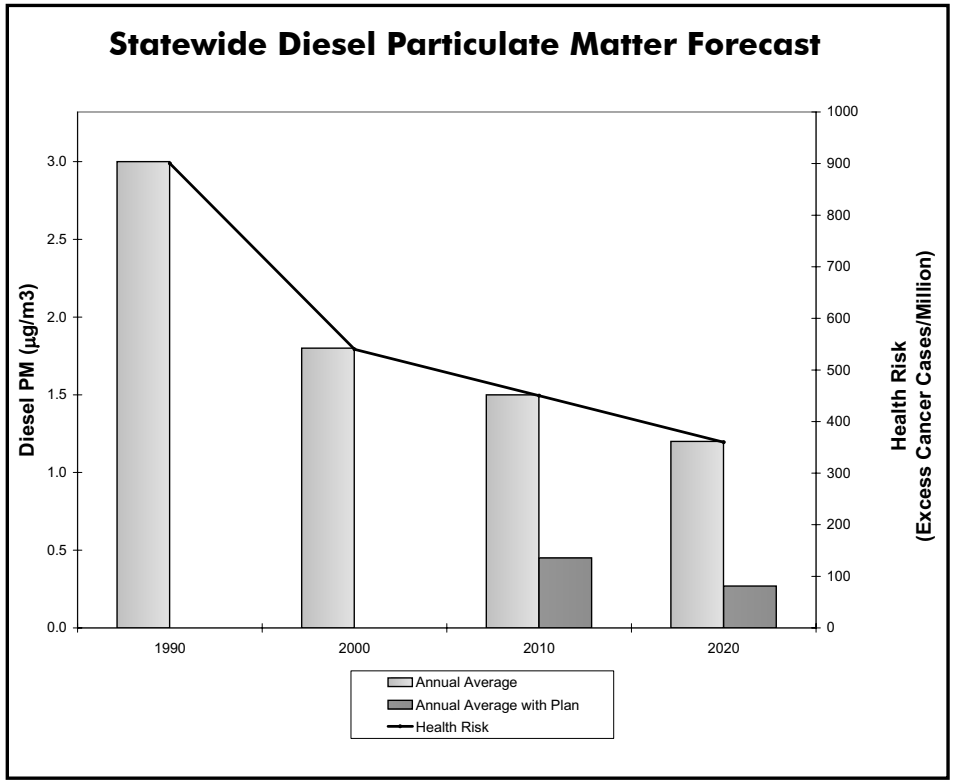


Figure 5-11

tions with implementation of control measures in the Risk Reduction Plan. These future year estimates are based on linear extrapolations from the 1990 emissions inventory and linear rollback techniques. It is important to note that the estimated risk from diesel PM is higher than the risk from all other toxic air contaminants combined, and this TAC poses the most significant risk to California's citizens. In fact, the ARB estimates that 70 percent of the known statewide cancer risk from outdoor air toxics is attributable to diesel PM.

The Risk Reduction Plan provides a mechanism for combating the diesel PM problem. Without implementing the Plan, concentrations in 2010 and 2020 are estimated to drop by only about 17 percent and 33 percent, respectively, from the estimated year 2000 level. However, the goal of the Plan is to reduce concentrations by 75 percent by 2010 and 85 percent by 2020. The key elements of the Plan are to clean up existing engines through engine retrofit emission control devices, to adopt stringent standards for new diesel engines, and to lower the sulfur content of diesel fuel to protect new, and very effective, advanced technology emission control devices on diesel engines. When fully implemented, the Risk Reduction Plan will significantly reduce emissions from both old and new diesel-fueled motor vehicles and from stationary sources that burn diesel fuel. In addition to these strategies, the ARB continues to promote the use of alternative fuels and electrification. As a result of these actions, diesel PM concentrations and associated health risks should continue to decline.

South Coast Air Basin

2004 Emission Inventory by Compound

Acetaldehyde

Approximately 94 percent of the emissions of acetaldehyde are from mobile sources.

South Coast - Acetaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	17	1%	0%
Area-wide Sources	86	5%	1%
On-Road Mobile	605	37%	8%
Gasoline Vehicles	270	16%	4%
Diesel Vehicles	335	20%	5%
Other Mobile	938	57%	13%
Gasoline Fuel	238	14%	3%
Diesel Fuel	695	42%	9%
Other Fuel	4	0%	0%
Natural Sources	0	0%	0%
Total	1645	100%	22%
Total Statewide	**7372**		

Table 5-22

Benzene

The primary sources of benzene emissions in the South Coast Air Basin are mobile sources (approximately 87 percent).

South Coast - Benzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	508	12%	4%
Area-wide Sources	44	1%	0%
On-Road Mobile	2293	56%	17%
Gasoline Vehicles	2202	53%	17%
Diesel Vehicles	91	2%	1%
Other Mobile	1285	31%	10%
Gasoline Fuel	1092	26%	8%
Diesel Fuel	189	5%	1%
Other Fuel	4	0%	0%
Natural Sources	0	0%	0%
Total	4130	100%	31%
Total Statewide	**13183**		

Table 5-23

1,3-Butadiene

Approximately 93 percent of the emissions of 1,3-butadiene are from mobile sources.

South Coast - 1,3-Butadiene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	7	1%	0%
Area-wide Sources	39	5%	1%
On-Road Mobile	470	58%	16%
Gasoline Vehicles	461	57%	15%
Diesel Vehicles	9	1%	0%
Other Mobile	281	35%	9%
Gasoline Fuel	263	32%	9%
Diesel Fuel	18	2%	1%
Other Fuel	< 1	0%	0%
Natural Sources	17	2%	1%
Total	815	100%	27%
Total Statewide	**3030**		

Table 5-24

Carbon Tetrachloride

Stationary sources, such as chemical manufacturers and petroleum refineries, account for all of the emissions of carbon tetrachloride.

South Coast - Carbon Tetrachloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.39	100%	17%
Area-wide Sources	0	0%	0%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	0.39	100%	17%
Total Statewide	**2.30**		

Table 5-25

Chromium, Hexavalent

Approximately 80 percent of the hexavalent chromium emissions are from stationary sources such as electrical generation, aircraft and parts manufacturing, and fabricated metal product manufacturing.

South Coast - Chromium, Hexavalent			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.41	80%	23%
Area-wide Sources	0	0%	0%
On-Road Mobile	0.05	10%	3%
Gasoline Vehicles	0.05	9%	3%
Diesel Vehicles	< .01	0%	0%
Other Mobile	0.05	10%	3%
Gasoline Fuel	0.05	10%	3%
Diesel Fuel	< .01	1%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	0.51	100%	29%
Total Statewide	**1.73**		

Table 5-26

para-Dichlorobenzene

Most of the emissions of *para*-dichlorobenzene are from consumer products (non-aerosol insect repellants and solid/gel air fresheners).

South Coast - *para*-DiChlorobenzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	9	1%	0%
Area-wide Sources	786	99%	42%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	795	100%	42%
Total Statewide	**1879**		

Table 5-27

Formaldehyde

Approximately 81 percent of the formaldehyde emissions are from mobile sources.

South Coast - Formaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	802	15%	4%
Area-wide Sources	179	3%	1%
On-Road Mobile	1900	36%	9%
Gasoline Vehicles	1230	23%	6%
Diesel Vehicles	670	13%	3%
Other Mobile	2401	45%	12%
Gasoline Fuel	990	19%	5%
Diesel Fuel	1392	26%	7%
Other Fuel	19	0%	0%
Natural Sources	0	0%	0%
Total	5281	100%	26%
Total Statewide	**20251**		

Table 5-28

Methylene Chloride

Approximately 66 percent of the emissions of methylene chloride are from stationary sources such as plastic product manufacturers, manufacturers of synthetics, and aircraft and parts manufacturers.

South Coast - Methylene Chloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	2930	66%	38%
Area-wide Sources	1538	34%	20%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	4468	100%	59%
Total Statewide	**7637**		

Table 5-29

Perchloroethylene

Approximately 70 percent of the emissions of perchloroethylene are from dry cleaning plants, manufacturers of aircraft parts and fabricated metal parts, and other stationary sources.

South Coast - Perchloroethylene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	1955	70%	31%
Area-wide Sources	856	30%	14%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	2810	100%	45%
Total Statewide	**6244**		

Table 5-30

Diesel Particulate Matter

Approximately 97 percent of emissions of diesel particulate matter are from mobile sources.

South Coast - Diesel PM			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	222	3%	1%
Area-wide Sources	0	0%	0%
On-Road Mobile	2139	27%	9%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	2139	27%	9%
Other Mobile	5591	70%	23%
Gasoline Fuel	0	0%	0%
Diesel Fuel	5591	70%	23%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	7952	100%	32%
Total Statewide	**24497**		

Table 5-31

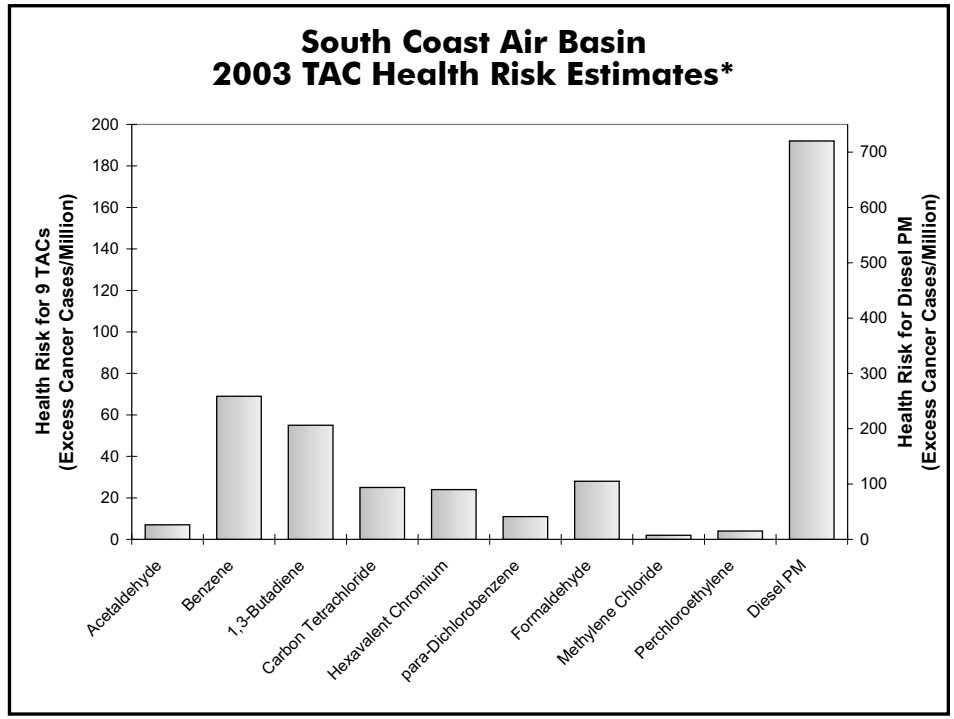
South Coast Air Basin

Air Quality and Health Risk

From 1990 through 2003, the ARB monitored ambient toxics concentrations at seven sites in the South Coast Air Basin. Data are available for most of the years at sites located in Burbank, Los Angeles, North Long Beach, and Riverside. Measurements for 1990 through 1997 are also available from a site at Upland. In addition, there are data for 1998 at a site in Fontana. During December 1999, monitoring activities for most of the TACs at Fontana were relocated to Azusa, and this site is now part of the statewide ambient TAC monitoring network. Annual average concentrations and associated health risks for the top ten TACs individually, as well as their cumulative health risk for the South Coast Air Basin, are shown in Table 5-32. Data for individual sites are listed in Appendix C.

Two special study sites, located in the Boyle Heights and Wilmington areas of Los Angeles, were operated between February 2001 and May 2002 (Boyle Heights) and between May 2001 and July 2002 (Wilmington). Monitoring was conducted for both TACs and criteria air pollutants. Limited monitoring of a few pollutants was conducted at two satellite sites in Boyle Heights from March 2001 through October 2001, and at one satellite site in Wilmington from November 2001 through May 2002. The Boyle Heights and Wilmington communities are both located near major freeways. The Wilmington community is also located near oil refineries and port facilities. Although not included in this almanac, data from Boyle Heights, Wilmington, and other community monitoring studies are being used in support of the ARB's Community Health Program. Copies of the full reports are available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm*.

Figure 5-12 shows 2003 health risks posed by the top ten TACs individually for the South Coast Air Basin. As indicated on the graph, the health risk data reflect the year of 2003, except for diesel PM. Data for this TAC reflect the year 2000, the most recent year for which complete and representative data are available. It is important to note that health risks shown here are based on an annual average concentration for all sites in the air basin. The health risk at individual locations may be higher or lower than the average for the air basin, depending on the impact of nearby sources.



** Data for diesel PM reflect 2000; data for all other TACs reflect 2003.*

Figure 5-12

Of the ten TACs considered in this almanac, diesel PM presents the most substantial health risk. In the South Coast Air Basin, the estimated health risk from diesel PM is 720 excess cancer cases per million people. Although the health risk is higher than the statewide average, it represents a 33 percent drop between 1990 and 2000. Although much smaller by comparison, 1,3-butadiene and benzene also pose substantial health risks. Since 1990, their health risks have been reduced by 59 percent and 73 percent, respectively. Perchloroethylene and methylene chloride also show substantial reductions of 72 percent and 58 percent, respectively. Overall, in South Coast Air Basin, all TACs except formaldehyde have been reduced since 1990, but their health risks are still higher than the statewide levels.

It is important to note that there may be other compounds that pose a significant risk but are not monitored. Reductions in ambient TAC concentrations and health risks should continue, as new rules and regulations are implemented to control toxic air contaminants.

South Coast Air Basin

Annual Average Concentrations and Health Risks

South Coast Air Basin Toxic Air Contaminants-Annual Average Concentrations and Health Risks															
TAC*	**Conc./Risk**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	2.46	3.00	2.46	2.67	2.30	0.97	2.08	1.77	1.54	1.63	1.26	1.47	1.41	1.47
	Health Risk	12	15	12	13	11	5	10	9	7	8	6	7	7	7
Benzene	Annual Avg	3.42	2.91	2.61	2.17	2.40	1.89	1.45	1.34	1.25	1.20	0.97	0.86	0.77	0.75
	Health Risk	317	269	242	201	222	175	134	124	116	111	90	80	71	69
1,3-Butadiene	Annual Avg	0.53	0.45	0.50	0.57	0.50	0.46	0.39	0.38	0.35	0.33	0.25	0.25	0.21	0.15
	Health Risk	200	170	187	212	187	173	146	142	133	123	94	94	79	55
Carbon Tetrachloride	Annual Avg	0.14	0.13		0.11		0.10	0.08		0.11		0.10	0.09	0.09	0.09
	Health Risk	36	35		28		27	21		30		25	23	24	25
Chromium, Hexavalent	Annual Avg			0.39	0.29	0.29	0.46	0.18	0.17	0.15	0.14	0.18		0.18	0.16
	Health Risk			59	43	43	69	27	25	22	22	27		27	24
para-Dichlorobenzene	Annual Avg		0.17	0.19	0.17	0.13	0.17	0.11	0.13			0.13	0.15	0.16	0.17
	Health Risk		11	13	11	8	11	7	9			9	10	11	11
Formaldehyde	Annual Avg	2.92	3.08	2.22	3.22	3.14	3.57	5.06	4.47	3.79	4.06	3.13	4.13	4.16	3.83
	Health Risk	22	23	16	24	23	26	37	33	28	30	23	30	31	28
Methylene Chloride	Annual Avg	1.86	1.51	0.90	1.23	1.10	1.28	0.95	1.14	0.85	0.92	0.83	0.63	0.57	0.59
	Health Risk	6	5	3	4	4	4	3	4	3	3	3	2	2	2
Perchloroethylene	Annual Avg	0.58	0.55	0.41	0.45	0.39	0.36	0.32	0.27	0.26		0.21	0.18	0.15	0.11
	Health Risk	23	22	16	18	16	15	13	11	10		8	7	6	4
*Diesel Particulate Matter***	*Annual Avg*	*(3.6)*					*(2.7)*					*(2.4)*			
	Health Risk	*(1080)*					*(810)*					*(720)*			
Average Basin Risk***	Without Diesel PM	616	550	548	554	514	505	398	357	349	297	285	253	258	225
	With Diesel PM	***(1696)***					***(1315)***					***(1005)***			

* Concentrations for Hexavalent Chromium are expressed as ng/m3 and concentrations for diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as parts per billion.

** Diesel PM concentration estimates are based on receptor modeling techniques, and estimates are available only for selected years.

*** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. It reflects only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which we do not monitor or have health risk information. Additional information about interpreting the toxic air contaminant air quality trends can be found in Chapter 1, *Interpreting the Emission and Air Quality Statistics.*

Table 5-32

San Francisco Bay Area Air Basin

2004 Emission Inventory by Compound

Acetaldehyde

Approximately 75 percent of the emissions of acetaldehyde are from mobile sources. Area-wide sources such as residential wood combustion and agricultural burning contribute approximately 21 percent.

San Francisco Bay Area - Acetaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	54	4%	1%
Area-wide Sources	275	21%	4%
On-Road Mobile	332	25%	5%
Gasoline Vehicles	151	11%	2%
Diesel Vehicles	181	14%	2%
Other Mobile	660	50%	9%
Gasoline Fuel	103	8%	1%
Diesel Fuel	406	31%	6%
Other Fuel	150	11%	2%
Natural Sources	0	0%	0%
Total	1321	100%	18%
Total Statewide	**7372**		

Table 5-33

Benzene

Mobile sources are the primary sources of benzene emissions in the San Francisco Bay Area Air Basin (approximately 90 percent).

San Francisco Bay Area - Benzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	160	8%	1%
Area-wide Sources	34	2%	0%
On-Road Mobile	1292	60%	10%
Gasoline Vehicles	1243	58%	9%
Diesel Vehicles	49	2%	0%
Other Mobile	650	30%	5%
Gasoline Fuel	476	22%	4%
Diesel Fuel	111	5%	1%
Other Fuel	63	3%	0%
Natural Sources	0	0%	0%
Total	2136	100%	16%
Total Statewide	**13183**		

Table 5-34

1,3-Butadiene

Essentially all of the emissions of 1,3-butadiene are from mobile sources.

San Francisco Bay Area - 1,3-Butadiene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	6	1%	0%
Area-wide Sources	2	0%	0%
On-Road Mobile	270	59%	9%
Gasoline Vehicles	265	57%	9%
Diesel Vehicles	5	1%	0%
Other Mobile	182	39%	6%
Gasoline Fuel	114	25%	4%
Diesel Fuel	11	2%	0%
Other Fuel	57	12%	2%
Natural Sources	1	0%	0%
Total	461	100%	15%
Total Statewide	**3030**		

Table 5-35

Carbon Tetrachloride

Stationary sources, such as chemical and petroleum refineries, account for all of the emissions of carbon tetrachloride.

San Francisco Bay Area - Carbon Tetrachloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	1.53	100%	65%
Area-wide Sources	0	0%	0%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	1.53	100%	65%
Total Statewide	**2.30**		

Table 5-36

Chromium, Hexavalent

Approximately 75 percent of the hexavalent chromium emissions are from other mobile sources. Stationary sources such as electrical generation and fabricated metal product manufacturing contribute approximately four percent.

San Francisco Bay Area - Chromium, Hexavalent			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< .01	4%	0%
Area-wide Sources	0	0%	0%
On-Road Mobile	0.02	22%	1%
Gasoline Vehicles	0.02	21%	1%
Diesel Vehicles	< .01	0%	0%
Other Mobile	0.08	75%	5%
Gasoline Fuel	0.02	19%	1%
Diesel Fuel	< .01	1%	0%
Other Fuel	0.06	54%	3%
Natural Sources	0	0%	0%
Total	0.11	100%	6%
Total Statewide	**1.73**		

Table 5-37

para-Dichlorobenzene

Emissions of *para*-dichlorobenzene are essentially all from consumer products (non-aerosol insect repellants and solid/gel air fresheners).

San Francisco Bay Area - *para*-DiChlorobenzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< 1	0%	0%
Area-wide Sources	359	100%	19%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	360	100%	19%
Total Statewide	**1879**		

Table 5-38

Formaldehyde

Approximately 84 percent of the formaldehyde emissions are from mobile sources.

San Francisco Bay Area - Formaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	175	5%	1%
Area-wide Sources	360	11%	2%
On-Road Mobile	1050	32%	5%
Gasoline Vehicles	688	21%	3%
Diesel Vehicles	362	11%	2%
Other Mobile	1728	52%	9%
Gasoline Fuel	425	13%	2%
Diesel Fuel	813	25%	4%
Other Fuel	490	15%	2%
Natural Sources	0	0%	0%
Total	3313	100%	16%
Total Statewide	**20251**		

Table 5-39

Methylene Chloride

Approximately 63 percent of the emissions of methylene chloride are from area-wide sources.

San Francisco Bay Area - Methylene Chloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	419	37%	5%
Area-wide Sources	705	63%	9%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	1124	100%	15%
Total Statewide	**7637**		

Table 5-40

Perchloroethylene

Approximately 56 percent of the emissions of perchloroethylene are from such stationary sources as dry cleaning plants and manufacturers of aircraft parts and fabricated metal parts.

San Francisco Bay Area - Perchloroethylene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	499	56%	8%
Area-wide Sources	390	44%	6%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	888	100%	14%
Total Statewide	**6244**		

Table 5-41

Diesel Particulate Matter

Emissions of diesel particulate matter are primarily from mobile sources.

San Francisco Bay Area - Diesel PM			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	87	2%	0%
Area-wide Sources	0	0%	0%
On-Road Mobile	1102	25%	4%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	1102	25%	4%
Other Mobile	3225	73%	13%
Gasoline Fuel	0	0%	0%
Diesel Fuel	3225	73%	13%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	4414	100%	18%
Total Statewide	**24497**		

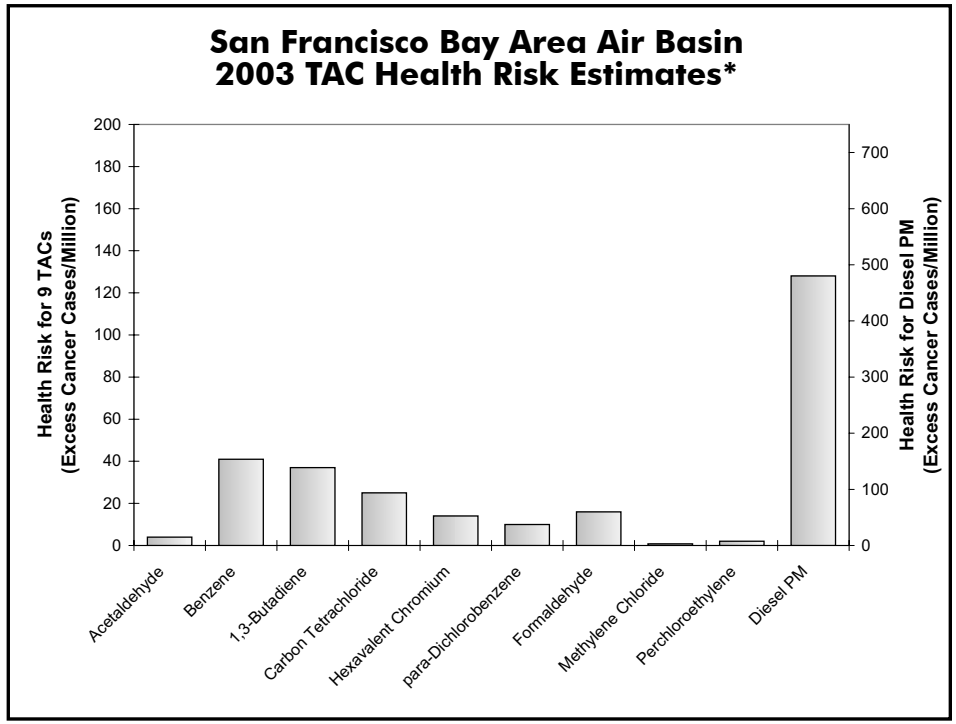
Table 5-42

San Francisco Bay Area Air Basin

Air Quality and Health Risk

From 1990 through 2003, the ARB monitored ambient TAC concentrations at six sites in the San Francisco Bay Area Air Basin. Data for the entire time period are available from sites located in Fremont and San Francisco. San Jose-Fourth Street site has measurements from 1990 through 2001; this site was relocated to San Jose-Jackson Street in mid-2002. Data are also available from a site at Concord from 1990 through 1999. In addition, there was a monitor at Richmond from 1990 through April 1997. This site was relocated to San Pablo and began sampling there in May 1997. At the end of February 2000, TAC monitoring was discontinued at the Concord and San Pablo sites, and additional data from these sites will not be available. Annual average concentration and associated health risk are unavailable for the year during the site move because neither site has a full year of data. Annual average concentrations and health risks for the top ten TACs individually, as well as their cumulative health risk for the San Francisco Bay Area Air Basin, are shown in Table 5-43. Data for individual sites are shown in Appendix C.

Two special study sites, located in the Crockett and Fruitvale/Oakland areas of the San Francisco Bay Area Air Basin, were operated between October 2001 and May 2003 (Crockett) and between November 2001 and April 2003 (Fruitvale). Monitoring was conducted for both TACs and criteria air pollutants. The Crockett community is located near high-risk facilities, including mobile source emissions. Oil refineries and major oil storage facilities are located in nearby cities to Crockett. Crockett is also the location of a major food processing operation and a heavy-rail transfer facility. The Fruitvale community lies between two major freeways that are a significant source of vehicular emissions. The Fruitvale area is also downwind of several industrial operations that are sources of pollution. Although not included in this almanac, data from Crockett, Fruitvale, and other community monitoring studies are being used in support of the ARB's Community Health Program. Copies of the full reports are available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm*.



** Data for diesel PM reflect 2000; data for all other TACs reflect 2003.*

Figure 5-13

Figure 5-13 shows 2003 health risks for the top ten TACs individually for the San Francisco Bay Area Air Basin. As indicated on the graph, the health risk data reflect the year 2003 except for diesel PM. Data for this TAC reflect the year 2000, the most recent year for

which complete and representative data are available. It is important to note that health risks shown here are based on an annual average concentration for all sites in the air basin. The health risk at individual locations may be higher or lower than the average for the air basin, depending on the impact of nearby sources.

Of the ten TACs considered in this almanac, diesel PM poses the greatest health risk in this air basin, 480 excess cancer cases per million people exposed for 70 years. The estimate is slightly lower than the estimated statewide value for the same year, and it represents a 36 percent drop between 1990 and 2000. Aside from diesel PM, 1,3-butadiene and benzene also pose substantial health risks. Since 1990, they have been reduced by 60 percent and 76 percent, respectively. Methylene chloride and perchloroethylene also show significant reductions of 82 percent and 75 percent, respectively. Overall, in the San Francisco Bay Area Air Basin, all TACs except for *para*-dichlorobenzene and formaldehyde show a reduction since 1990.

In general, the average concentrations and associated health risks of the top ten TACs for the San Francisco Bay Area Air Basin are lower than the statewide averages, and they are much lower than those for the South Coast Air Basin. However, it is important to note that there may be other compounds that pose a significant risk but are not monitored. Reductions in ambient level of TACs should continue as additional control measures are implemented.

San Francisco Bay Area Air Basin
Annual Average Concentrations and Health Risks

San Francisco Bay Area Air Basin Toxic Air Contaminants-Annual Average Concentrations and Health Risks															
TAC*	**Conc./Risk**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.30	1.40	1.03	1.31	1.17	0.42	0.83	0.73	0.65	0.76	0.68	0.73	0.63	0.74
	Health Risk	6	7	5	6	6	2	4	4	3	4	3	4	3	4
Benzene	Annual Avg	2.18	1.82	1.49	1.49	1.40	1.26	0.71	0.61	0.71	0.60	0.56	0.43	0.45	0.44
	Health Risk	202	169	138	138	129	116	66	56	66	55	52	39	42	41
1,3-Butadiene	Annual Avg	0.36	0.29	0.28	0.37	0.29	0.28	0.22	0.19	0.22	0.17	0.15	0.13	0.14	0.10
	Health Risk	135	108	103	138	108	104	82	70	82	64	56	50	51	37
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08				0.09	0.09	0.09	0.10
	Health Risk	34	33		29		26	21				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.23	0.20	0.19	0.25	0.13	0.12	0.10	0.10	0.12		0.07	0.10
	Health Risk			34	29	29	37	19	17	15	15	18		11	14
para-Dichlorobenzene	Annual Avg		0.12	0.12	0.12	0.11	0.13	0.14	0.12			0.11	0.14	0.15	0.15
	Health Risk		8	8	8	7	8	9	8			7	9	10	10
Formaldehyde	Annual Avg	1.87	1.73	1.43	1.56	1.66	2.06	2.62	1.85	1.76	2.09	1.77	2.32	2.57	2.22
	Health Risk	14	13	11	11	12	15	19	14	13	15	13	17	19	16
Methylene Chloride	Annual Avg	1.04	2.32	0.65	0.72	0.59	0.60	0.58	0.55			0.53	0.27	0.22	0.22
	Health Risk	4	8	2	2	2	2	2	2			2	1	1	1
Perchloroethylene	Annual Avg	0.20	0.23	0.17	0.13	0.08	0.09	0.07	0.07			0.08	0.06	0.05	0.04
	Health Risk	8	9	7	5	3	4	3	3			3	2	2	2
*Diesel Particulate Matter***	*Annual Avg*	*(2.5)*					*(1.9)*					*(1.6)*			
	Health Risk	*(750)*					*(570)*					*(480)*			
Average Basin Risk* **	Without Diesel PM	403	355	308	366	296	314	225	174	179	153	179	145	163	150
	With Diesel PM	***(1153)***					***(884)***					***(659)***			

* Concentrations for Hexavalent chromium are expressed as ng/m3 and concentrations for diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as parts per billion.

** Diesel PM concentration estimates are based on receptor modeling techniques, and estimates are available only for selected years.

*** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. It reflects only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which we do not monitor or have health risk information. Additional information about interpreting the toxic air contaminant air quality trends can be found in Chapter 1, *Interpreting the Emission and Air Quality Statistics.*

Table 5-43

San Joaquin Valley Air Basin

2004 Emission Inventory by Compound

Acetaldehyde

Approximately 76 percent of the emissions of acetaldehyde are from mobile sources. Area-wide sources such as residential wood combustion account for approximately 17 percent.

San Joaquin Valley - Acetaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	72	6%	1%
Area-wide Sources	195	17%	3%
On-Road Mobile	255	22%	3%
Gasoline Vehicles	87	8%	1%
Diesel Vehicles	168	15%	2%
Other Mobile	617	54%	8%
Gasoline Fuel	71	6%	1%
Diesel Fuel	390	34%	5%
Other Fuel	156	14%	3%
Natural Sources	0	0%	0%
Total	1139	100%	15%
Total Statewide	**7372**		

Table 5-44

Benzene

The primary sources of benzene emissions in the San Joaquin Valley Air Basin are mobile sources (approximately 64 percent) and stationary sources (approximately 35 percent).

San Joaquin Valley - Benzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	656	35%	5%
Area-wide Sources	13	1%	0%
On-Road Mobile	728	38%	6%
Gasoline Vehicles	683	36%	5%
Diesel Vehicles	46	2%	0%
Other Mobile	500	26%	4%
Gasoline Fuel	329	17%	2%
Diesel Fuel	106	6%	1%
Other Fuel	65	3%	0%
Natural Sources	< 1	0%	0%
Total	1899	100%	14%
Total Statewide	**13183**		

Table 5-45

1,3-Butadiene

Approximately 67 percent of the emissions of 1,3-butadiene are from mobile sources.

San Joaquin Valley - 1,3-Butadiene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	3	1%	0%
Area-wide Sources	134	30%	4%
On-Road Mobile	150	34%	5%
Gasoline Vehicles	146	33%	5%
Diesel Vehicles	4	1%	0%
Other Mobile	148	33%	5%
Gasoline Fuel	79	18%	3%
Diesel Fuel	10	2%	0%
Other Fuel	59	13%	2%
Natural Sources	10	2%	0%
Total	446	100%	15%
Total Statewide	**3030**		

Table 5-46

Carbon Tetrachloride

Emissions of carbon tetrachloride are all from stationary sources such as chemical and allied product manufacturers.

San Joaquin Valley - Carbon Tetrachloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< .01	100%	0%
Area-wide Sources	0	0%	0%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	< .01	100%	0%
Total Statewide	**2.30**		

Table 5-47

Chromium, Hexavalent

Approximately 65 percent of the hexavalent chromium emissions are from stationary sources such as electrical generation, aircraft and parts manufacturing, and fabricated metal product manufacturing.

San Joaquin Valley - Chromium, Hexavalent			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.13	65%	7%
Area-wide Sources	0	0%	0%
On-Road Mobile	0.01	7%	1%
Gasoline Vehicles	0.01	7%	1%
Diesel Vehicles	< .01	0%	0%
Other Mobile	0.05	28%	3%
Gasoline Fuel	0.01	6%	1%
Diesel Fuel	< .01	1%	0%
Other Fuel	0.04	21%	2%
Natural Sources	0	0%	0%
Total	0.20	100%	11%
Total Statewide	**1.73**		

Table 5-48

para-Dichlorobenzene

Most of the emissions of *para*-dichlorobenzene are from consumer products (non-aerosol insect repellants and solid/gel air fresheners).

San Joaquin Valley - *para*-DiChlorobenzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	5	2%	0%
Area-wide Sources	184	98%	10%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	189	100%	10%
Total Statewide	**1879**		

Table 5-49

Formaldehyde

Approximately 68 percent of the formaldehyde emissions are from mobile sources.

San Joaquin Valley - Formaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	984	28%	5%
Area-wide Sources	229	6%	1%
On-Road Mobile	732	21%	4%
Gasoline Vehicles	396	11%	2%
Diesel Vehicles	335	10%	2%
Other Mobile	1574	45%	9%
Gasoline Fuel	289	8%	1%
Diesel Fuel	781	22%	4%
Other Fuel	504	14%	4%
Natural Sources	0	0%	0%
Total	3519	100%	19%
Total Statewide	**20251**		

Table 5-50

Methylene Chloride

Approximately 82 percent of the emissions of methylene chloride are from paint removers/strippers, automotive brake cleaners, and other consumer products.

San Joaquin Valley - Methylene Chloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	79	18%	1%
Area-wide Sources	358	82%	5%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	437	100%	6%
Total Statewide	**7637**		

Table 5-51

Perchloroethylene

Approximately 68 percent of the emissions of perchloroethylene are from such stationary sources as dry cleaning plants and manufacturers of aircraft parts and fabricated metal parts.

San Joaquin Valley - Perchloroethylene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	434	68%	7%
Area-wide Sources	200	32%	3%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	635	100%	10%
Total Statewide	**6244**		

Table 5-52

Diesel Particulate Matter

Emissions of diesel particulate matter are from mobile sources (approximately 89 percent) and stationary sources (approximately 12 percent).

San Joaquin Valley - Diesel PM			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	481	12%	2%
Area-wide Sources	0	0%	0%
On-Road Mobile	935	23%	4%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	935	23%	4%
Other Mobile	2708	66%	11%
Gasoline Fuel	0	0%	0%
Diesel Fuel	2708	66%	11%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	4124	100%	17%
Total Statewide	**24497**		

Table 5-53

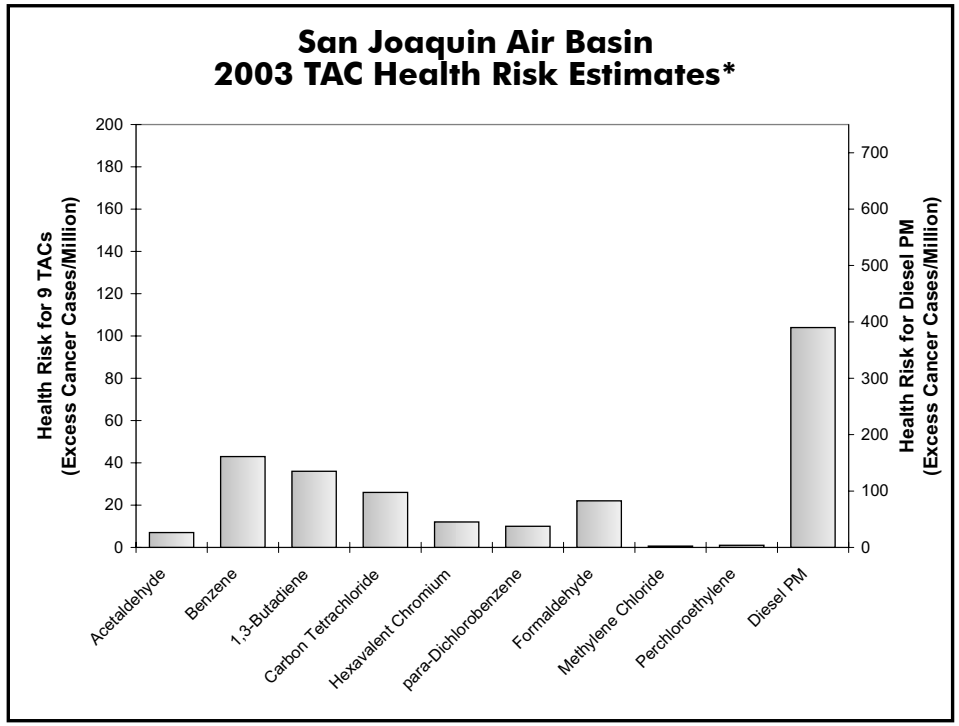
San Joaquin Valley Air Basin

Air Quality and Health Risk

From 1990 through 2003, the ARB monitored ambient TAC concentrations at six sites in the San Joaquin Valley Air Basin. Data for all years are available only for the Stockton site. Data are available for 1991 through 2003 at the Fresno-First Street site, for 1990 through 1993 at the Bakersfield-Chester Avenue site, and for 1995 through 2003 at the Bakersfield-5558 California Avenue site. Data are also available at the Modesto-14th Street site from 1990 through 1999. In addition, limited TAC data are available at the Modesto-I Street site during 1991 to 1997. Annual average concentrations and associated health risks of the top ten TACs individually, as well as their cumulative health risk for the San Joaquin Valley Air Basin, are shown in Table 5-54. Data for individual sites are listed in Appendix C.

A special study site, located in the Fresno area of the San Joaquin Valley Air Basin, was operated between June 2002 and August 2003. Monitoring was conducted for both TACs and criteria air pollutants. This Fresno community is located in a residential neighborhood near sources of motor vehicle pollution. There is a large number of children living in the community. Although not included in the almanac, data from Fresno and other community monitoring studies are being used in support of the ARB's Community Health Program.

Figure 5-14 shows 2003 health risks posed by the top ten TACs individually for the San Joaquin Valley Air Basin. As indicated on the graph, the health risk data reflect the year of 2003 except for diesel PM. Data for this TAC reflect the year 2000, the most recent year for which complete and representative data are available. It is important to note that health risks shown here are based on an annual average concentration for all sites in the air basin. The health risk at individual locations may be higher or lower than the average for the air basin, depending on the impact of nearby sources.



** Data for diesel PM reflect 2000; data for all other TACs reflect 2003.*

Figure 5-14

As in all other areas of the State, the health risk for diesel PM overwhelms the other nine TACs. Based on receptor modeling techniques, the diesel PM health risk in the San Joaquin Valley Air Basin for 2000 is estimated at 390 excess cancer cases per million people exposed over a 70-year lifetime. While this value is lower than the estimated statewide health risk, it is similar to values estimated for other

urbanized areas of the State such as the San Diego Air Basin and the Sacramento Valley Air Basin. Since 1990, the estimated diesel PM concentration and associated health risk has decreased by 50 percent. Among the nine remaining TACs, 1,3-butadiene and benzene pose the greatest health risk. They have been reduced by 61 percent and 74 percent, respectively. Methylene chloride and perchloroethylene also show substantial reductions, and they have been reduced by 70 percent and 66 percent, respectively. Overall, in this air basin, all TACs except *para*-dichlorobenzene and formaldehyde have been reduced since 1990.

In general, the average concentrations and associated health risks of most TACs for the San Joaquin Valley Air Basin are lower than the statewide averages, and they are much lower than those for the South Coast Air Basin. It is important to note that there may be other compounds that pose a significant risk but are not monitored. Reductions in ambient levels of TACs should continue as additional control measures are implemented.

San Joaquin Valley Air Basin
Annual Average Concentrations and Health Risks

San Joaquin Valley Air Basin Toxic Air Contaminants-Annual Average Concentrations and Health Risks															
TAC*	**Conc./Risk**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.94	1.84	1.38	1.73	1.29	0.54	1.28	1.19	1.30	1.56	1.09	1.15	1.24	1.34
	Health Risk	9	9	7	8	6	3	6	6	6	8	5	6	6	7
Benzene	Annual Avg	2.45	2.11	1.36	1.32	1.33	1.16	0.73	0.71	0.76	0.69	0.63	0.54	0.55	0.46
	Health Risk	227	196	126	122	123	107	68	66	71	64	58	50	51	43
1,3-Butadiene	Annual Avg	0.41	0.36	0.24	0.34	0.32	0.26	0.22	0.20	0.23	0.18	0.16	0.15	0.15	0.10
	Health Risk	154	135	89	127	121	99	83	73	88	67	59	56	55	36
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08		0.11		0.10	0.09	0.09	0.10
	Health Risk	34	34		29		26	20		30		25	23	24	26
Chromium, Hexavalent	Annual Avg			0.23	0.21	0.19	0.28	0.13	0.11	0.10	0.10	0.12		0.09	0.08
	Health Risk			34	31	29	42	20	16	15	15	18		13	12
para-Dichlorobenzene	Annual Avg		0.11	0.11	0.13	0.11	0.11	0.10	0.13			0.11	0.13	0.15	0.15
	Health Risk		7	7	9	7	8	7	9			7	9	10	10
Formaldehyde	Annual Avg	2.45	1.81	1.46	1.67	1.80	2.10	2.96	2.77	2.86	3.44	2.61	3.08	3.13	3.02
	Health Risk	18	13	11	12	13	15	22	20	21	25	19	23	23	22
Methylene Chloride	Annual Avg	0.76	0.59	0.55	0.76	0.59	0.61	0.54	0.53	0.52	0.50	0.53	0.27	0.16	0.14
	Health Risk	3	2	2	3	2	2	2	2	2	2	2	1	1	1
Perchloroethylene	Annual Avg	0.13	0.13	0.10	0.47	0.07	0.07	0.07	0.06	0.04		0.08	0.05	0.04	0.03
	Health Risk	5	5	4	19	3	3	3	2	2		3	2	2	1
*Diesel Particulate Matter***	*Annual Avg*	(2.6)					(1.7)					(1.3)			
	Health Risk	(780)					(510)					(390)			
Average Basin Risk***	Without Diesel PM	450	401	280	360	304	305	231	194	235	181	196	170	185	158
	With Diesel PM	***(1230)***					***(815)***					***(586)***			

* Concentrations for Hexavalent chromium are expressed as ng/m3 and concentrations for diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as parts per billion.

** Diesel PM concentration estimates are based on receptor modeling techniques, and estimates are available only for selected years.

*** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. It reflects only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which we do not monitor or have health risk information. Additional information about interpreting the toxic air contaminant air quality trends can be found in Chapter 1, *Interpreting the Emission and Air Quality Statistics.*

Table 5-54

San Diego Air Basin

2004 Emission Inventory by Compound

Acetaldehyde

Approximately 78 percent of the emissions of acetaldehyde are from mobile sources.

San Diego - Acetaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	6	1%	0%
Area-wide Sources	104	21%	1%
On-Road Mobile	136	27%	2%
Gasoline Vehicles	62	12%	1%
Diesel Vehicles	74	15%	1%
Other Mobile	262	51%	4%
Gasoline Fuel	60	12%	1%
Diesel Fuel	137	27%	2%
Other Fuel	65	13%	1%
Natural Sources	0	0%	0%
Total	508	100%	7%
Total Statewide	**7372**		

Table 5-55

Benzene

The primary sources of benzene emissions in the San Diego Air Basin are mobile sources (approximately 96 percent).

San Diego - Benzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	37	4%	0%
Area-wide Sources	3	0%	0%
On-Road Mobile	519	58%	4%
Gasoline Vehicles	499	56%	4%
Diesel Vehicles	20	2%	0%
Other Mobile	339	38%	3%
Gasoline Fuel	274	31%	2%
Diesel Fuel	37	4%	0%
Other Fuel	27	3%	0%
Natural Sources	0	0%	0%
Total	899	100%	7%
Total Statewide	**13183**		

Table 5-56

1,3-Butadiene

Approximately 94 percent of the emissions of 1,3-butadiene are from mobile sources.

San Diego - 1,3-Butadiene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< 1	0%	0%
Area-wide Sources	4	2%	0%
On-Road Mobile	108	50%	3%
Gasoline Vehicles	106	49%	3%
Diesel Vehicles	2	1%	0%
Other Mobile	94	44%	3%
Gasoline Fuel	66	31%	2%
Diesel Fuel	4	2%	0%
Other Fuel	25	11%	1%
Natural Sources	8	4%	0%
Total	215	100%	7%
Total Statewide	**3030**		

Table 5-57

Carbon Tetrachloride

Stationary sources such as chemical and allied product manufacturers account for all of the emissions of carbon tetrachloride.

San Diego - Carbon Tetrachloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.12	100%	5%
Area-wide Sources	0	0%	0%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	0.12	100%	5%
Total Statewide	**2.30**		

Table 5-58

Chromium, Hexavalent

Approximately 76 percent of the hexavalent chromium emissions are from other mobile sources. Stationary sources account for approximately 18 percent.

San Diego - Chromium, Hexavalent			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.04	18%	2%
Area-wide Sources	0	0%	0%
On-Road Mobile	0.01	6%	1%
Gasoline Vehicles	0.01	5%	1%
Diesel Vehicles	< .01	0%	0%
Other Mobile	0.18	76%	10%
Gasoline Fuel	0.01	5%	1%
Diesel Fuel	< .01	0%	0%
Other Fuel	0.17	71%	10%
Natural Sources	0	0%	0%
Total	0.24	100%	14%
Total Statewide	**1.73**		

Table 5-59

para-Dichlorobenzene

All of the emissions of *para*-dichlorobenzene are from consumer products (non-aerosol insect repellants and solid/gel air fresheners).

San Diego - *para*-DiChlorobenzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0	0%	0%
Area-wide Sources	161	100%	9%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	161	100%	9%
Total Statewide	**1879**		

Table 5-60

Formaldehyde

Approximately 88 percent of the formaldehyde emissions are from mobile sources.

San Diego - Formaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	39	3%	0%
Area-wide Sources	120	9%	1%
On-Road Mobile	434	33%	2%
Gasoline Vehicles	286	22%	1%
Diesel Vehicles	149	11%	1%
Other Mobile	731	55%	4%
Gasoline Fuel	246	19%	1%
Diesel Fuel	274	21%	1%
Other Fuel	211	16%	1%
Natural Sources	0	0%	0%
Total	1324	100%	7%
Total Statewide	**20251**		

Table 5-61

Methylene Chloride

Area-wide sources such as paint removers/strippers, automotive brake cleaners, and other consumer products account for approximately 83 percent of the emissions of methylene chloride.

San Diego - Methylene Chloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	65	17%	1%
Area-wide Sources	313	83%	4%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	378	100%	5%
Total Statewide	**7637**		

Table 5-62

Perchloroethylene

Approximately 73 percent of the emissions of perchloroethylene are from stationary sources such as dry cleaning plants, manufacturers of aircraft parts and fabricated metal parts, and other stationary sources.

San Diego - Perchloroethylene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	462	73%	7%
Area-wide Sources	175	27%	3%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	638	100%	10%
Total Statewide	**6244**		

Table 5-63

Diesel Particulate Matter

Approximately 97 percent of the emissions of diesel particulate matter are from mobile sources.

San Diego - Diesel PM			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	36	2%	0%
Area-wide Sources	0	0%	0%
On-Road Mobile	446	29%	2%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	446	29%	2%
Other Mobile	1045	68%	4%
Gasoline Fuel	0	0%	0%
Diesel Fuel	1045	68%	4%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	1527	100%	6%
Total Statewide	**24497**		

Table 5-64

San Diego Air Basin

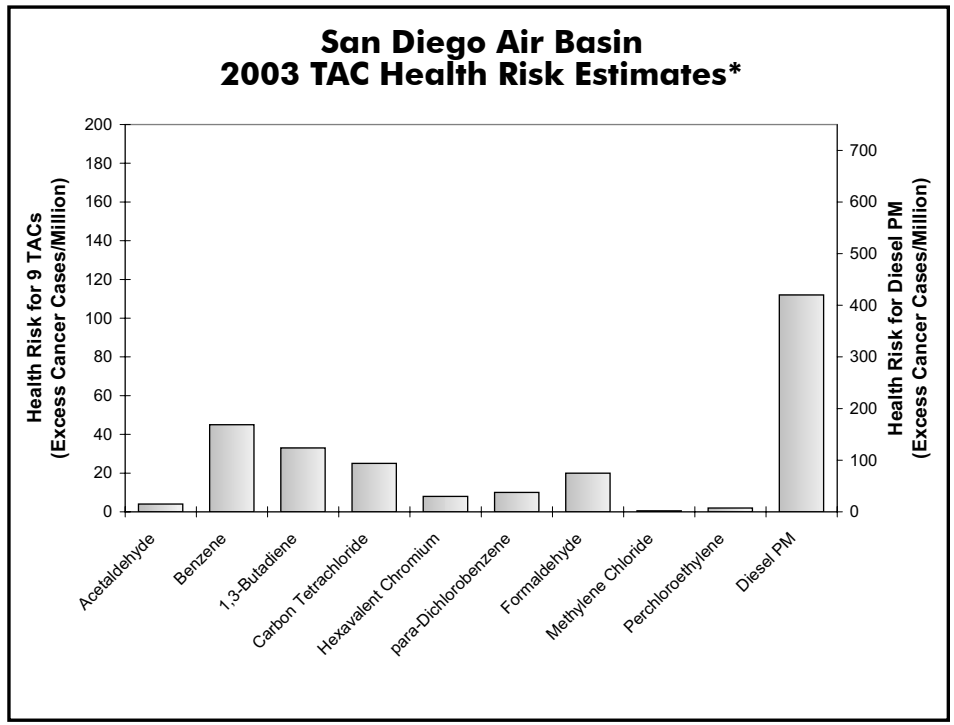
Air Quality and Health Risk

During 1990 through 2003, the ARB monitored ambient TAC concentrations at two sites in the San Diego Air Basin. The sites are located in Chula Vista and El Cajon. Annual average concentrations and health risks of the top ten TACs individually as well as their cumulative health risk for the San Diego Air Basin are listed in Table 5-65. Data for individual sites are shown in Appendix C.

A special study site, located in the Logan Heights/Barrio Logan area of San Diego, was operated between October 1999 and February 2001. Monitoring was conducted for both TACs and criteria air pollutants. The Barrio Logan community is located in a large urban area near major freeways, industrial sources, and neighborhood sources such as gas stations, dry cleaners, and automotive repair facilities. Although not included in this almanac, data from Barrio Logan and other community monitoring studies are being used in support of the ARB's Community Health Program. Copies of the full reports are available at *www.arb.ca.gov/ch/programs/sb25/sb25.htm*.

Figure 5-15 shows 2003 health risks posed by the top ten TACs individually for the San Diego Air Basin. As indicated on the graph, the health risk data reflect the year 2003 except for diesel PM. Data for this TAC reflect the year 2000, the most recent year for which complete and representative data are available. It is important to note that health risks shown here are based on an annual average concentration for all sites in the air basin. The health risk at individual locations may be higher or lower than the average for the air basin, depending on the impact of nearby sources.

Similar to most areas in the State, diesel PM presents the most substantial health risk among the ten TACs considered in this almanac. In the San Diego Air Basin, the estimated health risk for diesel PM in 2000 was 420 excess cancer cases per million people exposed over 70 years. While the health risk from diesel PM is lower than the estimated statewide value, it is comparable to the annual averages estimated for other urbanized areas such as the Sacramento Valley and San Joaquin Valley Air Basins. Since 1990, diesel PM health risk has been reduced by 52 percent in the San Diego Air Basin. Aside from diesel PM, 1,3-butadiene and benzene pose the greatest health risks among the nine remaining TACs. Since 1990, their risks have been



** Data for diesel PM reflect 2000; data for all other TACs reflect 2003.*

Figure 5-15

reduced by 59 percent and 73 percent, respectively. Perchloroethylene and methylene chloride also show significant reductions of 79 percent and 82 percent, respectively. Overall, in San Diego Air Basin, all TACs except *para*-dichlorobenzene and formaldehyde have been reduced since 1990.

It is important to note that there may be other compounds that pose a significant risk but are not monitored. Furthermore, reductions in ambient TAC concentrations and health risks should continue, as new rules and regulations are implemented to control toxic air contaminants.

San Diego Air Basin
Annual Average Concentrations and Health Risks

San Diego Air Basin Toxic Air Contaminants-Annual Average Concentrations and Health Risks															
TAC*	**Conc./Risk**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.33	1.50	1.22	1.41	1.48	0.64	1.03	1.00	0.86	1.04	0.84	0.95	0.97	0.89
	Health Risk	6	7	6	7	7	3	5	5	4	5	4	5	5	4
Benzene	Annual Avg	2.25	1.70	1.48	1.16	1.39	0.98	0.76	0.76	0.76	0.86	0.65	0.51	0.49	0.48
	Health Risk	208	158	137	107	129	90	71	70	70	79	60	47	45	45
1,3-Butadiene	Annual Avg	0.33	0.26	0.26	0.31	0.31	0.24	0.21	0.20	0.20	0.22	0.16	0.14	0.12	0.09
	Health Risk	125	97	97	117	115	91	78	75	74	83	60	51	45	33
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.10		0.10	0.08				0.09	0.09	0.09	0.09
	Health Risk	35	34		27		26	20				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.24	0.19	0.16	0.18	0.11	0.11	0.10	0.10	0.10		0.05	0.05
	Health Risk			36	28	23	27	16	16	15	15	15		7	8
para-Dichlorobenzene	Annual Avg		0.10	0.11	0.13	0.15	0.12	0.11	0.13				0.15	0.15	0.15
	Health Risk		7	8	8	10	8	7	8				10	10	10
Formaldehyde	Annual Avg	1.64	1.53	1.26	1.76	2.25	2.13	2.62	2.62	2.27	2.67	2.23	2.59	2.99	2.68
	Health Risk	12	11	9	13	17	16	19	19	17	20	16	19	22	20
Methylene Chloride	Annual Avg	0.59	0.83	1.34	1.13	0.73	0.63	0.59	0.57		0.53	0.76	0.17	0.16	0.16
	Health Risk	2	3	5	4	3	2	2	2		2	3	1	1	1
Perchloroethylene	Annual Avg	0.28	0.27	0.26	0.20	0.21	0.25	0.15	0.13			0.09	0.06	0.06	0.05
	Health Risk	11	11	11	8	8	10	6	5			4	2	2	2
*Diesel Particulate Matter***	*Annual Avg*	*(2.9)*					*(1.9)*					*(1.4)*			
	Health Risk	*(870)*					*(570)*					*(420)*			
Average Basin Risk***	Without Diesel PM	399	328	309	319	312	273	224	200	180	204	187	158	161	148
	With Diesel PM	***(1269)***					***(843)***					***(607)***			

* Concentrations for Hexavalent chromium are expressed as ng/m3 and concentrations for diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as parts per billion.

** Diesel PM concentration estimates are based on receptor modeling techniques, and estimates are available only for selected years.

*** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. It reflects only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which we do not monitor or have health risk information. Additional information about interpreting the toxic air contaminant air quality trends can be found in Chapter 1, *Interpreting the Emission and Air Quality Statistics.*

Table 5-65

Sacramento Valley Air Basin

2004 Emission Inventory by Compound

Acetaldehyde

Approximately 60 percent of the emissions of acetaldehyde are from mobile sources. Another 36 percent are from area-wide sources, including the burning of wood in residential fireplaces and wood stoves.

Sacramento Valley - Acetaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	28	3%	0%
Area-wide Sources	290	36%	4%
On-Road Mobile	140	17%	2%
Gasoline Vehicles	59	7%	1%
Diesel Vehicles	81	10%	1%
Other Mobile	346	43%	5%
Gasoline Fuel	77	10%	1%
Diesel Fuel	228	28%	3%
Other Fuel	41	5%	1%
Natural Sources	0	0%	0%
Total	804	100%	11%
Total Statewide	**7372**		

Table 5-66

Benzene

The primary sources of benzene emissions in the Sacramento Valley Air Basin are mobile sources (approximately 86 percent).

Sacramento Valley - Benzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	149	14%	1%
Area-wide Sources	8	1%	0%
On-Road Mobile	503	46%	4%
Gasoline Vehicles	481	44%	4%
Diesel Vehicles	22	2%	0%
Other Mobile	433	40%	3%
Gasoline Fuel	354	32%	3%
Diesel Fuel	62	6%	0%
Other Fuel	17	2%	0%
Natural Sources	0	0%	0%
Total	1093	100%	8%
Total Statewide	**13183**		

Table 5-67

1,3-Butadiene

Approximately 75 percent of the emissions of 1,3-butadiene are from mobile sources.

Sacramento Valley - 1,3-Butadiene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< 1	0%	0%
Area-wide Sources	59	21%	2%
On-Road Mobile	103	37%	3%
Gasoline Vehicles	101	36%	3%
Diesel Vehicles	2	1%	0%
Other Mobile	107	38%	4%
Gasoline Fuel	85	31%	3%
Diesel Fuel	6	2%	0%
Other Fuel	15	6%	1%
Natural Sources	8	3%	0%
Total	278	100%	9%
Total Statewide	**3030**		

Table 5-68

Carbon Tetrachloride

Stationary sources such as chemical and allied product manufacturers account for all of the emissions of carbon tetrachloride.

Sacramento Valley - Carbon Tetrachloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.05	100%	2%
Area-wide Sources	0	0%	0%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	0.05	100%	2%
Total Statewide	**2.30**		

Table 5-69

Chromium, Hexavalent

Approximately 55 percent of the hexavalent chromium emissions are from stationary sources such as electrical generation, aircraft and parts manufacturing, and fabricated metal product manufacturing.

Sacramento Valley - Chromium, Hexavalent			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	0.05	55%	3%
Area-wide Sources	0	0%	0%
On-Road Mobile	< .01	10%	0%
Gasoline Vehicles	< .01	9%	0%
Diesel Vehicles	< .01	0%	0%
Other Mobile	0.03	36%	2%
Gasoline Fuel	0.02	18%	1%
Diesel Fuel	< .01	1%	0%
Other Fuel	0.01	17%	1%
Natural Sources	0	0%	0%
Total	0.08	100%	5%
Total Statewide	**1.73**		

Table 5-70

para-Dichlorobenzene

Most of the emissions of *para*-dichlorobenzene are from consumer products (non-aerosol insect repellants and solid/gel air fresheners).

Sacramento Valley - *para*-DiChlorobenzene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	< 1	0%	0%
Area-wide Sources	130	100%	7%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	130	100%	7%
Total Statewide	**1879**		

Table 5-71

Formaldehyde

Approximately 72 percent of the formaldehyde emissions are from mobile sources, and 18 percent are from area-wide sources.

Sacramento Valley - Formaldehyde			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	193	10%	1%
Area-wide Sources	328	18%	2%
On-Road Mobile	425	23%	2%
Gasoline Vehicles	263	14%	1%
Diesel Vehicles	162	9%	1%
Other Mobile	909	49%	4%
Gasoline Fuel	320	17%	2%
Diesel Fuel	457	25%	2%
Other Fuel	132	7%	1%
Natural Sources	0	0%	0%
Total	1855	100%	9%
Total Statewide	**20251**		

Table 5-72

Methylene Chloride

Approximately 71 percent of the emissions of methylene chloride are from area-wide sources such as paint removers/strippers, automotive brake cleaners, and other consumer products.

Sacramento Valley - Methylene Chloride			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	103	29%	1%
Area-wide Sources	253	71%	3%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	356	100%	5%
Total Statewide	**7637**		

Table 5-73

Perchloroethylene

Approximately 68 percent of the emissions of perchloroethylene are from stationary sources such as dry cleaning plants and manufacturers of aircraft parts and fabricated metal parts.

Sacramento Valley - Perchloroethylene			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	296	68%	5%
Area-wide Sources	141	32%	2%
On-Road Mobile	0	0%	0%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	0	0%	0%
Other Mobile	0	0%	0%
Gasoline Fuel	0	0%	0%
Diesel Fuel	0	0%	0%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	438	100%	7%
Total Statewide	**6244**		

Table 5-74

Diesel Particulate Matter

Approximately 91 percent emissions of diesel particulate matter are from mobile sources.

Sacramento Valley - Diesel PM			
Emissions Source	**tons/year**	**Percent Air Basin**	**Percent State**
Stationary Sources	216	9%	1%
Area-wide Sources	0	0%	0%
On-Road Mobile	508	22%	2%
Gasoline Vehicles	0	0%	0%
Diesel Vehicles	508	22%	2%
Other Mobile	1629	69%	7%
Gasoline Fuel	0	0%	0%
Diesel Fuel	1629	69%	7%
Other Fuel	0	0%	0%
Natural Sources	0	0%	0%
Total	2353	100%	10%
Total Statewide	**24497**		

Table 5-75

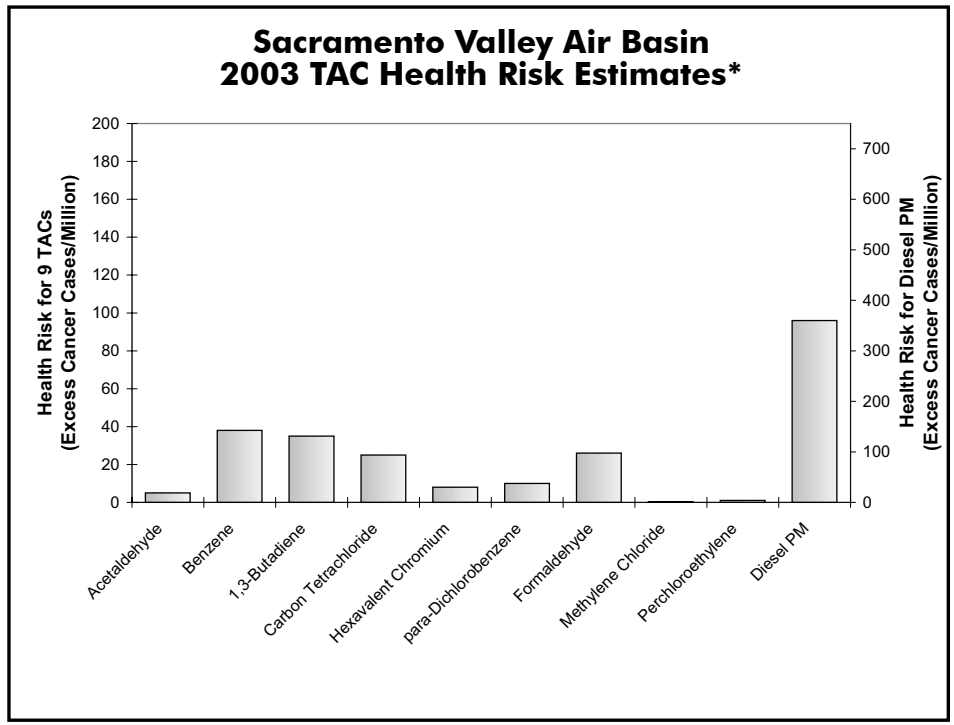
Sacramento Valley Air Basin

Air Quality and Health Risk

Unlike the other air basins described in this almanac, TAC monitoring in the Sacramento Valley Air Basin has not been continuous at any site. TAC concentrations were monitored at the Chico-Salem Street site during 1990 through the middle of 1992. The site was then moved to Chico-Manzanita Avenue. While there was monitoring in the Chico area during all of 1992, an annual average is not included here because neither site has a full year of data. Similarly, TAC concentrations were monitored at the Citrus Heights site during 1990 through part of 1993, when the site was relocated to Roseville. Again, no annual average concentration and associated health risk are available for the year during which the site was moved because neither site has a full year of data. Table 5-76 shows annual average concentrations and health risks of the top ten TACs individually, as well as their cumulative health risk for the Sacramento Valley Air Basin. Data for individual sites are listed in Appendix C.

Figure 5-16 is based on all data collected in the Sacramento Valley Air Basin and shows the estimated annual average health risks for the top ten TACs in this area. As shown in the graph, the health risk estimates for the nine TACs measured by the ambient network reflect 2003, the most recent year for which complete and representative data are available. The estimate for diesel PM reflects the year 2000. It is important to note that health risks shown here are based on two areas in the air basin, and other locations may be higher or lower than the average for the air basin, depending on the impact of nearby sources.

Diesel PM poses the greatest health risk among the ten TACs considered in this almanac. Based on receptor modeling techniques, the ARB estimated its health risk to be 360 excess cancer cases per million people in the Sacramento Valley Air Basin. This is about half the estimated statewide health risk, and it is similar to that for the San Joaquin Valley. Since 1990, the diesel PM's health risk has been reduced by 52 percent. Aside from diesel PM, 1,3-butadiene and benzene pose the greatest health risk in the Sacramento Valley Air Basin. They have been reduced by 66 percent and 76 percent, respectively. Methylene chloride and perchloroethylene also show substantial reduction of 74 percent and 66 percent, respectively. Overall, levels of most TACs have gone down since 1990 except *para*-dichloroben-



** Data for Diesel PM reflect 2000; data for all other TACs reflect 2003.*

Figure 5-16

zene and formaldehyde. In 2003, formaldehyde shows a 19 percent increase from 1996, the first year a new method was used to analyze formaldehyde.

As in all areas of the State, it is important to note that there may be other compounds that are not monitored, but which may pose a substantial health risk in the Sacramento Valley Air Basin.

Sacramento Valley Air Basin
Annual Average Concentrations and Health Risks

Sacramento Valley Air Basin Toxic Air Contaminants-Annual Average Concentrations and Health Risks															
TAC*	**Conc./Risk**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.29			1.37	1.04	0.39	1.03	1.05	0.92	1.23	0.83	0.74	1.14	1.04
	Health Risk	6			7	5	2	5	5	4	6	4	4	6	5
Benzene	Annual Avg	2.02	1.88	1.35	1.00	1.02	0.80	0.56	0.55	0.50	0.56	0.45	0.42	0.44	0.41
	Health Risk	187	174	125	92	95	74	51	51	47	52	42	39	41	38
1,3-Butadiene	Annual Avg	0.38	0.33	0.28	0.29	0.22	0.19	0.18	0.16	0.15	0.13	0.12	0.13	0.12	0.09
	Health Risk	142	125	106	108	83	70	66	60	58	48	45	47	44	35
Carbon Tetrachloride	Annual Avg	0.12	0.12		0.11		0.10	0.08				0.09	0.09	0.09	0.09
	Health Risk	33	32		29		26	21				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.17	0.14	0.13	0.18	0.11	0.10	0.10	0.10	0.10	0.10	0.05	0.05
	Health Risk			26	21	19	26	16	15	15	15	15	15	8	8
para-Dichlorobenzene	Annual Avg			0.11	0.10	0.20	0.14	0.11	0.14			0.10	0.13	0.15	0.15
	Health Risk			7	7	14	9	7	10			7	9	10	10
Formaldehyde	Annual Avg	1.57			1.77	1.75	1.91	2.76	2.92	2.52	3.61	2.51	2.41	3.79	3.53
	Health Risk	12			13	13	14	20	22	19	27	18	18	28	26
Methylene Chloride	Annual Avg	0.65	0.56	0.55	0.98	0.66	0.53	0.54	0.52		0.60	0.57	0.29	0.08	0.08
	Health Risk	2	2	2	3	2	2	2	2		2	2	1	0	0
Perchloroethylene	Annual Avg	0.07	0.07	0.06	0.05	0.17	0.05	0.06	0.05			0.06	0.03	0.03	0.02
	Health Risk	3	3	3	2	7	2	2	2			2	1	1	1
*Diesel Particulate Matter***	*Annual Avg*	*(2.5)*					*(1.6)*					*(1.2)*			
	Health Risk	*(750)*					*(480)*					*(360)*			
Average Basin Risk***	Without Diesel PM	385	336	269	282	238	225	190	167	143	150	160	157	162	148
	With Diesel PM	***(1135)***					***(705)***					***(520)***			

* Concentrations for Hexavalent chromium are expressed as ng/m3 and concentrations for diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as parts per billion.

** Diesel PM concentration estimates are based on receptor modeling techniques, and estimates are available only for selected years.

*** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. It reflects only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which we do not monitor or have health risk information. Additional information about interpreting the toxic air contaminant air quality trends can be found in Chapter 1, *Interpreting the Emission and Air Quality Statistics.*

Table 5-76

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APPENDIX A

County Level Emissions and Air Quality by Air Basin

Appendix A: *County Level Emissions and Air Quality by Air Basin*

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Introduction

This appendix contains criteria pollutant emission trends and forecasts and air quality trend data for each of California's 15 air basins. The emissions data are summarized first, by county or county portion within the air basin. Emissions data are included for the ozone precursors NO_x and ROG, directly emitted PM_{10}, directly emitted $PM_{2.5}$, and CO. The values represent the total tons of pollutant emissions per average day, listed every five years, from 1975 to 2020. In addition to these data, tables listing the highest emitting facilities for NO_x, ROG, PM_{10}, and $PM_{2.5}$, by air basin, are also included. The lists of high emitting facilities consist of only the top ten facilities exceeding 100 tons per year. The emission totals are the most recent data available from the respective district agencies. Some facilities may have reduced or increased emissions since these data were collected, and these changes will be reflected in subsequent editions of the almanac. Finally, the lists do not include military bases, landfills, or airports.

The air quality trend statistics for each county or county portion are also organized alphabetically, by air basin. The time period covered is 1984 through 2003 for ozone, CO, NO_2, and SO_2 and 1988 through 2003 for PM_{10}. Tables for some areas include blanks, indicating that no monitoring data are available or data are incomplete for a given statistic. In a number of cases, tables are completely blank. These blank tables are included for completeness, but the lack of data is noted on the tables. (Note: $PM_{2.5}$ air quality data are now included in Appendix A due to sufficient data being available for developing trends. $PM_{2.5}$ air quality data are also available statewide in Chapter 3 and summarized by air basin in Chapter 2 and in Appendix B.)

Air quality statistics can fluctuate from year-to-year because of the influence of meteorology and/or changes in emissions. However, the statistics can also vary because of a change in monitoring site. The peak and maximum value air quality statistics reflect the highest value for the statistic at any site in the area. As a result, the statistic may not reflect the same site during the entire trend period. For example, the maximum 8-hour average carbon monoxide concentrations in Imperial County in the Salton Sea Air Basin are below the levels of the State and national standards from 1984 through 1993. In 1994, however, the concentrations show a significant increase, and both the State and national standards are violated. The CO concentrations in this air basin did not suddenly increase during 1994. Instead, monitoring began at a new site in Calexico, and the concentrations at the new site were higher than at the existing set of sites in the Salton Sea Air Basin. Information about the time periods for which air quality data are available for different pollutants at sites in California and Baja, Mexico is available on the web at *www.arb.ca.gov/aqd/namslams/namslams.htm*.

Since the peak and maximum air quality statistics reflect the highest values in the area, the monitoring sites represented also may not be consistent among the various statistics during a particular year. For example, the monitoring site reflected in the maximum 1-hour ozone concentration may not be the same as the monitoring site reflected in the maximum 8-hour ozone concentration. In contrast to the peak and maximum statistics, the counts of days above a standard generally reflect a composite, countywide value (in other words, a count of the total number of days an exceedance occurred at any site in the county. The exception is PM_{10}. The calculated days above the State and national 24-hour standards for this pollutant reflect the number of exceedance days at the high site, only.

Great Basin Valleys Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alpine	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2	2	2
Inyo*	5	5	4	4	4	3	3	3	2	2	7	7	7	7	5	4	4	4	4	4
Mono*	2	3	3	3	2	2	2	2	1	1	5	6	6	6	6	6	6	6	6	7
Air Basin Total	7	9	7	7	7	6	5	5	4	3	13	14	14	14	14	13	12	12	12	13

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alpine	1	2	2	2	2	2	2	2	2	3	3	5	5	6	8	8	8	8	8	9
Inyo*	829	829	829	829	828	827	150	42	43	44	51	51	45	41	30	22	19	15	12	11
Mono*	29	32	32	35	35	35	36	37	38	40	36	42	41	38	34	29	27	26	26	26
Air Basin Total	859	863	863	865	865	865	188	81	83	86	89	97	91	86	72	59	54	50	47	46

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alpine	0	0	0	0	0	0	1	1	1	1
Inyo*	127	127	127	127	127	127	25	9	9	9
Mono*	15	15	15	16	16	16	16	16	17	17
Air Basin Total	142	143	143	143	143	143	42	26	26	27

* Values for these counties include emissions from the Owens and Mono Lake Beds.

Table A-1

Great Basin Valleys Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Coso Operating Company (Steam Plant)	Little Lake	165

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-2

Lake County Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lake	7	8	9	10	9	8	7	6	5	4	11	13	15	14	14	12	11	9	8	7

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lake	8	9	11	11	11	12	12	12	12	13	92	103	117	111	103	88	80	71	62	57

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lake	3	4	4	4	4	5	5	5	5	5

Table A-3

Lake County Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-4

Lake Tahoe Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
El Dorado	4	4	4	5	4	4	3	3	2	2	8	7	7	7	6	6	5	5	5	5
Placer	2	1	1	2	2	2	2	2	2	1	6	3	3	3	3	3	2	2	2	2
Air Basin Total	6	5	5	6	6	5	5	5	4	3	14	9	9	10	9	8	8	7	7	7

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
El Dorado	2	2	3	3	3	4	4	4	4	4	100	76	67	59	49	40	37	33	31	30
Placer	1	1	1	1	1	1	2	2	2	2	76	32	33	27	23	18	16	13	12	11
Air Basin Total	3	3	4	4	5	5	5	6	6	6	177	109	100	86	72	58	52	47	43	41

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
El Dorado	1	1	2	2	2	2	2	2	2	2
Placer	0	0	1	1	1	1	1	1	1	1
Air Basin Total	2	2	2	2	3	3	3	3	3	3

A portion of El Dorado County lies within the Mountain Counties Air Basin. Portions of Placer County lie within the Mountain Counties and Sacramento Valley Air Basins.

Table A-5

Lake Tahoe Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-6

Mojave Desert Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Kern	53	30	37	51	41	41	37	36	35	35	65	47	32	28	17	15	13	11	11	11
Los Angeles	20	26	29	37	30	29	26	21	18	17	31	36	39	41	26	22	20	19	20	20
Riverside	4	4	4	10	6	5	7	7	7	7	4	3	4	4	3	2	2	2	2	2
San Bernardino	137	161	146	181	165	169	156	152	154	158	29	36	47	63	52	43	36	31	30	29
Air Basin Total	213	221	216	278	242	243	225	216	215	217	130	123	122	135	98	83	70	64	62	63

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Kern	42	32	29	45	27	31	28	29	29	29	741	481	255	195	128	107	91	76	66	61
Los Angeles	36	38	37	35	29	31	35	36	37	38	100	173	212	256	164	114	88	70	60	54
Riverside	6	7	7	9	9	8	7	8	8	8	12	10	13	18	14	11	9	7	7	6
San Bernardino	71	76	90	80	90	88	95	100	105	110	131	214	287	438	344	269	226	182	153	139
Air Basin Total	154	152	163	169	156	157	166	172	179	186	984	878	767	907	651	502	414	336	286	260

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Kern	19	13	11	22	9	10	9	9	10	10
Los Angeles	9	9	9	9	7	8	9	9	10	10
Riverside	2	2	2	2	2	2	2	2	2	2
San Bernardino	22	22	30	24	30	28	29	30	32	33
Air Basin Total	51	46	51	56	49	47	49	51	53	55

A portion of Kern County lies within the San Joaquin Valley Air Basin. A portion of Los Angeles County lies within the South Coast Air Basin. Portions of Riverside County lie within the Salton Sea and South Coast Air Basins. A portion of San Bernardino County lies within the South Coast Air Basin.

Table A-7

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Mojave Desert Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
TXI Riverside Cement Company	Oro Grande	4609
Cemex - Black Mountain Quarry	Apple Valley	4483
California Portland Cement	Mojave	2942
Mitsubishi Cement 2000	Lucerne Valley	2245
Searles Valley Minerals	Trona	2026
Southern California Gas	Blythe	1917
Southern California Gas	Needles	1157
PG&E Topock Compressor Station	Needles	1140
National Cement	Lebec	1070
Reliant Energy	Daggett	910

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
TXI Riverside Cement Company	Oro Grande	104

Table A-8

Mojave Desert Air Basin

High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
TXI Riverside Cement Company	Oro Grande	1470
Antelope Valley Aggregate	Littlerock	757
US Borax	Boron	618
Mitsubishi Cement 2000	Lucerne Valley	600
National Cement	Lebec	371
California Portland Cement	Mojave	329
Searles Valley Minerals	Trona	326
Cemex - Black Mountain Quarry	Apple Valley	277
Lehigh Southwest Cement	Monolith	210
Hanson Aggregates	Newberry Springs	175

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
TXI Riverside Cement Company	Oro Grande	316
Antelope Valley Aggregate	Littlerock	286
Mitsubishi Cement 2000	Lucerne Valley	277
Searles Valley Minerals	Trona	226
US Borax	Boron	190
Cemex - Black Mountain Quarry	Apple Valley	183
National Cement	Lebec	128
California Portland Cement	Mojave	121

Table A-8 (continued)

Mountain Counties Air Basin

County Emission Trends and Forecasts

	NO_X Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Amador	5	6	7	9	9	7	7	6	5	5	11	12	12	13	11	10	10	9	9	8
Calaveras	5	12	6	7	6	5	5	4	3	2	9	10	11	12	13	12	10	9	8	7
El Dorado	9	12	12	13	12	9	8	6	5	4	18	24	24	23	21	15	13	12	11	11
Mariposa	2	2	2	3	3	2	2	2	1	1	5	6	7	7	7	7	6	5	4	4
Nevada	10	13	14	15	12	10	9	7	6	5	14	19	22	20	17	16	14	13	12	12
Placer	4	6	5	5	5	5	4	4	3	3	4	9	5	5	4	4	4	3	3	3
Plumas	8	10	10	11	9	9	8	7	7	6	12	15	14	15	17	17	16	16	16	17
Sierra	1	1	1	1	1	1	1	1	1	1	3	3	3	3	4	4	4	4	3	3
Tuolumne	9	11	10	12	10	9	8	7	6	5	14	15	16	17	16	14	13	11	11	10
Air Basin Total	52	73	66	76	67	58	52	44	37	32	89	113	113	117	111	98	89	82	78	77

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Amador	9	8	8	9	10	11	11	11	12	12	64	70	73	80	65	54	51	45	40	37
Calaveras	29	11	10	11	11	11	11	12	12	13	63	81	76	82	76	63	56	49	42	38
El Dorado	10	12	13	15	16	16	17	18	19	20	115	152	157	153	129	100	87	77	71	69
Mariposa	6	7	8	8	8	8	8	9	9	9	26	31	32	35	33	27	23	19	15	14
Nevada	11	14	15	18	18	19	19	20	21	22	108	141	158	148	124	105	95	85	78	75
Placer	5	7	6	7	7	8	8	8	9	9	31	35	39	37	32	32	28	24	21	20
Plumas	17	19	20	19	19	19	19	19	20	20	132	143	142	153	151	142	141	138	136	136
Sierra	11	12	12	11	12	12	12	11	12	12	27	26	27	30	30	31	28	27	27	26
Tuolumne	7	9	9	11	10	10	10	10	11	11	93	106	110	123	108	89	81	73	67	65
Air Basin Total	105	98	101	109	111	113	116	120	124	129	658	784	814	841	747	642	590	537	498	537

A portion of El Dorado County lies within the Lake Tahoe Air Basin. Portions of Placer County lie within the Lake Tahoe and Sacramento Valley Air Basins.

Table A-9

Mountain Counties Air Basin

County Emission Trends and Forecasts

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Amador	5	5	5	5	6	6	6	6	6	7
Calaveras	11	5	5	5	5	5	5	5	5	5
El Dorado	5	5	6	7	7	7	7	7	8	8
Mariposa	2	2	2	2	3	3	3	3	3	3
Nevada	5	7	7	8	9	9	9	9	9	9
Placer	2	3	2	2	2	2	3	3	3	3
Plumas	8	9	10	9	9	9	8	8	8	8
Sierra	3	3	4	3	3	3	3	3	3	3
Tuolumne	3	5	4	5	5	5	4	4	4	5
Air Basin Total	43	44	44	47	48	48	48	49	50	51

A portion of El Dorado County lies within the Lake Tahoe Air Basin. Portions of Placer County lie within the Lake Tahoe and Sacramento Valley Air Basins.

Table A-9 (continued)

Mountain Counties Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Sierra Pacific Industries	Quincy	363
Sierra Pacific Industries	Loyalton	180
Pacific Ultrapower	Jamestown	157
Collins Pine	Chester	109

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Sierrapine Ltd Ampine Division	Martell	263

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Sierrapine Ltd Ampine Division	Martell	518
Wheelabrator Martell	Martell	324
Blue Mountain Minerals	Columbia	121

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
Sierrapine Ltd Ampine Division	Martell	414
Wheelabrator Martell	Martell	285

Table A-10

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North Central Coast Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Monterey	117	131	90	90	76	73	52	45	39	35	97	80	75	68	56	49	42	39	37	36
San Benito	8	9	9	11	10	8	8	7	6	5	12	11	11	11	9	8	7	7	7	7
Santa Cruz	22	25	29	32	27	24	20	17	14	12	45	44	45	40	31	26	22	21	20	20
Air Basin Total	147	164	128	133	113	105	81	69	59	52	153	134	131	119	96	83	72	66	64	63

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Monterey	41	43	40	40	38	42	44	48	49	49	684	577	586	510	377	343	277	264	235	218
San Benito	11	11	13	14	13	15	16	17	18	18	87	84	88	81	68	61	62	64	60	58
Santa Cruz	11	12	13	14	13	14	14	14	15	15	254	258	264	233	169	135	109	87	72	64
Air Basin Total	63	67	66	69	64	70	74	79	81	83	1024	920	939	824	614	539	448	414	368	341

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Monterey	19	21	16	16	15	17	19	22	22	22
San Benito	5	5	6	6	5	6	7	7	8	8
Santa Cruz	5	5	5	6	5	5	5	5	5	6
Air Basin Total	28	30	28	28	25	29	31	35	35	35

Table A-11

North Central Coast Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
RMC Pacific Materials	Davenport	822
Duke Energy	Moss Landing	297

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
RMC Pacific Materials	Davenport	195
Duke Energy	Moss Landing	164
Chemical Lime Company	Salinas	107

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
Duke Energy	Moss Landing	164
RMC Pacific Materials	Davenport	117

Table A-12

North Coast Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Del Norte	6	6	5	5	4	3	3	2	2	2	10	11	8	7	6	6	6	5	5	5
Humboldt	38	39	34	35	28	27	22	20	17	16	66	42	34	32	26	22	20	18	17	17
Mendocino	21	20	20	21	17	15	13	11	8	7	31	26	20	20	18	15	13	12	11	11
Sonoma	15	22	25	23	20	18	16	12	9	7	14	23	21	23	19	16	13	12	10	10
Trinity	2	3	3	3	2	2	2	2	1	1	7	8	6	7	6	6	5	5	4	4
Air Basin Total	82	90	86	87	72	65	56	47	38	33	128	109	90	88	75	65	57	52	48	46

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Del Norte	8	9	9	10	10	10	11	11	11	11	130	127	116	113	104	96	94	91	89	88
Humboldt	29	29	27	25	23	22	22	23	23	23	331	295	264	247	192	159	146	129	116	108
Mendocino	19	16	17	19	19	20	21	23	24	26	162	152	145	142	112	89	78	67	59	54
Sonoma	4	5	5	8	6	6	6	6	6	6	70	157	165	155	118	95	72	65	55	49
Trinity	16	19	20	19	20	18	18	17	17	17	70	75	74	75	66	60	57	54	51	49
Air Basin Total	75	78	78	81	78	77	78	79	81	84	762	806	763	732	593	500	447	406	370	348

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Del Norte	5	6	6	6	6	6	6	6	6	6
Humboldt	17	17	16	13	11	11	11	11	11	11
Mendocino	10	7	7	7	7	7	7	8	8	9
Sonoma	2	2	3	4	3	3	3	3	3	3
Trinity	6	7	7	6	6	6	6	6	6	6
Air Basin Total	40	39	37	37	34	33	33	33	33	34

A portion of Sonoma County lies within the San Francisco Bay Area Air Basin.

Table A-13

North Coast Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
PG&E Humboldt Bay	Eureka	592
Samoa-Pacific Cellulose	Samoa	351
Fairhaven Power Company	Fairhaven	301
Pacific Lumber Company	Scotia	246
Humboldt Flakeboard Panels	Arcata	156

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Fairhaven Power Company	Fairhaven	109
Samoa-Pacific Cellulose	Samoa	104

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Fairhaven Power Company	Fairhaven	123
Georgia Pacific	Fort Bragg	119

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
Fairhaven Power Company	Fairhaven	114
Georgia Pacific	Fort Bragg	109

Table A-14

Northeast Plateau Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lassen	9	9	9	9	8	8	7	6	5	5	11	15	15	14	13	12	12	11	11	11
Modoc	6	6	5	5	5	5	4	4	4	3	6	7	6	6	5	4	4	4	4	4
Siskiyou	18	19	18	18	17	15	12	10	9	8	29	29	28	28	26	23	22	22	21	21
Air Basin Total	34	34	32	32	30	28	23	20	18	16	47	51	49	48	44	40	39	37	36	36

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lassen	19	19	20	21	20	23	22	22	22	23	65	81	81	76	73	64	58	54	51	49
Modoc	18	18	19	19	18	18	18	17	17	17	31	33	31	30	25	20	18	16	15	14
Siskiyou	32	34	33	33	33	33	33	33	33	34	355	347	334	334	309	279	270	261	254	249
Air Basin Total	69	71	72	73	71	74	73	72	73	74	451	462	446	440	407	363	346	331	319	312

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Lassen	7	7	7	7	7	7	7	7	7	7
Modoc	6	5	5	5	5	5	5	4	4	4
Siskiyou	20	21	19	19	19	19	19	19	19	19
Air Basin Total	32	33	31	32	31	31	30	30	30	30

Table A-15

Northeast Plateau Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
H.I. Power Company	Wendel	150
PG&E Tionesta Compressor Station	Tulelake	100

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-16

Sacramento Valley Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Butte	30	34	33	35	31	26	22	18	15	13	42	44	43	42	35	29	25	23	22	21
Colusa	9	10	9	13	13	10	10	8	8	7	14	12	14	12	10	9	9	9	9	9
Glenn	14	13	12	13	12	10	9	8	7	6	14	14	14	12	12	10	10	10	9	9
Placer	23	27	28	31	29	28	24	20	17	15	35	33	34	31	29	23	20	19	18	18
Sacramento	129	134	140	148	125	103	83	64	48	37	214	196	175	145	114	85	67	59	55	53
Shasta	36	39	37	42	36	33	29	26	23	21	39	43	42	40	33	29	25	22	21	20
Solano	12	15	14	17	15	13	11	9	7	6	12	16	15	16	14	12	9	8	7	7
Sutter	19	20	18	21	19	17	15	14	11	10	19	18	19	16	14	12	11	10	10	10
Tehama	14	18	15	15	13	12	10	8	7	7	14	16	15	14	11	9	8	8	7	7
Yolo	31	32	33	37	34	31	24	18	14	11	36	33	28	23	20	16	13	12	11	11
Yuba	11	14	12	12	11	10	8	7	6	5	14	17	15	13	12	10	9	8	7	7
Air Basin Total	329	356	351	384	337	295	246	200	162	137	454	442	412	366	302	244	207	187	177	174

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Butte	26	29	29	32	28	27	28	29	30	30	257	276	273	266	207	160	140	118	102	94
Colusa	19	19	19	19	19	20	20	20	21	21	84	79	78	75	66	60	57	54	53	52
Glenn	14	15	14	15	15	15	15	16	16	17	84	85	83	75	63	55	52	49	46	45
Placer	8	9	11	13	13	15	16	17	18	19	201	237	229	202	169	149	125	108	95	89
Sacramento	34	37	40	44	40	42	44	46	48	49	1457	1376	1298	1054	743	525	389	306	251	211
Shasta	30	27	28	31	30	31	32	33	35	36	319	327	327	332	268	231	213	194	183	178
Solano	7	8	8	8	8	9	9	9	9	10	68	105	103	103	72	56	43	35	29	26
Sutter	13	14	13	14	14	15	15	15	15	16	99	101	98	93	71	56	50	42	36	33
Tehama	13	15	15	14	14	14	15	15	15	16	83	91	85	87	65	50	42	36	32	30
Yolo	21	22	23	26	26	28	28	29	29	30	223	202	192	152	110	85	65	52	44	39
Yuba	10	9	9	8	8	9	9	9	9	9	94	101	85	80	67	55	49	42	37	35
Air Basin Total	195	203	210	223	216	225	231	239	247	253	2970	2981	2851	2517	1902	1482	1224	1035	909	833

Portions of Placer County lie within the Lake Tahoe and Mountain Counties Air Basins. A portion of Solano County lies within the San Francisco Bay Area Air Basin.

Table A-17

Sacramento Valley Air Basin

County Emission Trends and Forecasts

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Butte	12	13	13	14	12	12	12	12	12	12
Colusa	8	8	8	8	8	8	8	8	8	9
Glenn	6	6	6	6	6	7	7	7	7	7
Placer	4	4	5	7	6	7	7	7	8	8
Sacramento	14	15	16	18	15	15	16	17	17	17
Shasta	17	14	14	16	15	15	15	16	16	17
Solano	3	3	3	3	3	3	3	3	3	3
Sutter	5	6	5	5	5	6	5	5	5	5
Tehama	5	6	6	5	5	5	5	5	5	5
Yolo	8	7	7	8	8	8	8	8	8	8
Yuba	4	4	4	4	4	4	4	4	4	4
Air Basin Total	85	85	87	93	87	89	91	92	94	96

Portions of Placer County lie within the Lake Tahoe and Mountain Counties Air Basins. A portion of Solano County lies within the San Francisco Bay Area Air Basin.

Table A-17 (continued)

Sacramento Valley Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Wheelabrator Shasta	Anderson	592
Lehigh Southwest Cement Co.	Redding	527
PG&E Delevan Compressor Station	Colusa	356
Pacific Gas & Electric	Burney	254
Sierrapine - Rocklin	Rocklin	160
Sierra Pacific	Lincoln	157
Burney Forest Products	Burney	155
Wadham Energy Partnership	Williams	152
Calpine Greenleaf	Yuba City	144
Johns-Manville (Insulation)	Willows	137

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Johns-Manville (Insulation)	Willows	213
Oilseeds International (Vegetable Oil)	Grimes	160

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Lehigh Southwest Cement.	Redding	122

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-18

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Salton Sea Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Imperial	43	38	37	42	44	38	34	32	30	28	46	46	38	38	37	33	32	31	30	30
Riverside	32	34	39	32	29	27	21	16	11	10	36	38	40	32	25	20	14	12	11	11
Air Basin Total	75	72	76	74	72	64	55	49	41	39	83	84	78	70	62	52	45	42	42	42

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Imperial	264	268	265	256	238	235	237	240	243	246	224	219	194	195	163	122	105	93	83	76
Riverside	18	19	21	34	26	24	24	25	26	27	276	276	297	224	169	121	83	66	58	55
Air Basin Total	282	287	286	290	264	259	261	265	269	272	499	494	492	419	332	243	188	159	141	131

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Imperial	61	61	60	59	57	56	55	56	57	57
Riverside	6	5	6	8	6	6	6	6	6	6
Air Basin Total	67	67	66	68	63	62	61	62	63	64

Portions of Riverside County lie within the Mojave Desert and South Coast Air Basins.

Table A-19

Salton Sea Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Imperial Irrigation District	El Centro	308
Holly Sugar	Brawley	210

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
US Gypsum - Plaster City	Plaster City	156

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-20

San Diego Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Diego	272	264	276	309	262	221	177	142	110	91	445	442	419	348	271	228	188	175	171	172

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Diego	72	81	89	107	104	110	118	125	131	138	3331	3066	2963	2499	1755	1316	983	798	666	599

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Diego	33	36	34	40	38	40	42	46	47	49

Table A-21

San Diego Air Basin
High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Cabrillo Power	Carlsbad	276
Solar Turbines - Ruffin Rd	San Diego	114

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
National Steel & Shipbuilding	San Diego	196

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Duke Energy - South Bay Power Plant	Chula Vista	194
Cabrillo Power	Carlsbad	162

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-22

San Francisco Bay Area Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alameda	180	176	184	176	147	128	107	88	69	58	304	274	229	169	132	104	81	71	64	60
Contra Costa	262	244	199	183	152	127	105	93	83	78	238	264	209	133	112	96	71	64	61	59
Marin	30	31	30	29	25	21	19	15	12	9	56	52	44	34	28	22	18	14	12	11
Napa	15	14	16	15	14	12	11	9	7	5	27	24	21	18	16	16	11	9	7	7
San Francisco	102	111	102	100	82	74	61	51	41	36	153	131	106	76	59	48	37	32	29	27
San Mateo	104	102	98	94	82	67	59	49	40	35	167	149	120	86	70	52	41	35	31	29
Santa Clara	207	205	192	189	165	140	120	96	75	63	359	335	262	189	149	117	90	77	68	63
Solano	45	54	51	53	41	34	30	27	24	23	54	69	59	44	32	26	21	19	18	17
Sonoma	29	31	32	37	33	28	23	18	13	10	68	63	55	43	37	29	23	19	17	16
Air Basin Total	975	968	905	876	741	632	535	446	363	316	1426	1360	1105	791	635	510	392	340	307	289

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alameda	33	31	37	36	34	35	35	36	37	37	1923	1741	1505	1104	779	569	435	354	282	238
Contra Costa	36	36	32	30	28	29	31	31	32	33	1292	1169	1052	792	590	427	339	273	222	192
Marin	5	6	6	7	7	7	8	8	8	8	396	371	314	237	172	130	105	81	64	54
Napa	6	5	6	6	6	6	6	6	6	6	155	144	131	112	93	74	62	50	41	36
San Francisco	12	13	14	14	14	14	15	15	15	15	872	817	688	484	347	262	206	170	142	123
San Mateo	14	15	17	17	15	19	19	19	20	20	1254	1142	914	650	478	327	256	203	160	134
Santa Clara	40	40	44	45	43	49	52	52	53	54	2330	2175	1807	1330	975	720	565	457	366	311
Solano	13	14	15	15	14	13	14	14	14	14	318	325	296	237	159	119	97	78	64	55
Sonoma	10	10	11	12	11	12	11	11	12	12	417	410	371	296	236	167	134	100	76	61
Air Basin Total	168	169	182	181	170	184	191	193	196	200	8956	8293	7078	5241	3829	2793	2200	1766	1417	1205

A portion of Solano County lies within the Sacramento Valley Air Basin. A portion of Sonoma County lies within the North Coast Air Basin.

Table A-23

San Francisco Bay Area Air Basin

County Emission Trends and Forecasts

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Alameda	15	14	16	16	14	15	15	15	15	15
Contra Costa	23	22	17	16	13	14	15	15	15	15
Marin	3	3	3	3	3	3	3	3	3	3
Napa	2	2	2	2	3	2	2	2	2	2
San Francisco	8	8	8	8	8	8	8	8	8	8
San Mateo	7	7	7	8	7	8	8	8	8	8
Santa Clara	17	15	17	18	16	18	18	18	18	18
Solano	5	5	5	6	5	5	5	5	5	5
Sonoma	5	5	5	6	5	5	5	5	5	5
Air Basin Total	84	81	81	82	75	78	78	78	78	79

A portion of Solano County lies within the Sacramento Valley Air Basin. A portion of Sonoma County lies within the North Coast Air Basin.

Table A-23 (continued)

San Francisco Bay Area Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Shell Martinez Refinery	Martinez	2898
Tesoro Refining And Marketing	Martinez	2307
Valero Refining Company	Benicia	2289
Chevron Products Company	Richmond	2063
Hanson Permanente Cement	Cupertino	1935
Conoco Phillips - San Francisco	Rodeo	1794
Mirant Delta, Llc	Pittsburg	733
Tosco Refining Company	Rodeo	632
Owens-Brockway Glass Container	Oakland	558
Owens Corning (Insulation)	Santa Clara	343

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Tesoro Refining And Marketing	Martinez	2041
Chevron Products Company	Richmond	1637
Shell Martinez Refinery	Martinez	1462
Conoco Phillips - San Francisco	Rodeo	769
New United Motor Manufacturing	Fremont	581
Valero Refining Company	Benicia	389
Ball Metal Beverage Container	Fairfield	280
United States Pipe & Foundry	Union City	170
Pacific Custom Materials (Stone Products)	Port Costa	124

Table A-24

San Francisco Bay Area Air Basin

High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Shell Martinez Refinery	Martinez	357
Valero Refining Company	Benicia	219
Hanson Permanente Cement	Cupertino	193
Chevron Products Company	Richmond	188
Mirant Delta, Llc	Pittsburg	156
Tesoro Refining And Marketing	Martinez	149
Owens Corning (Insulation)	Santa Clara	109
Owens-Brockway Glass Container	Oakland	102

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
Shell Martinez Refinery	Martinez	346
Valero Refining Company	Benicia	204
Chevron Products Company	Richmond	181
Mirant Delta, Llc	Pittsburg	156
Tesoro Refining And Marketing	Martinez	133
Hanson Permanente Cement	Cupertino	119

Table A-24 (continued)

San Joaquin Valley Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Fresno	139	154	165	168	147	115	95	77	61	51	183	167	141	130	112	95	82	78	76	77
Kern	225	338	329	267	201	157	132	116	104	97	604	719	602	197	114	102	87	83	80	79
Kings	44	40	42	36	32	25	18	16	13	11	31	28	25	22	23	19	18	17	18	18
Madera	30	36	33	36	33	31	30	27	24	22	42	26	24	24	22	19	18	17	16	16
Merced	41	48	43	50	45	40	33	26	21	17	52	49	40	44	38	34	31	30	29	30
San Joaquin	92	98	105	112	101	89	75	61	51	46	105	96	87	82	69	57	46	42	40	40
Stanislaus	51	64	63	77	66	57	48	39	32	27	76	71	67	71	61	54	46	44	43	44
Tulare	55	64	63	65	60	54	48	38	29	24	84	79	74	72	67	61	57	54	54	55
Air Basin Total	677	842	842	811	686	568	479	400	335	294	1176	1235	1060	642	506	441	386	364	357	360

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Fresno	87	80	81	83	81	83	85	90	92	95	893	844	814	733	572	446	343	278	235	210
Kern	58	56	55	50	49	50	51	54	56	59	718	824	712	604	445	341	262	218	187	169
Kings	29	27	28	28	29	29	30	32	32	33	149	137	119	109	98	74	62	50	42	37
Madera	17	19	17	19	19	19	21	22	23	24	172	183	178	158	120	105	95	80	68	61
Merced	38	37	37	39	37	37	37	38	39	39	348	341	298	306	238	194	164	137	119	107
San Joaquin	32	32	33	36	36	37	37	38	40	42	607	596	605	528	413	317	237	189	159	143
Stanislaus	35	35	36	38	37	37	38	38	39	40	407	402	393	412	313	242	185	149	124	111
Tulare	57	55	57	58	57	59	60	63	64	65	559	553	540	486	417	358	322	282	253	236
Air Basin Total	352	342	343	351	345	352	358	375	385	397	3852	3879	3659	3336	2617	2076	1670	1384	1187	1073

A portion of Kern County lies within the Mojave Desert Air Basin.

Table A-25

San Joaquin Valley Air Basin

County Emission Trends and Forecasts

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Fresno	38	31	31	31	29	29	30	31	32	33
Kern	31	30	27	22	21	22	21	22	23	24
Kings	10	9	9	10	10	10	11	11	12	12
Madera	7	9	7	8	8	8	9	9	10	10
Merced	14	14	14	15	14	14	14	14	14	15
San Joaquin	14	14	14	15	15	15	14	15	15	16
Stanislaus	15	16	16	17	16	16	16	16	16	16
Tulare	33	33	33	34	33	34	34	35	35	35
Air Basin Total	163	155	150	149	145	148	149	153	157	161

A portion of Kern County lies within the Mojave Desert Air Basin.

Table A-25 (continued)

San Joaquin Valley Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Aera Energy	Kern County	1127
Guardian Industries (Glass)	Kingsburg	1053
Pilkington North America (Glass)	Lathrop	935
JNW & Associates Cogeneration	Winton	668
Chevron USA	Kern County	591
Kern River Cogeneration	Bakersfield	580
Owens-Brockway Glass Container	Tracy	571
Saint-Gobain Containers	Madera	518
Sycamore Cogeneration	Bakersfield	472
Occidental Of Elk Hills (Natural Gas)	Tupman	428

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Crimson Resource Management (Natural Gas)	Taft	448
Occidental Of Elk Hills (Natural Gas)	Tupman	325
Styrote	Delano	256
Silgan Containers	Riverbank	245
Eott Energy Operating (Natural Gas)	Tupman	162
J G Boswell Oil Mill	Corcoran	118
Bay Sulfur Company	Stockton	116
Owens-Brockway Glass Container	Tracy	102

Table A-26

San Joaquin Valley Air Basin

High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Pilkington North America (Glass)	Lathrop	221
Chevron USA	Fellows	130
Aera Energy	Kern County	129
Calaveras Materials	Fresno	100

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
Pilkington North America (Glass)	Lathrop	212
Chevron USA	Fellows	130
Aera Energy	Kern County	128

Table A-26 (continued)

South Central Coast Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Luis Obispo	65	65	47	49	32	32	24	19	15	13	46	50	53	44	35	30	26	24	23	22
Santa Barbara	52	65	64	65	54	47	37	30	25	21	83	78	81	73	57	46	38	34	32	32
Ventura	95	105	93	86	67	57	47	38	29	24	109	117	107	95	76	62	51	46	43	41
Air Basin Total	212	236	204	199	153	136	108	87	69	58	238	244	241	212	167	139	115	104	98	95

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Luis Obispo	24	26	27	28	27	28	29	29	30	31	273	290	303	277	204	173	139	116	101	92
Santa Barbara	19	21	21	22	20	22	22	23	23	24	469	451	458	418	299	228	181	143	117	100
Ventura	25	23	23	26	25	26	27	28	29	30	553	614	608	546	411	312	236	192	164	147
Air Basin Total	69	70	71	75	72	76	77	80	82	85	1295	1355	1368	1241	915	713	556	452	381	339

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
San Luis Obispo	11	12	11	11	10	11	11	11	11	11
Santa Barbara	9	10	10	10	10	10	10	10	10	10
Ventura	15	12	11	12	11	11	11	11	11	11
Air Basin Total	35	35	32	33	31	32	31	32	32	33

Table A-27

South Central Coast Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
Celite Corporation (Minerals)	Lompoc	392
The Point Arguello Project (Oil Production)	Goleta	296
Exxon - SYU Project	Goleta	226
ERG - Orcutt Hill (Oil Production)	Orcutt	219
Conoco Phillips - Santa Maria	Arroyo Grande	142
Procter & Gamble Paper Products	Oxnard	133

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Exxon - SYU Project	Goleta	272
Aera Energy (Oil Production)	Ventura	151
The Point Arguello Project (Oil Production)	Goleta	145
Nuevo - South County Offshore (Oil Production)	Orcutt	138
Venoco - Ellwood	Goleta	101

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
Celite Corporation	Lompoc	134
Conoco Phillips - Santa Maria	Arroyo Grande	110

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**

No High Emitting Facilities

Table A-28

South Coast Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	1234	1123	1171	1027	849	736	581	455	360	311	1953	1600	1538	1141	805	608	420	349	322	309
Orange	270	279	312	266	222	195	162	129	104	91	484	465	471	350	254	198	141	121	114	111
Riverside	88	99	111	151	133	137	118	94	69	55	125	125	134	133	110	93	72	64	63	64
San Bernardino	130	140	146	145	127	128	108	85	67	57	162	174	181	150	119	100	77	68	65	65
Air Basin Total	1723	1641	1741	1588	1331	1195	970	763	600	515	2725	2364	2324	1775	1288	998	710	602	563	549

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	139	136	151	185	163	144	142	143	145	147	11684	9018	8811	6609	4718	3406	2364	1793	1446	1223
Orange	32	38	44	58	54	54	54	55	55	56	2622	2407	2464	1922	1454	1048	770	612	514	457
Riverside	23	28	32	48	49	49	52	55	58	61	775	789	847	927	724	558	422	336	283	251
San Bernardino	43	44	47	53	59	46	48	50	51	53	1074	1169	1018	863	678	521	397	322	276	253
Air Basin Total	236	247	274	343	325	293	296	303	309	317	16154	13382	13140	10322	7574	5533	3953	3062	2519	2184

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	80	70	72	76	62	59	60	59	60	60
Orange	16	17	19	21	18	19	19	19	19	19
Riverside	9	10	11	15	15	16	17	18	19	20
San Bernardino	20	18	16	17	18	17	18	18	19	20
Air Basin Total	124	116	117	129	112	111	113	114	116	119

A portion of Los Angeles County lies within the Mojave Desert Air Basin. Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins. A portion of San Bernardino County Lies within the Mojave Desert Air Basin.

Table A-29

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South Coast Air Basin

High Emitting Facilities

Oxides of Nitrogen (NO_x)		
Facility Name	**City**	**Tons per Year**
California Portland Cement	Colton	1258
Equilon Enterprises (Refining)	Wilmington	1108
Chevron USA	El Segundo	1027
West Coast Products (Refining)	Carson	834
Mobil Oil	Torrance	671
Tosco Refining Company	Wilmington	593
Southern California Edison	Avalon	435
AES Alamitos (Electric Power)	Long Beach	393
Tosco Refining Company	Carson	389
Mountain Vista Power Generation	Etiwanda	361

Reactive Organic Gases (ROG)		
Facility Name	**City**	**Tons per Year**
Chevron USA	El Segundo	870
Mobil Oil	Torrance	573
West Coast Products (Refining)	Carson	409
MCP Foods	Anaheim	386
Tomkins Industries (Plastics)	Anaheim	328
TABC, Inc (Automotive Parts)	Long Beach	287
Equilon Enterprises (Refining)	Wilmington	284
Tosco Refining Company	Wilmington	259
AES Alamitos (Electric Power)	Long Beach	215
Anheuser-Busch	Van Nuys	182

South Coast Air Basin

High Emitting Facilities

Directly Emitted Particulate Matter (PM_{10})		
Facility Name	**City**	**Tons per Year**
AES Alamitos (Electric Power)	Long Beach	405
Chevron USA	El Segundo	261
West Coast Products (Refining)	Carson	251
Equilon Enterprises (Refining)	Wilmington	176
Tosco Refining Company	Wilmington	170
Ultramar Inc (Refining)	Wilmington	169
AES Redondo Beach (Electric Power)	Redondo Beach	153
Mobil Oil	Torrance	141
California Portland Cement	Colton	111

Directly Emitted Particulate Matter ($PM_{2.5}$)		
Facility Name	**City**	**Tons per Year**
AES Alamitos (Electric Power)	Long Beach	405
West Coast Products (Refining)	Carson	246
Chevron USA	El Segundo	239
Tosco Refining Company	Wilmington	158
AES Redondo Beach (Electric Power)	Redondo Beach	152
Ultramar Inc (Refining)	Wilmington	148
Equilon Enterprises (Refining)	Wilmington	147
Mobil Oil	Torrance	128

Table A-30 (continued)

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Air Quality

This section contains air quality trend data for each county in California's 15 air basins, organized alphabetically, by air basin. It is important to note that some counties are located in more than one air basin. For these counties, the air quality data are for that portion of the county located in each air basin. The time period covered is 1984 through 2003 for ozone, CO, NO_2, and SO_2; 1988 through 2003 for PM_{10}; and 1999 through 2003 for $PM_{2.5}$. In some areas, no monitoring data are available or the data are incomplete. Tables for these areas are included, but the lack of data is noted on the tables.

Consistent with last years almanac, this section provides information on the 4th highest 1-hour ozone concentration in three years, and the average 4th highest 8-hour concentration in three years. In some cases, these statistics may be the same as the national 1-hour and 8-hour ozone design values. However, since this does not consider data completeness, they are not considered valid for design value purposes.

This year's almanac also provides both State and national PM_{10} annual average statistics. State and national annual average concentrations may differ for several reasons: 1) the State and national criteria for assessing data completeness are different, 2) different monitors are approved, by the State and U.S. EPA, for assessing compliance with the State and national standards, and 3) the State standard uses local conditions while the national standard uses standard conditions for data reporting.

Note: $PM_{2.5}$ air quality data are included in Appendix A for the first time due to the data now being adequate for developing trends. $PM_{2.5}$ air quality data are summarized by air basin in Chapter 2 and Appendix B.

Additional information about the data in the folowing tables can be found in the *Introduction* section to this Appendix and in the *Interpreting the Emissions and Air Quality Statistics* section in Chapter 1.

Great Basin Valleys Air Basin

County: Alpine

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-31

Great Basin Valleys Air Basin

County: Inyo

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator									0.083	0.083	0.097	0.097	0.094	0.090	0.092	0.090	0.090	0.089	0.091	0.091
Peak 8-Hour Indicator									0.073	0.075	0.086	0.086	0.084	0.085	0.087	0.085	0.085	0.083	0.085	0.084
4th High 1-Hr. in 3 Yrs								0.040	0.080	0.080	0.093	0.093	0.093	0.086	0.088	0.089	0.090	0.092	0.092	0.092
Avg. of 4th High 8-Hr. in 3 Yrs								0.040	0.055	0.060	0.068	0.064	0.076	0.074	0.079	0.079	0.080	0.079	0.081	0.081
Maximum 1-Hr. Concentration								0.050	0.080	0.080	0.101	0.085	0.095	0.084	0.092	0.094	0.090	0.095	0.100	0.089
Max. 8-Hr. Concentration								0.041	0.076	0.077	0.089	0.073	0.082	0.080	0.085	0.089	0.080	0.089	0.088	0.084
Days Above State Standard								0	0	0	2	0	1	0	0	0	0	1	2	0
Days Above Nat. 1-Hr. Std.								0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.								0	0	0	3	0	0	0	1	1	0	2	2	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					119	227	866	150	64	254	388	692	309	402	1022	2708	9967	3457	7401	15641
Max. 24-Hr. Concentration (Nat)					394	1861	866	181	526	781	388	2668	491	402	1116	867	2023	3189	1442	16462
Annual Average (State)						27.1	29.4	23.2	18.1	28.7	22.4	32.3	21.5	14.6	57.8	13.6	115.4	63.1	159.3	130.4
Annual Average (Nat)					32.7	27.4	29.4	23.2	37.3	30.6	26.2	31.8	21.5	14.6	53.8	15.3	39.0	69.6	31.2	38.8
Calc Days Above State 24-Hr Std						36	18	12	12	36	16	23	7	6	80	0	58	41	93	44
Calc Days Above Nat 24-Hr Std					13	27	12	3	19	8	4	14	26	17	22	0	45	17	13	32

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																40.7	68.0	76.0	68.0	44.0
Max. 24-Hr. Concentration (Nat)																40.7	68.0	76.0	68.0	44.0
98th Percentile of 24-Hr Conc.																	67.0	23.0	64.0	8.0
Annual Average (State)																		5.5		
Avg. of Qtrly. Means (Nat)																		5.5	8.4	

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator									3.5	3.2	3.1	2.9								
Max. 1-Hr. Concentration								6	11	5	5	4								
Max. 8-Hr. Concentration								3.6	3.8	2.8	2.8	2								
Days Above State 8-Hr. Std.								0	0	0	0	0								
Days Above Nat. 8-Hr. Std.								0	0	0	0	0								

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-32

Great Basin Valleys Air Basin

County: Mono

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.096	0.094	0.100	0.099	0.100	0.099	0.100	0.099	0.115	0.110	0.108	0.097	0.099	0.096	0.095			0.104	0.105	
Peak 8-Hour Indicator	0.089	0.088	0.095	0.094	0.092	0.092	0.093	0.091	0.097	0.093	0.092	0.085	0.087	0.083	0.081			0.091	0.091	
4th High 1-Hr. in 3 Yrs	0.090	0.090	0.100	0.100	0.100	0.100	0.100	0.090	0.120	0.120	0.120	0.100	0.100	0.091	0.090			0.097	0.097	
Avg. of 4th High 8-Hr. in 3 Yrs	0.078	0.079	0.082	0.084	0.086	0.081	0.081	0.076	0.081	0.078	0.082	0.079	0.079	0.077	0.073			0.083	0.072	
Maximum 1-Hr. Concentration	0.090	0.100	0.100	0.100	0.100	0.080	0.100	0.090	0.150	0.090	0.120	0.110	0.090	0.092	0.079			0.100	0.071	
Max. 8-Hr. Concentration	0.087	0.090	0.093	0.091	0.098	0.077	0.091	0.073	0.103	0.077	0.092	0.101	0.090	0.078	0.073			0.095	0.063	
Days Above State Standard	0	1	5	4	3	0	2	0	5	0	2	2	0	0	0			4	0	
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0			0	0	
Days Above Nat. 8-Hr. Std.	2	2	13	2	6	0	3	0	9	0	3	2	1	0	0			2	0	

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					166	163	161	134	493	981	92	122	158	112	88	109	8817	3643	5291	4774
Max. 24-Hr. Concentration (Nat)					166	163	161	134	493	981	92	122	158	112	106	133	10466	4482	6505	5745
Annual Average (State)							11.6		37.0	34.2	29.8	26.0		26.4		10.0	116.8		62.3	10.5
Annual Average (Nat)					36.9	34.6	39.6	12.7	36.3	34.6	29.9	26.0	14.4	26.5	8.7	12.6	121.2	10.8	79.5	
Calc Days Above State 24-Hr Std							13		83	62	64	37		36		0	18		22	0
Calc Days Above Nat 24-Hr Std					6	7	12	0	6	6	0	0	0	0	0	0	15	0	13	22

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																	31.0	41.0		34.0
Max. 24-Hr. Concentration (Nat)																	31.0	41.0		34.0
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator		7.3	7.2	7.0	5.9	5.8	5.7	5.6		5.0	4.7	4.6	4.0	4.0	3.9		2.9	2.5	2.5	
Max. 1-Hr. Concentration	13.0	16.0	11.0	9.0	13.0	12.0	10.0	11.0	8.0	13.0	9.0	10.0	6.0	8.2	6.7		4.2	15.4	3.8	
Max. 8-Hr. Concentration	7.3	7.4	6.0	6.3	5.0	5.4	4.4	5.0	4.4	4.5	5.4	5.4	3.0	3.4	3.0		2.5	2.5	1.8	
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-33

Lake County Air Basin

County: Lake

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.079	0.075	0.081	0.081	0.080	0.083	0.074	0.075	0.077	0.077	0.083	0.082	0.082	0.076	0.076	0.087	0.083	0.080	0.081	0.080
Peak 8-Hour Indicator	0.073	0.067	0.072	0.075	0.076	0.072	0.060	0.064	0.064	0.066	0.071	0.071	0.071	0.064	0.065	0.075	0.073	0.071	0.073	0.071
4th High 1-Hr. in 3 Yrs	0.080	0.070	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
Avg. of 4th High 8-Hr. in 3 Yrs	0.063	0.059	0.064	0.065	0.065	0.058	0.054	0.055	0.055	0.057	0.059	0.061	0.060	0.058	0.057	0.061	0.062	0.063	0.064	0.064
Maximum 1-Hr. Concentration	0.080	0.080	0.080	0.090	0.070	0.060	0.090	0.080	0.080	0.080	0.090	0.070	0.090	0.080	0.080	0.090	0.080	0.070	0.090	0.080
Max. 8-Hr. Concentration	0.077	0.070	0.080	0.080	0.061	0.053	0.063	0.066	0.057	0.072	0.075	0.063	0.070	0.065	0.076	0.072	0.073	0.065	0.077	0.065
Days Above State Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					23	29	30	31	22	30	21	30	26	18	34	40	21	23	85	32
Max. 24-Hr. Concentration (Nat)					28	29	30	31	22	30	21	30	26	18	35	43	22	21		
Annual Average (State)						12.9			11.9	11.3	11.0	10.8	10.2	8.6			10.6	10.2	13.1	10.0
Annual Average (Nat)						12.9		12.6	11.8	11.3	10.9	10.7	10.2	8.6	7.8		10.8			
Calc Days Above State 24-Hr Std						0			0	0	0	0	0	0			0	0	12	0
Calc Days Above Nat 24-Hr Std						0	0	0	0	0	0	0	0	0	0		0			

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																14.5	10.0	15.1	74.7	21.9
Max. 24-Hr. Concentration (Nat)																14.5	10.0	15.1	74.7	21.9
98th Percentile of 24-Hr Conc.																	9.4	11.3	46.3	15.1
Annual Average (State)																		4.1	6.3	4.4
Avg. of Qtrly. Means (Nat)																	4.3	4.2	6.3	4.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator						1.9	2.9	2.9												
Max. 1-Hr. Concentration						3.0	6.0	7.0												
Max. 8-Hr. Concentration						2.2	2.6	3.1												
Days Above State 8-Hr. Std.						0	0	0												
Days Above Nat. 8-Hr. Std.						0	0	0												

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-34

Lake Tahoe Air Basin

County: El Dorado

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.080	0.081	0.082	0.085	0.089	0.091	0.091	0.093	0.089	0.079	0.082	0.084	0.084	0.083	0.082	0.081	0.089	0.090	0.093	0.091
Peak 8-Hour Indicator	0.070	0.072	0.074	0.077	0.080	0.081	0.081	0.082	0.081	0.068	0.074	0.075	0.076	0.073	0.074	0.074	0.077	0.079	0.080	0.081
4th High 1-Hr. in 3 Yrs	0.080	0.080	0.080	0.090	0.090	0.090	0.090	0.090	0.090	0.070	0.081	0.086	0.083	0.083	0.081	0.081	0.086	0.087	0.089	0.088
Avg. of 4th High 8-Hr. in 3 Yrs	0.067	0.068	0.069	0.071	0.074	0.076	0.075	0.076	0.075	0.056	0.061	0.070	0.071	0.068	0.069	0.069	0.074	0.075	0.075	0.076
Maximum 1-Hr. Concentration	0.080	0.100	0.090	0.090	0.090	0.100	0.090	0.090	0.100	0.090	0.086	0.092	0.083	0.095	0.081	0.095	0.089	0.095	0.102	0.082
Max. 8-Hr. Concentration	0.072	0.086	0.080	0.082	0.085	0.085	0.080	0.081	0.082	0.071	0.079	0.089	0.073	0.071	0.077	0.079	0.077	0.084	0.079	0.079
Days Above State Standard	0	1	0	0	0	2	0	0	1	0	0	0	0	1	0	1	0	1	1	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	1	0	0	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)									52	92	78	71	72	55	50	36	44	50	46	52
Max. 24-Hr. Concentration (Nat)					95	73	84	78	85	92	78	71	72	55	59	41	50	58	51	61
Annual Average (State)											27.1	22.5		21.6	19.8	16.9	17.3	16.9	17.1	15.0
Annual Average (Nat)						28.1	30.7	28.3			27.1	22.5	23.4	21.6	23.4	19.9	20.4	19.8	19.9	17.6
Calc Days Above State 24-Hr Std											42	18		13	0	0	0	0	0	6
Calc Days Above Nat 24-Hr Std						0	0	0			0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																21.0	23.0	31.0	27.0	24.0
Max. 24-Hr. Concentration (Nat)																21.0	23.0	31.0	27.0	21.0
98th Percentile of 24-Hr Conc.																21.0	22.0	26.0		19.0
Annual Average (State)																8.3	7.8	8.2		7.2
Avg. of Qtrly. Means (Nat)																8.3	7.8	8.2		7.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	16.1	16.4	15.5	14.9	13.2	12.6	11.9	11.1	10.2	8.7	8.3	7.8	7.0	5.6	5.0	2.3	2.1	2.0	2.0	1.9
Max. 1-Hr. Concentration	23.0	23.0	20.0	19.0	19.0	17.0	18.0	14.0	15.0	13.0	11.3	9.3	10.4	7.7	7.5	3.2	5.4	3.1	3.8	2.4
Max. 8-Hr. Concentration	14.8	16.3	12.5	13.0	12.5	11.3	10.1	9.2	9.9	7.5	7.1	6.3	5.1	3.8	4.3	2.4	1.9	1.9	3.0	1.9
Days Above Nat. 8-Hr. Std.	28	28	10	12	9	5	5	0	1	0	0	0	0	0	0	0	0	0	0	0
Days Above Lake Tahoe 8-Hr. Std.	139	121	96	87	80	67	39	24	13	12	9	1	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.079	0.079	0.074	0.076	0.073	0.074	0.078	0.076	0.078	0.062	0.061	0.062	0.062	0.061	0.060	0.057	0.058	0.068	0.063	0.062
Max. 1-Hr. Concentration	0.060	0.080	0.080	0.080	0.070	0.070	0.150	0.060	0.060	0.060	0.057	0.059	0.061	0.051	0.052	0.060	0.086	0.090	0.088	0.059
Max. Annual Average	0.012	0.011	0.010	0.012	0.012		0.012	0.012		0.011	0.012	0.011	0.011	0.011	0.010	0.011	0.011	0.011	0.012	0.010

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-35

A portion of El Dorado County lies within the Mountain Counties Air Basin.

Lake Tahoe Air Basin

County: Placer

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				0.079
Peak 8-Hour Indicator																				0.073
4th High 1-Hr. in 3 Yrs																				0.076
Avg. of 4th High 8-Hr. in 3 Yrs																				0.068
Maximum 1-Hr. Concentration																				0.086
Max. 8-Hr. Concentration																				0.070
Days Above State Standard																				0
Days Above Nat. 1-Hr. Std.																				0
Days Above Nat. 8-Hr. Std.																				0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)												24	50							
Max. 24-Hr. Concentration (Nat)												24	50							
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				27.4
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator										3.9	3.9	3.9								1.0
Max. 1-Hr. Concentration	13.0									9.0	11.6	9.5								1.4
Max. 8-Hr. Concentration	7.3									4.3	4.7	2.9								0.8
Days Above Nat. 8-Hr. Std.	0									0	0	0								0
Days Above Lake Tahoe 8-Hr. Std.	2									0	0	0								0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-36

Portions of Placer County lie within the Mountain Counties and Sacramento Valley Air Basins.

Mojave Desert Air Basin

County: Kern

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator											0.122	0.134	0.125	0.121	0.125	0.121	0.121	0.116	0.116	0.117
Peak 8-Hour Indicator											0.106	0.112	0.107	0.105	0.110	0.106	0.106	0.101	0.100	0.103
4th High 1-Hr. in 3 Yrs										0.120	0.121	0.123	0.123	0.123	0.126	0.119	0.119	0.118	0.116	0.118
Avg. of 4th High 8-Hr. in 3 Yrs										0.102	0.102	0.101	0.100	0.097	0.099	0.096	0.097	0.096	0.095	0.098
Maximum 1-Hr. Concentration										0.130	0.124	0.142	0.130	0.119	0.134	0.119	0.113	0.126	0.115	0.119
Max. 8-Hr. Concentration										0.112	0.107	0.109	0.109	0.096	0.117	0.100	0.095	0.104	0.102	0.103
Days Above State Standard										15	43	54	46	22	43	39	25	33	18	31
Days Above Nat. 1-Hr. Std.										2	0	3	2	0	2	0	0	1	0	0
Days Above Nat. 8-Hr. Std.										13	46	46	42	19	40	34	15	32	26	27

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)						54	462	534	65	50	33	143	92	130	159	40	90	112	194	158
Max. 24-Hr. Concentration (Nat)					148	54	462	534	65	64	116	235	92	130	165	45	90	115	208	162
Annual Average (State)													16.9	18.4	15.0	17.7	20.3	19.8	24.2	21.5
Annual Average (Nat)							34.0			21.2		17.3	16.9	18.6	16.2	19.3	21.6	21.2	26.1	22.9
Calc Days Above State 24-Hr Std													0	6	0	0	6	6	12	12
Calc Days Above Nat 24-Hr Std							6			0		0	0	0	0	0	0	0	7	6

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																27.6	38.6	15.3	31.4	23.2
Max. 24-Hr. Concentration (Nat)																27.6	38.6	15.3	31.4	23.2
98th Percentile of 24-Hr Conc.																		13.9	28.0	
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																	7.8	6.5	8.2	5.9

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator											0.063	0.067	0.072	0.072	0.072	0.067	0.070	0.066	0.067	0.064
Max. 1-Hr. Concentration										0.070	0.060	0.120	0.075	0.075	0.082	0.083	0.071	0.071	0.071	0.073
Max. Annual Average												0.008		0.010	0.011		0.010	0.010		0.009

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-37

A portion of Kern County lies within the San Joaquin Valley Air Basin.

Mojave Desert Air Basin

County: Los Angeles

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.176	0.185	0.187	0.191	0.187	0.181	0.179	0.140	0.154	0.159	0.161	0.194	0.138	0.134	0.140	0.131	0.137	0.128	0.140	0.137
Peak 8-Hour Indicator	0.139	0.142	0.145	0.144	0.138	0.138	0.136	0.113	0.120	0.122	0.123	0.144	0.110	0.111	0.107	0.104	0.107	0.106	0.108	0.115
4th High 1-Hr. in 3 Yrs	0.180	0.180	0.190	0.190	0.180	0.170	0.170	0.140	0.160	0.160	0.160	0.172	0.138	0.129	0.137	0.137	0.139	0.128	0.128	0.133
Avg. of 4th High 8-Hr. in 3 Yrs	0.124	0.132	0.134	0.132	0.128	0.123	0.105	0.105	0.110	0.113	0.113	0.130	0.103	0.098	0.097	0.089	0.092	0.091	0.071	0.082
Maximum 1-Hr. Concentration	0.180	0.190	0.200	0.170	0.180	0.210	0.150	0.140	0.170	0.160	0.143	0.185	0.131	0.123	0.164	0.097	0.141	0.146	0.157	0.156
Max. 8-Hr. Concentration	0.141	0.147	0.150	0.140	0.131	0.147	0.106	0.111	0.137	0.127	0.112	0.154	0.104	0.101	0.118	0.083	0.117	0.102	0.107	0.120
Days Above State Standard	110	106	108	105	105	95	52	62	78	59	62	92	40	14	24	1	35	37	46	50
Days Above Nat. 1-Hr. Std.	49	58	47	32	44	27	7	8	25	14	10	34	1	0	8	0	2	3	5	4
Days Above Nat. 8-Hr. Std.	85	85	79	76	91	65	36	39	53	36	33	70	18	7	18	0	28	24	38	33

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)							342	780	68	70	97	61	67	54						54
Max. 24-Hr. Concentration (Nat)						110	342	780	68	70	97	61	67	54	80	85			73	57
Annual Average (State)										35.1			29.0							
Annual Average (Nat)						46.0		58.0	32.6	34.9		25.5	29.0	29.2		28.7			29.7	24.6
Calc Days Above State 24-Hr Std										58			12							
Calc Days Above Nat 24-Hr Std						0		13	0	0		0	0	0		0			0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																47.6	36.0	35.0	24.0	25.0
Max. 24-Hr. Concentration (Nat)																47.6	36.0	35.0	24.0	25.0
98th Percentile of 24-Hr Conc.																23.5	21.0		20.0	17.0
Annual Average (State)																11.2				9.4
Avg. of Qtrly. Means (Nat)																11.2	10.5		10.4	9.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	5.4	5.6	5.2	4.9	4.6	5.5	7.7	7.6	6.5	6.2	6.1	5.8	5.3	4.8	4.4	4.4	4.6	4.8	2.0	2.0
Max. 1-Hr. Concentration	10.0	12.0	9.0	12.0	11.0	13.0	11.0	10.0	9.0	8.0	9.1	7.5	6.8	5.9	5.4	7.2	6.0	6.1	3.4	3.2
Max. 8-Hr. Concentration	4.9	5.7	4.6	3.9	5.9	7.1	8.3	7.1	5.4	5.9	5.6	5.0	4.7	4.0	3.6	5.4	4.3	3.3	2.2	1.9
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.093	0.091	0.087	0.084	0.090	0.091	0.096	0.095	0.097	0.098	0.097	0.098	0.090	0.086	0.070	0.070	0.070	0.070	0.074	0.071
Max. 1-Hr. Concentration	0.110	0.080	0.090	0.090	0.090	0.080	0.090	0.110	0.160	0.110	0.097	0.140	0.080	0.071	0.077	0.083	0.065	0.075	0.101	0.067
Max. Annual Average	0.018	0.015	0.014	0.016	0.016	0.019		0.014	0.017	0.020	0.018	0.019	0.015				0.016		0.016	0.015

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-38

A portion of Los Angeles County lies within the South Coast Air Basin.

Mojave Desert Air Basin

County: Riverside

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator		0.143	0.138	0.144	0.142	0.141	0.132	0.140	0.146	0.146										0.079
Peak 8-Hour Indicator		0.106	0.107	0.112	0.113	0.116	0.105	0.113	0.113	0.114										0.073
4th High 1-Hr. in 3 Yrs		0.110	0.140	0.147	0.147	0.140	0.131	0.130	0.130	0.131										0.074
Avg. of 4th High 8-Hr. in 3 Yrs		0.092	0.096	0.101	0.103	0.102	0.096	0.099	0.101	0.101										0.064
Maximum 1-Hr. Concentration		0.140	0.160	0.148	0.140	0.140	0.130	0.130	0.138	0.140										0.077
Max. 8-Hr. Concentration		0.102	0.105	0.127	0.105	0.117	0.102	0.115	0.115	0.108										0.071
Days Above State Standard		19	39	65	32	31	23	33	44	18										0
Days Above Nat. 1-Hr. Std.		3	3	10	4	2	1	6	7	1										0
Days Above Nat. 8-Hr. Std.		8	30	49	16	20	18	37	39	16										0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)								112	242											
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-39

Portions of Riverside County lie within the Salton Sea and South Coast Air Basins.

Mojave Desert Air Basin

County: San Bernardino

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.193	0.200	0.235	0.231	0.234	0.204	0.215	0.223	0.220	0.193	0.191	0.193	0.186	0.171	0.176	0.162	0.154	0.136	0.139	0.138
Peak 8-Hour Indicator	0.142	0.164	0.200	0.191	0.189	0.161	0.170	0.170	0.166	0.155	0.148	0.158	0.146	0.145	0.145	0.133	0.124	0.114	0.116	0.117
4th High 1-Hr. in 3 Yrs	0.220	0.220	0.230	0.230	0.230	0.210	0.220	0.230	0.230	0.200	0.190	0.188	0.182	0.175	0.167	0.166	0.164	0.135	0.143	0.138
Avg. of 4th High 8-Hr. in 3 Yrs	0.132	0.150	0.168	0.163	0.165	0.153	0.151	0.151	0.147	0.139	0.138	0.137	0.131	0.124	0.127	0.118	0.110	0.102	0.106	0.106
Maximum 1-Hr. Concentration	0.230	0.210	0.260	0.220	0.270	0.220	0.270	0.240	0.230	0.200	0.188	0.240	0.175	0.187	0.202	0.137	0.163	0.146	0.148	0.163
Max. 8-Hr. Concentration	0.158	0.167	0.225	0.161	0.167	0.161	0.198	0.173	0.165	0.147	0.155	0.170	0.146	0.133	0.144	0.122	0.132	0.117	0.123	0.130
Days Above State Standard	103	138	142	147	148	150	135	132	148	129	137	109	98	95	74	74	79	52	68	78
Days Above Nat. 1-Hr. Std.	38	74	94	71	104	91	76	67	75	66	77	47	38	22	24	4	10	3	14	11
Days Above Nat. 8-Hr. Std.	86	119	136	135	137	136	118	122	128	121	126	94	83	74	60	61	61	47	59	61

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					63	191	381	389	80	79	140	85	138	85						169
Max. 24-Hr. Concentration (Nat)					150	191	381	389	105	79	140	85	138	85	70	109	80	84	98	181
Annual Average (State)						42.5			39.7	34.4	27.9		28.9	27.4						27.9
Annual Average (Nat)					35.8	48.6	48.1	42.8	39.4	34.9	42.1		28.9	27.3	27.8	32.1	33.6	29.8	34.3	33.2
Calc Days Above State 24-Hr Std						72			84	50	6		18	6						18
Calc Days Above Nat 24-Hr Std					0	6	6	7	0	0	0		0	0	0	0	0	0	0	8

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																25.4	31.0	32.0	38.0	28.0
Max. 24-Hr. Concentration (Nat)																25.4	31.0	32.0	38.0	28.0
98th Percentile of 24-Hr Conc.																20.4	23.0	21.0	34.0	24.0
Annual Average (State)																		11.5	13.9	
Avg. of Qtrly. Means (Nat)																11.9	12.0	11.5	13.9	11.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	3.1	3.4	3.4	3.5	4.2	4.0	4.1	4.2	4.3	3.8	3.8	2.9	7.4	2.3	2.4	2.1	1.7	1.8	1.8	1.8
Max. 1-Hr. Concentration	6.0	6.0	8.0	6.0	10.0	7.0	9.0	5.0	6.0	5.0	7.9	6.1	8.4	4.1	3.9	10.3	3.0	3.8	3.0	3.9
Max. 8-Hr. Concentration	2.9	3.5	3.4	4.0	5.8	3.9	3.9	3.9	3.4	3.5	3.2	2.7	7.5	3.1	2.2	3.2	1.6	1.7	1.8	2.1
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.138	0.136	0.130	0.134	0.112	0.100	0.182	0.259	0.275	0.289	0.202	0.124	0.119	0.097	0.102	0.105	0.106	0.099	0.096	0.092
Max. 1-Hr. Concentration	0.160	0.140	0.150	0.130	0.100	0.120	0.190	0.350	0.240	0.360	0.138	0.118	0.087	0.107	0.196	0.113	0.105	0.102	0.091	0.095
Max. Annual Average	0.021	0.025	0.021		0.018	0.026	0.019		0.025		0.024	0.023	0.021	0.020	0.022	0.024	0.025	0.024	0.025	0.024

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.04	0.04	0.03	0.03	0.07	0.06	0.06	0.04	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.00	0.01	0.01	0.00	0.02	0.03	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Table A-40

A portion of San Bernardino County lies within the South Coast Air Basin.

Mountain Counties Air Basin

County: Amador

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator									0.119	0.117	0.117	0.120	0.123	0.123	0.133	0.129	0.127	0.114	0.113	0.110
Peak 8-Hour Indicator									0.096	0.095	0.096	0.100	0.103	0.103	0.110	0.109	0.109	0.099	0.098	0.092
4th High 1-Hr. in 3 Yrs									0.110	0.110	0.119	0.119	0.123	0.127	0.128	0.128	0.126	0.118	0.111	0.108
Avg. of 4th High 8-Hr. in 3 Yrs									0.090	0.089	0.091	0.091	0.093	0.090	0.095	0.096	0.099	0.091	0.088	0.085
Maximum 1-Hr. Concentration									0.120	0.110	0.123	0.146	0.127	0.135	0.143	0.121	0.121	0.107	0.118	0.111
Max. 8-Hr. Concentration									0.105	0.090	0.104	0.112	0.106	0.104	0.115	0.107	0.102	0.087	0.092	0.085
Days Above State Standard									15	11	15	21	21	9	30	22	13	4	8	12
Days Above Nat. 1-Hr. Std.									0	0	0	1	2	1	4	0	0	0	0	0
Days Above Nat. 8-Hr. Std.									11	5	15	18	14	3	28	13	14	2	7	2

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)														30						
Max. 24-Hr. Concentration (Nat)														30						
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator									2.5	2.2	2.0	2.0	1.7	1.5	1.4	1.5	1.6	1.5	1.4	1.3
Max. 1-Hr. Concentration									3.0	3.0	9.3	9.3	2.2	2.8	2.5	2.2	5.0	3.5	3.0	2.2
Max. 8-Hr. Concentration									2.4	3.0	1.8	2.6	1.5	1.4	1.4	1.5	1.3	1.4	1.2	1.2
Days Above State 8-Hr. Std.									0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.									0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-41

Mountain Counties Air Basin

County: Calaveras

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator											0.121	0.118	0.123	0.124	0.128	0.123	0.124	0.116	0.116	0.116
Peak 8-Hour Indicator											0.105	0.102	0.105	0.105	0.111	0.109	0.109	0.101	0.100	0.099
4th High 1-Hr. in 3 Yrs											0.114	0.117	0.129	0.130	0.130	0.124	0.124	0.120	0.117	0.117
Avg. of 4th High 8-Hr. in 3 Yrs											0.099	0.096	0.097	0.093	0.096	0.096	0.100	0.094	0.092	0.091
Maximum 1-Hr. Concentration											0.121	0.146	0.138	0.140	0.134	0.126	0.134	0.120	0.131	0.117
Max. 8-Hr. Concentration											0.108	0.107	0.112	0.112	0.109	0.106	0.105	0.090	0.108	0.097
Days Above State Standard											35	23	24	6	27	21	16	8	14	20
Days Above Nat. 1-Hr. Std.											0	1	3	1	1	1	1	0	1	0
Days Above Nat. 8-Hr. Std.											34	19	18	4	28	18	17	5	12	18

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)											44	118	36	112	34	63	36	42	47	39
Max. 24-Hr. Concentration (Nat)											44	118	36	112	35	65	35	44	44	40
Annual Average (State)												20.9	17.7		15.6		17.7	19.2	20.9	18.2
Annual Average (Nat)												21.0	17.8	19.9	15.8	20.7	17.9	19.4	20.9	18.2
Calc Days Above State 24-Hr Std												12	0		0		0	0	0	0
Calc Days Above Nat 24-Hr Std												0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																33.0	48.0	31.0	40.0	20.0
Max. 24-Hr. Concentration (Nat)																33.0	48.0	31.0	40.0	20.0
98th Percentile of 24-Hr Conc.																28.0	30.0	18.0	30.0	19.0
Annual Average (State)																11.1	9.0	8.1	9.9	8.6
Avg. of Qtrly. Means (Nat)																11.1	9.0	8.1	9.9	8.6

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator											0.7	1.0	0.9	0.9	0.9	0.9	0.8	1.1	1.0	1.0
Max. 1-Hr. Concentration											1.5	2.1	1.7	2.1	1.8	1.8	1.2	6.2	1.2	0.9
Max. 8-Hr. Concentration											0.7	1.8	0.9	1.7	0.9	0.8	0.9	4.3	0.8	0.7
Days Above State 8-Hr. Std.											0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.											0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-42

Mountain Counties Air Basin

County: El Dorado

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator						0.138			0.127	0.122	0.127	0.131	0.137	0.140	0.147	0.144	0.144	0.137	0.143	0.146
Peak 8-Hour Indicator						0.120			0.109	0.106	0.109	0.112	0.116	0.113	0.119	0.118	0.120	0.113	0.119	0.122
4th High 1-Hr. in 3 Yrs						0.120			0.120	0.120	0.124	0.124	0.126	0.123	0.143	0.144	0.143	0.128	0.143	0.143
Avg. of 4th High 8-Hr. in 3 Yrs						0.103			0.098	0.095	0.097	0.099	0.103	0.099	0.103	0.103	0.107	0.104	0.106	0.107
Maximum 1-Hr. Concentration						0.130			0.120	0.120	0.130	0.126	0.136	0.145	0.163	0.144	0.128	0.148	0.156	0.145
Max. 8-Hr. Concentration						0.110			0.112	0.108	0.104	0.113	0.113	0.106	0.127	0.118	0.113	0.109	0.137	0.122
Days Above State Standard						21			29	10	26	32	41	19	32	39	37	42	50	37
Days Above Nat. 1-Hr. Std.						2			0	0	2	1	3	1	6	4	2	1	6	4
Days Above Nat. 8-Hr. Std.						24			29	12	22	31	36	16	26	40	31	35	42	27

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)									103	62	34	53	58	62	39	46	38	51	36	50
Max. 24-Hr. Concentration (Nat)					56	59	89		103	62	34	53	58	62	41	49	38	52	37	51
Annual Average (State)										18.4	18.0	18.1		17.4	14.3	17.7		16.0	16.4	14.4
Annual Average (Nat)										18.4	18.0	18.1	17.0	17.4	14.9	18.5	16.5	16.8	17.3	15.1
Calc Days Above State 24-Hr Std										6	0	6		6	0	0		6	0	0
Calc Days Above Nat 24-Hr Std										0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				21.7
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator						4.1	4.3		1.6	1.3	1.3	1.2	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.7
Max. 1-Hr. Concentration						6.0	5.0		3.0	2.0	1.7	1.6	1.3	1.6	1.7	1.4	2.7	1.4	1.9	1.1
Max. 8-Hr. Concentration						4.6	3.5		2.4	1.5	1.0	1.0	0.9	0.8	0.9	0.9	1.0	0.8	0.8	0.7
Days Above State 8-Hr. Std.						0	0		0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.						0	0		0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-43

A portion of El Dorado County lies within the Lake Tahoe Air Basin.

Mountain Counties Air Basin

County: Mariposa

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator				0.129	0.124	0.121	0.116	0.117	0.117	0.115	0.114	0.113	0.108	0.111	0.114	0.120	0.118	0.113	0.108	0.111
Peak 8-Hour Indicator				0.106	0.103	0.102	0.104	0.102	0.102	0.109	0.107	0.104	0.104	0.106	0.106	0.108	0.105	0.102	0.098	0.098
4th High 1-Hr. in 3 Yrs				0.116	0.119	0.119	0.113	0.110	0.110	0.110	0.110	0.111	0.109	0.110	0.111	0.112	0.112	0.112	0.106	0.113
Avg. of 4th High 8-Hr. in 3 Yrs				0.093	0.092	0.090	0.090	0.088	0.089	0.096	0.095	0.095	0.096	0.095	0.095	0.095	0.094	0.091	0.089	0.091
Maximum 1-Hr. Concentration				0.145	0.119	0.110	0.120	0.110	0.111	0.120	0.113	0.114	0.111	0.120	0.114	0.155	0.121	0.116	0.106	0.135
Max. 8-Hr. Concentration				0.111	0.096	0.093	0.096	0.102	0.095	0.111	0.104	0.103	0.107	0.105	0.103	0.105	0.100	0.098	0.097	0.103
Days Above State Standard				27	26	2	20	19	10	17	10	20	28	7	13	16	10	4	19	15
Days Above Nat. 1-Hr. Std.				3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Days Above Nat. 8-Hr. Std.				22	20	4	20	31	9	22	12	24	30	7	14	24	14	8	26	28

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)						84	209	350	104	126	115	71	106	62	36	75	89	277	72	58
Max. 24-Hr. Concentration (Nat)					180	84	209	350	104	126	115	71	106	62	40	82	98	312	76	66
Annual Average (State)								48.4			33.9							29.6	25.9	21.0
Annual Average (Nat)							40.9	47.8	30.9		34.6	28.0			20.4	26.7	26.3	33.3	28.5	23.1
Calc Days Above State 24-Hr Std								95			87							37	18	6
Calc Days Above Nat 24-Hr Std							10	14	0		0	0		0	0	0	0	6	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																			29.0	54.0
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration									6.2											2.5
Max. 8-Hr. Concentration									4.5											1.5
Days Above State 8-Hr. Std.									0											0
Days Above Nat. 8-Hr. Std.									0											0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																			0.043	0.019
Max. Annual Average																				

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-44

Mountain Counties Air Basin

County: Nevada

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator						0.118	0.125	0.118	0.110	0.076	0.111	0.111	0.118	0.113	0.114	0.114	0.117	0.116	0.116	0.117
Peak 8-Hour Indicator						0.111	0.110	0.104	0.096	0.064	0.097	0.097	0.104	0.103	0.103	0.101	0.104	0.103	0.105	0.107
4th High 1-Hr. in 3 Yrs						0.100	0.110	0.110	0.110	0.070	0.100	0.100	0.110	0.108	0.111	0.109	0.115	0.116	0.117	0.116
Avg. of 4th High 8-Hr. in 3 Yrs						0.097	0.094	0.092	0.088	0.065	0.077	0.085	0.087	0.089	0.095	0.095	0.096	0.097	0.098	0.098
Maximum 1-Hr. Concentration						0.120	0.150	0.110	0.110	0.090	0.110	0.099	0.111	0.108	0.119	0.165	0.130	0.116	0.127	0.120
Max. 8-Hr. Concentration						0.107	0.115	0.096	0.087	0.078	0.107	0.092	0.104	0.101	0.099	0.103	0.113	0.106	0.113	0.103
Days Above State Standard						12	8	7	2	0	8	3	22	10	16	20	21	21	24	23
Days Above Nat. 1-Hr. Std.						0	2	0	0	0	0	0	0	0	0	1	1	0	1	0
Days Above Nat. 8-Hr. Std.						11	9	7	5	0	9	4	29	17	25	33	28	23	28	23

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)									30	34			44	81			49			
Max. 24-Hr. Concentration (Nat)					38			44	43	34			49	136	92	84	57			
Annual Average (State)														28.3						
Annual Average (Nat)									22.3					28.4	14.4	25.3				
Calc Days Above State 24-Hr Std														41						
Calc Days Above Nat 24-Hr Std									0					0	0	0				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																50.0	27.0	120.0	23.0	21.0
Max. 24-Hr. Concentration (Nat)																50.0	27.0	120.0	23.0	21.0
98th Percentile of 24-Hr Conc.																	23.0	26.0	16.0	20.0
Annual Average (State)																				7.2
Avg. of Qtrly. Means (Nat)																	8.8	9.4	7.5	7.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration								1.0	0.0	10.0	9.0									
Max. 8-Hr. Concentration								0.1	0.0	5.4	5.4									
Days Above State 8-Hr. Std.								0	0	0	0									
Days Above Nat. 8-Hr. Std.								0	0	0	0									

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-45

Mountain Counties Air Basin

County: Placer

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator					0.155	0.134	0.134	0.109	0.120	0.119	0.118	0.119	0.116	0.111	0.106	0.111	0.114	0.113	0.129	0.123
Peak 8-Hour Indicator					0.122	0.114	0.114	0.108	0.101	0.099	0.100	0.102	0.102	0.097	0.095	0.095	0.096	0.094	0.114	0.105
4th High 1-Hr. in 3 Yrs					0.140	0.140	0.140	0.100	0.110	0.110	0.120	0.119	0.117	0.109	0.103	0.105	0.105	0.104	0.116	0.118
Avg. of 4th High 8-Hr. in 3 Yrs					0.108	0.102	0.089	0.063	0.092	0.092	0.092	0.092	0.091	0.086	0.086	0.086	0.079	0.073	0.077	0.088
Maximum 1-Hr. Concentration					0.160	0.120	0.090	0.060	0.130	0.120	0.122	0.130	0.108	0.103	0.132	0.159	0.070	0.095	0.142	0.121
Max. 8-Hr. Concentration					0.138	0.101	0.078	0.035	0.098	0.097	0.107	0.100	0.091	0.097	0.108	0.093	0.058	0.088	0.113	0.097
Days Above State Standard					39	24	0	0	17	9	15	16	4	2	11	9	0	2	17	13
Days Above Nat. 1-Hr. Std.					7	0	0	0	1	0	0	1	0	0	1	1	0	0	2	0
Days Above Nat. 8-Hr. Std.					35	22	0	0	12	4	12	11	5	2	8	9	0	2	18	12

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)												86	60	74						
Max. 24-Hr. Concentration (Nat)												86	60	74						
Annual Average (State)																				
Annual Average (Nat)													21.8	21.9						
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std													0	0						

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-46

Portions of Placer County lie within the Lake Tahoe and Sacramento Valley Air Basins.

Mountain Counties Air Basin

County: Plumas

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator			0.090	0.090						0.087	0.090	0.094	0.094	0.096	0.083	0.084	0.083	0.084	0.088	0.088
Peak 8-Hour Indicator			0.082	0.082						0.075	0.081	0.086	0.087	0.089	0.076	0.077	0.076	0.078	0.081	0.080
4th High 1-Hr. in 3 Yrs			0.080	0.080					0.050	0.080	0.090	0.090	0.091	0.091	0.081	0.083	0.083	0.083	0.087	0.087
Avg. of 4th High 8-Hr. in 3 Yrs			0.073	0.071					0.037	0.053	0.062	0.077	0.078	0.065	0.060	0.060	0.070	0.069	0.071	0.069
Maximum 1-Hr. Concentration			0.090	0.080					0.050	0.090	0.090	0.105	0.091	0.046	0.087	0.086	0.081	0.086	0.091	0.075
Max. 8-Hr. Concentration			0.078	0.073					0.040	0.076	0.083	0.096	0.080	0.042	0.074	0.077	0.076	0.072	0.084	0.064
Days Above State Standard			0	0					0	0	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 1-Hr. Std.			0	0					0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.			0	0					0	0	0	2	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					113	144	138	162	120	130	98	52	55	66	69	115	67	60	48	47
Max. 24-Hr. Concentration (Nat)					153	144	138	162	120	130	98	52	55	66	74	125	75	60	49	49
Annual Average (State)											33.4	24.1	21.5		18.5		19.9			18.1
Annual Average (Nat)							38.2		37.5		33.0	24.0	21.4	22.4	25.3	27.6	21.3	22.5		19.7
Calc Days Above State 24-Hr Std											42	6	6		6		25			0
Calc Days Above Nat 24-Hr Std							0		0		0	0	0	0	0	0	0	0		0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																92.0	46.0	58.0	41.0	47.8
Max. 24-Hr. Concentration (Nat)																92.0	46.0	58.0	41.0	43.0
98th Percentile of 24-Hr Conc.																84.0		43.0		40.0
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																		15.6		13.3

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator			4.5	4.5																
Max. 1-Hr. Concentration			6.0	3.0																
Max. 8-Hr. Concentration			4.2	2.3																
Days Above State 8-Hr. Std.			0	0																
Days Above Nat. 8-Hr. Std.			0	0																

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator			0.046	0.046																
Max. 1-Hr. Concentration			0.050	0.040																
Max. Annual Average																				

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-47

Mountain Counties Air Basin

County: Sierra

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)													114	138			34			
Max. 24-Hr. Concentration (Nat)													114	138	60	68	39			
Annual Average (State)																				
Annual Average (Nat)														32.0	22.6	25.0				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std														0	0	0				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-48

Mountain Counties Air Basin

County: Tuolumne

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator					0.097	0.093	0.092	0.089	0.102	0.102	0.103	0.105	0.112	0.112	0.118	0.115	0.113	0.108	0.109	0.106
Peak 8-Hour Indicator					0.088	0.086	0.086	0.081	0.093	0.091	0.091	0.094	0.099	0.099	0.103	0.104	0.102	0.101	0.102	0.092
4th High 1-Hr. in 3 Yrs					0.091	0.091	0.091	0.090	0.090	0.100	0.101	0.103	0.116	0.117	0.117	0.116	0.114	0.107	0.109	0.104
Avg. of 4th High 8-Hr. in 3 Yrs					0.081	0.078	0.077	0.075	0.083	0.085	0.085	0.087	0.090	0.088	0.092	0.092	0.096	0.092	0.091	0.085
Maximum 1-Hr. Concentration					0.096	0.090	0.090	0.090	0.100	0.120	0.107	0.135	0.121	0.117	0.122	0.130	0.109	0.109	0.132	0.116
Max. 8-Hr. Concentration					0.086	0.078	0.081	0.078	0.097	0.088	0.094	0.105	0.108	0.107	0.107	0.103	0.104	0.097	0.101	0.088
Days Above State Standard					2	0	0	0	2	5	8	9	25	8	21	17	13	4	16	8
Days Above Nat. 1-Hr. Std.					0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0
Days Above Nat. 8-Hr. Std.					3	0	0	0	1	6	9	14	21	7	26	25	26	5	25	7

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

No Monitoring Data Available

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator									2.9	2.9	2.8	2.8	2.7	2.4	5.1	5.4	5.7	2.4	1.6	1.6
Max. 1-Hr. Concentration									4.0	5.0	4.4	3.9	4.5	6.6	6.7	4.1	3.4	2.8	3.7	2.5
Max. 8-Hr. Concentration									2.6	3.0	2.7	3.4	2.6	1.9	5.5	3.0	1.6	1.6	1.5	1.4
Days Above State 8-Hr. Std.									0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.									0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-49

North Central Coast Air Basin

County: Monterey

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.098	0.098	0.095	0.095	0.092	0.098	0.096	0.095	0.093	0.091	0.092	0.094	0.093	0.090	0.093	0.084	0.087	0.082	0.081	0.083
Peak 8-Hour Indicator	0.082	0.083	0.081	0.082	0.077	0.084	0.084	0.080	0.079	0.079	0.080	0.080	0.081	0.079	0.079	0.068	0.071	0.069	0.070	0.072
4th High 1-Hr. in 3 Yrs	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.100	0.090	0.090	0.090	0.090	0.091	0.087	0.089	0.084	0.085	0.081	0.082	0.082
Avg. of 4th High 8-Hr. in 3 Yrs	0.065	0.074	0.071	0.071	0.068	0.072	0.075	0.073	0.071	0.069	0.070	0.069	0.067	0.066	0.066	0.062	0.064	0.063	0.064	0.066
Maximum 1-Hr. Concentration	0.090	0.110	0.080	0.090	0.090	0.130	0.090	0.100	0.090	0.110	0.093	0.093	0.094	0.091	0.091	0.086	0.095	0.085	0.082	0.092
Max. 8-Hr. Concentration	0.075	0.087	0.076	0.077	0.077	0.095	0.080	0.078	0.085	0.083	0.092	0.077	0.081	0.076	0.076	0.072	0.079	0.079	0.073	0.081
Days Above State Standard	0	1	0	0	0	3	0	1	0	2	0	0	0	0	0	0	1	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					51	54	56	46	41	86	50	50	50	91	54	94	77	72	60	90
Max. 24-Hr. Concentration (Nat)					51	54	57	55	45	86	50	50	50	91	52	91	74	68	62	87
Annual Average (State)							22.5			11.6	19.5	20.6	20.0	21.4		30.3	31.2		28.9	31.6
Annual Average (Nat)					23.0	25.4	22.5	23.4		11.7	19.5	20.6	20.0	21.4	27.0	29.0	29.9	29.4	27.7	30.1
Calc Days Above State 24-Hr Std							6			0	0	0	0	6		12	24		25	41
Calc Days Above Nat 24-Hr Std					0	0	0	0		0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																30.8	26.4	25.6	23.5	15.9
Max. 24-Hr. Concentration (Nat)																30.8	26.4	25.6	23.5	15.9
98th Percentile of 24-Hr Conc.																25.0	21.5	21.7	22.8	14.0
Annual Average (State)																			9.1	7.3
Avg. of Qtrly. Means (Nat)																9.8	7.9	8.6	9.1	7.3

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	2.6	2.4	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.1	2.0	2.0	2.0	1.6	1.6	1.5	1.4
Max. 1-Hr. Concentration	5.0	6.0	4.0	5.0	6.0	5.0	5.0	4.0	4.0	4.0	4.6	3.2	5.5	4.4	3.8	3.8	3.5	3.3	2.3	2.8
Max. 8-Hr. Concentration	3.0	3.3	2.3	2.3	2.4	2.4	2.5	2.5	2.9	2.7	2.1	2.1	2.6	1.8	2.2	1.8	1.4	1.6	1.4	1.1
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.066	0.072	0.083	0.083	0.077	0.072	0.071	0.068	0.062	0.064	0.064	0.062	0.059	0.059	0.059	0.054	0.046	0.045	0.046	0.046
Max. 1-Hr. Concentration	0.060	0.090	0.110	0.070	0.070	0.070	0.060	0.060	0.070	0.070	0.067	0.054	0.060	0.056	0.085	0.054	0.071	0.041	0.049	0.053
Max. Annual Average	0.014	0.015	0.014		0.014	0.014	0.012	0.011	0.012	0.012	0.012		0.011	0.010	0.010		0.007	0.007	0.007	0.006

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.01	0.01	0.01	0.01	0.01	0.01	0.01													
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Max. 24-Hr. Concentration	0.00	0.00	0.01	0.00	0.00	0.00	0.00													

Table A-50

North Central Coast Air Basin

County: San Benito

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.104	0.113	0.109	0.146	0.136	0.131	0.115	0.114	0.115	0.111	0.107	0.106	0.111	0.112	0.113	0.103	0.104	0.100	0.104	0.104
Peak 8-Hour Indicator	0.086	0.090	0.088	0.115	0.109	0.105	0.092	0.092	0.093	0.091	0.086	0.086	0.094	0.094	0.096	0.090	0.089	0.085	0.088	0.089
4th High 1-Hr. in 3 Yrs	0.100	0.100	0.100	0.134	0.134	0.139	0.120	0.110	0.110	0.110	0.110	0.104	0.114	0.114	0.114	0.109	0.107	0.100	0.104	0.106
Avg. of 4th High 8-Hr. in 3 Yrs	0.077	0.081	0.078	0.103	0.095	0.090	0.084	0.083	0.084	0.083	0.081	0.081	0.085	0.084	0.086	0.082	0.082	0.079	0.081	0.081
Maximum 1-Hr. Concentration	0.100	0.110	0.100	0.146	0.127	0.140	0.120	0.140	0.110	0.110	0.101	0.138	0.120	0.112	0.124	0.107	0.098	0.108	0.115	0.111
Max. 8-Hr. Concentration	0.083	0.091	0.083	0.113	0.096	0.100	0.095	0.108	0.090	0.087	0.084	0.102	0.101	0.091	0.097	0.085	0.084	0.088	0.094	0.088
Days Above State Standard	6	11	1	37	14	8	10	9	9	8	6	7	16	1	9	2	2	3	8	2
Days Above Nat. 1-Hr. Std.	0	0	0	5	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	4	0	26	6	1	5	3	3	2	0	3	9	1	6	1	0	2	5	2

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					58	58	48	55	17	61	37	50	38	34	39	68	41	42	59	36
Max. 24-Hr. Concentration (Nat)					71	58	48	55	17	61	37	50	38	34	37	67	40	42	59	36
Annual Average (State)						24.3				18.9		17.2	16.8	18.0		22.6	16.4		18.5	16.7
Annual Average (Nat)						24.4		22.6		18.8	16.9	17.2	16.8	18.0	15.7	21.8	15.7	17.6	17.9	16.4
Calc Days Above State 24-Hr Std						6				12		0	0	0		13	0		7	0
Calc Days Above Nat 24-Hr Std						0		0		0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.092																			
Max. 1-Hr. Concentration	0.060																			
Max. Annual Average																				

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-51

North Central Coast Air Basin

County: Santa Cruz

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.089	0.103	0.096	0.097	0.094	0.092	0.084	0.084	0.082	0.110	0.102	0.102	0.098	0.095	0.096	0.088	0.089	0.086	0.087	0.085
Peak 8-Hour Indicator	0.071	0.082	0.077	0.074	0.072	0.072	0.069	0.066	0.064	0.093	0.087	0.087	0.079	0.077	0.078	0.073	0.074	0.072	0.074	0.073
4th High 1-Hr. in 3 Yrs	0.090	0.090	0.090	0.090	0.090	0.090	0.080	0.090	0.080	0.100	0.100	0.100	0.094	0.091	0.092	0.084	0.089	0.084	0.085	0.085
Avg. of 4th High 8-Hr. in 3 Yrs	0.064	0.069	0.066	0.067	0.062	0.061	0.060	0.058	0.066	0.073	0.072	0.062	0.066	0.067	0.068	0.066	0.066	0.065	0.064	0.065
Maximum 1-Hr. Concentration	0.080	0.110	0.090	0.090	0.080	0.100	0.100	0.120	0.090	0.100	0.094	0.097	0.107	0.089	0.107	0.097	0.096	0.085	0.086	0.098
Max. 8-Hr. Concentration	0.072	0.088	0.077	0.073	0.070	0.087	0.080	0.082	0.075	0.086	0.078	0.070	0.088	0.071	0.077	0.072	0.078	0.073	0.077	0.074
Days Above State Standard	0	2	0	0	0	1	1	2	0	7	0	1	2	0	1	1	1	0	0	1
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	2	0	0	0	1	0	0	0	2	0	0	2	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					65	51	49	49	36	102	106	152	115	113	78	106	52	74	81	72
Max. 24-Hr. Concentration (Nat)					65	51	49	49	36	102	106	152	115	113	76	103	50	72	77	70
Annual Average (State)							23.8	24.3		21.7	31.1	36.3	32.8	36.9		32.3	27.1		28.0	28.6
Annual Average (Nat)							23.9	24.3		21.7	31.1	36.4	32.8	37.0	28.5	30.9	26.2	28.7	26.8	27.3
Calc Days Above State 24-Hr Std							0	0		12	31	71	71	72		50	18		24	31
Calc Days Above Nat 24-Hr Std							0	0		0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																31.3	23.3	23.1	22.8	15.0
Max. 24-Hr. Concentration (Nat)																31.3	23.3	23.1	22.8	15.0
98th Percentile of 24-Hr Conc.																21.9	17.9	23.1	22.0	13.6
Annual Average (State)																	7.9	9.1	8.6	
Avg. of Qtrly. Means (Nat)																9.4	7.9	9.1	8.6	7.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator				1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.8	0.8	0.8	0.8	0.9	0.9	0.8
Max. 1-Hr. Concentration				1.0	2.0	3.0	2.0	1.0	2.0	1.0	2.2	1.4	3.0	0.9	1.0	2.0	1.3	1.9	1.3	1.6
Max. 8-Hr. Concentration				1.0	1.3	1.3	1.0	1.0	1.2	1.0	1.3	0.9	1.0	0.7	0.9	0.8	0.8	1.0	0.8	0.7
Days Above State 8-Hr. Std.				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator				0.044	0.048	0.049	0.050	0.049	0.047	0.043	0.051	0.052	0.050	0.045	0.041	0.035	0.036	0.036	0.035	0.036
Max. 1-Hr. Concentration			0.040	0.050	0.050	0.040	0.050	0.040	0.040	0.050	0.045	0.053	0.042	0.031	0.039	0.032	0.035	0.042	0.035	0.034
Max. Annual Average				0.005		0.008			0.006		0.005		0.005		0.004	0.005	0.005	0.005	0.005	

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator					0.02	0.02	0.02	0.01	0.01	0.03	0.04	0.05	0.04	0.03	0.01	0.01	0.01	0.02	0.03	0.03
Max. Annual Average			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration			0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01

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North Coast Air Basin

County: Del Norte

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator					0.062	0.058	0.066	0.063	0.063	0.062	0.063	0.062								
Peak 8-Hour Indicator					0.053	0.050	0.061	0.059	0.059	0.056	0.056	0.054								
4th High 1-Hr. in 3 Yrs				0.039	0.059	0.059	0.060	0.060	0.060	0.060	0.060	0.060								
Avg. of 4th High 8-Hr. in 3 Yrs				0.035	0.043	0.042	0.053	0.051	0.051	0.050	0.051	0.049								
Maximum 1-Hr. Concentration				0.040	0.068	0.050	0.070	0.060	0.070	0.060	0.064	0.056								
Max. 8-Hr. Concentration				0.038	0.060	0.042	0.060	0.051	0.061	0.053	0.061	0.052								
Days Above State Standard				0	0	0	0	0	0	0	0	0								
Days Above Nat. 1-Hr. Std.				0	0	0	0	0	0	0	0	0								
Days Above Nat. 8-Hr. Std.				0	0	0	0	0	0	0	0	0								

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)												41	42	58	50	42	46	48	39	37
Max. 24-Hr. Concentration (Nat)					46							41	42	58	48	39	44	46	39	39
Annual Average (State)														20.8		18.4	17.6	17.3		
Annual Average (Nat)														20.9		17.3		16.9	18.7	
Calc Days Above State 24-Hr Std														6		0	0	0		
Calc Days Above Nat 24-Hr Std												0		0		0	0	0	0	

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-53

North Coast Air Basin

County: Humboldt

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator								0.049	0.049											
Peak 8-Hour Indicator								0.041	0.041											
4th High 1-Hr. in 3 Yrs							0.030	0.040	0.040											
Avg. of 4th High 8-Hr. in 3 Yrs							0.030	0.035	0.034											
Maximum 1-Hr. Concentration							0.040	0.050	0.040											
Max. 8-Hr. Concentration							0.031	0.042	0.040											
Days Above State Standard							0	0	0											
Days Above Nat. 1-Hr. Std.							0	0	0											
Days Above Nat. 8-Hr. Std.							0	0	0											

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					98	92	83				77	68	87	56	45	60	53	67	38	71
Max. 24-Hr. Concentration (Nat)					98	92	83				77	68	87	56	43	57	51	64	36	68
Annual Average (State)						31.4	28.0				24.3		19.0	21.0	15.9	19.9	21.8	21.3		
Annual Average (Nat)					36.2	31.4	28.0				24.3	19.9	18.4	21.2	14.8	19.2	20.9	20.8	18.5	
Calc Days Above State 24-Hr Std						35	29				12		12	6	0	13	6	13		
Calc Days Above Nat 24-Hr Std					0	0	0				0	0	0	0	0	0	0	0	0	

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																36.9	24.0	32.6	23.7	36.1
Max. 24-Hr. Concentration (Nat)																36.9	24.0	32.6	23.7	36.1
98th Percentile of 24-Hr Conc.																27.7	21.5	29.0	22.6	
Annual Average (State)																9.1		9.4		
Avg. of Qtrly. Means (Nat)																9.1	9.1	9.4	7.9	

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator						4.6	4.6													
Max. 1-Hr. Concentration						10.0	9.0													
Max. 8-Hr. Concentration						4.5	3.5													
Days Above State 8-Hr. Std.						0	0													
Days Above Nat. 8-Hr. Std.						0	0													

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-54

North Coast Air Basin

County: Mendocino

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.076	0.073	0.074	0.083						0.073	0.075	0.075	0.076	0.074	0.080	0.079	0.079	0.076	0.076	0.080
Peak 8-Hour Indicator	0.058	0.056	0.061	0.070						0.059	0.061	0.062	0.062	0.060	0.063	0.066	0.065	0.063	0.063	0.065
4th High 1-Hr. in 3 Yrs	0.070	0.070	0.070	0.080	0.080				0.050	0.060	0.074	0.080	0.073	0.069	0.069	0.073	0.073	0.073	0.083	0.083
Avg. of 4th High 8-Hr. in 3 Yrs	0.051	0.050	0.052	0.056	0.066				0.038	0.047	0.050	0.056	0.052	0.050	0.052	0.058	0.058	0.055	0.055	0.057
Maximum 1-Hr. Concentration	0.070	0.070	0.070	0.090	0.090				0.060	0.080	0.087	0.084	0.058	0.071	0.090	0.079	0.071	0.070	0.092	0.090
Max. 8-Hr. Concentration	0.062	0.056	0.062	0.076	0.076				0.043	0.065	0.061	0.065	0.049	0.061	0.071	0.069	0.059	0.055	0.072	0.066
Days Above State Standard	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					101	82	60	74	51	54	62	54	56	66	52	69	51	64	72	67
Max. 24-Hr. Concentration (Nat)					101	82	60	74	51	54	62	54	56	66	50	66	49	61	74	65
Annual Average (State)						29.7	23.7	25.4	21.9	23.2	21.9	26.0	24.4	23.4	22.1		23.5	25.4	22.9	22.2
Annual Average (Nat)						29.9	23.7	25.3	21.8	22.6	22.1	26.1	24.6	23.4	21.1	24.3	22.4	24.1	22.2	21.4
Calc Days Above State 24-Hr Std						40	24	17	6	13	6	13	7	6	6		6	24	12	25
Calc Days Above Nat 24-Hr Std						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																35.6	22.3	38.3	59.7	15.6
Max. 24-Hr. Concentration (Nat)																35.6	22.3	38.3	59.7	15.6
98th Percentile of 24-Hr Conc.																26.3		27.0	39.7	15.2
Annual Average (State)																8.8			9.1	7.4
Avg. of Qtrly. Means (Nat)																8.8		8.0	9.1	7.3

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator		5.2	5.2							2.4		3.2	3.4	3.3	3.1	3.6	3.4	3.3	2.6	2.3
Max. 1-Hr. Concentration	6.0	8.0	6.0		1.0				1.0	6.0		5.4	4.8	7.4	4.8	5.2	4.4	4.0	3.1	5.3
Max. 8-Hr. Concentration	4.1	5.5	3.1		1.0				0.6	2.4		3.2	2.7	3.2	3.5	3.7	2.6	2.3	2.5	2.2
Days Above State 8-Hr. Std.	0	0	0		0				0	0		0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0		0				0	0		0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator										0.054	0.053	0.053	0.053	0.049	0.050	0.054	0.053	0.052	0.042	0.045
Max. 1-Hr. Concentration					0.030				0.080	0.050	0.079	0.078	0.044	0.061	0.052	0.066	0.042	0.052	0.080	0.053
Max. Annual Average											0.008	0.009		0.010	0.010	0.010	0.011	0.010	0.010	0.009

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator										0.01	0.01									
Max. Annual Average					0.00				0.00	0.00	0.00									
Max. 24-Hr. Concentration					0.01				0.01	0.00	0.00									

Table A-55

North Coast Air Basin

County: Sonoma

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator									0.085	0.088	0.089	0.090	0.088	0.091	0.103	0.109	0.105	0.093	0.083	0.082
Peak 8-Hour Indicator									0.068	0.072	0.072	0.074	0.074	0.079	0.087	0.092	0.089	0.078	0.069	0.068
4th High 1-Hr. in 3 Yrs									0.080	0.090	0.090	0.090	0.090	0.090	0.110	0.110	0.110	0.100	0.080	0.080
Avg. of 4th High 8-Hr. in 3 Yrs									0.063	0.065	0.066	0.069	0.069	0.072	0.077	0.082	0.076	0.069	0.063	0.062
Maximum 1-Hr. Concentration									0.090	0.090	0.100	0.100	0.080	0.100	0.130	0.100	0.090	0.090	0.080	0.090
Max. 8-Hr. Concentration									0.072	0.073	0.080	0.090	0.071	0.091	0.106	0.087	0.077	0.073	0.068	0.080
Days Above State Standard									0	0	1	1	0	2	7	4	0	0	0	0
Days Above Nat. 1-Hr. Std.									0	0	0	0	0	0	1	0	0	0	0	0
Days Above Nat. 8-Hr. Std.									0	0	0	1	0	1	5	2	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					62	85	266	78	58	53	57	43	40	54	33	74	45	63	37	45
Max. 24-Hr. Concentration (Nat)					86	85	266	78	58	53	57	43	40	54	32	71	44	59	36	45
Annual Average (State)							23.8	24.8		20.7	18.4		16.4	16.5	16.6	19.4	12.6		15.6	15.1
Annual Average (Nat)					25.4	27.2	23.8	24.2		20.3	18.4		16.5	16.5	16.0	18.3	14.7	15.0	15.0	14.8
Calc Days Above State 24-Hr Std							22	23		12	13		0	5	0	18	0		0	0
Calc Days Above Nat 24-Hr Std					0	0	6	0		0	0		0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-56

A portion of Sonoma County lies within the San Francisco Bay Area Air Basin.

North Coast Air Basin

County: Trinity

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)													63	54	47	95	51	72	53	54
Max. 24-Hr. Concentration (Nat)					125							41	72	54	46	100	51	73	52	57
Annual Average (State)														17.8	18.1	24.3	18.8			
Annual Average (Nat)														18.0			18.7			
Calc Days Above State 24-Hr Std														6	0	36	7			
Calc Days Above Nat 24-Hr Std												0	0	0	0	0	0	0		

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator				3.4																
Max. 1-Hr. Concentration				4.0																
Max. 8-Hr. Concentration				3.0																
Days Above State 8-Hr. Std.				0																
Days Above Nat. 8-Hr. Std.				0																

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-57

Northeast Plateau Air Basin

County: Lassen

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)													42	84	48	93	74	91		
Max. 24-Hr. Concentration (Nat)													42	84	52	100	80	105		
Annual Average (State)																				
Annual Average (Nat)																				
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std																				

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-58

Northeast Plateau Air Basin

County: Modoc

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)											101	78	74	97	41	89	74			
Max. 24-Hr. Concentration (Nat)											101	78	74	97	62	94	79	67		
Annual Average (State)																				
Annual Average (Nat)												30.3				26.3	22.5	19.8		
Calc Days Above State 24-Hr Std																				
Calc Days Above Nat 24-Hr Std												0				0	0	0		

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																40.0	38.0	35.0	5.0	10.0
Max. 24-Hr. Concentration (Nat)																40.0	38.0	35.0	5.0	10.0
98th Percentile of 24-Hr Conc.																27.0	37.0			
Annual Average (State)																	8.5			
Avg. of Qtrly. Means (Nat)																7.9	8.5			

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-59

Northeast Plateau Air Basin

County: Siskiyou

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.074	0.076	0.078	0.081	0.082	0.083	0.082	0.084	0.081	0.073	0.075	0.074	0.075	0.074	0.078	0.078	0.081	0.080	0.085	0.083
Peak 8-Hour Indicator	0.065	0.068	0.071	0.075	0.074	0.075	0.075	0.075	0.073	0.067	0.067	0.064	0.064	0.066	0.070	0.069	0.070	0.068	0.071	0.072
4th High 1-Hr. in 3 Yrs	0.070	0.070	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.070	0.070	0.070	0.070	0.070	0.075	0.075	0.078	0.078	0.081	0.079
Avg. of 4th High 8-Hr. in 3 Yrs	0.059	0.061	0.064	0.069	0.069	0.069	0.067	0.059	0.057	0.051	0.058	0.057	0.059	0.058	0.061	0.062	0.063	0.053	0.055	0.057
Maximum 1-Hr. Concentration	0.080	0.080	0.080	0.090	0.080	0.080	0.080	0.050	0.080	0.070	0.080	0.070	0.070	0.082	0.078	0.070	0.082	0.049	0.087	0.089
Max. 8-Hr. Concentration	0.066	0.075	0.070	0.081	0.071	0.076	0.076	0.046	0.073	0.070	0.068	0.062	0.063	0.074	0.071	0.067	0.071	0.038	0.075	0.074
Days Above State Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					58	59	63	60	74	60	61	46	188	40	63	51	33	33	73	31
Max. 24-Hr. Concentration (Nat)					92	59	63	60	74	60	61	46	188	40	66	56	53	41	86	33
Annual Average (State)						24.8			23.6		22.1	16.0				16.8			17.5	12.8
Annual Average (Nat)					25.0	24.8	23.5		23.6		22.1	16.0	13.6	12.9	11.1	17.7	13.9	14.1	18.6	13.3
Calc Days Above State 24-Hr Std						29			24		0	0				0			6	0
Calc Days Above Nat 24-Hr Std					0	0	0		0		0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration				12.0	4.0															
Max. 8-Hr. Concentration				10.4	1.8															
Days Above State 8-Hr. Std.				1	0															
Days Above Nat. 8-Hr. Std.				1	0															

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-60

Sacramento Valley Air Basin

County: Butte

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.086	0.094	0.097	0.102	0.103	0.105	0.103	0.098	0.094	0.091	0.096	0.098	0.095	0.091	0.091	0.101	0.103	0.102	0.103	0.102
Peak 8-Hour Indicator	0.075	0.085	0.088	0.089	0.088	0.090	0.088	0.083	0.083	0.082	0.085	0.086	0.086	0.080	0.079	0.087	0.095	0.094	0.095	0.096
4th High 1-Hr. in 3 Yrs	0.080	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.090	0.090	0.095	0.097	0.097	0.091	0.096	0.103	0.103	0.099	0.105	0.102
Avg. of 4th High 8-Hr. in 3 Yrs	0.069	0.074	0.078	0.082	0.081	0.082	0.080	0.077	0.076	0.075	0.078	0.078	0.077	0.072	0.072	0.077	0.086	0.087	0.089	0.089
Maximum 1-Hr. Concentration	0.090	0.100	0.110	0.110	0.100	0.100	0.130	0.100	0.090	0.100	0.099	0.105	0.108	0.087	0.106	0.135	0.105	0.101	0.112	0.101
Max. 8-Hr. Concentration	0.075	0.093	0.087	0.088	0.092	0.087	0.095	0.085	0.077	0.083	0.091	0.086	0.084	0.072	0.090	0.100	0.095	0.089	0.101	0.091
Days Above State Standard	0	4	2	5	8	4	2	1	0	1	3	1	2	0	2	7	5	4	10	5
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	4	1	3	3	1	1	1	0	0	2	1	0	0	1	5	6	6	13	8

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					100	82			83	78	93	64	66	108	71	94	85	112	96	54
Max. 24-Hr. Concentration (Nat)					115	91	97	123	83	78	93	64	66	108	68	95	81	105	92	54
Annual Average (State)										28.0	33.3	27.0	25.2	25.2	22.8	31.1	27.9	29.9	28.8	21.7
Annual Average (Nat)					42.1	35.5	35.5	38.3		27.6	33.3	26.2	25.5	24.9	22.3	30.5	27.6	29.3	28.2	21.3
Calc Days Above State 24-Hr Std										46	36	37	16	21	18	49	39	31	37	6
Calc Days Above Nat 24-Hr Std					0	0	0	0		0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															69.0	73.0	98.0	65.0	96.1	67.0
Max. 24-Hr. Concentration (Nat)															69.0	73.0	98.0	65.0	84.0	33.0
98th Percentile of 24-Hr Conc.															69.0	60.0	70.0	56.0	53.0	32.0
Annual Average (State)																17.5	15.8		15.1	15.9
Avg. of Qtrly. Means (Nat)																17.5	15.8	13.0	15.1	10.5

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	8.6	8.6	10.1	10.2	10.7	10.1	10.4	9.8	9.8	8.9	6.2	5.8	5.9	5.5	5.3	4.4	4.5	4.6	4.1	3.5
Max. 1-Hr. Concentration	14.0	15.0	20.0	12.0	17.0	15.0	17.0	15.0	14.0	9.0	9.4	8.5	8.7	7.0	6.0	7.2	5.2	6.4	5.1	3.9
Max. 8-Hr. Concentration	10.9	9.8	10.4	8.6	12.3	10.0	10.8	9.2	6.8	5.8	5.7	4.8	6.1	5.1	4.5	5.4	4.0	4.3	3.5	2.5
Days Above State 8-Hr. Std.	1	2	3	0	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	1	2	2	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.080	0.084	0.083	0.089	0.090	0.089	0.081	0.081	0.082	0.082	0.078	0.077	0.074	0.072	0.068	0.074	0.077	0.074	0.061	0.058
Max. 1-Hr. Concentration	0.160	0.080	0.080	0.090	0.100	0.080	0.080	0.070	0.080	0.090	0.080	0.074	0.070	0.061	0.068	0.077	0.078	0.062	0.058	0.057
Max. Annual Average	0.014	0.014	0.015	0.017	0.016	0.016	0.015		0.016	0.016	0.015	0.014	0.013	0.013	0.013	0.015	0.012	0.012	0.012	0.011

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-61

Sacramento Valley Air Basin

County: Colusa

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.110	0.111	0.109	0.112					0.108	0.107	0.102	0.102	0.109	0.101	0.100	0.095	0.094	0.098	0.097	0.096
Peak 8-Hour Indicator	0.092	0.093	0.091	0.097					0.091	0.093	0.091	0.094	0.094	0.088	0.086	0.084	0.082	0.087	0.085	0.084
4th High 1-Hr. in 3 Yrs	0.110	0.100	0.110	0.110				0.090	0.100	0.100	0.100	0.101	0.102	0.098	0.099	0.094	0.094	0.095	0.095	0.095
Avg. of 4th High 8-Hr. in 3 Yrs	0.080	0.082	0.085	0.085				0.073	0.078	0.079	0.082	0.082	0.082	0.077	0.077	0.076	0.075	0.077	0.076	0.075
Maximum 1-Hr. Concentration	0.110	0.110	0.110	0.120				0.100	0.110	0.100	0.107	0.106	0.111	0.093	0.099	0.095	0.092	0.101	0.094	0.089
Max. 8-Hr. Concentration	0.093	0.091	0.088	0.102				0.084	0.092	0.085	0.090	0.090	0.091	0.081	0.088	0.085	0.072	0.088	0.081	0.071
Days Above State Standard	12	7	12	28				1	8	3	4	6	6	0	2	1	0	5	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	4	5	21				0	3	2	2	2	4	0	1	1	0	3	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					98	72	93	102	84	70	57	93	57	57	59	172	55	76	64	69
Max. 24-Hr. Concentration (Nat)					98	72	93	102	84	70	57	93	57	57	58	171	55	74	62	68
Annual Average (State)						29.8	31.3		29.9	25.0	28.9			25.1	20.0			25.2		
Annual Average (Nat)					33.5	29.8	30.9		28.7	24.5	28.1	29.9	26.8	24.6	19.5			24.5		23.8
Calc Days Above State 24-Hr Std						35	35		42	20	26			12	6			7		
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															37.0	55.0	28.0	36.0	57.0	30.0
Max. 24-Hr. Concentration (Nat)															37.0	55.0	28.0	36.0	57.0	30.0
98th Percentile of 24-Hr Conc.																	26.0	31.0		27.0
Annual Average (State)																		9.6		
Avg. of Qtrly. Means (Nat)																	8.0	9.6		8.0

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-62

Sacramento Valley Air Basin

County: Glenn

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.105	0.107	0.101	0.108			0.102	0.104	0.101	0.103	0.101	0.098	0.098	0.097	0.094	0.098	0.096	0.096	0.092	0.091
Peak 8-Hour Indicator	0.087	0.091	0.088	0.092			0.087	0.090	0.089	0.090	0.089	0.086	0.085	0.084	0.082	0.087	0.085	0.086	0.080	0.080
4th High 1-Hr. in 3 Yrs	0.100	0.110	0.100	0.110			0.090	0.100	0.100	0.100	0.100	0.096	0.098	0.092	0.095	0.097	0.097	0.096	0.088	0.088
Avg. of 4th High 8-Hr. in 3 Yrs	0.079	0.080	0.080	0.084			0.080	0.078	0.081	0.080	0.081	0.080	0.079	0.077	0.076	0.078	0.077	0.077	0.074	0.073
Maximum 1-Hr. Concentration	0.100	0.110	0.100	0.120			0.100	0.100	0.110	0.100	0.099	0.103	0.098	0.096	0.098	0.101	0.086	0.094	0.093	0.090
Max. 8-Hr. Concentration	0.088	0.090	0.083	0.097			0.086	0.082	0.088	0.083	0.086	0.087	0.081	0.080	0.088	0.093	0.078	0.084	0.077	0.079
Days Above State Standard	1	5	2	9			3	1	6	1	3	1	1	1	2	4	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	1	3	0	8			1	0	4	0	2	1	0	0	1	2	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					93	73	63	81	111	75	80	88	75	72	55	88	65	68	80	61
Max. 24-Hr. Concentration (Nat)					93	73	63	81	111	75	80	88	75	72	53	88	65	68	77	61
Annual Average (State)						27.1	28.8	33.0	28.9	23.1		29.0	24.5	22.8	20.3		23.4		29.1	20.4
Annual Average (Nat)					35.1	27.1	28.0	32.3	28.4	23.1		27.6	24.7	22.4		26.1	22.2		28.6	20.1
Calc Days Above State 24-Hr Std						18	23	83	46	16		57	29	10	12		6		41	18
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0		0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-63

Sacramento Valley Air Basin

County: Placer

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.144	0.153	0.153	0.149	0.153	0.148	0.150	0.138	0.145	0.138	0.137	0.135	0.139	0.134	0.138	0.129	0.134	0.124	0.130	0.128
Peak 8-Hour Indicator	0.117	0.125	0.120	0.121	0.121	0.121	0.122	0.120	0.121	0.116	0.116	0.118	0.116	0.111	0.111	0.111	0.115	0.112	0.113	0.111
4th High 1-Hr. in 3 Yrs	0.150	0.160	0.160	0.150	0.160	0.150	0.150	0.140	0.140	0.140	0.140	0.134	0.131	0.131	0.131	0.132	0.132	0.127	0.124	0.124
Avg. of 4th High 8-Hr. in 3 Yrs	0.104	0.111	0.109	0.105	0.108	0.105	0.107	0.105	0.105	0.103	0.103	0.105	0.103	0.095	0.095	0.097	0.102	0.101	0.101	0.099
Maximum 1-Hr. Concentration	0.180	0.180	0.170	0.180	0.180	0.120	0.150	0.130	0.170	0.150	0.133	0.148	0.135	0.113	0.153	0.142	0.128	0.128	0.136	0.133
Max. 8-Hr. Concentration	0.112	0.127	0.123	0.121	0.120	0.097	0.127	0.115	0.122	0.120	0.117	0.119	0.110	0.096	0.119	0.113	0.107	0.107	0.115	0.111
Days Above State Standard	39	35	45	41	55	23	42	36	46	23	35	35	33	10	23	28	25	32	25	17
Days Above Nat. 1-Hr. Std.	5	8	4	7	13	0	11	4	8	4	5	3	3	0	7	3	1	1	4	1
Days Above Nat. 8-Hr. Std.	28	25	36	37	43	13	41	29	34	17	27	21	26	4	20	27	19	26	16	12

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)								55	48	52	65	84	98	66	75	89	62	62	61	59
Max. 24-Hr. Concentration (Nat)					70	67	58	68	48	52	65	84	98	66	70	89	58	59	58	58
Annual Average (State)										21.4	25.3	24.1	20.9	22.1	23.0	26.7	24.5	24.7	25.2	21.3
Annual Average (Nat)					31.4	28.7				24.3	25.0	23.4	23.6	21.8	22.3	26.1	23.9	24.2	24.6	21.0
Calc Days Above State 24-Hr Std										0	16	7	0	0	18	31	11	24	6	6
Calc Days Above Nat 24-Hr Std					0	0				0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															63.0	79.0	51.0	49.0	53.0	30.0
Max. 24-Hr. Concentration (Nat)															63.0	79.0	51.0	49.0	53.0	30.0
98th Percentile of 24-Hr Conc.																40.0	43.0	49.0	40.0	26.0
Annual Average (State)																13.4	12.2	11.9	13.2	9.9
Avg. of Qtrly. Means (Nat)																13.4	12.2	11.9	13.2	9.9

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator									2.3	2.6	2.9	2.6	2.5	2.2	2.3	2.3	2.4	2.3	2.2	2.0
Max. 1-Hr. Concentration								4.0	9.0	6.0	4.7	3.9	4.5	3.7	4.2	3.9	3.2	3.1	4.6	2.4
Max. 8-Hr. Concentration								3.3	2.3	2.8	3.0	2.1	2.8	2.1	2.4	2.2	2.4	1.9	2.8	1.6
Days Above State 8-Hr. Std.								0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.								0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator									0.090	0.088	0.090	0.096	0.098	0.095	0.091	0.092	0.091	0.090	0.085	0.087
Max. 1-Hr. Concentration								0.050	0.080	0.090	0.089	0.093	0.100	0.080	0.097	0.093	0.082	0.086	0.075	0.083
Max. Annual Average									0.015	0.016	0.018	0.017	0.016	0.015	0.016	0.012	0.016	0.015	0.016	0.014

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-64

Portions of Placer County lie within the Lake Tahoe and Mountain Counties Air Basins.

Sacramento Valley Air Basin

County: Sacramento

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.162	0.173	0.173	0.168	0.171	0.166	0.162	0.153	0.158	0.159	0.148	0.149	0.154	0.141	0.161	0.155	0.153	0.138	0.135	0.137
Peak 8-Hour Indicator	0.128	0.131	0.133	0.129	0.129	0.128	0.126	0.122	0.124	0.125	0.116	0.120	0.124	0.117	0.125	0.124	0.118	0.111	0.110	0.111
4th High 1-Hr. in 3 Yrs	0.180	0.180	0.180	0.160	0.160	0.160	0.160	0.150	0.150	0.150	0.143	0.145	0.145	0.133	0.148	0.148	0.148	0.133	0.132	0.138
Avg. of 4th High 8-Hr. in 3 Yrs	0.115	0.118	0.118	0.114	0.114	0.114	0.101	0.100	0.101	0.110	0.104	0.106	0.106	0.097	0.097	0.101	0.105	0.099	0.100	0.100
Maximum 1-Hr. Concentration	0.210	0.200	0.160	0.170	0.170	0.170	0.150	0.190	0.150	0.150	0.145	0.156	0.157	0.143	0.160	0.160	0.138	0.142	0.139	0.140
Max. 8-Hr. Concentration	0.138	0.161	0.125	0.127	0.130	0.133	0.108	0.140	0.122	0.118	0.121	0.128	0.126	0.107	0.137	0.129	0.108	0.108	0.120	0.118
Days Above State Standard	58	48	48	74	86	61	29	55	52	26	36	39	49	21	42	40	31	31	39	40
Days Above Nat. 1-Hr. Std.	23	18	22	17	30	8	8	12	9	6	6	10	7	3	13	5	4	2	3	5
Days Above Nat. 8-Hr. Std.	44	32	36	53	58	32	20	45	35	14	24	32	29	9	29	26	26	23	28	30

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					99	147	153	134	89	113	99	90	86	108	114	141	90	96	91	77
Max. 24-Hr. Concentration (Nat)					99	139	153	134	89	110	99	90	86	108	104	141	86	89	85	75
Annual Average (State)						41.9			31.2	29.4	29.1	28.0	25.6	23.5	23.3	29.6	25.9		27.6	28.8
Annual Average (Nat)					40.4	41.9	41.7	42.3	31.1	28.5	30.2	28.8	24.9	23.2	27.0	33.1	26.7	23.1	29.0	28.4
Calc Days Above State 24-Hr Std						82			34	43	23	42	24	12	18	49	36		30	25
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															96.0	108.0	123.1	128.2	91.0	73.2
Max. 24-Hr. Concentration (Nat)															96.0	108.0	81.0	78.0	91.0	65.0
98th Percentile of 24-Hr Conc.															96.0	84.0	81.0	78.0	77.0	43.0
Annual Average (State)																	12.3			12.2
Avg. of Qtrly. Means (Nat)																17.0	12.3		14.3	12.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	13.0	13.2	14.6	14.4	13.4	14.0	14.7	14.8	12.9	10.7	9.6	9.3	8.5	7.7	7.3	7.0	7.0	7.3	6.0	4.4
Max. 1-Hr. Concentration	18.0	17.0	20.0	15.0	15.0	18.0	16.0	15.0	12.0	12.0	10.8	9.8	8.7	9.5	7.9	7.7	10.0	6.7	7.8	8.5
Max. 8-Hr. Concentration	12.4	13.3	13.9	10.0	11.6	15.9	14.0	12.3	8.6	9.4	8.4	7.4	7.2	7.2	7.1	6.6	6.3	5.3	4.3	4.5
Days Above State 8-Hr. Std.	6	12	12	5	11	22	14	8	0	2	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	12	11	3	8	22	12	6	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.103	0.109	0.112	0.115	0.123	0.117	0.115	0.122	0.128	0.126	0.115	0.106	0.101	0.094	0.086	0.107	0.097	0.095	0.084	0.089
Max. 1-Hr. Concentration	0.100	0.130	0.120	0.100	0.180	0.130	0.160	0.240	0.190	0.120	0.111	0.099	0.145	0.092	0.101	0.110	0.085	0.102	0.090	0.102
Max. Annual Average	0.019	0.021	0.022	0.022	0.025	0.019	0.023	0.024	0.021	0.015	0.022	0.022	0.022	0.019	0.021	0.021	0.019	0.019	0.020	0.015

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.02	0.03	0.03		0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Max. Annual Average	0.00	0.00	0.00		0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.01	0.01	0.01		0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01

Table A-65

Sacramento Valley Air Basin

County: Shasta

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.110	0.115	0.115	0.121	0.122	0.119	0.129	0.119	0.117	0.111	0.111	0.105	0.114	0.118	0.127	0.126	0.125	0.110	0.100	0.105
Peak 8-Hour Indicator	0.097	0.106	0.102	0.105	0.106	0.104	0.107	0.103	0.102	0.098	0.100	0.097	0.102	0.100	0.111	0.110	0.110	0.097	0.088	0.092
4th High 1-Hr. in 3 Yrs	0.100	0.100	0.110	0.120	0.120	0.120	0.110	0.110	0.110	0.110	0.110	0.101	0.110	0.110	0.120	0.120	0.120	0.111	0.098	0.107
Avg. of 4th High 8-Hr. in 3 Yrs	0.082	0.077	0.080	0.091	0.088	0.085	0.093	0.091	0.090	0.083	0.084	0.080	0.087	0.086	0.095	0.095	0.093	0.082	0.078	0.080
Maximum 1-Hr. Concentration	0.100	0.120	0.120	0.130	0.120	0.090	0.130	0.110	0.110	0.110	0.113	0.099	0.110	0.119	0.140	0.116	0.102	0.100	0.098	0.114
Max. 8-Hr. Concentration	0.091	0.105	0.097	0.108	0.105	0.083	0.110	0.095	0.091	0.088	0.105	0.084	0.100	0.107	0.126	0.098	0.087	0.084	0.084	0.096
Days Above State Standard	2	10	8	25	5	0	13	12	10	1	7	3	16	8	40	23	3	1	4	9
Days Above Nat. 1-Hr. Std.	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	2	9	9	21	3	0	13	11	10	1	8	0	14	6	45	12	1	0	0	6

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					60	91	80	83	86	91	64	55	51	63	52	75	53	71	58	52
Max. 24-Hr. Concentration (Nat)					60	91	80	83	86	91	64	55	51	63	61	81	49	66	60	53
Annual Average (State)								28.7		20.1	24.4	25.1	24.3				24.3	24.1	20.8	21.7
Annual Average (Nat)					26.4		24.9	28.7		20.1	24.4	25.2	24.3	22.2	23.5		23.7	23.7	25.9	21.5
Calc Days Above State 24-Hr Std								50		7	12	13	6				6	6	6	12
Calc Days Above Nat 24-Hr Std					0		0	0		0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															50.0	57.0	45.0	49.0	40.0	34.0
Max. 24-Hr. Concentration (Nat)															50.0	57.0	45.0	49.0	40.0	34.0
98th Percentile of 24-Hr Conc.																55.0		29.0	38.0	16.0
Annual Average (State)																12.9		9.2		7.5
Avg. of Qtrly. Means (Nat)																12.9		9.2	10.5	7.5

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	1.1	1.1	3.1	3.1		2.4	2.3	2.3	2.6	2.0	2.0									
Max. 1-Hr. Concentration	3.0	2.0	5.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.5									
Max. 8-Hr. Concentration	1.1	1.1	2.8	2.5	1.8	2.5	2.3	2.0	1.9	2.1	1.7									
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0									
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0									

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator			0.091	0.093	0.093	0.090	0.081	0.069	0.069											
Max. 1-Hr. Concentration		0.020	0.090	0.100	0.100	0.080	0.070	0.070	0.050											
Max. Annual Average				0.015				0.012												

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-66

Sacramento Valley Air Basin

County: Solano

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.085	0.081	0.093	0.112	0.108	0.112	0.104					0.114	0.113	0.113	0.117	0.121	0.120	0.112	0.101	0.102
Peak 8-Hour Indicator	0.061	0.059	0.073	0.093	0.095	0.096	0.092					0.090	0.092	0.090	0.098	0.103	0.102	0.093	0.083	0.084
4th High 1-Hr. in 3 Yrs	0.080	0.080	0.090	0.110	0.110	0.120	0.100					0.102	0.106	0.106	0.123	0.123	0.123	0.110	0.100	0.094
Avg. of 4th High 8-Hr. in 3 Yrs	0.051	0.047	0.055	0.066	0.079	0.082	0.075					0.079	0.079	0.076	0.082	0.085	0.085	0.077	0.072	0.072
Maximum 1-Hr. Concentration	0.100	0.070	0.090	0.120	0.100	0.120	0.110					0.115	0.126	0.105	0.137	0.140	0.100	0.104	0.100	0.095
Max. 8-Hr. Concentration	0.070	0.052	0.066	0.102	0.088	0.101	0.088					0.090	0.101	0.083	0.101	0.106	0.081	0.081	0.077	0.081
Days Above State Standard	1	0	0	12	2	4	1					6	8	3	10	8	2	2	1	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0					0	1	0	2	1	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	8	2	1	1					3	2	0	7	8	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					81	109	96	98	70	53	76	62	45	74	62	68	50	82	66	42
Max. 24-Hr. Concentration (Nat)					81	109	96	98	70	53	76	62	45	74	56	66	47	77	63	40
Annual Average (State)									24.4		21.2	18.9	17.3	16.1	17.7	20.5	19.0	20.8	19.9	16.0
Annual Average (Nat)									24.4	22.4	21.2	19.0	17.3	16.1	17.2	19.8	18.3	20.2	19.4	15.7
Calc Days Above State 24-Hr Std									24		18	13	0	6	6	18	0	12	6	0
Calc Days Above Nat 24-Hr Std									0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration					4.0															
Max. 8-Hr. Concentration					1.8															
Days Above State 8-Hr. Std.					0															
Days Above Nat. 8-Hr. Std.					0															

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-67

A portion of Solano County lies within the San Francisco Bay Area Air Basin.

Sacramento Valley Air Basin

County: Sutter

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.127	0.125	0.125	0.120	0.128	0.123	0.121	0.106	0.111	0.125	0.121	0.120	0.115	0.114	0.120	0.116	0.115	0.107	0.113	0.121
Peak 8-Hour Indicator	0.103	0.104	0.105	0.102	0.103	0.103	0.096	0.091	0.098	0.109	0.105	0.107	0.104	0.102	0.102	0.100	0.099	0.097	0.100	0.104
4th High 1-Hr. in 3 Yrs	0.130	0.120	0.120	0.120	0.130	0.120	0.120	0.100	0.110	0.110	0.113	0.113	0.113	0.107	0.116	0.116	0.116	0.106	0.109	0.113
Avg. of 4th High 8-Hr. in 3 Yrs	0.089	0.089	0.092	0.093	0.095	0.091	0.082	0.076	0.082	0.097	0.096	0.096	0.096	0.091	0.091	0.089	0.089	0.083	0.084	0.088
Maximum 1-Hr. Concentration	0.130	0.120	0.140	0.140	0.150	0.100	0.110	0.110	0.120	0.140	0.115	0.126	0.116	0.105	0.124	0.115	0.108	0.116	0.117	0.117
Max. 8-Hr. Concentration	0.101	0.097	0.103	0.107	0.103	0.087	0.083	0.095	0.108	0.108	0.100	0.103	0.102	0.092	0.102	0.097	0.092	0.093	0.103	0.099
Days Above State Standard	22	18	21	23	41	4	2	10	29	13	25	21	28	5	16	21	9	6	15	10
Days Above Nat. 1-Hr. Std.	1	0	2	1	2	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	14	10	12	16	32	2	0	2	13	9	18	17	28	3	14	11	5	3	11	6

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)						103	96	108	79	78	154	128	82	98	63	151	70	82	75	83
Max. 24-Hr. Concentration (Nat)					109	103	96	108	79	78	154	128	82	98	60	150	70	80	74	81
Annual Average (State)							38.5	39.2	35.2	31.2			29.9	28.8	24.5	39.4		30.5	31.8	26.4
Annual Average (Nat)					37.4		38.5	38.5	34.3	30.7	34.5		29.8	28.6	23.8	38.4	27.9	30.2	30.9	26.0
Calc Days Above State 24-Hr Std							74	104	61	43			27	22	30	62		50	25	31
Calc Days Above Nat 24-Hr Std					0		0	0	0	0	0		0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)															69.0	58.0	44.0	56.0	62.0	32.0
Max. 24-Hr. Concentration (Nat)															69.0	58.0	44.0	56.0	62.0	32.0
98th Percentile of 24-Hr Conc.															69.0	53.0	38.0	54.0	35.0	29.0
Annual Average (State)																15.9	11.2	11.9	13.1	9.4
Avg. of Qtrly. Means (Nat)																	10.6	11.9		9.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator								10.2	8.1	5.8	5.7	5.2	4.8	4.6	4.4	4.4	4.4	4.6	4.2	3.6
Max. 1-Hr. Concentration								12.0	9.0	10.0	8.8	7.5	7.7	6.1	7.3	7.2	6.1	17.2	6.4	4.3
Max. 8-Hr. Concentration								8.5	6.3	7.3	6.1	4.7	4.7	4.1	4.9	4.4	3.6	3.9	3.5	2.4
Days Above State 8-Hr. Std.								0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.								0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator								0.108	0.089	0.088	0.086	0.083	0.079	0.077	0.075	0.081	0.079	0.082	0.075	0.078
Max. 1-Hr. Concentration								0.100	0.090	0.090	0.075	0.074	0.068	0.073	0.074	0.085	0.072	0.079	0.068	0.080
Max. Annual Average									0.017	0.017	0.016	0.013	0.012	0.014	0.013	0.014			0.015	0.014

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-68

Sacramento Valley Air Basin

County: Tehama

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator							0.119	0.115	0.113	0.107	0.104	0.108	0.102	0.099	0.109	0.115	0.115	0.111	0.098	0.100
Peak 8-Hour Indicator							0.106	0.099	0.096	0.093	0.093	0.096	0.090	0.088	0.097	0.103	0.105	0.102	0.091	0.091
4th High 1-Hr. in 3 Yrs							0.110	0.110	0.110	0.100	0.100	0.100	0.098	0.099	0.120	0.120	0.120	0.109	0.096	0.100
Avg. of 4th High 8-Hr. in 3 Yrs							0.095	0.089	0.089	0.086	0.086	0.086	0.084	0.083	0.086	0.091	0.091	0.086	0.083	0.084
Maximum 1-Hr. Concentration							0.120	0.110	0.100	0.100	0.100	0.110	0.108	0.101	0.120	0.128	0.096	0.094	0.109	0.103
Max. 8-Hr. Concentration							0.100	0.085	0.091	0.093	0.087	0.103	0.084	0.093	0.112	0.108	0.088	0.085	0.095	0.088
Days Above State Standard							15	6	9	5	2	10	4	2	12	18	2	0	7	6
Days Above Nat. 1-Hr. Std.							0	0	0	0	0	0	0	0	0	1	0	0	0	0
Days Above Nat. 8-Hr. Std.							11	2	9	4	3	9	0	2	11	20	2	1	7	3

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					99	68	67	85	75	67	74	63	56	58	118	99	49	73	71	58
Max. 24-Hr. Concentration (Nat)					99	68	67	85	75	67	74	63	56	58	119	98	49	71	69	58
Annual Average (State)						31.4	29.7	32.4	29.3	24.9										
Annual Average (Nat)					42.8	31.4	29.7	32.5	29.3	25.0	30.0			22.5			23.6	26.2	30.5	22.6
Calc Days Above State 24-Hr Std						42	24	67	30	18										
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0			0			0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-69

Sacramento Valley Air Basin

County: Yolo

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.126	0.124	0.120	0.125	0.124	0.119	0.115	0.113	0.112	0.110	0.106	0.107	0.109	0.111	0.120	0.115	0.115	0.112	0.107	0.104
Peak 8-Hour Indicator	0.098	0.099	0.099	0.100	0.102	0.102	0.098	0.094	0.096	0.093	0.091	0.089	0.092	0.092	0.098	0.096	0.096	0.093	0.091	0.092
4th High 1-Hr. in 3 Yrs	0.120	0.120	0.130	0.140	0.130	0.120	0.120	0.100	0.110	0.110	0.110	0.103	0.108	0.108	0.110	0.110	0.110	0.105	0.101	0.101
Avg. of 4th High 8-Hr. in 3 Yrs	0.084	0.086	0.086	0.087	0.087	0.085	0.080	0.077	0.086	0.080	0.079	0.078	0.082	0.079	0.087	0.086	0.085	0.082	0.083	0.083
Maximum 1-Hr. Concentration	0.140	0.140	0.140	0.140	0.120	0.100	0.140	0.100	0.120	0.130	0.100	0.114	0.122	0.104	0.115	0.117	0.103	0.103	0.121	0.098
Max. 8-Hr. Concentration	0.097	0.097	0.100	0.127	0.097	0.083	0.105	0.091	0.096	0.097	0.082	0.091	0.104	0.086	0.102	0.094	0.089	0.093	0.091	0.084
Days Above State Standard	20	13	12	25	32	3	9	4	14	1	4	9	13	2	10	10	7	6	10	4
Days Above Nat. 1-Hr. Std.	2	1	2	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	11	6	4	13	12	0	6	1	7	1	0	4	4	1	5	6	2	2	5	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)							147	136	106	96	98	145	77	126	130	179	85	101	87	70
Max. 24-Hr. Concentration (Nat)					96	113	147	136	106	96	98	145	77	126	130	179	79	95	82	69
Annual Average (State)									34.7	30.5		29.9	27.5	27.7	29.9	33.3	26.6	28.2	28.0	
Annual Average (Nat)					40.5		31.3		34.7	31.8	29.8	30.1	27.5	27.6	29.0	32.5	25.7	27.4	27.2	23.4
Calc Days Above State 24-Hr Std									70	63		43	44	12	60	64	43	30	37	
Calc Days Above Nat 24-Hr Std					0		0		0	0	0	0	0	0	0	7	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																70.0	46.0	57.0	69.0	41.7
Max. 24-Hr. Concentration (Nat)																70.0	46.0	57.0	69.0	31.0
98th Percentile of 24-Hr Conc.																	38.0		31.0	28.0
Annual Average (State)																	10.3			8.4
Avg. of Qtrly. Means (Nat)																16.3	10.3		10.7	8.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	4.2	3.6	4.3	4.6	4.6	4.6	4.9	5.2	3.8	3.8			1.4	1.7	1.5	1.4	1.2	1.2	1.3	1.1
Max. 1-Hr. Concentration	9.0	12.0	13.0	14.0	9.0	13.0	12.0	7.0	7.0	6.0	10.0	5.3	2.4	2.8	2.5	2.4	2.5	19.1	1.9	3.3
Max. 8-Hr. Concentration	4.1	4.9	6.0	8.4	4.9	5.4	5.0	3.5	3.9	3.4	6.6	3.1	1.8	1.8	1.1	1.4	1.3	3.4	1.4	0.8
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator													0.064	0.061	0.064	0.069	0.069	0.082	0.075	0.076
Max. 1-Hr. Concentration													0.061	0.057	0.060	0.073	0.053	0.172	0.059	0.060
Max. Annual Average														0.010	0.011	0.012	0.011	0.010	0.012	0.011

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-70

Sacramento Valley Air Basin

County: Yuba

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator																				
Peak 8-Hour Indicator																				
4th High 1-Hr. in 3 Yrs																				
Avg. of 4th High 8-Hr. in 3 Yrs																				
Maximum 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State Standard																				
Days Above Nat. 1-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					96	113	80	102												
Max. 24-Hr. Concentration (Nat)					96	113	80	102												
Annual Average (State)							31.1													
Annual Average (Nat)							31.3													
Calc Days Above State 24-Hr Std							43													
Calc Days Above Nat 24-Hr Std							0													

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. Annual Average																				

No Monitoring Data Available

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-71

Salton Sea Air Basin

County: Imperial

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.103	0.122	0.134	0.092	0.110	0.110	0.117	0.108	0.150	0.156	0.154	0.163	0.155	0.156	0.145	0.147	0.149	0.152	0.142	0.130
Peak 8-Hour Indicator	0.083	0.097	0.105	0.074	0.086	0.088	0.090	0.084	0.111	0.114	0.114	0.116	0.115	0.114	0.111	0.109	0.099	0.104	0.100	0.097
4th High 1-Hr. in 3 Yrs	0.100	0.120	0.120	0.090	0.110	0.110	0.110	0.120	0.150	0.150	0.150	0.180	0.180	0.160	0.140	0.142	0.157	0.166	0.147	0.142
Avg. of 4th High 8-Hr. in 3 Yrs	0.059	0.067	0.071	0.069	0.073	0.075	0.076	0.078	0.090	0.095	0.104	0.105	0.103	0.103	0.093	0.092	0.089	0.092	0.090	0.087
Maximum 1-Hr. Concentration	0.050	0.130	0.090	0.090	0.120	0.110	0.110	0.180	0.150	0.210	0.180	0.232	0.180	0.160	0.236	0.171	0.169	0.167	0.156	0.144
Max. 8-Hr. Concentration	0.031	0.102	0.080	0.081	0.098	0.088	0.082	0.135	0.117	0.128	0.116	0.116	0.117	0.120	0.104	0.110	0.113	0.112	0.104	0.097
Days Above State Standard	0	16	0	0	17	4	6	9	46	50	75	83	69	69	44	65	20	41	29	23
Days Above Nat. 1-Hr. Std.	0	1	0	0	0	0	0	3	8	16	8	22	10	10	5	24	5	10	3	3
Days Above Nat. 8-Hr. Std.	0	10	0	0	3	1	0	3	24	24	47	49	34	50	18	20	5	18	13	8

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					368	676	258	243	103	175	258	229	359	532	181	238	279	634	361	848
Max. 24-Hr. Concentration (Nat)					368	676	258	243	103	175	258	229	359	532	176	227	268	647	373	840
Annual Average (State)						77.9	57.0	57.0	47.5	52.6		72.0	73.6	77.7	66.6	79.0	84.8	87.1	80.9	79.7
Annual Average (Nat)					60.4	77.9	57.3	57.9	47.5	53.3	44.8	71.9	73.6	77.7	66.1	77.8	95.2	86.2	79.9	80.0
Calc Days Above State 24-Hr Std						221	197	182	143	144		218	244	294	227	289	313	312	305	284
Calc Days Above Nat 24-Hr Std					7	27	12	7	0	13	0	13	30	12	12	32	38	18	18	25

** PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																52.5	84.2	60.2	142.7	153.6
Max. 24-Hr. Concentration (Nat)																52.5	84.2	60.2	46.5	65.1
98th Percentile of 24-Hr Conc.																39.5	56.0		44.1	21.0
Annual Average (State)																			15.1	
Avg. of Qtrly. Means (Nat)																15.2	16.9		15.1	9.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator											17.4	18.8	17.8	17.4	15.4	15.5	14.8	14.3	12.8	11.5
Max. 1-Hr. Concentration											30.6	32.0	27.0	24.0	23.5	22.9	19.9	17.4	15.6	14.3
Max. 8-Hr. Concentration											13.1	22.9	22.1	17.8	14.4	17.9	15.5	12.3	11.6	8.8
Days Above State 8-Hr. Std.											10	17	11	15	12	13	7	6	4	0
Days Above Nat. 8-Hr. Std.											9	15	9	10	8	11	6	6	3	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator											0.153	0.182	0.178	0.178	0.150	0.145	0.170	0.161	0.153	0.147
Max. 1-Hr. Concentration											0.227	0.217	0.164	0.128	0.257	0.286	0.192	0.139	0.138	0.189
Max. Annual Average												0.016	0.014			0.018			0.013	0.013

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator													0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.00
Max. Annual Average											0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration											0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00

Table A-72

Salton Sea Air Basin

County: Riverside

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.202	0.204	0.197	0.185	0.182	0.180	0.181	0.175	0.168	0.159	0.153	0.153	0.154	0.152	0.153	0.143	0.138	0.130	0.134	0.135
Peak 8-Hour Indicator	0.150	0.154	0.153	0.148	0.141	0.142	0.139	0.139	0.133	0.131	0.127	0.125	0.122	0.120	0.122	0.114	0.112	0.110	0.117	0.119
4th High 1-Hr. in 3 Yrs	0.190	0.190	0.190	0.180	0.180	0.180	0.180	0.180	0.170	0.170	0.152	0.158	0.158	0.152	0.155	0.143	0.133	0.128	0.132	0.133
Avg. of 4th High 8-Hr. in 3 Yrs	0.134	0.134	0.135	0.131	0.130	0.129	0.126	0.125	0.121	0.118	0.113	0.110	0.111	0.107	0.107	0.100	0.099	0.100	0.105	0.108
Maximum 1-Hr. Concentration	0.200	0.240	0.180	0.170	0.200	0.190	0.170	0.180	0.170	0.170	0.165	0.160	0.160	0.155	0.173	0.126	0.124	0.137	0.136	0.141
Max. 8-Hr. Concentration	0.165	0.160	0.142	0.141	0.137	0.160	0.130	0.148	0.128	0.126	0.130	0.132	0.125	0.117	0.136	0.107	0.104	0.113	0.124	0.110
Days Above State Standard	100	93	80	85	99	117	82	80	82	82	78	56	61	45	42	33	43	56	54	60
Days Above Nat. 1-Hr. Std.	40	28	31	40	35	38	27	24	24	21	13	11	12	4	8	1	0	6	2	4
Days Above Nat. 8-Hr. Std.	79	68	62	72	70	90	56	62	66	64	39	34	52	26	31	23	30	43	50	46

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					115	712	520	340	175	125	97	199	215	182	158	119	201	604	276	309
Max. 24-Hr. Concentration (Nat)					115	712	520	340	175	125	97	199	215	182	158	119	201	604	276	309
Annual Average (State)						44.6	80.3	69.1	43.8	46.4	48.3	52.0	55.2		48.4	28.9	55.4	59.0	53.5	56.4
Annual Average (Nat)					47.6	89.9	80.3	69.3	43.1	46.5	48.3	52.3	55.6	53.9	48.1	52.7	55.2	59.5	53.8	56.7
Calc Days Above State 24-Hr Std						104	254	230	115	151	136	162	189		146	19	183	171	169	161
Calc Days Above Nat 24-Hr Std					0	26	26	19	6	0	0	7	13	13	3	0	9	18	9	9

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																29.6	28.6	44.7	42.3	26.8
Max. 24-Hr. Concentration (Nat)																29.6	28.6	44.7	42.3	26.8
98th Percentile of 24-Hr Conc.																	26.2	33.0	23.3	24.9
Annual Average (State)																	11.2		11.9	11.4
Avg. of Qtrly. Means (Nat)																	11.2	12.2	11.9	11.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	2.5	2.5	2.6	2.6	2.5	2.4	2.3	2.3	2.2	2.1	1.9	1.7	1.6	1.5	1.5	1.6	1.7	1.7	1.6	1.4
Max. 1-Hr. Concentration	4.0	5.0	5.0	5.0	4.0	6.0	5.0	5.0	5.0	6.0	3.9	3.3	3.2	2.7	3.1	2.9	2.7	2.2	1.9	3.3
Max. 8-Hr. Concentration	2.1	2.6	3.6	2.9	2.1	2.9	2.3	2.5	2.4	2.0	2.0	1.5	1.6	1.3	1.7	1.8	1.6	1.6	1.1	1.3
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.150	0.124	0.085	0.083	0.084	0.089	0.092	0.091	0.088	0.088	0.088	0.088	0.084	0.082	0.077	0.075	0.073	0.071	0.069	0.070
Max. 1-Hr. Concentration	0.090	0.080	0.080	0.080	0.110	0.090	0.090	0.090	0.090	0.090	0.080	0.082	0.080	0.069	0.070	0.068	0.064	0.081	0.068	0.067
Max. Annual Average	0.014	0.020		0.019	0.022	0.024	0.021	0.021		0.019	0.021	0.021	0.020		0.016	0.018	0.016	0.017	0.016	0.016

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.02																			
Max. Annual Average	0.00																			
Max. 24-Hr. Concentration	0.00																			

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Portions of Riverside County lie within the Mojave Desert and South Coast Air Basins.

San Diego Air Basin

County: San Diego

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.197	0.188	0.179	0.179	0.179	0.186	0.180	0.172	0.164	0.150	0.147	0.148	0.142	0.132	0.134	0.134	0.132	0.117	0.117	0.116
Peak 8-Hour Indicator	0.142	0.145	0.140	0.136	0.130	0.135	0.139	0.135	0.129	0.122	0.118	0.121	0.117	0.113	0.114	0.112	0.112	0.101	0.103	0.101
4th High 1-Hr. in 3 Yrs	0.200	0.210	0.190	0.180	0.180	0.190	0.190	0.170	0.170	0.154	0.150	0.146	0.141	0.138	0.135	0.135	0.131	0.118	0.118	0.118
Avg. of 4th High 8-Hr. in 3 Yrs	0.126	0.132	0.125	0.124	0.121	0.125	0.129	0.125	0.118	0.112	0.109	0.108	0.104	0.099	0.102	0.099	0.100	0.094	0.095	0.093
Maximum 1-Hr. Concentration	0.280	0.220	0.190	0.290	0.250	0.250	0.200	0.210	0.170	0.187	0.147	0.162	0.138	0.136	0.164	0.124	0.124	0.141	0.121	0.125
Max. 8-Hr. Concentration	0.207	0.168	0.143	0.196	0.156	0.193	0.145	0.145	0.133	0.154	0.121	0.122	0.117	0.112	0.141	0.100	0.106	0.116	0.100	0.103
Days Above State Standard	146	148	131	127	160	159	139	106	97	90	79	96	51	43	54	27	24	29	15	23
Days Above Nat. 1-Hr. Std.	51	50	42	40	45	56	39	27	19	14	9	12	2	1	9	0	0	2	0	1
Days Above Nat. 8-Hr. Std.	98	109	81	99	119	122	96	67	66	58	46	48	31	16	35	17	16	17	13	6

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					80	90	115	81	67	159	129	121	93	125	57	119	136	106	131	289
Max. 24-Hr. Concentration (Nat)					81	90	115	81	67	159	129	121	93	125	89	121	139	107	130	280
Annual Average (State)						44.4	32.8	40.7	28.9	45.8	50.7	47.1	30.2	46.6	26.5	50.9	44.5	47.4	52.4	52.6
Annual Average (Nat)					40.0	43.8	37.6	40.6	35.9	45.9	50.7	46.8	30.0	46.6	42.5	52.2	45.2	49.1	54.9	52.1
Calc Days Above State 24-Hr Std						114	38	84	12	134	134	122	12	125	6	124	109	129	173	151
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	6

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																64.3	66.3	60.0	53.6	239.2
Max. 24-Hr. Concentration (Nat)																64.3	66.3	60.0	53.6	239.2
98th Percentile of 24-Hr Conc.																35.7	32.5	40.8	36.0	46.9
Annual Average (State)																			15.5	14.4
Avg. of Qtrly. Means (Nat)																18.0	15.8	17.7	16.0	15.5

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	9.4	10.6	10.2	10.4	10.2	10.3	10.2	10.0	8.6	7.8	7.7	7.3	7.3	6.3	6.3	5.6	5.3	5.4	5.3	5.0
Max. 1-Hr. Concentration	16.0	17.0	16.0	14.0	17.0	17.0	18.0	14.0	14.0	11.4	11.0	9.9	12.4	9.3	10.2	9.9	9.3	8.5	8.5	12.7
Max. 8-Hr. Concentration	8.5	13.0	10.4	9.4	10.3	10.5	9.1	7.9	7.9	7.5	7.5	6.3	7.1	5.4	4.8	6.0	5.9	5.1	4.7	10.6
Days Above State 8-Hr. Std.	0	5	2	1	5	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Days Above Nat. 8-Hr. Std.	0	3	1	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.183	0.193	0.193	0.203	0.215	0.233	0.210	0.189	0.169	0.155	0.145	0.129	0.129	0.126	0.116	0.122	0.117	0.126	0.122	0.130
Max. 1-Hr. Concentration	0.230	0.210	0.220	0.260	0.280	0.230	0.180	0.160	0.190	0.130	0.157	0.140	0.124	0.142	0.132	0.172	0.117	0.148	0.126	0.148
Max. Annual Average	0.031	0.032	0.030	0.032	0.035	0.031	0.029	0.029	0.027	0.023	0.024	0.026	0.022	0.024	0.023	0.026	0.024	0.022	0.022	0.021

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.09	0.07	0.06	0.06	0.07	0.07	0.07	0.06	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.05	0.04
Max. Annual Average	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.04	0.02	0.03	0.04	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01

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San Francisco Bay Area Air Basin

County: Alameda

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.155	0.157	0.148	0.141	0.143	0.138	0.136	0.129	0.130	0.126	0.118	0.135	0.151	0.149	0.151	0.144	0.143	0.122	0.126	0.129
Peak 8-Hour Indicator	0.109	0.114	0.110	0.106	0.104	0.106	0.102	0.098	0.096	0.094	0.091	0.103	0.112	0.110	0.110	0.107	0.109	0.092	0.096	0.098
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.150	0.140	0.140	0.140	0.130	0.130	0.120	0.120	0.120	0.138	0.138	0.138	0.138	0.139	0.139	0.113	0.124	0.123
Avg. of 4th High 8-Hr. in 3 Yrs	0.090	0.096	0.093	0.089	0.087	0.089	0.087	0.084	0.082	0.081	0.082	0.087	0.093	0.090	0.089	0.086	0.087	0.078	0.081	0.084
Maximum 1-Hr. Concentration	0.150	0.150	0.140	0.160	0.150	0.140	0.130	0.140	0.130	0.130	0.129	0.155	0.138	0.114	0.146	0.146	0.152	0.113	0.160	0.128
Max. 8-Hr. Concentration	0.118	0.106	0.106	0.116	0.096	0.101	0.105	0.092	0.091	0.102	0.092	0.115	0.112	0.084	0.110	0.116	0.114	0.089	0.106	0.094
Days Above State Standard	36	27	22	21	27	14	9	19	16	8	7	21	23	6	22	15	9	9	11	11
Days Above Nat. 1-Hr. Std.	10	7	5	7	4	2	2	1	1	2	2	9	8	0	6	2	2	0	2	1
Days Above Nat. 8-Hr. Std.	15	12	5	11	8	5	4	2	3	4	3	12	10	0	10	5	2	3	6	4

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					69	108	137	155	99	84	97	52	71	65	66	90	74	114	66	37
Max. 24-Hr. Concentration (Nat)					74	108	137	155	99	84	97	52	71	65	63	88	71	109	64	37
Annual Average (State)						37.2	32.5	36.5	29.0	25.5	24.9	22.3	22.6	24.3	22.5	25.9	22.2			18.9
Annual Average (Nat)					32.1	37.1	32.6	36.1	29.0	25.9	24.9	22.3	22.6	24.3	21.8	25.6	21.5	24.6	24.5	18.6
Calc Days Above State 24-Hr Std						76	59	85	30	18	18	6	6	12	12	18	12			0
Calc Days Above Nat 24-Hr Std					0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																63.1	56.4	107.5	84.5	42.0
Max. 24-Hr. Concentration (Nat)																63.1	56.4	107.5	61.6	42.0
98th Percentile of 24-Hr Conc.																	38.3	54.4	50.5	24.2
Annual Average (State)																	10.6	12.2	13.8	9.0
Avg. of Qtrly. Means (Nat)																	11.2	12.2	13.8	9.0

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	7.4	6.8	7.0	6.4	6.6	6.5	6.8	7.0	6.4	5.8	4.8	4.8	4.8	4.4	4.5	4.7	4.6	4.4	5.5	5.5
Max. 1-Hr. Concentration	12.0	10.0	12.0	10.0	10.0	10.0	8.0	9.0	7.0	7.0	8.7	5.5	6.9	7.9	6.3	6.4	5.4	5.8	7.7	6.0
Max. 8-Hr. Concentration	8.0	6.1	7.5	5.0	5.6	7.5	6.1	6.8	4.6	4.9	5.6	3.8	3.9	3.6	4.6	5.2	3.4	4.0	5.1	4.4
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.132	0.138	0.140	0.138	0.139	0.138	0.138	0.133	0.120	0.112	0.092	0.091	0.09	0.089	0.087	0.094	0.09	0.09	0.077	0.075
Max. 1-Hr. Concentration	0.130	0.140	0.140	0.150	0.140	0.150	0.130	0.150	0.110	0.110	0.097	0.086	0.088	0.086	0.098	0.112	0.081	0.078	0.08	0.076
Max. Annual Average	0.025	0.026	0.025	0.025	0.026	0.025	0.023	0.024	0.021	0.022	0.022	0.021	0.022	0.02	0.02	0.022	0.02	0.019	0.019	0.017

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																			0.02	0.02
Max. Annual Average																		0.00	0.00	0.00
Max. 24-Hr. Concentration																		0.00	0.01	0.01

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San Francisco Bay Area Air Basin

County: Contra Costa

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.143	0.140	0.128	0.129	0.128	0.129	0.115	0.113	0.112	0.111	0.110	0.121	0.125	0.123	0.126	0.128	0.128	0.120	0.113	0.113
Peak 8-Hour Indicator	0.108	0.105	0.101	0.102	0.099	0.102	0.096	0.093	0.091	0.089	0.090	0.094	0.099	0.097	0.099	0.100	0.100	0.094	0.091	0.091
4th High 1-Hr. in 3 Yrs	0.130	0.130	0.130	0.130	0.130	0.130	0.110	0.110	0.110	0.110	0.121	0.130	0.127	0.127	0.119	0.126	0.130	0.126	0.114	0.106
Avg. of 4th High 8-Hr. in 3 Yrs	0.091	0.088	0.088	0.088	0.086	0.088	0.086	0.083	0.081	0.079	0.079	0.081	0.085	0.083	0.083	0.084	0.084	0.082	0.078	0.081
Maximum 1-Hr. Concentration	0.160	0.150	0.120	0.150	0.140	0.110	0.120	0.110	0.110	0.130	0.121	0.152	0.137	0.108	0.147	0.156	0.138	0.134	0.111	0.101
Max. 8-Hr. Concentration	0.116	0.103	0.092	0.105	0.095	0.097	0.105	0.088	0.092	0.096	0.097	0.114	0.100	0.081	0.109	0.122	0.094	0.102	0.096	0.085
Days Above State Standard	18	15	9	22	12	12	7	5	7	10	6	12	15	4	16	8	2	7	10	5
Days Above Nat. 1-Hr. Std.	3	2	0	3	1	0	0	0	0	2	0	4	1	0	2	3	1	1	0	0
Days Above Nat. 8-Hr. Std.	11	5	4	15	5	7	5	2	2	2	2	6	5	0	8	7	1	2	5	1

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					95	115	147	123	73	81	87	73	76	78	71	104	65	112	77	59
Max. 24-Hr. Concentration (Nat)					95	115	147	123	73	81	87	73	76	78	67	101	62	106	73	58
Annual Average (State)						30.3	29.3	33.4	26.1	25.3	24.7	23.3	21.1	22.3	20.6	26.0	20.4			20.6
Annual Average (Nat)					34.5	30.3	29.3	33.2	26.5	25.1	24.5	23.3	21.1	22.3	20.1	25.3	19.8	22.7	23.8	20.4
Calc Days Above State 24-Hr Std						53	41	79	47	37	24	18	6	12	17	37	12			6
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																56.6	52.6	68.2	76.7	49.7
Max. 24-Hr. Concentration (Nat)																56.6	52.6	68.2	76.7	49.7
98th Percentile of 24-Hr Conc.																	42.6	38.4	49.0	33.8
Annual Average (State)																				9.7
Avg. of Qtrly. Means (Nat)																	10.9	10.2	12.7	9.7

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	6.5	6.1	6.2	5.8	6.3	6.1	6.1	6.1	5.7	5.2	4.5	4.1	3.6	3.2	3.3	3.4	3.3	3.1	2.8	2.6
Max. 1-Hr. Concentration	12.0	11.0	10.0	12.0	15.0	12.0	11.0	9.0	9.0	9.0	7.7	6.5	6.8	5.7	5.7	7.8	4.9	5.2	6.2	3.4
Max. 8-Hr. Concentration	5.9	5.3	5.9	5.5	6.6	5.6	5.8	5.4	5.4	5.0	4.2	2.9	2.9	3.2	3.8	3.3	2.7	2.7	2.5	2.0
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.112	0.113	0.114	0.113	0.112	0.110	0.098	0.099	0.096	0.097	0.084	0.082	0.079	0.077	0.070	0.075	0.073	0.074	0.062	0.062
Max. 1-Hr. Concentration	0.150	0.110	0.130	0.130	0.130	0.110	0.100	0.120	0.110	0.100	0.081	0.087	0.085	0.076	0.066	0.087	0.074	0.065	0.069	0.070
Max. Annual Average	0.024	0.023	0.023	0.023	0.023	0.023	0.021	0.023	0.020	0.020	0.020	0.019	0.017	0.016	0.016	0.018	0.016	0.015	0.015	0.013

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.07	0.07	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.05	0.04	0.04	0.05	0.04	0.05	0.06	0.06	0.05	0.04
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.05	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.03	0.02	0.02	0.01

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San Francisco Bay Area Air Basin

County: Marin

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.098	0.103	0.100	0.094	0.094	0.095	0.084	0.074	0.067	0.076	0.080	0.087	0.088	0.087	0.081	0.085	0.083	0.080	0.070	0.072
Peak 8-Hour Indicator	0.070	0.072	0.072	0.067	0.068	0.068	0.064	0.061	0.057	0.056	0.059	0.064	0.064	0.062	0.058	0.059	0.059	0.059	0.054	0.056
4th High 1-Hr. in 3 Yrs	0.110	0.110	0.100	0.090	0.090	0.090	0.080	0.080	0.066	0.080	0.080	0.082	0.088	0.088	0.081	0.092	0.085	0.087	0.075	0.077
Avg. of 4th High 8-Hr. in 3 Yrs	0.058	0.062	0.063	0.059	0.058	0.057	0.053	0.054	0.051	0.047	0.050	0.055	0.057	0.055	0.051	0.051	0.050	0.051	0.047	0.048
Maximum 1-Hr. Concentration	0.110	0.100	0.080	0.100	0.100	0.080	0.080	0.080	0.070	0.080	0.089	0.088	0.105	0.106	0.074	0.102	0.071	0.087	0.077	0.087
Max. 8-Hr. Concentration	0.083	0.077	0.060	0.076	0.076	0.068	0.062	0.067	0.055	0.061	0.061	0.072	0.081	0.073	0.058	0.080	0.058	0.065	0.056	0.067
Days Above State Standard	5	1	0	1	1	0	0	0	0	0	0	0	2	1	0	2	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					91	73	115	115	63	69	72	74	50	72	55	78	42	83	73	41
Max. 24-Hr. Concentration (Nat)					91	73	115	115	63	69	72	74	50	72	52	76	40	79	70	39
Annual Average (State)						29.7	25.8	30.6	24.4	23.4	24.2	20.9	21.7	21.9	20.9	22.8				17.6
Annual Average (Nat)						29.5	25.7	30.2	24.4	23.4	24.2	20.8	21.7	21.9	20.1	22.0	19.5	20.4	21.4	17.0
Calc Days Above State 24-Hr Std						41	23	63	29	6	24	6	0	12	6	12				0
Calc Days Above Nat 24-Hr Std						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																	41.7	53.1	69.9	31.9
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	5.3	5.1	5.5	5.4	5.4	4.7	4.9	5.3	5.3	5.1	3.9	3.5	3.3	3.2	3.3	3.1	2.9	2.6	2.3	2.2
Max. 1-Hr. Concentration	14.0	10.0	10.0	12.0	10.0	9.0	8.0	10.0	8.0	9.0	6.4	6.1	7.1	6.0	5.9	5.6	4.2	5.2	4.1	3.8
Max. 8-Hr. Concentration	5.8	4.6	5.9	4.5	5.0	4.0	5.0	5.7	5.0	4.0	3.0	3.2	4.0	2.6	3.3	2.9	2.3	2.4	1.9	2.0
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.101	0.099	0.100	0.099	0.104	0.102	0.096	0.091	0.084	0.085	0.077	0.075	0.068	0.065	0.064	0.068	0.065	0.066	0.059	0.060
Max. 1-Hr. Concentration	0.120	0.090	0.110	0.130	0.140	0.100	0.070	0.090	0.080	0.080	0.079	0.060	0.068	0.067	0.062	0.087	0.057	0.061	0.057	0.066
Max. Annual Average	0.025	0.024	0.024	0.023	0.022	0.022	0.021	0.021	0.021	0.021	0.020	0.018	0.018	0.016	0.017	0.018	0.016	0.017	0.017	0.016

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

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San Francisco Bay Area Air Basin

County: Napa

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.111	0.115	0.107	0.106	0.107	0.109	0.100	0.098	0.094	0.098	0.096	0.106	0.107	0.103	0.101	0.106	0.105	0.099	0.091	0.095
Peak 8-Hour Indicator	0.085	0.088	0.083	0.081	0.082	0.084	0.077	0.074	0.071	0.076	0.077	0.085	0.083	0.080	0.076	0.080	0.081	0.075	0.071	0.074
4th High 1-Hr. in 3 Yrs	0.110	0.110	0.110	0.110	0.100	0.100	0.090	0.100	0.090	0.100	0.091	0.105	0.095	0.095	0.091	0.103	0.103	0.099	0.082	0.099
Avg. of 4th High 8-Hr. in 3 Yrs	0.072	0.073	0.069	0.068	0.070	0.071	0.066	0.064	0.063	0.066	0.066	0.073	0.071	0.067	0.063	0.067	0.069	0.066	0.063	0.065
Maximum 1-Hr. Concentration	0.110	0.110	0.090	0.110	0.100	0.100	0.090	0.110	0.090	0.120	0.092	0.130	0.090	0.084	0.125	0.115	0.077	0.099	0.116	0.105
Max. 8-Hr. Concentration	0.090	0.085	0.067	0.080	0.088	0.085	0.072	0.075	0.070	0.083	0.075	0.096	0.075	0.071	0.099	0.090	0.063	0.078	0.082	0.083
Days Above State Standard	8	3	0	6	1	2	0	3	0	2	0	4	0	0	3	4	0	1	1	2
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	2	1	0	0	1	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					109	97	117	100	74	70	86	69	39				45	96	70	41
Max. 24-Hr. Concentration (Nat)					109	97	117	100	74	70	86	69	57	78	60	66	45	91	67	41
Annual Average (State)						31.7	33.7	33.0	27.1	25.8		20.2								21.3
Annual Average (Nat)						31.7	33.5	33.1	27.1	25.7	23.6	20.3	20.2	18.7	16.9	18.6	16.3	24.0	25.4	20.6
Calc Days Above State 24-Hr Std						53	47	67	30	18		6								0
Calc Days Above Nat 24-Hr Std						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	7.0	6.9	6.9	6.3	6.4	6.4	6.3	6.2	6.0	5.7	5.2	5.0	4.5	4.1	4.1	4.0	3.7	3.5	2.8	2.6
Max. 1-Hr. Concentration	11.0	10.0	11.0	12.0	11.0	12.0	10.0	9.0	8.0	7.0	7.4	7.6	5.6	5.7	5.8	5.5	4.7	5.7	4.2	4.7
Max. 8-Hr. Concentration	7.1	6.6	6.8	5.6	6.0	5.4	7.1	5.8	5.3	4.4	4.6	3.5	3.8	3.9	3.9	4.2	2.8	3.0	2.4	2.5
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.081	0.080	0.091	0.093	0.095	0.090	0.084	0.087	0.081	0.082	0.072	0.071	0.065	0.063	0.058	0.066	0.061	0.064	0.055	0.058
Max. 1-Hr. Concentration	0.090	0.090	0.090	0.090	0.080	0.090	0.070	0.090	0.060	0.080	0.065	0.059	0.077	0.075	0.061	0.086	0.054	0.059	0.052	0.066
Max. Annual Average	0.018	0.017	0.018	0.018	0.018	0.017	0.017	0.017	0.015	0.015	0.015	0.014	0.014	0.012	0.012	0.014	0.012	0.013	0.013	0.012

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

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San Francisco Bay Area Air Basin

County: San Francisco

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.078	0.080	0.076	0.073	0.074	0.075	0.071	0.063	0.058	0.060	0.062	0.065	0.064	0.067	0.059	0.059	0.057	0.060	0.057	0.062
Peak 8-Hour Indicator	0.052	0.055	0.057	0.056	0.057	0.057	0.056	0.052	0.050	0.047	0.048	0.050	0.051	0.051	0.048	0.048	0.047	0.049	0.049	0.052
4th High 1-Hr. in 3 Yrs	0.090	0.090	0.090	0.070	0.080	0.080	0.070	0.070	0.060	0.060	0.060	0.080	0.071	0.071	0.061	0.067	0.061	0.063	0.059	0.061
Avg. of 4th High 8-Hr. in 3 Yrs	0.044	0.048	0.048	0.037	0.052	0.051	0.049	0.045	0.043	0.042	0.042	0.044	0.046	0.045	0.043	0.044	0.044	0.046	0.044	0.047
Maximum 1-Hr. Concentration	0.100	0.090	0.070	0.090	0.090	0.080	0.060	0.050	0.080	0.080	0.055	0.088	0.071	0.068	0.053	0.079	0.058	0.082	0.054	0.085
Max. 8-Hr. Concentration	0.067	0.065	0.056	0.070	0.070	0.063	0.051	0.047	0.052	0.052	0.045	0.067	0.050	0.059	0.046	0.057	0.043	0.054	0.049	0.059
Days Above State Standard	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					117	101	165	109	81	69	93	50	71	81	56	82	67	70	79	52
Max. 24-Hr. Concentration (Nat)					117	101	165	109	81	69	93	50	71	81	52	78	63	67	74	51
Annual Average (State)						35.8	33.6	34.9		28.8	28.2	24.8	24.3	24.9	22.9	27.5	25.1			22.7
Annual Average (Nat)						35.9	33.8	35.2	31.7	28.8	28.0	24.8	24.3	24.9	21.7	26.4	24.0	25.9	24.7	21.8
Calc Days Above State 24-Hr Std						75	70	91		30	36	0	12	18	6	37	12			6
Calc Days Above Nat 24-Hr Std					0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																71.2	47.9	76.6	70.2	41.6
Max. 24-Hr. Concentration (Nat)																71.2	47.9	76.6	70.2	41.6
98th Percentile of 24-Hr Conc.																		51.3	57.5	33.0
Annual Average (State)																			13.1	10.1
Avg. of Qtrly. Means (Nat)																		11.5	13.1	10.1

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	8.4	8.8	9.1	8.6	8.3	7.7	7.8	7.2	6.7	6.4	5.8	5.6	4.7	4.5	4.2	4.2	3.8	3.7	2.9	2.8
Max. 1-Hr. Concentration	15.0	21.0	20.0	17.0	15.0	14.0	12.0	14.0	10.0	10.0	7.5	8.5	8.6	8.0	7.1	8.6	5.5	5.2	6.8	8.6
Max. 8-Hr. Concentration	10.8	15.0	12.6	10.0	12.8	9.0	6.9	8.4	7.4	6.9	5.3	5.3	5.6	5.7	4.0	4.6	3.2	3.3	2.6	3.6
Days Above State 8-Hr. Std.	1	4	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	1	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.131	0.141	0.143	0.112	0.116	0.122	0.120	0.112	0.108	0.099	0.092	0.089	0.088	0.083	0.076	0.083	0.084	0.083	0.074	0.074
Max. 1-Hr. Concentration	0.140	0.180	0.110	0.150	0.120	0.140	0.110	0.100	0.090	0.080	0.091	0.088	0.081	0.067	0.080	0.103	0.074	0.073	0.075	0.072
Max. Annual Average	0.029		0.024	0.024	0.026			0.024	0.022	0.024	0.022	0.021	0.021	0.020	0.020	0.021	0.020	0.019	0.019	0.018

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.07	0.07	0.08		0.03	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Max. Annual Average	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.04	0.03	0.03	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

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San Francisco Bay Area Air Basin

County: San Mateo

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.115	0.121	0.104	0.099	0.097	0.098	0.089	0.078	0.071	0.076	0.075	0.091	0.098	0.100	0.078	0.071	0.071	0.074	0.079	0.084
Peak 8-Hour Indicator	0.073	0.075	0.069	0.066	0.069	0.071	0.067	0.061	0.055	0.056	0.055	0.065	0.067	0.068	0.058	0.054	0.052	0.055	0.057	0.064
4th High 1-Hr. in 3 Yrs	0.110	0.110	0.110	0.110	0.100	0.100	0.090	0.080	0.070	0.080	0.084	0.103	0.103	0.103	0.090	0.079	0.080	0.081	0.081	0.090
Avg. of 4th High 8-Hr. in 3 Yrs	0.063	0.068	0.061	0.060	0.060	0.065	0.058	0.053	0.049	0.050	0.049	0.058	0.061	0.062	0.053	0.049	0.047	0.049	0.052	0.058
Maximum 1-Hr. Concentration	0.110	0.130	0.100	0.120	0.100	0.100	0.080	0.080	0.090	0.100	0.084	0.140	0.097	0.090	0.066	0.082	0.083	0.105	0.090	0.113
Max. 8-Hr. Concentration	0.080	0.077	0.071	0.074	0.076	0.072	0.050	0.056	0.065	0.076	0.066	0.099	0.067	0.073	0.053	0.063	0.063	0.067	0.063	0.078
Days Above State Standard	9	5	1	2	2	1	0	0	0	1	0	5	1	0	0	0	0	1	0	1
Days Above Nat. 1-Hr. Std.	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					94	90	137	90	80	76	76	48	48	70	56	95	61	68	56	38
Max. 24-Hr. Concentration (Nat)					94	90	137	90	80	76	76	48	48	70	49	85	53	65	53	37
Annual Average (State)						33.1	27.9	32.1	28.5	26.5	24.8	21.0	21.0	23.9	24.5	28.3	24.0			19.8
Annual Average (Nat)						33.0	28.3	32.1	28.5	26.5	24.9	21.0	21.1	23.9	22.4	24.6	21.2	22.5	22.1	19.3
Calc Days Above State 24-Hr Std						59	47	73	41	31	36	0	0	12	12	31	18			0
Calc Days Above Nat 24-Hr Std						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																59.7	44.0	67.9	43.0	34.0
Max. 24-Hr. Concentration (Nat)																59.7	44.0	67.9	43.0	34.0
98th Percentile of 24-Hr Conc.																	36.9	46.1	36.3	30.6
Annual Average (State)																		11.3	11.5	9.0
Avg. of Qtrly. Means (Nat)																	10.9	11.3	11.5	9.0

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	7.1	7.3	7.0	6.9	6.0	5.8	5.9	5.9	5.8	5.8	5.4	4.9	4.4	3.9	4.2	4.3	4.3	4.2	3.7	3.3
Max. 1-Hr. Concentration	13.0	14.0	12.0	13.0	13.0	13.0	12.0	11.0	12.0	10.0	12.0	10.1	8.6	10.7	8.7	8.0	9.8	7.1	5.8	5.4
Max. 8-Hr. Concentration	5.6	6.4	6.4	5.5	5.4	5.3	5.9	6.5	4.8	5.8	5.4	3.9	3.6	4.2	4.1	3.8	4.4	3.9	2.8	2.6
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.092	0.116	0.130	0.137	0.140	0.132	0.128	0.122	0.116	0.110	0.101	0.096	0.092	0.081	0.077	0.079	0.076	0.078	0.066	0.068
Max. 1-Hr. Concentration	0.090	0.130	0.130	0.120	0.130	0.120	0.120	0.120	0.100	0.090	0.106	0.077	0.090	0.084	0.063	0.104	0.065	0.074	0.066	0.081
Max. Annual Average	0.021	0.022	0.024		0.024	0.024	0.022	0.023	0.021	0.022	0.021	0.019	0.020	0.018	0.018	0.019	0.018	0.017	0.017	0.015

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

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San Francisco Bay Area Air Basin

County: Santa Clara

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.164	0.172	0.155	0.149	0.147	0.148	0.130	0.117	0.117	0.119	0.115	0.125	0.126	0.125	0.127	0.126	0.130	0.120	0.122	0.118
Peak 8-Hour Indicator	0.125	0.130	0.121	0.114	0.111	0.112	0.104	0.095	0.091	0.093	0.093	0.100	0.099	0.098	0.098	0.097	0.101	0.090	0.096	0.097
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.150	0.140	0.140	0.140	0.120	0.120	0.120	0.120	0.118	0.130	0.129	0.129	0.118	0.125	0.125	0.113	0.116	0.116
Avg. of 4th High 8-Hr. in 3 Yrs	0.100	0.103	0.097	0.092	0.092	0.097	0.088	0.082	0.078	0.080	0.080	0.086	0.088	0.085	0.085	0.080	0.081	0.076	0.082	0.086
Maximum 1-Hr. Concentration	0.170	0.160	0.140	0.170	0.140	0.130	0.130	0.130	0.130	0.130	0.130	0.145	0.129	0.114	0.147	0.125	0.113	0.123	0.121	0.124
Max. 8-Hr. Concentration	0.124	0.127	0.105	0.108	0.101	0.102	0.096	0.108	0.101	0.112	0.095	0.109	0.103	0.084	0.111	0.102	0.101	0.096	0.099	0.101
Days Above State Standard	50	40	32	41	34	17	10	12	15	14	8	22	24	3	22	12	4	9	10	11
Days Above Nat. 1-Hr. Std.	19	7	1	12	2	3	1	1	1	1	1	6	1	0	3	1	0	0	0	0
Days Above Nat. 8-Hr. Std.	28	14	10	25	19	7	4	5	3	4	2	14	8	0	8	4	1	3	6	6

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					146	147	134	120	112	93	93	60	76	78	100	117	80	82	73	60
Max. 24-Hr. Concentration (Nat)					146	150	173	153	112	101	93	60	76	95	92	114	76	77	70	57
Annual Average (State)						37.7	35.1	37.9	33.9	28.1	28.3	25.7	24.8	25.8	25.8	30.0	27.8			24.8
Annual Average (Nat)					38.3	40.8	40.4	38.3	33.7	28.4	28.3	25.7	24.9	25.8	25.1	28.7	26.8	28.9		24.2
Calc Days Above State 24-Hr Std						76	65	85	53	31	36	24	12	18	18	31	42			18
Calc Days Above Nat 24-Hr Std					0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																77.0	67.2	63.3	57.6	56.1
Max. 24-Hr. Concentration (Nat)																77.0	67.2	63.3	57.6	56.1
98th Percentile of 24-Hr Conc.																	55.3	55.4	37.3	37.4
Annual Average (State)																		12.4	12.0	11.7
Avg. of Qtrly. Means (Nat)																	13.6	12.4	12.0	11.7

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	11.9	13.9	14.0	13.4	10.7	11.8	12.6	12.4	11.1	9.3	8.1	7.8	7.4	6.5	6.7	6.5	7.1	6.9	6.0	3.9
Max. 1-Hr. Concentration	20.0	21.0	16.0	13.0	15.0	19.0	18.0	15.0	11.0	14.0	12.0	8.9	8.8	9.9	8.6	9.0	8.9	7.6	5.9	5.5
Max. 8-Hr. Concentration	12.1	16.1	11.3	7.4	10.4	12.0	11.0	11.0	7.8	6.9	8.8	5.8	7.0	6.1	6.3	6.3	7.0	5.1	4.5	4.0
Days Above State 8-Hr. Std.	5	20	5	0	3	8	4	4	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	18	5	0	3	7	2	3	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.186	0.196	0.189	0.188	0.167	0.162	0.156	0.160	0.155	0.141	0.116	0.119	0.114	0.111	0.101	0.108	0.105	0.109	0.100	
Max. 1-Hr. Concentration	0.180	0.190	0.160	0.170	0.160	0.150	0.150	0.140	0.100	0.120	0.107	0.116	0.108	0.118	0.083	0.128	0.114	0.108	0.069	
Max. Annual Average	0.032	0.035	0.033	0.031	0.032	0.032	0.030	0.031	0.027	0.027	0.028	0.027	0.025	0.025	0.025	0.026	0.025	0.024		

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-81

San Francisco Bay Area Air Basin

County: Solano

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.118	0.119	0.112	0.113	0.111	0.117	0.107	0.103	0.100	0.103	0.102	0.111	0.114	0.113	0.115	0.121	0.124	0.117	0.114	0.101
Peak 8-Hour Indicator	0.091	0.093	0.090	0.095	0.096	0.097	0.087	0.084	0.082	0.084	0.083	0.089	0.093	0.091	0.093	0.098	0.099	0.092	0.090	0.089
4th High 1-Hr. in 3 Yrs	0.130	0.130	0.120	0.110	0.110	0.110	0.110	0.100	0.100	0.100	0.100	0.109	0.113	0.113	0.110	0.117	0.117	0.111	0.099	0.099
Avg. of 4th High 8-Hr. in 3 Yrs	0.074	0.075	0.073	0.077	0.077	0.078	0.074	0.074	0.074	0.074	0.073	0.077	0.079	0.078	0.077	0.081	0.080	0.075	0.074	0.073
Maximum 1-Hr. Concentration	0.140	0.120	0.090	0.120	0.130	0.120	0.110	0.110	0.100	0.130	0.107	0.133	0.113	0.103	0.121	0.129	0.096	0.102	0.109	0.101
Max. 8-Hr. Concentration	0.095	0.087	0.076	0.092	0.093	0.086	0.087	0.087	0.086	0.096	0.082	0.099	0.095	0.083	0.097	0.101	0.076	0.084	0.083	0.077
Days Above State Standard	13	7	0	14	6	4	2	5	4	4	3	13	8	1	9	9	1	3	4	2
Days Above Nat. 1-Hr. Std.	4	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	1	0	5	2	1	1	1	2	2	0	5	3	0	3	4	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																		58	84	39
Max. 24-Hr. Concentration (Nat)											63	59	49	85	71	84	53	86	80	38
Annual Average (State)																				17.3
Annual Average (Nat)												18.7	17.2	18.3	17.2	19.3	15.0	19.5	21.4	16.8
Calc Days Above State 24-Hr Std																				0
Calc Days Above Nat 24-Hr Std												0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																90.5	60.1	90.1	72.3	30.8
Max. 24-Hr. Concentration (Nat)																90.5	60.1	90.1	72.3	30.8
98th Percentile of 24-Hr Conc.																	44.0	56.0	54.0	25.1
Annual Average (State)																	11.6	12.5	13.6	9.4
Avg. of Qtrly. Means (Nat)																	11.6	12.5	13.6	9.4

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	11.4	10.8	10.9	10.3	10.3	10.1	10.4	10.3	9.3	8.4	7.5	7.1	6.2	5.6	5.4	5.7	5.5	5.3	4.6	4.1
Max. 1-Hr. Concentration	15.0	12.0	13.0	13.0	14.0	13.0	12.0	13.0	11.0	12.0	8.7	7.0	6.4	6.5	7.2	6.6	6.5	5.6	5.8	4.0
Max. 8-Hr. Concentration	9.8	8.6	10.8	9.4	10.6	11.5	9.0	9.6	6.6	7.9	6.5	5.3	4.9	4.9	5.3	5.5	5.1	4.1	3.9	2.9
Days Above State 8-Hr. Std.	4	0	4	1	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	2	0	4	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.095	0.093	0.097	0.090	0.090	0.094	0.094	0.096	0.090	0.087	0.075	0.072	0.069	0.065	0.064	0.068	0.067	0.066	0.056	0.055
Max. 1-Hr. Concentration	0.110	0.090	0.100	0.080	0.090	0.130	0.080	0.090	0.070	0.070	0.066	0.070	0.071	0.068	0.064	0.083	0.064	0.057	0.051	0.067
Max. Annual Average	0.019	0.018		0.018	0.019	0.018	0.018	0.018	0.017	0.016	0.016	0.015	0.015	0.013	0.014	0.014	0.013	0.013	0.013	0.012

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00

Table A-82

A portion of Solano County lies within the Sacramento Valley Air Basin.

San Francisco Bay Area Air Basin

County: Sonoma

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.100	0.106	0.105	0.102	0.101	0.104	0.102	0.103	0.095	0.091	0.081	0.086	0.086	0.084	0.079	0.085	0.082	0.083	0.071	0.074
Peak 8-Hour Indicator	0.085	0.089	0.087	0.087	0.087	0.092	0.085	0.083	0.076	0.074	0.070	0.065	0.070	0.063	0.059	0.062	0.062	0.063	0.057	0.059
4th High 1-Hr. in 3 Yrs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.090	0.090	0.080	0.084	0.084	0.085	0.077	0.090	0.086	0.086	0.077	0.086
Avg. of 4th High 8-Hr. in 3 Yrs	0.066	0.068	0.068	0.069	0.071	0.076	0.072	0.072	0.067	0.063	0.058	0.057	0.058	0.054	0.052	0.054	0.055	0.055	0.052	0.054
Maximum 1-Hr. Concentration	0.110	0.110	0.100	0.110	0.110	0.100	0.090	0.100	0.090	0.080	0.086	0.097	0.089	0.093	0.068	0.095	0.078	0.086	0.077	0.096
Max. 8-Hr. Concentration	0.087	0.091	0.078	0.097	0.096	0.083	0.073	0.078	0.080	0.062	0.072	0.077	0.077	0.080	0.054	0.076	0.056	0.063	0.060	0.079
Days Above State Standard	3	3	1	2	2	3	0	3	0	0	0	1	0	0	0	1	0	0	0	1
Days Above Nat. 1-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	2	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)													38	85	56	57	48	78	64	36
Max. 24-Hr. Concentration (Nat)											61	46	38	85	53	54	46	74	60	34
Annual Average (State)														18.7			18.2			16.9
Annual Average (Nat)												15.4	16.9	18.6	18.2		17.6	21.0	19.7	16.4
Calc Days Above State 24-Hr Std														12			0			0
Calc Days Above Nat 24-Hr Std												0	0	0	0		0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																54.9	40.1	75.9	50.7	38.8
Max. 24-Hr. Concentration (Nat)																54.9	40.1	75.9	50.7	38.8
98th Percentile of 24-Hr Conc.																	36.8	41.4	42.4	29.8
Annual Average (State)																	10.3	10.8		8.8
Avg. of Qtrly. Means (Nat)																	10.3	10.8	10.5	8.8

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	5.1	5.3	5.6	5.5	5.2	5.5	5.5	5.2	4.4	4.3	3.8	3.5	3.1	3.0	3.1	3.3	3.2	3.1	2.7	2.4
Max. 1-Hr. Concentration	10.0	9.0	9.0	7.0	9.0	9.0	7.0	6.0	6.0	6.0	5.1	4.9	5.6	5.4	5.2	5.7	4.5	4.8	3.7	3.1
Max. 8-Hr. Concentration	4.9	5.9	5.3	4.3	5.1	6.1	5.1	4.0	4.0	3.8	3.4	2.8	3.0	3.3	3.2	3.4	3.0	2.4	2.1	1.8
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.106	0.120	0.119	0.110	0.103	0.097	0.094	0.083	0.083	0.082	0.080	0.076	0.067	0.064	0.057	0.062	0.060	0.061	0.055	0.056
Max. 1-Hr. Concentration	0.140	0.160	0.110	0.090	0.120	0.090	0.090	0.090	0.100	0.090	0.084	0.066	0.062	0.061	0.057	0.074	0.054	0.057	0.054	0.055
Max. Annual Average	0.017	0.017	0.016	0.016	0.016		0.014	0.015	0.015		0.015	0.015	0.014	0.013	0.015	0.014	0.013	0.013	0.013	0.012

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-83

A portion of Sonoma County lies within the North Coast Air Basin.

San Joaquin Valley Air Basin

County: Fresno

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.164	0.162	0.172	0.172	0.168	0.170	0.158	0.167	0.162	0.162	0.155	0.152	0.154	0.153	0.162	0.159	0.158	0.146	0.151	0.151
Peak 8-Hour Indicator	0.127	0.123	0.128	0.128	0.129	0.129	0.118	0.128	0.122	0.124	0.115	0.119	0.120	0.121	0.126	0.126	0.126	0.118	0.120	0.120
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.170	0.170	0.170	0.160	0.150	0.160	0.160	0.160	0.150	0.144	0.146	0.146	0.161	0.161	0.161	0.146	0.151	0.151
Avg. of 4th High 8-Hr. in 3 Yrs	0.114	0.110	0.117	0.118	0.121	0.115	0.110	0.110	0.108	0.111	0.107	0.108	0.107	0.111	0.115	0.113	0.111	0.108	0.115	0.111
Maximum 1-Hr. Concentration	0.170	0.160	0.180	0.200	0.190	0.150	0.150	0.180	0.160	0.160	0.144	0.173	0.154	0.147	0.169	0.155	0.165	0.149	0.164	0.152
Max. 8-Hr. Concentration	0.125	0.131	0.135	0.150	0.125	0.121	0.117	0.130	0.121	0.121	0.111	0.126	0.123	0.127	0.134	0.123	0.131	0.120	0.132	0.116
Days Above State Standard	109	112	118	127	130	109	79	94	86	81	65	81	96	95	79	95	92	108	106	108
Days Above Nat. 1-Hr. Std.	42	34	39	43	47	24	14	30	25	19	14	22	31	13	30	18	23	21	25	17
Days Above Nat. 8-Hr. Std.	100	85	94	112	113	92	55	81	69	59	55	63	78	75	69	83	79	94	95	97

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					162	204	297	152	125	190	127	126	144	124	149	164	139	204	111	93
Max. 24-Hr. Concentration (Nat)					162	250	297	152	125	190	127	126	144	124	141	162	138	193	106	92
Annual Average (State)						49.3	65.5	60.0	52.1	53.0	38.1	48.9	39.8	46.7	39.8	46.9	41.0	43.3	43.4	44.0
Annual Average (Nat)					52.1	56.3	65.5	60.0	52.2	53.1	49.7	48.8	39.3	46.7	39.3	46.6	40.3	44.4	42.6	43.4
Calc Days Above State 24-Hr Std						176	196	185	178	152	72	137	89	107	91	119	72	98	123	128
Calc Days Above Nat 24-Hr Std					7	12	26	0	0	6	0	0	0	0	0	0	0	6	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																136.0	160.0	110.0	99.7	79.9
Max. 24-Hr. Concentration (Nat)																136.0	160.0	110.0	84.0	63.0
98th Percentile of 24-Hr Conc.																120.0	108.0	76.0	77.0	56.0
Annual Average (State)																23.4			21.3	17.8
Avg. of Qtrly. Means (Nat)																27.7	18.4	19.8	21.6	17.9

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	13.6	13.4	13.9	13.5	13.8	13.7	13.9	10.2	10.2	10.0	10.0	10.9	9.9	9.0	8.3	8.5	8.3	5.8	5.3	4.8
Max. 1-Hr. Concentration	24.0	18.0	21.0	15.0	19.0	23.0	15.0	15.0	13.0	13.0	15.0	12.0	10.1	9.9	10.3	11.9	9.0	6.7	6.1	5.0
Max. 8-Hr. Concentration	15.7	10.7	16.3	10.9	16.5	13.1	10.3	10.4	7.6	9.3	8.9	9.1	6.8	7.5	8.0	7.7	6.2	4.6	4.5	4.1
Days Above State 8-Hr. Std.	7	6	12	3	3	17	3	1	0	2	0	1	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	6	6	8	3	4	13	3	1	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.115	0.144	0.148	0.145	0.144	0.151	0.156	0.129	0.123	0.121	0.124	0.124	0.115	0.107	0.100	0.107	0.106	0.102	0.093	0.095
Max. 1-Hr. Concentration	0.190	0.150	0.190	0.150	0.210	0.190	0.160	0.120	0.110	0.120	0.119	0.111	0.109	0.103	0.112	0.108	0.094	0.090	0.089	0.092
Max. Annual Average	0.027	0.031	0.019	0.030	0.032	0.032	0.026	0.025	0.023	0.023	0.023	0.022	0.021	0.021	0.020	0.024	0.021	0.021	0.020	0.020

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02						
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
Max. 24-Hr. Concentration	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00						0.00

Table A-84

San Joaquin Valley Air Basin

County: Kern

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.164	0.162	0.162	0.166	0.169	0.167	0.164	0.166	0.160	0.154	0.154	0.163	0.164	0.167	0.161	0.152	0.150	0.141	0.143	0.147
Peak 8-Hour Indicator	0.120	0.119	0.119	0.134	0.134	0.131	0.126	0.125	0.121	0.122	0.123	0.128	0.130	0.135	0.131	0.127	0.129	0.116	0.119	0.122
4th High 1-Hr. in 3 Yrs	0.160	0.160	0.160	0.160	0.170	0.170	0.160	0.160	0.160	0.160	0.160	0.165	0.165	0.164	0.158	0.154	0.154	0.138	0.142	0.150
Avg. of 4th High 8-Hr. in 3 Yrs	0.109	0.111	0.114	0.118	0.118	0.120	0.119	0.118	0.115	0.112	0.111	0.119	0.119	0.115	0.115	0.111	0.111	0.109	0.112	0.115
Maximum 1-Hr. Concentration	0.170	0.160	0.160	0.170	0.170	0.180	0.170	0.160	0.150	0.160	0.175	0.168	0.165	0.146	0.165	0.140	0.151	0.138	0.151	0.156
Max. 8-Hr. Concentration	0.121	0.121	0.126	0.131	0.127	0.136	0.123	0.120	0.115	0.125	0.129	0.134	0.137	0.118	0.136	0.112	0.117	0.115	0.120	0.127
Days Above State Standard	81	112	99	124	134	132	120	119	106	110	114	115	114	66	81	105	95	95	95	122
Days Above Nat. 1-Hr. Std.	26	27	33	46	56	42	37	37	10	37	37	38	44	8	29	12	16	16	17	28
Days Above Nat. 8-Hr. Std.	71	90	94	112	124	112	96	107	100	98	101	104	109	55	75	88	82	85	89	116

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					206	237	287	189	186	131	192	195	153	137	166	186	153	216	194	134
Max. 24-Hr. Concentration (Nat)					244	237	287	189	183	130	190	195	153	137	159	183	145	205	189	136
Annual Average (State)							80.1	70.0	62.4	55.8	41.5	57.9	54.1	42.9	40.5	60.1	53.9	51.3	59.9	52.3
Annual Average (Nat)					60.0	79.3	79.3	69.9	62.9	54.3	39.6	58.2	54.1	46.1	38.7	59.5	53.1	47.7	59.2	52.4
Calc Days Above State 24-Hr Std							292	225	246	178	106	184	204	80	95	173	158	133	256	167
Calc Days Above Nat 24-Hr Std					31	23	31	18	8	0	0	3	0	0	0	8	0	9	6	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																134.8	112.7	154.7	104.3	84.5
Max. 24-Hr. Concentration (Nat)																134.8	112.7	154.7	89.6	67.8
98th Percentile of 24-Hr Conc.																111.3	95.4	95.9	80.4	51.9
Annual Average (State)																31.2	22.6	20.8	24.1	24.8
Avg. of Qtrly. Means (Nat)																26.8	22.6	21.8	24.1	19.7

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	8.2	7.4	7.3	7.0	7.4	8.8	9.4	9.5	8.5	6.8	5.4	5.3	5.1	4.7	4.1	4.8	6.0	5.4	4.6	3.0
Max. 1-Hr. Concentration	11.0	10.0	14.0	10.0	12.0	14.0	13.0	13.0	11.0	8.0	8.8	7.8	8.7	6.1	5.7	10.5	10.1	16.0	4.5	4.5
Max. 8-Hr. Concentration	6.9	6.0	8.8	6.9	8.9	11.0	8.6	8.1	5.8	6.1	6.4	6.2	7.7	4.0	3.9	5.0	5.4	3.5	2.5	3.7
Days Above State 8-Hr. Std.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.119	0.127	0.125	0.125	0.128	0.133	0.136	0.131	0.120	0.114	0.110	0.109	0.105	0.103	0.096	0.098	0.100	0.109	0.107	0.106
Max. 1-Hr. Concentration	0.140	0.160	0.120	0.100	0.120	0.130	0.140	0.110	0.110	0.100	0.089	0.109	0.110	0.081	0.100	0.107	0.089	0.115	0.107	0.085
Max. Annual Average	0.028	0.031	0.030	0.029	0.032	0.033	0.031	0.030	0.027	0.017	0.017	0.029	0.029	0.024	0.022	0.027	0.024	0.022	0.024	0.020

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.09	0.09	0.09	0.08	0.07	0.06	0.06	0.04	0.04	0.03	0.02	0.02	0.03	0.03		0.01	0.02	0.02		
Max. Annual Average	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00		
Max. 24-Hr. Concentration	0.03	0.03	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.01	0.00	0.01		

Table A-85

A portion of Kern County lies within the Mojave Desert Air Basin.

San Joaquin Valley Air Basin

County: Kings

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.122	0.127	0.125	0.128	0.127	0.124	0.119	0.112	0.106	0.109	0.111	0.106	0.137	0.137	0.137	0.124	0.127	0.124	0.125	0.120
Peak 8-Hour Indicator	0.102	0.106	0.105	0.106	0.103	0.102	0.100	0.096	0.090	0.090	0.099	0.094	0.121	0.120	0.118	0.105	0.111	0.108	0.109	0.103
4th High 1-Hr. in 3 Yrs	0.120	0.120	0.120	0.130	0.130	0.130	0.130	0.110	0.100	0.110	0.109	0.109	0.138	0.138	0.138	0.128	0.128	0.124	0.124	0.121
Avg. of 4th High 8-Hr. in 3 Yrs	0.095	0.098	0.088	0.088	0.088	0.096	0.091	0.088	0.080	0.080	0.093	0.086	0.096	0.097	0.105	0.099	0.102	0.098	0.099	0.095
Maximum 1-Hr. Concentration	0.120	0.140	0.110	0.130	0.150	0.130	0.100	0.110	0.100	0.110	0.119	0.096	0.144	0.126	0.143	0.140	0.124	0.127	0.125	0.120
Max. 8-Hr. Concentration	0.102	0.101	0.096	0.104	0.107	0.112	0.092	0.093	0.078	0.093	0.102	0.085	0.121	0.106	0.113	0.111	0.110	0.107	0.105	0.100
Days Above State Standard	20	14	1	19	34	13	4	15	1	2	9	2	78	23	27	28	48	21	29	19
Days Above Nat. 1-Hr. Std.	0	2	0	2	3	1	0	0	0	0	0	0	8	2	3	2	0	1	1	0
Days Above Nat. 8-Hr. Std.	20	14	1	14	28	10	3	9	0	2	12	1	81	26	31	25	51	18	27	15

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					170	213	439	279	178	239	129	279	143	199	149	185	137	221	174	150
Max. 24-Hr. Concentration (Nat)					159	202	439	279	167	239	125	279	143	199	146	174	128	185	168	150
Annual Average (State)						67.0	58.8	62.9	54.7	56.3	49.6	52.9	40.9	47.3		53.1	51.3		55.4	47.5
Annual Average (Nat)					53.2	66.0	63.9	62.9	54.7	56.3	50.1	52.9	40.8	48.2		53.0	46.6	57.4	53.5	46.9
Calc Days Above State 24-Hr Std						208	157	189	172	170	166	174	115	102		135	132		172	149
Calc Days Above Nat 24-Hr Std					7	29	14	14	6	20	0	12	0	6		9	0	14	6	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																53.0	76.0	123.2	90.7	55.1
Max. 24-Hr. Concentration (Nat)																53.0	76.0	123.2	90.7	55.1
98th Percentile of 24-Hr Conc.																		89.5	65.1	42.2
Annual Average (State)																				16.2
Avg. of Qtrly. Means (Nat)																	16.4	19.2	21.5	16.3

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator											0.087	0.094	0.091	0.091	0.081	0.084	0.073	0.068	0.073	0.073
Max. 1-Hr. Concentration											0.082	0.094	0.066	0.080	0.086	0.086	0.072	0.096	0.067	0.076
Max. Annual Average											0.015	0.015		0.014	0.014		0.014		0.014	0.013

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

Table A-86

San Joaquin Valley Air Basin

County: Madera

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator						0.118	0.113	0.117	0.114	0.125	0.121	0.124	0.122		0.122	0.115	0.111	0.104	0.111	0.115
Peak 8-Hour Indicator						0.103	0.103	0.101	0.098	0.107	0.106	0.109	0.106		0.106	0.102	0.101	0.097	0.098	0.097
4th High 1-Hr. in 3 Yrs					0.110	0.120	0.120	0.120	0.110	0.130	0.130	0.130	0.121	0.084	0.110	0.117	0.117	0.104	0.115	0.119
Avg. of 4th High 8-Hr. in 3 Yrs					0.097	0.096	0.093	0.093	0.091	0.096	0.091	0.093	0.093	0.070	0.081	0.083	0.089	0.088	0.091	0.093
Maximum 1-Hr. Concentration					0.130	0.120	0.110	0.130	0.120	0.150	0.103	0.117	0.134	0.085	0.127	0.118	0.104	0.115	0.141	0.120
Max. 8-Hr. Concentration					0.106	0.101	0.098	0.101	0.097	0.110	0.086	0.102	0.111	0.080	0.116	0.095	0.096	0.093	0.110	0.102
Days Above State Standard					11	15	6	24	15	28	4	16	28	0	15	12	8	15	21	15
Days Above Nat. 1-Hr. Std.					1	0	0	2	0	6	0	0	2	0	1	0	0	0	2	0
Days Above Nat. 8-Hr. Std.					8	15	13	17	12	26	1	15	28	0	12	10	9	13	18	14

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					108	162	174	118	96	128	105	111	89							
Max. 24-Hr. Concentration (Nat)					108	162	174	118	96	128	105	111	89							
Annual Average (State)					52.7	53.7		51.6	43.6	47.1	40.4	41.9								
Annual Average (Nat)					52.7	53.7	53.5	52.0	43.6	47.1	40.1	41.9								
Calc Days Above State 24-Hr Std					159	148		165	118	138	78	125								
Calc Days Above Nat 24-Hr Std					0	6	7	0	0	0	0	0								

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																				
Max. 24-Hr. Concentration (Nat)																				
98th Percentile of 24-Hr Conc.																				
Annual Average (State)																				
Avg. of Qtrly. Means (Nat)																				

No Monitoring Data Available

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration																				
Max. 8-Hr. Concentration																				
Days Above State 8-Hr. Std.																				
Days Above Nat. 8-Hr. Std.																				

No Monitoring Data Available

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator														0.088	0.053	0.068	0.066	0.066	0.060	0.056
Max. 1-Hr. Concentration														0.077	0.060	0.084	0.060	0.060	0.058	0.054
Max. Annual Average															0.011	0.014	0.013	0.011	0.012	0.010

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

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San Joaquin Valley Air Basin

County: Merced

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator									0.124	0.122	0.122	0.124	0.127	0.129	0.132	0.134	0.132	0.122	0.124	0.124
Peak 8-Hour Indicator									0.107	0.106	0.106	0.109	0.110	0.111	0.113	0.118	0.116	0.108	0.110	0.113
4th High 1-Hr. in 3 Yrs								0.120	0.120	0.120	0.120	0.125	0.125	0.125	0.131	0.132	0.132	0.120	0.121	0.122
Avg. of 4th High 8-Hr. in 3 Yrs								0.097	0.099	0.098	0.098	0.100	0.102	0.094	0.096	0.097	0.106	0.101	0.101	0.102
Maximum 1-Hr. Concentration								0.130	0.120	0.130	0.123	0.130	0.131	0.102	0.143	0.132	0.120	0.113	0.138	0.122
Max. 8-Hr. Concentration								0.111	0.107	0.110	0.107	0.114	0.116	0.095	0.129	0.117	0.112	0.105	0.125	0.110
Days Above State Standard								13	39	22	31	38	44	1	37	42	32	26	55	54
Days Above Nat. 1-Hr. Std.								2	0	1	0	3	1	0	3	2	0	0	2	0
Days Above Nat. 8-Hr. Std.								12	40	19	26	36	44	1	35	40	37	29	56	54

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					114	148	211	145	98	121	131	100	61			143	112	117	88	75
Max. 24-Hr. Concentration (Nat)					114	148	211	145	98	121	131	100	61			134	104	113	85	74
Annual Average (State)						52.0	53.4	52.4	45.8	42.5	39.4	38.7					36.1		39.6	32.7
Annual Average (Nat)						52.0	53.2	52.4	45.9	42.5	39.2	38.7					34.9	39.1	38.8	32.1
Calc Days Above State 24-Hr Std						107	148	152	139	109	61	96					70		85	44
Calc Days Above Nat 24-Hr Std						0	6	0	0	0	0	0					0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																108.7	86.1	80.3	66.0	46.7
Max. 24-Hr. Concentration (Nat)																108.7	86.1	80.3	66.0	46.7
98th Percentile of 24-Hr Conc.																91.9			55.1	44.2
Annual Average (State)																			18.7	15.7
Avg. of Qtrly. Means (Nat)																	16.7		18.8	15.7

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator																				
Max. 1-Hr. Concentration								10.0	9.0											
Max. 8-Hr. Concentration								5.4	4.8											
Days Above State 8-Hr. Std.								0	0											
Days Above Nat. 8-Hr. Std.								0	0											

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator									0.075	0.080	0.080	0.078	0.076	0.076	0.075	0.074		0.079	0.072	0.070
Max. 1-Hr. Concentration								0.090	0.070	0.090	0.076	0.073	0.071	0.072	0.063	0.078		0.066	0.068	0.063
Max. Annual Average										0.014	0.013	0.012	0.012	0.013	0.012				0.012	0.012

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator																				
Max. Annual Average																				
Max. 24-Hr. Concentration																				

No Monitoring Data Available

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San Joaquin Valley Air Basin

County: San Joaquin

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.145	0.141	0.136	0.134	0.134	0.133	0.132	0.119	0.117	0.117	0.117	0.122	0.123	0.122	0.124	0.123	0.121	0.118	0.113	0.113
Peak 8-Hour Indicator	0.121	0.119	0.117	0.110	0.110	0.110	0.112	0.098	0.098	0.098	0.097	0.109	0.103	0.104	0.100	0.103	0.104	0.100	0.096	0.097
4th High 1-Hr. in 3 Yrs	0.130	0.140	0.140	0.130	0.130	0.130	0.130	0.120	0.120	0.110	0.119	0.124	0.120	0.119	0.116	0.118	0.118	0.118	0.111	0.104
Avg. of 4th High 8-Hr. in 3 Yrs	0.107	0.104	0.101	0.097	0.098	0.093	0.090	0.087	0.088	0.088	0.087	0.091	0.092	0.087	0.087	0.087	0.088	0.084	0.081	0.081
Maximum 1-Hr. Concentration	0.150	0.140	0.140	0.160	0.130	0.120	0.130	0.120	0.110	0.130	0.128	0.134	0.140	0.119	0.126	0.144	0.122	0.114	0.108	0.104
Max. 8-Hr. Concentration	0.114	0.112	0.115	0.110	0.103	0.103	0.102	0.095	0.090	0.097	0.101	0.107	0.096	0.099	0.100	0.113	0.094	0.092	0.096	0.089
Days Above State Standard	49	35	31	54	37	10	17	26	21	12	16	16	26	6	19	16	9	9	12	6
Days Above Nat. 1-Hr. Std.	4	5	3	1	4	0	1	0	0	1	1	2	2	0	1	3	0	0	0	0
Days Above Nat. 8-Hr. Std.	35	24	17	30	21	4	7	10	10	4	6	9	14	3	7	10	3	2	3	2

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					115	146	251	140	145	104	109	109	127	130	115	155	110	147	91	90
Max. 24-Hr. Concentration (Nat)					153	146	251	140	145	104	109	109	127	130	106	150	104	140	87	88
Annual Average (State)							51.4				37.0		27.4	29.7	30.1	37.7	33.7	36.6	36.1	28.4
Annual Average (Nat)					51.2	50.4	51.2	52.4	44.8		36.9		27.4	29.7	29.1	36.3	32.2	35.9	35.5	28.1
Calc Days Above State 24-Hr Std							128				63		19	30	50	67	60	64	58	20
Calc Days Above Nat 24-Hr Std					0	0	6	0	0	0	0		0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																101.0	78.0	76.0	64.0	45.0
Max. 24-Hr. Concentration (Nat)																101.0	78.0	76.0	64.0	45.0
98th Percentile of 24-Hr Conc.																79.0	55.0	58.0	50.0	41.0
Annual Average (State)																19.7			16.7	13.6
Avg. of Qtrly. Means (Nat)																19.8	15.5	13.9	16.7	13.6

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	10.5	10.3	13.6	13.9	14.1	12.2	13.7	13.2	11.5	9.2	7.5	7.5	7.3	6.2	6.0	6.2	6.8	4.8	4.1	3.7
Max. 1-Hr. Concentration	16.0	13.0	19.0	16.0	14.0	16.0	17.0	15.0	11.0	10.0	11.3	10.3	11.0	7.7	10.2	11.3	8.1	8.4	6.0	5.8
Max. 8-Hr. Concentration	7.8	8.4	12.1	12.9	11.4	11.0	11.5	11.4	8.3	6.9	7.8	6.2	7.6	4.2	7.9	7.8	6.6	6.0	3.2	3.1
Days Above State 8-Hr. Std.	0	0	9	1	1	6	7	2	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	8	1	1	4	6	2	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.107	0.111	0.122	0.122	0.126	0.122	0.130	0.134	0.132	0.132	0.131	0.127	0.113	0.102	0.097	0.103	0.102	0.100	0.085	0.086
Max. 1-Hr. Concentration	0.090	0.110	0.160	0.100	0.110	0.130	0.120	0.110	0.190	0.160	0.144	0.119	0.088	0.090	0.102	0.106	0.099	0.087	0.077	0.088
Max. Annual Average		0.020	0.023	0.025	0.026	0.025	0.026	0.025	0.023	0.024	0.024	0.022	0.023	0.022	0.023	0.015	0.021	0.019	0.021	0.018

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.03	0.03	0.03	0.03	0.04	0.03														
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00														
Max. 24-Hr. Concentration	0.01	0.01	0.01	0.02	0.01	0.01														

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San Joaquin Valley Air Basin

County: Stanislaus

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.143	0.148	0.152	0.149	0.143	0.142	0.131	0.126	0.122	0.119	0.120	0.127	0.129	0.131	0.132	0.130	0.127	0.117	0.125	0.125
Peak 8-Hour Indicator	0.123	0.124	0.125	0.117	0.115	0.115	0.112	0.109	0.104	0.102	0.101	0.109	0.107	0.109	0.111	0.111	0.113	0.105	0.110	0.108
4th High 1-Hr. in 3 Yrs	0.140	0.140	0.140	0.140	0.140	0.140	0.130	0.120	0.120	0.110	0.114	0.125	0.125	0.125	0.129	0.127	0.131	0.111	0.123	0.119
Avg. of 4th High 8-Hr. in 3 Yrs	0.102	0.109	0.102	0.100	0.099	0.102	0.099	0.095	0.095	0.095	0.093	0.095	0.096	0.096	0.098	0.095	0.096	0.091	0.095	0.096
Maximum 1-Hr. Concentration	0.160	0.150	0.130	0.150	0.140	0.130	0.150	0.120	0.120	0.130	0.123	0.131	0.129	0.120	0.153	0.119	0.131	0.124	0.135	0.119
Max. 8-Hr. Concentration	0.136	0.122	0.102	0.127	0.126	0.120	0.110	0.102	0.102	0.108	0.10	0.111	0.111	0.100	0.125	0.104	0.107	0.100	0.113	0.100
Days Above State Standard	56	57	39	77	64	41	32	33	27	19	28	28	39	15	35	19	16	16	31	21
Days Above Nat. 1-Hr. Std.	13	10	2	18	5	3	3	0	0	2	0	2	2	0	4	0	1	0	1	0
Days Above Nat. 8-Hr. Std.	47	43	21	68	44	26	22	13	11	13	12	21	20	8	29	12	10	11	25	18

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)						148	171	157	150	154	160	120	133	119	135	162	119	160	97	88
Max. 24-Hr. Concentration (Nat)					175	148	180	157	150	154	160	120	133	119	125	157	112	158	93	87
Annual Average (State)							49.6	53.0	43.6	42.0	41.1	41.2	32.0	37.1	31.9	42.8	35.4	40.5	37.2	31.4
Annual Average (Nat)					48.4	52.8	49.1	53.7	43.6	42.0	41.1	41.3	32.0	37.1	31.0	41.1	34.9	39.7	36.6	30.6
Calc Days Above State 24-Hr Std							135	148	106	98	89	100	47	56	47	90	68	61	76	48
Calc Days Above Nat 24-Hr Std					7	0	6	6	0	0	6	0	0	0	0	0	0	3	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																108.0	77.0	95.0	87.1	66.9
Max. 24-Hr. Concentration (Nat)																108.0	77.0	95.0	83.0	64.0
98th Percentile of 24-Hr Conc.																100.0	71.0	69.0	69.0	47.0
Annual Average (State)																	18.7	15.6	18.7	14.5
Avg. of Qtrly. Means (Nat)																24.9	18.7	15.6	18.7	14.5

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	8.5	9.5	10.4	10.5	10.6	11.9	12.4	12.4	10.1	9.0	7.7	7.4	7.0	6.0	5.5	6.1	7.0	6.3	5.3	4.5
Max. 1-Hr. Concentration	15.0	15.0	18.0	12.0	17.0	17.0	17.0	19.0	10.0	11.0	9.5	11.4	9.2	7.1	9.4	11.4	8.0	7.8	5.2	5.3
Max. 8-Hr. Concentration	8.4	11	11.3	8.6	13.1	13.4	10.9	10.8	6.5	8.6	6.3	5.7	6.5	5.0	7.3	6.4	6.0	6.0	4.5	3.8
Days Above State 8-Hr. Std.	0	2	4	0	2	11	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	1	4	0	1	8	2	1	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.107	0.111	0.121	0.126	0.129	0.126	0.128	0.119	0.109	0.108	0.102	0.102	0.095	0.096	0.089	0.103	0.098	0.100	0.081	0.087
Max. 1-Hr. Concentration	0.080	0.120	0.130	0.120	0.130	0.140	0.100	0.110	0.100	0.110	0.093	0.093	0.087	0.093	0.088	0.103	0.079	0.087	0.083	0.091
Max. Annual Average	0.020	0.022	0.024	0.024	0.027		0.026	0.024	0.022	0.023	0.022	0.022	0.022	0.021	0.018	0.022	0.019	0.018	0.017	0.017

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.03	0.03	0.02	0.02	0.03	0.03	0.02	0.02												
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
Max. 24-Hr. Concentration	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.01												

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San Joaquin Valley Air Basin

County: Tulare

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.140	0.133	0.140	0.143	0.144	0.142	0.135	0.133	0.124	0.135	0.144	0.143	0.139	0.131	0.134	0.134	0.130	0.123	0.124	0.126
Peak 8-Hour Indicator	0.128	0.118	0.117	0.120	0.119	0.119	0.116	0.116	0.108	0.116	0.120	0.118	0.115	0.111	0.114	0.113	0.113	0.110	0.111	0.114
4th High 1-Hr. in 3 Yrs	0.130	0.130	0.140	0.150	0.150	0.150	0.140	0.140	0.130	0.140	0.150	0.150	0.140	0.132	0.139	0.127	0.129	0.126	0.126	0.124
Avg. of 4th High 8-Hr. in 3 Yrs	0.108	0.105	0.108	0.112	0.111	0.111	0.106	0.104	0.101	0.104	0.106	0.107	0.105	0.101	0.102	0.105	0.105	0.104	0.105	0.107
Maximum 1-Hr. Concentration	0.140	0.140	0.160	0.180	0.150	0.160	0.140	0.130	0.130	0.150	0.154	0.132	0.140	0.125	0.148	0.127	0.129	0.135	0.140	0.129
Max. 8-Hr. Concentration	0.117	0.113	0.121	0.133	0.117	0.121	0.115	0.111	0.106	0.125	0.119	0.112	0.111	0.106	0.122	0.112	0.108	0.111	0.117	0.115
Days Above State Standard	73	93	98	121	100	76	63	65	63	76	78	66	81	50	63	84	78	73	86	91
Days Above Nat. 1-Hr. Std.	3	6	13	10	4	10	1	1	2	10	12	3	4	1	6	3	1	2	3	3
Days Above Nat. 8-Hr. Std.	68	96	99	120	97	71	65	66	65	72	82	59	78	54	58	88	76	71	93	92

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					145	206	285	177	122	108	105	128	115	96	167	160	136	151	111	99
Max. 24-Hr. Concentration (Nat)					141	204	285	175	122	108	104	125	115	96	160	152	130	143	110	100
Annual Average (State)										52.8		52.7	44.5	41.6	40.4	55.8	53.7	52.3	52.4	43.0
Annual Average (Nat)					67.4	66.9	79.2	65.8		52.8	48.2	52.4	44.5	41.5	39.9	54.9	52.7	51.9	51.9	42.6
Calc Days Above State 24-Hr Std										183		163	148	65	102	182	196	168	179	108
Calc Days Above Nat 24-Hr Std					0	12	29	7		0	0	0	0	0	6	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																123.0	105.0	97.0	82.0	58.9
Max. 24-Hr. Concentration (Nat)																123.0	105.0	97.0	76.0	49.0
98th Percentile of 24-Hr Conc.																114.0	103.0	96.0	70.0	47.0
Annual Average (State)																	23.9		23.2	19.7
Avg. of Qtrly. Means (Nat)																27.6	23.9	22.5	23.2	18.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	5.5	5.5	5.7	5.8	6.0	6.4	6.5	6.5	6.0	5.2	4.4	4.5	4.5	4.2	4.0	4.1	4.1	4.0	3.5	3.0
Max. 1-Hr. Concentration	13.0	9.0	12.0	13.0	14.0	12.0	11.0	14.0	10.0	7.0	8.7	9.3	5.3	7.3	7.4	7.9	5.9	5.7	4.9	4.7
Max. 8-Hr. Concentration	5.4	5.5	6.9	5.8	8.0	6.4	6.7	6.1	4.8	4.0	4.4	4.4	4.0	4.1	3.8	4.1	4.2	3.7	2.9	3.0
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.114	0.120	0.117	0.114	0.118	0.138	0.137	0.130	0.109	0.111	0.113	0.115	0.119	0.115	0.089	0.100	0.098	0.096	0.092	0.096
Max. 1-Hr. Concentration	0.110	0.140	0.110	0.110	0.170	0.210	0.100	0.130	0.100	0.120	0.142	0.112	0.077	0.095	0.081	0.092	0.079	0.075	0.095	0.087
Max. Annual Average	0.023	0.022	0.025	0.019	0.022	0.020	0.021	0.022	0.020	0.023		0.023	0.018	0.019	0.017	0.021	0.018	0.018	0.019	0.018

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.02	0.03	0.03	0.04	0.02	0.02														
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00														
Max. 24-Hr. Concentration	0.01	0.05	0.01	0.02	0.01	0.01														

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South Central Coast Air Basin

County: San Luis Obispo

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.099	0.101	0.098	0.097	0.099	0.108	0.105	0.104	0.100	0.099	0.096	0.098	0.108	0.109	0.116	0.114	0.114	0.093	0.094	0.094
Peak 8-Hour Indicator	0.085	0.085	0.082	0.083	0.085	0.095	0.091	0.091	0.086	0.081	0.081	0.083	0.095	0.096	0.103	0.099	0.100	0.078	0.081	0.080
4th High 1-Hr. in 3 Yrs	0.100	0.110	0.100	0.100	0.100	0.100	0.100	0.110	0.100	0.100	0.098	0.097	0.107	0.107	0.114	0.113	0.113	0.092	0.092	0.092
Avg. of 4th High 8-Hr. in 3 Yrs	0.075	0.075	0.072	0.072	0.075	0.073	0.075	0.083	0.078	0.075	0.074	0.074	0.080	0.079	0.086	0.082	0.081	0.072	0.073	0.074
Maximum 1-Hr. Concentration	0.160	0.110	0.100	0.130	0.100	0.150	0.100	0.110	0.110	0.100	0.101	0.108	0.141	0.090	0.129	0.099	0.084	0.094	0.093	0.097
Max. 8-Hr. Concentration	0.093	0.088	0.096	0.111	0.086	0.122	0.082	0.101	0.098	0.088	0.089	0.087	0.117	0.077	0.113	0.083	0.080	0.081	0.083	0.089
Days Above State Standard	2	3	5	3	6	8	2	4	3	4	2	7	14	0	25	2	0	0	0	2
Days Above Nat. 1-Hr. Std.	1	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	2	1	3	2	1	8	0	2	1	2	1	1	10	0	21	0	0	0	0	1

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					63	63	79	75	135	141	78	73	90	75	55	58	80	70	46	70
Max. 24-Hr. Concentration (Nat)					63	84	86	119	135	141	78	73	98	99	70	90	113	89	178	78
Annual Average (State)							21.0	24.4	30.4	28.8	22.3	21.4	18.7	20.9	17.7		21.3	21.2	21.1	20.2
Annual Average (Nat)					22.5	29.2	30.3	26.5	30.4	42.8	22.4	23.0	19.1	24.2	22.3	27.2	21.6	24.8	20.4	24.5
Calc Days Above State 24-Hr Std							0	6	51	53	6	18	0	7	6		13	12	0	6
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																27.5	52.7	57.7	28.0	29.2
Max. 24-Hr. Concentration (Nat)																27.5	52.7	57.7	28.0	29.2
98th Percentile of 24-Hr Conc.																27.3	41.0	50.7	25.7	21.7
Annual Average (State)																9.6		10.1	9.2	8.2
Avg. of Qtrly. Means (Nat)																9.6	10.3	10.1	9.3	8.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	4.7	5.2	5.2	5.2	4.7	4.9	5.1	4.8	4.2	3.6	3.2	2.9	2.9	2.6	2.6	2.7	2.7	2.6	2.2	2.0
Max. 1-Hr. Concentration	11.0	11.0	10.0	10.0	10.0	10.0	10.0	8.0	8.0	9.0	6.1	5.7	5.0	6.4	4.4	5.3	3.9	8.3	3.5	3.1
Max. 8-Hr. Concentration	4.7	4.7	4.9	3.9	4.3	6.3	4.1	3.3	3.1	3.2	3.2	3.1	2.9	2.6	2.3	3.1	2.4	2.0	2.4	1.5
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.081	0.088	0.089	0.090	0.085	0.085	0.084	0.078	0.074	0.072	0.070	0.070	0.065	0.063	0.064	0.073	0.070	0.069	0.060	0.062
Max. 1-Hr. Concentration	0.090	0.100	0.090	0.080	0.090	0.090	0.070	0.080	0.060	0.070	0.069	0.069	0.060	0.071	0.061	0.070	0.059	0.061	0.060	0.064
Max. Annual Average	0.015	0.017	0.015	0.015	0.016	0.016	0.010	0.011	0.015	0.014	0.014	0.013	0.013	0.012	0.012	0.014	0.012	0.012	0.011	0.009

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.10	0.34	0.32	0.32	0.25	0.16	0.16	0.14	0.13	0.13	0.03	0.16	0.17	0.16	0.16	0.14	0.14	0.14	0.16	0.14
Max. Annual Average	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.02	0.07	0.06	0.03	0.04	0.02	0.09	0.02	0.02	0.05	0.01	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.02	0.02

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South Central Coast Air Basin

County: Santa Barbara

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.143	0.142	0.136	0.134	0.129	0.140	0.140	0.137	0.131	0.121	0.123	0.122	0.128	0.122	0.117	0.104	0.103	0.100	0.103	0.105
Peak 8-Hour Indicator	0.102	0.106	0.107	0.105	0.103	0.105	0.109	0.108	0.107	0.101	0.102	0.103	0.107	0.104	0.098	0.091	0.090	0.087	0.090	0.092
4th High 1-Hr. in 3 Yrs	0.150	0.150	0.150	0.140	0.130	0.147	0.153	0.153	0.137	0.123	0.129	0.126	0.130	0.130	0.130	0.108	0.108	0.101	0.101	0.103
Avg. of 4th High 8-Hr. in 3 Yrs	0.093	0.096	0.098	0.095	0.095	0.097	0.099	0.099	0.096	0.091	0.092	0.090	0.094	0.089	0.087	0.082	0.081	0.080	0.082	0.084
Maximum 1-Hr. Concentration	0.160	0.230	0.160	0.185	0.130	0.220	0.165	0.134	0.140	0.135	0.142	0.143	0.134	0.137	0.130	0.135	0.128	0.117	0.113	0.107
Max. 8-Hr. Concentration	0.118	0.140	0.128	0.141	0.102	0.176	0.141	0.113	0.125	0.110	0.116	0.118	0.122	0.108	0.120	0.110	0.087	0.106	0.090	0.102
Days Above State Standard	21	15	36	37	43	42	40	38	27	23	23	24	23	10	15	3	6	5	3	7
Days Above Nat. 1-Hr. Std.	4	3	7	4	3	9	4	6	5	1	5	3	4	1	2	1	1	0	0	0
Days Above Nat. 8-Hr. Std.	12	9	26	25	28	28	27	25	17	13	11	16	19	4	6	2	2	3	5	5

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					132	119	96	96	89	90	139	129	78	168	75	52	54	68	50	98
Max. 24-Hr. Concentration (Nat)					132	119	96	96	89	90	139	129	78	168	73	51	53	66	49	96
Annual Average (State)					28.7	33.8	36.9	25.7	32.6	29.3	26.8	25.4	28.6	29.7	26.1	29.5	26.6	27.4	24.3	25.2
Annual Average (Nat)					33.6	33.8	36.6	36.8	32.6	29.4	32.5	31.1	28.6	29.8	25.0	28.5	25.8	26.5	23.5	24.4
Calc Days Above State 24-Hr Std					19	26	25	6	57	41	7	13	18	12	18	12	18	18	0	6
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																24.3	28.7	43.2	21.3	24.0
Max. 24-Hr. Concentration (Nat)																24.3	28.7	43.2	21.3	24.0
98th Percentile of 24-Hr Conc.																	19.3	23.4	19.4	16.1
Annual Average (State)																	9.8	10.4	9.5	8.6
Avg. of Qtrly. Means (Nat)																	9.8	10.4	9.6	8.6

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	9.6	10.2	9.9	10.1	9.0	8.8	8.2	7.5	6.4	5.5	5.9	6.0	5.8	5.0	4.8	4.5	4.7	1.6	1.6	2.4
Max. 1-Hr. Concentration	16.0	17.0	18.0	14.0	15.0	11.0	11.0	9.0	12.0	9.0	10.7	7.8	12.6	8.2	8.5	8.2	5.8	5.4	3.4	5.9
Max. 8-Hr. Concentration	10.0	10.5	8.6	7.5	7.4	7.4	5.8	6.4	5.9	4.8	6.5	5.8	4.9	4.0	4.6	4.2	3.1	1.9	1.8	2.3
Days Above State 8-Hr. Std.	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.113	0.116	0.113	0.108	0.094	0.119	0.119	0.120	0.104	0.099	0.089	0.091	0.091	0.085	0.081	0.078	0.081	0.058	0.052	0.063
Max. 1-Hr. Concentration	0.170	0.160	0.150	0.140	0.160	0.120	0.110	0.160	0.100	0.090	0.100	0.113	0.107	0.065	0.089	0.096	0.124	0.113	0.063	0.059
Max. Annual Average	0.031	0.030	0.022	0.017	0.012	0.027	0.015	0.024	0.022	0.022	0.022	0.021	0.019	0.019	0.021	0.022	0.012	0.010	0.011	0.011

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.05	0.05	0.08	0.08	0.07	0.07	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Max. Annual Average	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.02	0.03	0.04	0.04	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01

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South Central Coast Air Basin

County: Ventura

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.188	0.181	0.177	0.172	0.176	0.173	0.172	0.164	0.159	0.157	0.147	0.162	0.161	0.153	0.143	0.135	0.132	0.126	0.125	0.124
Peak 8-Hour Indicator	0.149	0.145	0.147	0.146	0.144	0.142	0.144	0.141	0.133	0.133	0.120	0.132	0.134	0.133	0.123	0.114	0.112	0.107	0.106	0.103
4th High 1-Hr. in 3 Yrs	0.210	0.190	0.180	0.180	0.180	0.170	0.170	0.170	0.150	0.150	0.146	0.157	0.158	0.152	0.144	0.134	0.132	0.128	0.124	0.124
Avg. of 4th High 8-Hr. in 3 Yrs	0.137	0.132	0.131	0.129	0.131	0.132	0.130	0.127	0.118	0.115	0.112	0.117	0.119	0.115	0.112	0.106	0.105	0.101	0.097	0.095
Maximum 1-Hr. Concentration	0.190	0.200	0.180	0.180	0.180	0.230	0.170	0.170	0.150	0.146	0.164	0.169	0.158	0.134	0.174	0.132	0.128	0.129	0.132	0.130
Max. 8-Hr. Concentration	0.158	0.156	0.145	0.153	0.142	0.166	0.143	0.140	0.123	0.129	0.132	0.144	0.127	0.114	0.151	0.112	0.108	0.113	0.109	0.114
Days Above State Standard	132	136	149	123	135	116	99	107	68	58	88	90	80	59	41	33	38	34	22	41
Days Above Nat. 1-Hr. Std.	45	44	59	31	55	46	18	33	10	13	17	23	17	2	5	2	1	2	1	2
Days Above Nat. 8-Hr. Std.	108	111	120	88	110	94	70	92	57	46	64	67	65	46	30	23	30	24	15	31

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					118	92	133	90	84	118	86	94	93	321	111	86	102	77	100	169
Max. 24-Hr. Concentration (Nat)					118	92	133	90	84	118	78	94	93	321	110	84	100	78	97	149
Annual Average (State)					40.3	41.6	36.1	40.0	33.0	29.1	31.6	30.9	29.3	36.5	24.4	28.8	31.2	28.8	28.6	30.0
Annual Average (Nat)					41.6	41.5	36.1	39.9	33.2	29.1	30.5	28.4	29.3	37.0	24.4	31.3	31.0	31.5	28.9	30.7
Calc Days Above State 24-Hr Std					102	139	66	99	43	30	24	57	29	47	12	13	39	18	19	31
Calc Days Above Nat 24-Hr Std					0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																64.6	55.3	50.0	46.4	116.0
Max. 24-Hr. Concentration (Nat)																64.6	55.3	50.0	46.4	116.0
98th Percentile of 24-Hr Conc.																35.4		40.0	35.2	33.4
Annual Average (State)																		14.9		12.4
Avg. of Qtrly. Means (Nat)																13.8		14.9	14.6	14.2

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	6.0	5.9	6.2	5.7	5.7	4.9	4.9	4.7	4.5	3.9	3.6	4.0	4.0	3.9	3.6	3.3	3.4	3.1	2.7	2.7
Max. 1-Hr. Concentration	12.0	12.0	15.0	12.0	9.0	10.0	10.0	9.0	7.0	9.0	7.7	8.9	7.8	7.4	7.2	6.8	6.2	4.4	5.7	7.2
Max. 8-Hr. Concentration	5.0	6.0	7.0	5.7	4.4	4.1	5.0	4.3	3.0	3.7	4.2	4.3	3.4	3.8	3.5	3.6	4.3	3.4	2.3	3.6
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.140	0.136	0.132	0.130	0.123	0.117	0.119	0.120	0.114	0.104	0.104	0.112	0.114	0.110	0.097	0.089	0.086	0.083	0.079	0.073
Max. 1-Hr. Concentration	0.200	0.120	0.130	0.150	0.110	0.120	0.160	0.110	0.100	0.110	0.133	0.127	0.110	0.115	0.097	0.099	0.095	0.080	0.064	0.103
Max. Annual Average	0.009		0.015	0.016	0.024	0.027	0.025	0.024	0.012	0.023	0.020	0.024	0.015	0.020	0.019	0.017	0.020	0.019	0.017	0.015

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.01	0.03	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00

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South Coast Air Basin

County: Los Angeles

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.354	0.375	0.360	0.344	0.319	0.320	0.310	0.304	0.286	0.297	0.279	0.249	0.230	0.229	0.217	0.193	0.193	0.164	0.171	0.176
Peak 8-Hour Indicator	0.254	0.252	0.251	0.243	0.230	0.213	0.212	0.209	0.200	0.200	0.192	0.174	0.165	0.163	0.157	0.140	0.140	0.129	0.140	0.146
4th High 1-Hr. in 3 Yrs	0.360	0.360	0.350	0.350	0.340	0.330	0.330	0.310	0.300	0.300	0.280	0.250	0.223	0.209	0.200	0.188	0.188	0.169	0.169	0.180
Avg. of 4th High 8-Hr. in 3 Yrs	0.225	0.226	0.222	0.217	0.205	0.192	0.186	0.179	0.177	0.177	0.168	0.156	0.145	0.135	0.133	0.118	0.115	0.112	0.121	0.126
Maximum 1-Hr. Concentration	0.340	0.390	0.350	0.330	0.340	0.340	0.290	0.320	0.300	0.280	0.300	0.216	0.205	0.170	0.222	0.154	0.174	0.190	0.169	0.194
Max. 8-Hr. Concentration	0.226	0.288	0.251	0.210	0.258	0.235	0.177	0.183	0.218	0.185	0.208	0.158	0.150	0.130	0.171	0.108	0.146	0.134	0.144	0.152
Days Above State Standard	196	201	209	190	205	192	168	159	174	158	142	127	109	89	68	43	57	70	86	101
Days Above Nat. 1-Hr. Std.	153	154	162	147	165	140	120	111	129	102	102	79	55	27	35	6	12	17	36	47
Days Above Nat. 8-Hr. Std.	160	164	177	158	181	150	131	128	139	108	118	92	68	43	46	19	27	35	56	80

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					149	172	161	151	222	104	127	157	138	116	87	103	105	106	121	119
Max. 24-Hr. Concentration (Nat)					149	172	161	151	222	104	127	157	138	116	87	103	105	106	121	119
Annual Average (State)						63.8	54.9	54.9	48.7	47.4	45.3	48.6	45.4	46.1	37.8	56.3	40.0	44.2	37.7	44.4
Annual Average (Nat)					63.1	63.8	55.0	65.9	48.8	47.4	45.3	47.7	45.5	46.1	40.6	56.3	46.3	45.3	45.8	44.4
Calc Days Above State 24-Hr Std						249	187	183	146	155	145	143	153	149	67	213	92	119	71	124
Calc Days Above Nat 24-Hr Std					0	6	6	0	11	0	0	6	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																85.6	92.5	104.0	80.2	121.2
Max. 24-Hr. Concentration (Nat)																85.6	92.5	94.7	72.4	121.2
98th Percentile of 24-Hr Conc.																53.2	83.0	69.4	57.9	61.3
Annual Average (State)																	24.0	24.8	24.0	20.3
Avg. of Qtrly. Means (Nat)																25.7	24.0	25.2	24.0	22.1

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	20.2	21.1	21.1	21.7	21.9	22.5	21.9	19.0	17.7	16.5	16.7	15.6	16.1	15.4	15.4	13.7	12.6	11.2	9.4	8.7
Max. 1-Hr. Concentration	29.0	33.0	27.0	26.0	32.0	31.0	24.0	30.0	28.0	21.0	24.9	16.8	22.5	19.2	17.0	19.0	13.5	11.7	15.8	12.2
Max. 8-Hr. Concentration	19.7	27.7	19.7	19.6	27.5	21.8	16.8	17.4	18.8	14.6	18.2	13.8	17.5	17.1	13.3	11.2	10.1	7.6	10.1	7.3
Days Above State 8-Hr. Std.	77	62	57	50	70	70	49	51	39	29	27	17	26	18	13	11	6	0	1	0
Days Above Nat. 8-Hr. Std.	63	53	49	40	63	67	41	41	34	19	19	14	19	13	10	7	3	0	1	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.324	0.317	0.303	0.311	0.335	0.322	0.324	0.312	0.311	0.285	0.241	0.229	0.242	0.237	0.202	0.180	0.168	0.166	0.162	0.157
Max. 1-Hr. Concentration	0.350	0.350	0.330	0.420	0.540	0.340	0.280	0.380	0.300	0.260	0.247	0.239	0.250	0.200	0.170	0.212	0.173	0.251	0.262	0.163
Max. Annual Average	0.057	0.060	0.061	0.055	0.061	0.057	0.055	0.055	0.051	0.050	0.050	0.046	0.042	0.043	0.043	0.051	0.044	0.041	0.040	0.035

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.11	0.10	0.09	0.07	0.07	0.06	0.06	0.06	0.11	0.10	0.10	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.04	0.04
Max. Annual Average	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.06	0.04	0.04	0.02	0.04	0.02	0.04	0.02	0.03	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01

Table A-95

A portion of Los Angeles County lies within the Mojave Desert Air Basin.

South Coast Air Basin

County: Orange

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.297	0.295	0.274	0.267	0.246	0.235	0.227	0.219	0.205	0.197	0.189	0.163	0.156	0.137	0.141	0.131	0.131	0.113	0.117	0.124
Peak 8-Hour Indicator	0.196	0.195	0.180	0.174	0.163	0.159	0.154	0.145	0.139	0.133	0.134	0.120	0.112	0.101	0.101	0.094	0.095	0.094	0.091	0.096
4th High 1-Hr. in 3 Yrs	0.290	0.280	0.270	0.260	0.240	0.240	0.240	0.220	0.210	0.190	0.190	0.170	0.156	0.138	0.144	0.130	0.127	0.114	0.119	0.131
Avg. of 4th High 8-Hr. in 3 Yrs	0.163	0.166	0.157	0.152	0.142	0.141	0.138	0.127	0.120	0.114	0.117	0.107	0.100	0.088	0.088	0.084	0.084	0.080	0.080	0.086
Maximum 1-Hr. Concentration	0.320	0.340	0.250	0.240	0.290	0.260	0.210	0.250	0.220	0.190	0.252	0.160	0.150	0.134	0.182	0.116	0.137	0.125	0.136	0.165
Max. 8-Hr. Concentration	0.177	0.208	0.158	0.165	0.195	0.167	0.142	0.145	0.158	0.122	0.172	0.109	0.103	0.100	0.115	0.091	0.110	0.097	0.093	0.105
Days Above State Standard	107	101	101	81	96	81	80	71	63	59	46	39	27	13	22	8	14	12	9	19
Days Above Nat. 1-Hr. Std.	65	63	53	42	45	38	37	32	35	17	9	4	6	3	6	0	2	1	2	5
Days Above Nat. 8-Hr. Std.	75	66	62	54	50	44	39	36	35	25	15	8	9	3	6	1	6	4	1	10

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					88	88	158	146	88	115	106	172	101	91	81	122	126	93	80	96
Max. 24-Hr. Concentration (Nat)					132	138	158	146	88	115	106	172	101	91	81	122	126	93	80	96
Annual Average (State)						41.7		45.5	34.4	38.3	37.5	43.3	35.2	38.8	35.8	36.7	39.9	26.4	33.6	32.7
Annual Average (Nat)					46.0	46.9	48.1	45.9	40.0	38.3	37.5	43.5	35.2	38.8	35.8	36.7	39.6	26.5	33.5	32.8
Calc Days Above State 24-Hr Std						122		89	31	78	67	86	37	66	72	37	48	18	31	37
Calc Days Above Nat 24-Hr Std					0	0	6	0	0	0	0	7	0	0	0	0	0	0	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																68.6	113.9	70.8	68.6	115.5
Max. 24-Hr. Concentration (Nat)																68.6	113.9	70.8	68.6	115.5
98th Percentile of 24-Hr Conc.																	66.3	45.6	48.1	51.8
Annual Average (State)																	14.7		18.6	
Avg. of Qtrly. Means (Nat)																	20.3	22.0	18.6	17.3

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	11.8	11.6	11.0	11.3	10.9	11.5	11.5	10.8	9.4	8.8	8.7	8.2	8.5	7.3	6.7	6.4	6.7	6.6	5.8	4.6
Max. 1-Hr. Concentration	21.0	22.0	20.0	21.0	20.0	24.0	19.0	21.0	21.0	15.0	16.1	12.7	12.9	11.9	15.0	11.4	13.8	10.7	10.2	8.4
Max. 8-Hr. Concentration	14.4	17.0	10.4	10.6	12.0	12.1	11.7	8.6	9.4	7.7	8.6	8.0	7.4	6.0	7.1	6.4	6.7	4.7	5.3	5.9
Days Above State 8-Hr. Std.	7	9	4	3	9	13	6	0	3	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	5	7	4	2	7	12	5	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.266	0.252	0.236	0.240	0.238	0.241	0.235	0.231	0.221	0.220	0.201	0.196	0.188	0.171	0.141	0.143	0.149	0.150	0.124	0.129
Max. 1-Hr. Concentration	0.250	0.300	0.210	0.220	0.280	0.280	0.220	0.200	0.210	0.200	0.230	0.192	0.160	0.145	0.135	0.165	0.139	0.130	0.116	0.158
Max. Annual Average	0.046	0.043	0.045	0.042	0.046	0.047	0.047	0.045	0.039	0.039	0.041	0.039	0.035	0.033	0.034	0.035	0.029	0.027	0.024	0.028

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02
Max. Annual Average	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01

Table A-96

South Coast Air Basin

County: Riverside

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.333	0.332	0.308	0.297	0.276	0.269	0.263	0.261	0.251	0.240	0.222	0.207	0.192	0.188	0.188	0.176	0.171	0.154	0.154	0.158
Peak 8-Hour Indicator	0.228	0.228	0.207	0.209	0.205	0.205	0.198	0.196	0.194	0.189	0.170	0.162	0.151	0.146	0.150	0.143	0.141	0.130	0.125	0.131
4th High 1-Hr. in 3 Yrs	0.330	0.330	0.320	0.290	0.270	0.270	0.270	0.270	0.250	0.240	0.240	0.220	0.200	0.187	0.187	0.170	0.166	0.149	0.149	0.157
Avg. of 4th High 8-Hr. in 3 Yrs	0.201	0.209	0.197	0.191	0.180	0.180	0.177	0.175	0.169	0.165	0.157	0.149	0.140	0.135	0.129	0.124	0.114	0.111	0.113	0.118
Maximum 1-Hr. Concentration	0.320	0.350	0.270	0.290	0.280	0.270	0.290	0.240	0.260	0.260	0.253	0.213	0.203	0.187	0.195	0.144	0.164	0.152	0.160	0.169
Max. 8-Hr. Concentration	0.202	0.23	0.217	0.186	0.241	0.213	0.181	0.196	0.193	0.195	0.208	0.161	0.162	0.148	0.169	0.123	0.126	0.135	0.130	0.146
Days Above State Standard	182	177	174	175	191	182	150	155	159	157	144	134	107	128	80	83	93	97	93	102
Days Above Nat. 1-Hr. Std.	132	132	118	125	133	119	97	99	99	86	90	69	50	40	40	9	23	28	22	37
Days Above Nat. 8-Hr. Std.	156	159	146	151	152	148	122	132	135	124	127	99	84	106	65	56	70	73	67	85

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					252	252	250	179	126	231	161	219	162	163	116	153	139	219	130	164
Max. 24-Hr. Concentration (Nat)					252	252	250	179	126	231	161	219	162	163	116	153	139	219	130	164
Annual Average (State)						94.0	78.2	76.0	62.0	72.5	65.5	68.8	61.5	65.3		72.2	60.1	62.9	58.4	56.9
Annual Average (Nat)					94.5	93.0	78.2	76.1	62.6	72.5	65.5	68.8	62.8	65.6	46.2	72.2	59.1	63.3	58.1	55.6
Calc Days Above State 24-Hr Std						305	275	250	233	251	244	226	251	257		261	248	240	251	211
Calc Days Above Nat 24-Hr Std					30	34	18	12	0	18	6	25	6	6	0	0	0	6	0	6

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																111.2	119.6	98.0	77.6	104.3
Max. 24-Hr. Concentration (Nat)																111.2	119.6	98.0	77.6	104.3
98th Percentile of 24-Hr Conc.																75.4	77.1	74.3	66.3	76.6
Annual Average (State)																				24.8
Avg. of Qtrly. Means (Nat)																31.0	28.3	30.9	27.4	24.8

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	8.3	7.9	8.4	8.7	8.7	8.5	8.1	8.0	6.9	6.6	6.3	6.2	6.2	5.9	5.3	4.7	4.7	4.4	4.7	3.9
Max. 1-Hr. Concentration	16.0	14.0	18.0	13.0	17.0	14.0	15.0	14.0	11.0	10.0	11.0	9.0	9.1	10.7	6.4	7.4	8.8	5.8	6.5	4.6
Max. 8-Hr. Concentration	8.9	9.1	8.3	7.6	10.0	10.3	7.3	7.4	6.1	7.1	7.3	6.3	5.3	5.6	4.8	4.4	4.2	4.5	3.8	3.7
Days Above State 8-Hr. Std.	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.161	0.162	0.160	0.163	0.170	0.176	0.174	0.172	0.168	0.159	0.138	0.134	0.133	0.127	0.167	0.185	0.213	0.216	0.200	0.161
Max. 1-Hr. Concentration	0.170	0.160	0.160	0.210	0.190	0.160	0.160	0.210	0.230	0.140	0.181	0.147	0.110	0.200	0.255	0.307	0.214	0.237	0.149	0.099
Max. Annual Average	0.035	0.035	0.032	0.027		0.036	0.034	0.035	0.030		0.031	0.030	0.029	0.026	0.017	0.025	0.022	0.024	0.017	0.021

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.02
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.01	0.00	0.01

Table A-97

Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins.

South Coast Air Basin

County: San Bernardino

OZONE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hour Indicator	0.328	0.330	0.321	0.304	0.284	0.277	0.273	0.265	0.266	0.252	0.252	0.232	0.233	0.222	0.224	0.211	0.213	0.172	0.172	0.178
Peak 8-Hour Indicator	0.232	0.232	0.238	0.227	0.211	0.204	0.202	0.198	0.200	0.200	0.187	0.186	0.175	0.168	0.182	0.179	0.178	0.144	0.144	0.144
4th High 1-Hr. in 3 Yrs	0.320	0.320	0.320	0.320	0.290	0.280	0.280	0.270	0.270	0.250	0.250	0.234	0.231	0.215	0.217	0.211	0.211	0.170	0.169	0.167
Avg. of 4th High 8-Hr. in 3 Yrs	0.210	0.211	0.211	0.200	0.195	0.188	0.185	0.182	0.180	0.177	0.171	0.165	0.161	0.148	0.154	0.147	0.146	0.129	0.128	0.131
Maximum 1-Hr. Concentration	0.340	0.340	0.310	0.290	0.350	0.320	0.330	0.290	0.280	0.270	0.265	0.256	0.239	0.205	0.244	0.174	0.184	0.184	0.161	0.176
Max. 8-Hr. Concentration	0.248	0.252	0.240	0.198	0.250	0.252	0.193	0.203	0.211	0.185	0.192	0.203	0.173	0.143	0.206	0.142	0.149	0.144	0.139	0.153
Days Above State Standard	197	184	179	179	193	192	161	160	176	170	158	135	132	122	100	98	101	99	94	106
Days Above Nat. 1-Hr. Std.	162	138	145	141	153	143	115	109	123	112	115	91	79	53	58	37	25	32	30	50
Days Above Nat. 8-Hr. Std.	178	166	167	163	174	169	145	143	164	157	142	110	110	93	88	87	75	79	85	86

PM_{10} (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)					287	271	475	163	649	143	147	178	136	208	114	183	124	166	102	149
Max. 24-Hr. Concentration (Nat)					289	271	475	163	649	143	147	178	136	208	114	183	124	166	102	149
Annual Average (State)						79.7	77.3	68.5	79.0	58.2	60.0	60.8	54.9	53.6	50.2	60.1	52.6	52.4	50.1	44.8
Annual Average (Nat)					81.3	79.7	77.3	68.5	79.0	58.3	59.9	60.8	54.9	53.6	50.2	65.8	52.6	52.2	50.1	44.9
Calc Days Above State 24-Hr Std						293	265	250	243	231	232	209	211	174	171	223	195	208	201	139
Calc Days Above Nat 24-Hr Std					19	18	19	6	12	0	0	21	0	6	0	6	0	6	0	0

$PM_{2.5}$ (ug/m3)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Max. 24-Hr. Concentration (State)																121.4	89.8	78.5	82.1	98.1
Max. 24-Hr. Concentration (Nat)																121.4	89.8	78.5	82.1	98.1
98th Percentile of 24-Hr Conc.																85.6	70.3	69.5	66.3	66.9
Annual Average (State)																		25.0	25.8	23.8
Avg. of Qtrly. Means (Nat)																25.7	25.9	26.5	25.8	23.8

CARBON MONOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 8-Hr. Indicator	6.2	5.8	7.2	7.1	7.5	7.8	7.7	7.4	6.7	6.0	5.5	6.4	6.3	6.1	5.1	4.9	4.9	4.1	3.5	3.6
Max. 1-Hr. Concentration	9.0	10.0	9.0	11.0	9.0	11.0	9.0	8.0	7.0	7.0	7.6	7.7	5.8	7.6	6.3	5.5	4.8	4.1	4.5	5.1
Max. 8-Hr. Concentration	5.6	6.3	6.7	6.7	7.6	8.1	6.6	7.0	5.9	6.0	6.4	6.3	4.5	5.9	4.7	4.1	4.1	3.3	3.2	4.5
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NITROGEN DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.180	0.171	0.172	0.183	0.193	0.195	0.192	0.187	0.174	0.167	0.160	0.178	0.180	0.178	0.143	0.139	0.137	0.131	0.123	0.125
Max. 1-Hr. Concentration	0.200	0.180	0.240	0.200	0.210	0.200	0.200	0.210	0.140	0.160	0.177	0.199	0.163	0.153	0.154	0.149	0.143	0.129	0.122	0.117
Max. Annual Average	0.040	0.040	0.042	0.047	0.047	0.045	0.041	0.043	0.040	0.042	0.041	0.046	0.038	0.036	0.036	0.039	0.038	0.037	0.036	0.034

SULFUR DIOXIDE (ppm)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Peak 1-Hr. Indicator	0.05	0.04	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Max. Annual Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. 24-Hr. Concentration	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00

Table A-98

A portion of San Bernardino County lies within the Mojave Desert Air Basin.

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APPENDIX B

Air Quality Trend Data by Pollutant:

Ozone, PM_{10}, $PM_{2.5}$ CO, NO_2, SO_2

Appendix B: *Air Quality Trend Data by Pollutant: Ozone, PM_{10}, CO, NO_2, SO_2*

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Introduction

This appendix contains air quality trend data for each of California's 15 air basins, organized by pollutant. The seven pollutants included are ozone, particulate matter (PM_{10} & $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), oxides of nitrogen (NO_x), and sulfur dioxide (SO_2). The statistics are the same as those presented in Chapter 4, and the time period covered is 1984 through 2003 for ozone, CO, NO_2, NO_x, and SO_2, 1988 through 2003 for PM_{10}. and 1999 to 2003 for $PM_{2.5}$.

Air quality statistics can fluctuate from year-to-year because of the influence of meteorology and/or changes in emissions. However, the statistics can also vary because of a change in monitoring site. The peak and maximum value statistics listed here reflect the highest value for the statistic at any site in the area. As a result, the statistic may not reflect the same site during the entire trend period. For example, the maximum 8-hour carbon monoxide concentrations in Imperial County in the Salton Sea Air Basin are below the levels of the State and national standards from 1984 through 1993. In 1994, however, the concentrations show a significant increase, and both the State and national standards are violated. The CO concentrations in the Salton Sea Air Basin did not suddenly increase during 1994. Instead, monitoring began at a new site in Calexico, and the concentrations at the new site were higher than at the existing sites in the air basin. Information about the time periods for which air quality data are available for different pollutants at sites in California and Baja, Mexico is available on the web at *www.arb.ca.gov/aqd/namslams/namslams.htm*.

Since the peak and maximum air quality statistics reflect the highest values in the area, the monitoring sites represented also may not be consistent among the various statistics during a particular year. For example, the monitoring site reflected in the maximum 1-hour ozone concentration may not be the same as the monitoring site reflected in the maximum 8-hour ozone concentration. In contrast to the peak and maximum statistics, the counts of days above a standard reflect composite, basinwide values (in other words, a count of the total number of days an exceedance occurred at any site in the air basin).

Ozone

Peak 1-Hour Indicator (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.096	0.094	0.100	0.099	0.100	0.099	0.100	0.099	0.115	0.110	0.108	0.097	0.099	0.096	0.095	0.090	0.090	0.104	0.105	0.091
LAKE COUNTY	0.079	0.075	0.081	0.081	0.080	0.083	0.074	0.075	0.077	0.077	0.083	0.082	0.082	0.076	0.076	0.087	0.083	0.080	0.081	0.080
LAKE TAHOE	0.080	0.081	0.082	0.085	0.089	0.091	0.091	0.093	0.089	0.079	0.082	0.084	0.084	0.083	0.082	0.081	0.089	0.090	0.093	0.091
MOJAVE DESERT	0.193	0.200	0.235	0.231	0.234	0.204	0.215	0.223	0.220	0.193	0.191	0.194	0.186	0.171	0.176	0.162	0.154	0.136	0.140	0.138
MOUNTAIN COUNTIES			0.090	0.129	0.155	0.138	0.134	0.118	0.127	0.122	0.127	0.131	0.137	0.140	0.147	0.144	0.144	0.137	0.143	0.146
NORTH CENTRAL COAST	0.104	0.113	0.109	0.146	0.136	0.131	0.115	0.114	0.115	0.111	0.107	0.106	0.111	0.112	0.113	0.103	0.104	0.100	0.104	0.104
NORTH COAST	0.076	0.073	0.074	0.083	0.062	0.058	0.066	0.063	0.085	0.088	0.089	0.090	0.088	0.091	0.103	0.109	0.105	0.093	0.083	0.082
NORTHEAST PLATEAU	0.074	0.076	0.078	0.081	0.082	0.083	0.082	0.084	0.081	0.073	0.075	0.074	0.075	0.074	0.078	0.078	0.081	0.080	0.085	0.083
SACRAMENTO VALLEY	0.162	0.173	0.173	0.168	0.171	0.166	0.162	0.153	0.158	0.159	0.148	0.149	0.154	0.141	0.161	0.155	0.153	0.138	0.135	0.137
SALTON SEA	0.202	0.204	0.197	0.185	0.182	0.180	0.181	0.175	0.168	0.159	0.154	0.163	0.155	0.156	0.153	0.147	0.149	0.152	0.142	0.135
SAN DIEGO	0.197	0.188	0.179	0.179	0.179	0.186	0.180	0.172	0.164	0.150	0.147	0.148	0.142	0.132	0.134	0.134	0.132	0.117	0.117	0.116
SAN FRANCISCO BAY AREA	0.164	0.172	0.155	0.149	0.147	0.148	0.136	0.129	0.130	0.126	0.118	0.135	0.151	0.149	0.151	0.144	0.143	0.122	0.126	0.129
SAN JOAQUIN VALLEY	0.164	0.162	0.172	0.172	0.169	0.170	0.164	0.167	0.162	0.162	0.155	0.163	0.164	0.167	0.162	0.159	0.158	0.146	0.151	0.151
SOUTH CENTRAL COAST	0.188	0.181	0.177	0.172	0.176	0.173	0.172	0.164	0.159	0.157	0.147	0.162	0.161	0.153	0.143	0.135	0.132	0.126	0.125	0.124
SOUTH COAST	0.354	0.375	0.360	0.344	0.319	0.320	0.310	0.304	0.286	0.297	0.279	0.249	0.233	0.229	0.224	0.211	0.213	0.172	0.172	0.178

Table B-1

Peak 8-Hour Indicator (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.089	0.088	0.095	0.094	0.092	0.092	0.093	0.091	0.097	0.093	0.092	0.086	0.087	0.085	0.087	0.085	0.085	0.091	0.091	0.084
LAKE COUNTY	0.073	0.067	0.072	0.075	0.076	0.072	0.060	0.064	0.064	0.066	0.071	0.071	0.071	0.064	0.065	0.075	0.073	0.071	0.073	0.071
LAKE TAHOE	0.070	0.072	0.074	0.077	0.080	0.081	0.081	0.082	0.081	0.068	0.074	0.075	0.076	0.073	0.074	0.074	0.077	0.079	0.080	0.081
MOJAVE DESERT	0.142	0.164	0.200	0.191	0.189	0.161	0.170	0.170	0.166	0.155	0.148	0.158	0.146	0.145	0.145	0.133	0.124	0.114	0.116	0.117
MOUNTAIN COUNTIES			0.082	0.106	0.122	0.120	0.114	0.108	0.109	0.109	0.109	0.112	0.116	0.113	0.119	0.118	0.120	0.113	0.119	0.122
NORTH CENTRAL COAST	0.086	0.090	0.088	0.115	0.109	0.105	0.092	0.092	0.093	0.093	0.087	0.087	0.094	0.094	0.096	0.090	0.089	0.085	0.088	0.089
NORTH COAST	0.058	0.056	0.061	0.070	0.053	0.050	0.061	0.059	0.068	0.072	0.072	0.074	0.074	0.079	0.087	0.092	0.089	0.078	0.069	0.068
NORTHEAST PLATEAU	0.065	0.068	0.071	0.075	0.074	0.075	0.075	0.075	0.073	0.067	0.067	0.064	0.064	0.066	0.070	0.069	0.070	0.068	0.071	0.072
SACRAMENTO VALLEY	0.128	0.131	0.133	0.129	0.129	0.128	0.126	0.122	0.124	0.125	0.116	0.120	0.124	0.117	0.125	0.124	0.118	0.112	0.113	0.111
SALTON SEA	0.150	0.154	0.153	0.148	0.141	0.142	0.139	0.139	0.133	0.131	0.127	0.125	0.122	0.120	0.122	0.114	0.112	0.110	0.117	0.119
SAN DIEGO	0.142	0.145	0.140	0.136	0.130	0.135	0.139	0.135	0.129	0.122	0.118	0.121	0.117	0.113	0.114	0.112	0.112	0.101	0.103	0.101
SAN FRANCISCO BAY AREA	0.125	0.130	0.121	0.114	0.111	0.112	0.104	0.098	0.096	0.094	0.093	0.103	0.112	0.110	0.110	0.107	0.109	0.094	0.096	0.098
SAN JOAQUIN VALLEY	0.128	0.124	0.128	0.134	0.134	0.131	0.126	0.128	0.122	0.124	0.123	0.128	0.130	0.135	0.131	0.127	0.129	0.118	0.120	0.122
SOUTH CENTRAL COAST	0.149	0.145	0.147	0.146	0.144	0.142	0.144	0.141	0.133	0.133	0.120	0.132	0.134	0.133	0.123	0.114	0.112	0.107	0.106	0.103
SOUTH COAST	0.254	0.252	0.251	0.243	0.230	0.213	0.212	0.209	0.200	0.200	0.192	0.186	0.175	0.168	0.182	0.179	0.178	0.144	0.144	0.146

Table B-2

Ozone

4th Highest 1-Hour Concentration in 3 Years (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.090	0.090	0.100	0.100	0.100	0.100	0.100	0.090	0.120	0.120	0.120	0.100	0.100	0.091	0.090	0.089	0.090	0.097	0.097	0.092
LAKE COUNTY	0.080	0.070	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
LAKE TAHOE	0.080	0.080	0.080	0.090	0.090	0.090	0.090	0.090	0.090	0.070	0.081	0.086	0.083	0.083	0.081	0.081	0.086	0.087	0.089	0.088
MOJAVE DESERT	0.220	0.220	0.230	0.230	0.230	0.210	0.220	0.230	0.230	0.200	0.190	0.188	0.182	0.175	0.167	0.166	0.164	0.135	0.143	0.138
MOUNTAIN COUNTIES			0.080	0.116	0.140	0.140	0.140	0.110	0.120	0.120	0.124	0.124	0.129	0.130	0.143	0.144	0.143	0.128	0.143	0.143
NORTH CENTRAL COAST	0.100	0.100	0.100	0.134	0.134	0.139	0.120	0.110	0.110	0.110	0.110	0.104	0.114	0.114	0.114	0.109	0.107	0.100	0.104	0.106
NORTH COAST	0.070	0.070	0.070	0.080	0.080	0.059	0.060	0.060	0.080	0.090	0.090	0.090	0.090	0.090	0.110	0.110	0.110	0.100	0.083	0.083
NORTHEAST PLATEAU	0.070	0.070	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.070	0.070	0.070	0.070	0.070	0.075	0.075	0.078	0.078	0.081	0.079
SACRAMENTO VALLEY	0.180	0.180	0.180	0.160	0.160	0.160	0.160	0.150	0.150	0.150	0.143	0.145	0.145	0.133	0.148	0.148	0.148	0.133	0.132	0.138
SALTON SEA	0.190	0.190	0.190	0.180	0.180	0.180	0.180	0.180	0.170	0.170	0.152	0.180	0.180	0.160	0.155	0.143	0.157	0.166	0.147	0.142
SAN DIEGO	0.200	0.210	0.190	0.180	0.180	0.190	0.190	0.170	0.170	0.154	0.150	0.146	0.141	0.138	0.135	0.135	0.131	0.118	0.118	0.118
SAN FRANCISCO BAY AREA	0.160	0.160	0.150	0.140	0.140	0.140	0.130	0.130	0.120	0.120	0.121	0.138	0.138	0.138	0.138	0.139	0.139	0.126	0.124	0.123
SAN JOAQUIN VALLEY	0.160	0.160	0.170	0.170	0.170	0.170	0.160	0.160	0.160	0.160	0.160	0.165	0.165	0.164	0.161	0.161	0.161	0.146	0.151	0.151
SOUTH CENTRAL COAST	0.210	0.190	0.180	0.180	0.180	0.170	0.170	0.170	0.150	0.150	0.146	0.157	0.158	0.152	0.144	0.134	0.132	0.128	0.124	0.124
SOUTH COAST	0.360	0.360	0.350	0.350	0.340	0.330	0.330	0.310	0.300	0.300	0.280	0.250	0.231	0.215	0.217	0.211	0.211	0.170	0.169	0.180

Table B-3

Average of 4th Highest 8-Hour Concentration in 3 Years (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.078	0.079	0.082	0.084	0.086	0.081	0.081	0.076	0.081	0.078	0.082	0.079	0.079	0.077	0.079	0.079	0.080	0.083	0.081	0.081
LAKE COUNTY	0.063	0.059	0.064	0.065	0.065	0.058	0.054	0.055	0.055	0.057	0.059	0.061	0.060	0.058	0.057	0.061	0.062	0.063	0.064	0.064
LAKE TAHOE	0.067	0.068	0.069	0.071	0.074	0.076	0.075	0.076	0.075	0.056	0.061	0.070	0.071	0.068	0.069	0.069	0.074	0.075	0.075	0.076
MOJAVE DESERT	0.132	0.150	0.168	0.163	0.165	0.153	0.151	0.151	0.147	0.139	0.138	0.137	0.131	0.124	0.127	0.118	0.110	0.102	0.106	0.106
MOUNTAIN COUNTIES			0.073	0.093	0.108	0.103	0.094	0.092	0.098	0.096	0.099	0.099	0.103	0.099	0.103	0.103	0.107	0.104	0.106	0.107
NORTH CENTRAL COAST	0.077	0.081	0.078	0.103	0.095	0.090	0.084	0.083	0.084	0.083	0.081	0.081	0.085	0.084	0.086	0.082	0.082	0.079	0.081	0.081
NORTH COAST	0.051	0.050	0.052	0.056	0.066	0.042	0.053	0.051	0.063	0.065	0.066	0.069	0.069	0.072	0.077	0.082	0.076	0.069	0.063	0.062
NORTHEAST PLATEAU	0.059	0.061	0.064	0.069	0.069	0.069	0.067	0.059	0.057	0.051	0.058	0.057	0.059	0.058	0.061	0.062	0.063	0.053	0.055	0.057
SACRAMENTO VALLEY	0.115	0.118	0.118	0.114	0.114	0.114	0.107	0.105	0.105	0.110	0.104	0.106	0.106	0.097	0.097	0.101	0.105	0.101	0.101	0.100
SALTON SEA	0.134	0.134	0.135	0.131	0.130	0.129	0.126	0.125	0.121	0.118	0.113	0.110	0.111	0.107	0.107	0.100	0.099	0.100	0.105	0.108
SAN DIEGO	0.126	0.132	0.125	0.124	0.121	0.125	0.129	0.125	0.118	0.112	0.109	0.108	0.104	0.099	0.102	0.099	0.100	0.094	0.095	0.093
SAN FRANCISCO BAY AREA	0.100	0.103	0.097	0.092	0.092	0.097	0.088	0.084	0.082	0.081	0.082	0.087	0.093	0.090	0.089	0.086	0.087	0.082	0.082	0.086
SAN JOAQUIN VALLEY	0.114	0.111	0.117	0.118	0.121	0.120	0.119	0.118	0.115	0.112	0.111	0.119	0.119	0.115	0.115	0.113	0.111	0.109	0.115	0.115
SOUTH CENTRAL COAST	0.137	0.132	0.131	0.129	0.131	0.132	0.130	0.127	0.118	0.115	0.112	0.117	0.119	0.115	0.112	0.106	0.105	0.101	0.097	0.095
SOUTH COAST	0.225	0.226	0.222	0.217	0.205	0.192	0.186	0.182	0.180	0.177	0.171	0.165	0.161	0.148	0.154	0.147	0.146	0.129	0.128	0.131

Table B-4

Ozone

Maximum 1-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.090	0.100	0.100	0.100	0.100	0.080	0.100	0.090	0.150	0.090	0.120	0.110	0.095	0.092	0.092	0.094	0.090	0.100	0.100	0.089
LAKE COUNTY	0.080	0.080	0.080	0.090	0.070	0.060	0.090	0.080	0.080	0.080	0.090	0.070	0.090	0.080	0.080	0.090	0.080	0.070	0.090	0.080
LAKE TAHOE	0.080	0.100	0.090	0.090	0.090	0.100	0.090	0.090	0.100	0.090	0.086	0.092	0.083	0.095	0.081	0.095	0.089	0.095	0.102	0.086
MOJAVE DESERT	0.230	0.210	0.260	0.220	0.270	0.220	0.270	0.240	0.230	0.200	0.188	0.240	0.175	0.187	0.202	0.137	0.163	0.146	0.157	0.163
MOUNTAIN COUNTIES			0.090	0.145	0.160	0.130	0.150	0.110	0.130	0.120	0.130	0.146	0.138	0.145	0.163	0.165	0.134	0.148	0.156	0.145
NORTH CENTRAL COAST	0.100	0.110	0.100	0.146	0.127	0.140	0.120	0.140	0.110	0.110	0.101	0.138	0.120	0.112	0.124	0.107	0.098	0.108	0.115	0.111
NORTH COAST	0.070	0.070	0.070	0.090	0.090	0.050	0.070	0.060	0.090	0.090	0.100	0.100	0.080	0.100	0.130	0.100	0.090	0.090	0.092	0.090
NORTHEAST PLATEAU	0.080	0.080	0.080	0.090	0.080	0.080	0.080	0.050	0.080	0.070	0.080	0.070	0.070	0.082	0.078	0.070	0.082	0.049	0.087	0.089
SACRAMENTO VALLEY	0.210	0.200	0.170	0.180	0.180	0.170	0.150	0.190	0.170	0.150	0.145	0.156	0.157	0.143	0.160	0.160	0.138	0.142	0.139	0.140
SALTON SEA	0.200	0.240	0.180	0.170	0.200	0.190	0.170	0.180	0.170	0.210	0.180	0.232	0.180	0.160	0.236	0.171	0.169	0.167	0.156	0.144
SAN DIEGO	0.280	0.220	0.190	0.290	0.250	0.250	0.200	0.210	0.170	0.187	0.147	0.162	0.138	0.136	0.164	0.124	0.124	0.141	0.121	0.125
SAN FRANCISCO BAY AREA	0.170	0.160	0.140	0.170	0.150	0.140	0.130	0.140	0.130	0.130	0.130	0.155	0.138	0.114	0.147	0.156	0.152	0.134	0.160	0.128
SAN JOAQUIN VALLEY	0.170	0.160	0.180	0.200	0.190	0.180	0.170	0.180	0.160	0.160	0.175	0.173	0.165	0.147	0.169	0.155	0.165	0.149	0.164	0.156
SOUTH CENTRAL COAST	0.190	0.230	0.180	0.185	0.180	0.230	0.170	0.170	0.150	0.146	0.164	0.169	0.158	0.137	0.174	0.135	0.128	0.129	0.132	0.130
SOUTH COAST	0.340	0.390	0.350	0.330	0.350	0.340	0.330	0.320	0.300	0.280	0.300	0.256	0.239	0.205	0.244	0.174	0.184	0.190	0.169	0.194

Table B-5

Maximum 8-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0.087	0.090	0.093	0.091	0.098	0.077	0.091	0.073	0.103	0.077	0.092	0.101	0.090	0.080	0.085	0.089	0.080	0.095	0.088	0.084
LAKE COUNTY	0.077	0.070	0.080	0.080	0.061	0.053	0.063	0.066	0.057	0.072	0.075	0.063	0.070	0.065	0.076	0.072	0.073	0.065	0.077	0.065
LAKE TAHOE	0.072	0.086	0.080	0.082	0.085	0.085	0.080	0.081	0.082	0.071	0.079	0.089	0.073	0.071	0.077	0.079	0.077	0.084	0.079	0.079
MOJAVE DESERT	0.158	0.167	0.225	0.161	0.167	0.161	0.198	0.173	0.165	0.147	0.155	0.170	0.146	0.133	0.144	0.122	0.132	0.117	0.123	0.130
MOUNTAIN COUNTIES			0.078	0.111	0.138	0.110	0.115	0.102	0.112	0.111	0.108	0.113	0.113	0.112	0.127	0.118	0.113	0.109	0.137	0.122
NORTH CENTRAL COAST	0.083	0.091	0.083	0.113	0.096	0.100	0.095	0.108	0.090	0.087	0.092	0.102	0.101	0.091	0.097	0.085	0.084	0.088	0.094	0.088
NORTH COAST	0.062	0.056	0.062	0.076	0.076	0.042	0.060	0.051	0.072	0.073	0.080	0.090	0.071	0.091	0.106	0.087	0.077	0.073	0.072	0.080
NORTHEAST PLATEAU	0.066	0.075	0.070	0.081	0.071	0.076	0.076	0.046	0.073	0.070	0.068	0.062	0.063	0.074	0.071	0.067	0.071	0.038	0.075	0.074
SACRAMENTO VALLEY	0.138	0.161	0.125	0.127	0.130	0.133	0.127	0.140	0.122	0.120	0.121	0.128	0.126	0.107	0.137	0.129	0.108	0.108	0.120	0.118
SALTON SEA	0.165	0.160	0.142	0.141	0.137	0.160	0.130	0.148	0.128	0.128	0.130	0.132	0.125	0.120	0.136	0.110	0.113	0.113	0.124	0.110
SAN DIEGO	0.207	0.168	0.143	0.196	0.156	0.193	0.145	0.145	0.133	0.154	0.121	0.122	0.117	0.112	0.141	0.100	0.106	0.116	0.100	0.103
SAN FRANCISCO BAY AREA	0.124	0.127	0.106	0.116	0.101	0.102	0.105	0.108	0.101	0.112	0.097	0.115	0.112	0.084	0.111	0.122	0.114	0.102	0.106	0.101
SAN JOAQUIN VALLEY	0.136	0.131	0.135	0.150	0.127	0.136	0.123	0.130	0.121	0.125	0.129	0.134	0.137	0.127	0.136	0.123	0.131	0.120	0.132	0.127
SOUTH CENTRAL COAST	0.158	0.156	0.145	0.153	0.142	0.176	0.143	0.140	0.125	0.129	0.132	0.144	0.127	0.114	0.151	0.112	0.108	0.113	0.109	0.114
SOUTH COAST	0.248	0.288	0.251	0.210	0.258	0.252	0.193	0.203	0.218	0.195	0.208	0.203	0.173	0.148	0.206	0.142	0.149	0.144	0.144	0.153

Table B-6

Ozone

Days Above State Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0	1	5	4	3	0	2	0	5	0	4	2	1	0	0	0	0	4	2	0
LAKE COUNTY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAKE TAHOE	0	1	0	0	0	2	0	0	1	0	0	0	0	1	0	1	0	1	1	0
MOJAVE DESERT	131	147	156	158	152	158	136	135	150	135	137	119	108	101	77	83	86	72	75	93
MOUNTAIN COUNTIES			0	27	51	39	22	23	54	35	57	49	65	29	52	66	51	50	62	56
NORTH CENTRAL COAST	6	12	1	37	14	10	11	12	9	12	6	8	16	1	10	3	3	3	8	3
NORTH COAST	0	0	0	0	0	0	0	0	0	0	1	1	0	2	7	4	0	0	0	0
NORTHEAST PLATEAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO VALLEY	64	59	66	94	98	68	50	68	74	34	60	50	58	25	62	59	41	45	46	51
SALTON SEA	100	96	80	85	107	119	83	86	100	113	126	124	98	91	72	88	54	81	68	66
SAN DIEGO	146	148	131	127	160	159	139	106	97	90	79	96	51	43	54	27	24	29	15	23
SAN FRANCISCO BAY AREA	55	45	39	46	41	22	14	23	23	19	13	28	34	8	29	20	12	15	16	19
SAN JOAQUIN VALLEY	135	149	147	156	156	148	131	133	127	125	118	124	120	110	90	123	114	123	127	137
SOUTH CENTRAL COAST	133	137	150	126	138	117	105	112	75	63	90	95	82	59	54	33	38	34	24	45
SOUTH COAST	209	207	217	196	216	211	185	184	190	185	165	153	141	144	107	111	115	121	116	125

Table B-7

Ozone

Days Above National 1-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
LAKE COUNTY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAKE TAHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOJAVE DESERT	66	93	105	82	108	93	76	70	77	69	77	60	39	22	26	4	11	6	16	13
MOUNTAIN COUNTIES			0	3	7	2	2	0	1	0	2	3	7	2	8	7	4	1	8	6
NORTH CENTRAL COAST	0	0	0	5	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
NORTH COAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
NORTHEAST PLATEAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO VALLEY	23	19	24	24	35	8	16	14	14	7	9	11	9	3	14	7	5	2	7	5
SALTON SEA	40	29	31	40	35	38	27	27	31	36	20	33	21	13	13	25	5	15	5	7
SAN DIEGO	51	50	42	40	45	56	39	27	19	14	9	12	2	1	9	0	0	2	0	1
SAN FRANCISCO BAY AREA	22	9	5	14	5	4	2	2	2	3	2	11	8	0	8	3	3	1	2	1
SAN JOAQUIN VALLEY	61	53	59	65	74	54	45	51	29	43	43	44	56	16	39	28	30	32	31	37
SOUTH CENTRAL COAST	46	44	60	31	56	48	20	35	12	14	17	25	19	3	6	2	2	2	1	2
SOUTH COAST	175	158	167	161	178	157	131	130	142	124	118	98	85	64	60	39	33	36	45	64

Table B-8

Days Above National 8-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	2	2	13	2	6	0	3	0	9	0	6	2	1	0	1	1	0	4	2	0
LAKE COUNTY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAKE TAHOE	0	1	0	0	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MOJAVE DESERT	109	129	146	144	142	137	120	122	134	124	129	109	91	78	68	73	72	65	66	74
MOUNTAIN COUNTIES			0	22	43	38	22	33	47	34	49	47	59	28	54	65	56	44	59	56
NORTH CENTRAL COAST	0	5	0	26	6	3	5	3	4	4	1	3	9	1	6	1	0	2	5	2
NORTH COAST	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	2	0	0	0	0
NORTHEAST PLATEAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO VALLEY	46	42	50	73	68	37	44	60	56	22	48	40	44	15	60	43	35	37	34	40
SALTON SEA	79	70	62	72	70	90	56	65	75	80	75	79	62	63	40	35	33	54	55	47
SAN DIEGO	98	109	81	99	119	122	96	67	66	58	46	48	31	16	35	17	16	17	13	6
SAN FRANCISCO BAY AREA	32	17	13	29	20	13	7	6	6	5	4	18	14	0	16	9	4	7	7	7
SAN JOAQUIN VALLEY	120	127	134	148	140	133	104	121	119	104	108	109	114	95	84	117	103	109	125	134
SOUTH CENTRAL COAST	109	111	122	91	113	97	76	94	63	53	65	70	68	46	41	24	30	25	16	35
SOUTH COAST	190	181	191	179	194	181	161	160	173	161	148	120	115	118	93	93	94	92	96	109

Table B-9

PM_{10}

Maximum 24-Hour Concentration (State) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS					166	227	866	150	493	981	388	692	309	402	1022	2708	9967	3643	7401	15641
LAKE COUNTY					23	29	30	31	22	30	21	30	26	18	34	40	21	23	85	32
LAKE TAHOE									52	92	78	71	72	55	50	36	44	50	46	52
MOJAVE DESERT					63	191	462	780	80	79	140	143	138	130	159	40	90	112	194	169
MOUNTAIN COUNTIES					113	144	209	350	120	130	115	118	114	138	69	115	89	277	72	58
NORTH CENTRAL COAST					65	58	56	55	41	102	106	152	115	113	78	106	77	74	81	90
NORTH COAST					101	92	266	78	58	54	77	68	87	66	52	95	53	72	72	71
NORTHEAST PLATEAU					58	59	63	60	74	60	101	78	188	97	63	93	74	91	73	31
SACRAMENTO VALLEY					100	147	153	136	111	113	154	145	98	126	130	179	90	112	96	83
SALTON SEA					368	712	520	340	175	175	258	229	359	532	181	238	279	634	361	848
SAN DIEGO					80	90	115	81	67	159	129	121	93	125	57	119	136	106	131	289
SAN FRANCISCO BAY AREA					146	147	165	155	112	93	97	74	76	85	100	117	80	114	84	60
SAN JOAQUIN VALLEY					206	237	439	279	186	239	192	279	153	199	167	186	153	221	194	150
SOUTH CENTRAL COAST					132	119	133	96	135	141	139	129	93	321	111	86	102	77	100	169
SOUTH COAST					287	271	475	179	649	231	161	219	162	208	116	183	139	219	130	164

Table B-10 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

Maximum 24-Hour Concentration (National) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS					394	1861	866	181	526	981	388	2668	491	402	1116	514	10466	4482	6505	16462
LAKE COUNTY					28	29	30	31	22	30	21	30	26	18	35	43	22	21		
LAKE TAHOE					95	73	84	78	85	92	78	71	72	55	59	41	50	58	51	61
MOJAVE DESERT					150	191	462	780	242	79	140	235	138	130	165	109	90	115	208	181
MOUNTAIN COUNTIES					180	144	209	350	120	130	115	118	114	138	92	125	98	312	76	66
NORTH CENTRAL COAST					71	58	57	55	45	102	106	152	115	113	76	103	74	72	77	87
NORTH COAST					125	92	266	78	58	54	77	68	87	66	50	100	51	73	74	65
NORTHEAST PLATEAU					92	59	63	60	74	60	101	78	188	97	66	100	80	105	86	33
SACRAMENTO VALLEY					115	139	153	136	111	110	154	145	98	126	130	179	86	105	92	81
SALTON SEA					368	712	520	340	175	175	258	229	359	532	176	227	268	647	373	840
SAN DIEGO					81	90	115	81	67	159	129	121	93	125	89	121	139	107	130	280
SAN FRANCISCO BAY AREA					146	150	173	155	112	101	97	74	76	95	92	114	76	109	80	58
SAN JOAQUIN VALLEY					244	250	439	279	183	239	190	279	153	199	160	183	145	205	189	150
SOUTH CENTRAL COAST					132	119	133	119	135	141	139	129	98	321	110	90	113	89	178	149
SOUTH COAST					289	271	475	179	649	231	161	219	162	208	116	183	139	219	130	164

Table B-11 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

PM_{10}

Maximum Annual Average (State) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS						27.1	29.4	23.2	37.0	34.2	29.8	32.3	21.5	26.4	57.8	13.6	116.8	63.1	159.3	130.4
LAKE COUNTY						12.9			11.9	11.3	11.0	10.8	10.2	8.6			10.6	10.2	13.1	10.0
LAKE TAHOE											27.1	22.5		21.6	19.8	16.9	17.3	16.9	17.1	15.0
MOJAVE DESERT						42.5			39.7	35.1	27.9		29.0	27.4	15.0	17.7	20.3	19.8	24.2	27.9
MOUNTAIN COUNTIES								48.4		18.4	33.9	24.1	21.5	28.3	18.5	17.7	19.9	29.6	25.9	21.0
NORTH CENTRAL COAST						24.3	23.8	24.3		21.7	31.1	36.3	32.8	36.9		32.3	31.2		28.9	31.6
NORTH COAST						31.4	28.0	25.4	21.9	23.2	24.3	26.0	24.4	23.4	22.1	24.3	23.5	25.4	22.9	22.2
NORTHEAST PLATEAU						24.8			23.6		22.1	16.0				16.8			17.5	12.8
SACRAMENTO VALLEY						41.9	38.5	39.2	35.2	31.2	33.3	29.9	29.9	28.8	29.9	39.4	27.9	30.5	31.8	28.8
SALTON SEA						77.9	80.3	69.1	47.5	52.6	48.3	72.0	73.6	77.7	66.6	79.0	84.8	87.1	80.9	79.7
SAN DIEGO						44.4	32.8	40.7	28.9	45.8	50.7	47.1	30.2	46.6	26.5	50.9	44.5	47.4	52.4	52.6
SAN FRANCISCO BAY AREA						37.7	35.1	37.9	33.9	28.8	28.3	25.7	24.8	25.8	25.8	30.0	27.8			24.8
SAN JOAQUIN VALLEY					52.7	67.0	80.1	70.0	62.4	56.3	49.6	57.9	54.1	47.3	40.5	60.1	53.9	52.3	59.9	52.3
SOUTH CENTRAL COAST					40.3	41.6	36.9	40.0	33.0	29.3	31.6	30.9	29.3	36.5	26.1	29.5	31.2	28.8	28.6	30.0
SOUTH COAST						94.0	78.2	76.0	79.0	72.5	65.5	68.8	61.5	65.3	50.2	72.2	60.1	62.9	58.4	56.9

Table B-12 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

Maximum Annual Average of Quarters (National) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS					36.9	34.6	39.6	23.2	37.3	34.6	29.9	31.8	21.5	26.5	53.8	15.3	121.2	69.6	79.5	38.8
LAKE COUNTY						12.9		12.6	11.8	11.3	10.9	10.7	10.2	8.6	7.8		10.8			
LAKE TAHOE						28.1	30.7	28.3			27.1	22.5	23.4	21.6	23.4	19.9	20.4	19.8	19.9	17.6
MOJAVE DESERT					35.8	48.6	48.1	58.0	39.4	34.9	42.1	25.5	29.0	29.2	27.8	32.1	33.6	29.8	34.3	33.2
MOUNTAIN COUNTIES							40.9	47.8	37.5	18.4	34.6	28.0	21.8	32.0	25.3	27.6	26.3	33.3	28.5	23.1
NORTH CENTRAL COAST					23.0	25.4	23.9	24.3		21.7	31.1	36.4	32.8	37.0	28.5	30.9	29.9	29.4	27.7	30.1
NORTH COAST					36.2	31.4	28.0	25.3	21.8	22.6	24.3	26.1	24.6	23.4	21.1	24.3	22.4	24.1	22.2	21.4
NORTHEAST PLATEAU					25.0	24.8	23.5		23.6		22.1	30.3	13.6	12.9	11.1	26.3	22.5	19.8	18.6	13.3
SACRAMENTO VALLEY					42.8	41.9	41.7	42.3	34.7	31.8	34.5	30.1	29.8	28.6	29.0	38.4	27.9	30.2	30.9	28.4
SALTON SEA					60.4	89.9	80.3	69.3	47.5	53.3	48.3	71.9	73.6	77.7	66.1	77.8	95.2	86.2	79.9	80.0
SAN DIEGO					40.0	43.8	37.6	40.6	35.9	45.9	50.7	46.8	30.0	46.6	42.5	52.2	45.2	49.1	54.9	52.1
SAN FRANCISCO BAY AREA					38.3	40.8	40.4	38.3	33.7	28.8	28.3	25.7	24.9	25.8	25.1	28.7	26.8	28.9	25.4	24.2
SAN JOAQUIN VALLEY					67.4	79.3	79.3	69.9	62.9	56.3	50.1	58.2	54.1	48.2	39.9	59.5	53.1	57.4	59.2	52.4
SOUTH CENTRAL COAST					41.6	41.5	36.6	39.9	33.2	42.8	32.5	31.1	29.3	37.0	25.0	31.3	31.0	31.5	28.9	30.7
SOUTH COAST					94.5	93.0	78.2	76.1	79.0	72.5	65.5	68.8	62.8	65.6	50.2	72.2	59.1	63.3	58.1	55.6

Table B-13 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

PM_{10}

Calculated Days Above State 24-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS					195	170	116.2	100.7	132	128	105	117	120	90	117	19.4	113.2	87.2	106.4	71.2
LAKE COUNTY					0	0	0	0	0	0	0	0	0	0	0	0	0	0		
LAKE TAHOE					57	26	55	36	36	30	42	18	24	12	12	0	0	18	3	6
MOJAVE DESERT					204	230	241	186	153	131	132	60	87	36	43	72	63	54	84	69
MOUNTAIN COUNTIES					159	116	154.5	132	102	113	93	42	42	128	63	60	57	60	36	12
NORTH CENTRAL COAST					24	18	18	12	0	59	30	72	72	96	30	54	24	51	30	42
NORTH COAST					126	71	40	38	15	14.5	48	18	23	20	0	54	9	42	24	24
NORTHEAST PLATEAU					21	26	25	12	24	6	24	54	18	18	24	66	60	36	36	0
SACRAMENTO VALLEY					183	134	175	189	177	92	108	108	129	65	97	144	81	96	126	66
SALTON SEA					252	294	286	294	186	239	274	306	312	320	265	324	330	341	328	315
SAN DIEGO					105	146	60	90	42	143.5	131	117	96	125	108	140	144	146	186	147
SAN FRANCISCO BAY AREA					123	137	93	125	108	59	54	42	18	20	25	63	42	51	30	30
SAN JOAQUIN VALLEY					300	302	313	285	273	233	253	246	225	188	185	216	237	236	267	242
SOUTH CENTRAL COAST					198	212	151	204	138	174	81	108	138	144	88	108	135	72	156	90
SOUTH COAST					345	338	301	294	282	293	276	252	276	290	238	288	300	278	297	252

Table B-14 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

Calculated Days Above National 24-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS					12	12	14	8	30	22	9	16	27	15	32	4	37	17	18	28
LAKE COUNTY						0	0	0	0	0	0	0	0	0	0		0			
LAKE TAHOE						0	0	0	0		0	0	0	0	0	0	0	0	0	0
MOJAVE DESERT					0	8	21	30	6	0	0	3	0	0	6	0	0	0	6	8
MOUNTAIN COUNTIES					7	0	6	19	0	0	0	0	0	0	0	0	0	6	0	0
NORTH CENTRAL COAST					0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
NORTH COAST					0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTHEAST PLATEAU					0	0	0		0		0	0	3	0	0	0	0	0	0	0
SACRAMENTO VALLEY					0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
SALTON SEA					12	37	21	18	6	18	18	26	37	35	19	29	36	29	18	28
SAN DIEGO					0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	9
SAN FRANCISCO BAY AREA					0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY					40	40	56	40	3	11	8	8	0	3	6	12	0	12	8	0
SOUTH CENTRAL COAST					0	0	0	0	0	0	0	0	0	14	0	0	0	0	6	0
SOUTH COAST					44	32	33	15	24	12	3	31	6	17	0	6	0	5	0	6

Table B-15 ** Salton Sea PM_{10} statistics exclude data from the Calexico - East site because data from this site do not represent widespread exposure.*

$PM_{2.5}$

Maximum 24-Hour Concentration (State) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																40.7	68.0	76.0	68.0	44.0
LAKE COUNTY																14.5	10.0	15.1	74.7	21.9
LAKE TAHOE																21.0	23.0	31.0	27.0	27.4
MOJAVE DESERT																47.6	38.6	35.0	38.0	28.0
MOUNTAIN COUNTIES																92.0	48.0	120.0	41.0	54.0
NORTH CENTRAL COAST																31.3	26.4	25.6	23.5	15.9
NORTH COAST																36.9	24.0	38.3	59.7	36.1
NORTHEAST PLATEAU																40.0	38.0	35.0	5.0	10.0
SACRAMENTO VALLEY															96.0	108.0	123.1	128.2	96.1	73.2
SALTON SEA																52.5	84.2	60.2	142.7	153.6
SAN DIEGO																64.3	66.3	60.0	53.6	239.2
SAN FRANCISCO BAY AREA																90.5	67.2	107.5	84.5	56.1
SAN JOAQUIN VALLEY																136.0	160.0	154.7	104.3	84.5
SOUTH CENTRAL COAST																64.6	55.3	57.7	46.4	116.0
SOUTH COAST																121.4	119.6	104.0	82.1	121.2

Table B-16

Maximum 24-Hour Concentration (National) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																40.7	68.0	76.0	68.0	44.0
LAKE COUNTY																14.5	10.0	15.1	74.7	21.9
LAKE TAHOE																21.0	23.0	31.0	27.0	21.0
MOJAVE DESERT																47.6	38.6	35.0	38.0	28.0
MOUNTAIN COUNTIES																92.0	48.0	120.0	41.0	43.0
NORTH CENTRAL COAST																31.3	26.4	25.6	23.5	15.9
NORTH COAST																36.9	24.0	38.3	59.7	36.1
NORTHEAST PLATEAU																40.0	38.0	35.0	5.0	10.0
SACRAMENTO VALLEY															96.0	108.0	98.0	78.0	91.0	65.0
SALTON SEA																52.5	84.2	60.2	46.5	65.1
SAN DIEGO																64.3	66.3	60.0	53.6	239.2
SAN FRANCISCO BAY AREA																90.5	67.2	107.5	76.7	56.1
SAN JOAQUIN VALLEY																136.0	160.0	154.7	90.7	67.8
SOUTH CENTRAL COAST																64.6	55.3	57.7	46.4	116.0
SOUTH COAST																121.4	119.6	98.0	82.1	121.2

Table B-17

$PM_{2.5}$

98th Percentile 24-Hour Concentration (ug/m3)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																	67.0	23.0	64.0	8.0
LAKE COUNTY																	9.4	11.3	46.3	15.1
LAKE TAHOE																21.0	22.0	26.0		19.0
MOJAVE DESERT																23.5	23.0	21.0	34.0	24.0
MOUNTAIN COUNTIES																84.0	30.0	43.0	30.0	40.0
NORTH CENTRAL COAST																25.0	21.5	23.1	22.8	14.0
NORTH COAST																27.7	21.5	29.0	39.7	15.2
NORTHEAST PLATEAU																27.0	37.0			
SACRAMENTO VALLEY															96.0	84.0	81.0	78.0	77.0	43.0
SALTON SEA																39.5	56.0	33.0	44.1	24.9
SAN DIEGO																35.7	32.5	40.8	36.0	46.9
SAN FRANCISCO BAY AREA																	55.3	56.0	57.5	37.4
SAN JOAQUIN VALLEY																120.0	108.0	96.0	80.4	56.0
SOUTH CENTRAL COAST																35.4	41.0	50.7	35.2	33.4
SOUTH COAST																85.6	83.0	74.3	66.3	76.6

Table B-18

$PM_{2.5}$

Average of Quarterly Means (State) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																		5.5		
LAKE COUNTY																		4.1	6.3	4.4
LAKE TAHOE																8.3	7.8	8.2		7.2
MOJAVE DESERT																11.2		11.5	13.9	9.4
MOUNTAIN COUNTIES																11.1	9.0	8.1	9.9	8.6
NORTH CENTRAL COAST																	7.9	9.1	9.1	7.3
NORTH COAST																9.1		9.4	9.1	7.4
NORTHEAST PLATEAU																	8.5			
SACRAMENTO VALLEY																17.5	15.8	11.9	15.1	15.9
SALTON SEA																	11.2		15.1	11.4
SAN DIEGO																			15.5	14.4
SAN FRANCISCO BAY AREA																	11.6	12.5	13.8	11.7
SAN JOAQUIN VALLEY																31.2	23.9	20.8	24.1	24.8
SOUTH CENTRAL COAST																9.6	9.8	14.9	9.5	12.4
SOUTH COAST																	24.0	25.0	25.8	24.8

Table B-19

Average of Quarterly Means (National) (ug/m³)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																		5.5	8.4	
LAKE COUNTY																	4.3	4.2	6.3	4.4
LAKE TAHOE																8.3	7.8	8.2		7.2
MOJAVE DESERT																11.9	12.0	11.5	13.9	11.4
MOUNTAIN COUNTIES																11.1	9.0	15.6	9.9	13.3
NORTH CENTRAL COAST																9.8	7.9	9.1	9.1	7.4
NORTH COAST																9.1	9.1	9.4	9.1	7.3
NORTHEAST PLATEAU																7.9	8.5			
SACRAMENTO VALLEY																17.5	15.8	13.0	15.1	12.2
SALTON SEA																15.2	16.9	12.2	15.1	11.4
SAN DIEGO																18.0	15.8	17.7	16.0	15.5
SAN FRANCISCO BAY AREA																	13.6	12.5	13.8	11.7
SAN JOAQUIN VALLEY																27.7	23.9	22.5	24.1	19.7
SOUTH CENTRAL COAST																13.8	10.3	14.9	14.6	14.2
SOUTH COAST																31.0	28.3	30.9	27.4	24.8

Table B-20

Carbon Monoxide

Peak 8-Hour Indicator (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS		7.3	7.2	7.0	5.9	5.8	5.7	5.6	3.5	5.0	4.7	4.6	4.0	4.0	3.9		2.9	2.5	2.5	
LAKE COUNTY						1.9	2.9	2.9												
LAKE TAHOE	16.1	16.4	15.5	14.9	13.2	12.6	11.9	11.1	10.2	8.7	8.3	7.8	7.0	5.6	5.0	2.3	2.1	2.0	2.0	1.9
MOJAVE DESERT	5.4	5.6	5.2	4.9	4.6	5.5	7.7	7.6	6.5	6.2	6.1	5.8	7.4	4.8	4.4	4.4	4.6	4.8	2.0	2.0
MOUNTAIN COUNTIES			4.5	4.5		4.1	4.3		2.9	2.9	2.8	2.8	2.7	2.4	5.1	5.4	5.7	2.4	1.6	1.6
NORTH CENTRAL COAST	2.6	2.4	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.1	2.0	2.0	2.0	1.6	1.6	1.5	1.4
NORTH COAST		5.2	5.2	3.4		4.6	4.6			2.4		3.2	3.4	3.3	3.1	3.6	3.4	3.3	2.6	2.3
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	13.0	13.2	14.6	14.4	13.4	14.0	14.7	14.8	12.9	10.7	9.6	9.3	8.5	7.7	7.3	7.0	7.0	7.3	6.0	4.4
SALTON SEA	2.5	2.5	2.6	2.6	2.5	2.4	2.3	2.3	2.2	2.1	17.4	18.8	17.8	17.4	15.4	15.5	14.8	14.3	12.8	11.5
SAN DIEGO	9.4	10.6	10.2	10.4	10.2	10.3	10.2	10.0	8.6	7.8	7.7	7.3	7.3	6.3	6.3	5.6	5.3	5.4	5.3	5.0
SAN FRANCISCO BAY AREA	11.9	13.9	14.0	13.4	10.7	11.8	12.6	12.4	11.1	9.3	8.1	7.8	7.4	6.5	6.7	6.5	7.1	6.9	6.0	5.5
SAN JOAQUIN VALLEY	13.6	13.4	13.9	13.9	14.1	13.7	13.9	13.2	11.5	10.0	10.0	10.9	9.9	9.0	8.3	8.5	8.3	6.3	5.3	4.8
SOUTH CENTRAL COAST	9.6	10.2	9.9	10.1	9.0	8.8	8.2	7.5	6.4	5.5	5.9	6.0	5.8	5.0	4.8	4.5	4.7	3.1	2.7	2.7
SOUTH COAST	20.2	21.1	21.1	21.7	21.9	22.5	21.9	19.0	17.7	16.5	16.7	15.6	16.1	15.4	15.4	13.7	12.6	11.2	9.4	8.7

Table B-21

Carbon Monoxide

Maximum 1-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	13.0	16.0	11.0	9.0	13.0	12.0	10.0	11.0	11.0	13.0	9.0	10.0	6.0	8.2	6.7		4.2	15.4	3.8	
LAKE COUNTY						3.0	6.0	7.0												
LAKE TAHOE	23.0	23.0	20.0	19.0	19.0	17.0	18.0	14.0	15.0	13.0	11.6	9.5	10.4	7.7	7.5	3.2	5.4	3.1	3.8	2.4
MOJAVE DESERT	10.0	12.0	9.0	12.0	11.0	13.0	11.0	10.0	9.0	8.0	9.1	7.5	8.4	5.9	5.4	10.3	6.0	6.1	3.4	3.9
MOUNTAIN COUNTIES			6.0	3.0		6.0	5.0	1.0	6.2	10.0	9.3	9.3	4.5	6.6	6.7	4.1	5.0	6.2	3.7	2.5
NORTH CENTRAL COAST	5.0	6.0	4.0	5.0	6.0	5.0	5.0	4.0	4.0	4.0	4.6	3.2	5.5	4.4	3.8	3.8	3.5	3.3	2.3	2.8
NORTH COAST	6.0	8.0	6.0	4.0	1.0	10.0	9.0		1.0	6.0		5.4	4.8	7.4	4.8	5.2	4.4	4.0	3.1	5.3
NORTHEAST PLATEAU				12.0	4.0															
SACRAMENTO VALLEY	18.0	17.0	20.0	15.0	17.0	18.0	17.0	15.0	14.0	12.0	10.8	9.8	8.7	9.5	7.9	7.7	10.0	19.1	7.8	8.5
SALTON SEA	4.0	5.0	5.0	5.0	4.0	6.0	5.0	5.0	5.0	6.0	30.6	32.0	27.0	24.0	23.5	22.9	19.9	17.4	15.6	14.3
SAN DIEGO	16.0	17.0	16.0	14.0	17.0	17.0	18.0	14.0	14.0	11.4	11.0	9.9	12.4	9.3	10.2	9.9	9.3	8.5	8.5	12.7
SAN FRANCISCO BAY AREA	20.0	21.0	20.0	17.0	15.0	19.0	18.0	15.0	12.0	14.0	12.0	10.1	8.8	10.7	8.7	9.0	9.8	7.6	7.7	8.6
SAN JOAQUIN VALLEY	24.0	18.0	21.0	16.0	19.0	23.0	17.0	19.0	13.0	13.0	15.0	12.0	11.0	9.9	10.3	11.9	10.1	16.0	6.1	5.8
SOUTH CENTRAL COAST	16.0	17.0	18.0	14.0	15.0	11.0	11.0	9.0	12.0	9.0	10.7	8.9	12.6	8.2	8.5	8.2	6.2	8.3	5.7	7.2
SOUTH COAST	29.0	33.0	27.0	26.0	32.0	31.0	24.0	30.0	28.0	21.0	24.9	16.8	22.5	19.2	17.0	19.0	13.8	11.7	15.8	12.2

Table B-22

Maximum 8-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	7.3	7.4	6.0	6.3	5.0	5.4	4.4	5.0	4.4	4.5	5.4	5.4	3.0	3.4	3.0		2.5	2.5	1.8	
LAKE COUNTY						2.2	2.6	3.1												
LAKE TAHOE	14.8	16.3	12.5	13.0	12.5	11.3	10.1	9.2	9.9	7.5	7.1	6.3	5.1	3.8	4.3	2.4	1.9	1.9	3.0	1.9
MOJAVE DESERT	4.9	5.7	4.6	4.0	5.9	7.1	8.3	7.1	5.4	5.9	5.6	5.0	7.5	4.0	3.6	5.4	4.3	3.3	2.2	2.1
MOUNTAIN COUNTIES			4.2	2.3		4.6	3.5	0.1	4.5	5.4	5.4	3.4	2.6	1.9	5.5	3.0	1.6	4.3	1.5	1.5
NORTH CENTRAL COAST	3.0	3.3	2.3	2.3	2.4	2.4	2.5	2.5	2.9	2.7	2.1	2.1	2.6	1.8	2.2	1.8	1.4	1.6	1.4	1.1
NORTH COAST	4.1	5.5	3.1	3.0	1.0	4.5	3.5		0.6	2.4		3.2	2.7	3.2	3.5	3.7	2.6	2.3	2.5	2.2
NORTHEAST PLATEAU				10.4	1.8															
SACRAMENTO VALLEY	12.4	13.3	13.9	10.0	12.3	15.9	14.0	12.3	8.6	9.4	8.4	7.4	7.2	7.2	7.1	6.6	6.3	5.3	4.3	4.5
SALTON SEA	2.1	2.6	3.6	2.9	2.1	2.9	2.3	2.5	2.4	2.0	13.1	22.9	22.1	17.8	14.4	17.9	15.5	12.3	11.6	8.8
SAN DIEGO	8.5	13.0	10.4	9.4	10.3	10.5	9.1	7.9	7.9	7.5	7.5	6.3	7.1	5.4	4.8	6.0	5.9	5.1	4.7	10.6
SAN FRANCISCO BAY AREA	12.1	16.1	12.6	10.0	12.8	12.0	11.0	11.0	7.8	7.9	8.8	5.8	7.0	6.1	6.3	6.3	7.0	5.1	5.1	4.4
SAN JOAQUIN VALLEY	15.7	11.0	16.3	12.9	16.5	13.4	11.5	11.4	8.3	9.3	8.9	9.1	7.7	7.5	8.0	7.8	6.6	6.0	4.5	4.1
SOUTH CENTRAL COAST	10.0	10.5	8.6	7.5	7.4	7.4	5.8	6.4	5.9	4.8	6.5	5.8	4.9	4.0	4.6	4.2	4.3	3.4	2.4	3.6
SOUTH COAST	19.7	27.7	19.7	19.6	27.5	21.8	16.8	17.4	18.8	14.6	18.2	13.8	17.5	17.1	13.3	11.2	10.1	7.6	10.1	7.3

Table B-23

Carbon Monoxide

Days Above State 8-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	
LAKE COUNTY						0	0	0												
LAKE TAHOE	139	121	96	87	80	67	39	24	13	12	9	1	0	0	0	0	0	0	0	0
MOJAVE DESERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOUNTAIN COUNTIES			0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH CENTRAL COAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH COAST	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0	0	0
NORTHEAST PLATEAU				1	0															
SACRAMENTO VALLEY	6	12	13	5	12	22	14	9	0	2	0	0	0	0	0	0	0	0	0	0
SALTON SEA	0	0	0	0	0	0	0	0	0	0	10	17	11	15	12	13	7	6	4	0
SAN DIEGO	0	5	2	1	5	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1
SAN FRANCISCO BAY AREA	8	24	8	2	4	10	4	5	0	0	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	7	7	13	4	5	24	10	3	0	2	0	1	0	0	0	0	0	0	0	0
SOUTH CENTRAL COAST	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH COAST	79	64	58	50	73	71	50	51	39	29	27	17	26	18	13	11	6	0	1	0

Table B-24

** Data for Lake Tahoe reflects the number of days above the State 8-Hr. Lake Tahoe Standard of 6 parts per million.*

Days Above National 8-Hour Standard

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	
LAKE COUNTY						0	0	0												
LAKE TAHOE	28	28	10	12	9	5	5	0	1	0	0	0	0	0	0	0	0	0	0	0
MOJAVE DESERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOUNTAIN COUNTIES			0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH CENTRAL COAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH COAST	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0	0	0
NORTHEAST PLATEAU				1	0															
SACRAMENTO VALLEY	5	12	12	3	9	22	12	6	0	0	0	0	0	0	0	0	0	0	0	0
SALTON SEA	0	0	0	0	0	0	0	0	0	0	9	15	9	10	8	11	6	6	3	0
SAN DIEGO	0	3	1	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1
SAN FRANCISCO BAY AREA	7	21	8	1	4	9	2	4	0	0	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN VALLEY	6	7	11	4	6	18	9	3	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH CENTRAL COAST	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH COAST	66	54	49	40	65	67	42	41	34	19	19	14	19	13	10	7	3	0	1	0

Table B-25

Nitrogen Dioxide

Peak 1-Hour Indicator (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE	0.079	0.079	0.073	0.076	0.073	0.074	0.078	0.076	0.078	0.062	0.061	0.062	0.062	0.061	0.060	0.057	0.058	0.068	0.063	0.062
MOJAVE DESERT	0.138	0.136	0.130	0.134	0.112	0.100	0.181	0.259	0.277	0.289	0.202	0.124	0.119	0.097	0.102	0.105	0.106	0.099	0.096	0.092
MOUNTAIN COUNTIES			0.046	0.046																
NORTH CENTRAL COAST	0.091	0.072	0.083	0.083	0.077	0.072	0.071	0.068	0.062	0.064	0.064	0.062	0.059	0.059	0.059	0.054	0.046	0.045	0.046	0.046
NORTH COAST										0.054	0.053	0.053	0.053	0.049	0.050	0.054	0.053	0.052	0.042	0.045
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.103	0.109	0.112	0.115	0.123	0.117	0.115	0.122	0.128	0.126	0.115	0.106	0.101	0.095	0.091	0.107	0.097	0.095	0.085	0.089
SALTON SEA	0.149	0.124	0.085	0.083	0.084	0.089	0.092	0.091	0.088	0.088	0.153	0.182	0.178	0.178	0.150	0.145	0.170	0.161	0.153	0.147
SAN DIEGO	0.183	0.193	0.193	0.203	0.216	0.233	0.210	0.189	0.169	0.155	0.145	0.129	0.129	0.126	0.116	0.122	0.117	0.126	0.122	0.130
SAN FRANCISCO BAY AREA	0.186	0.196	0.189	0.188	0.167	0.162	0.156	0.160	0.155	0.141	0.116	0.119	0.114	0.111	0.101	0.108	0.105	0.109	0.100	0.075
SAN JOAQUIN VALLEY	0.119	0.144	0.148	0.145	0.144	0.151	0.156	0.134	0.132	0.132	0.131	0.127	0.119	0.115	0.100	0.107	0.106	0.109	0.107	0.106
SOUTH CENTRAL COAST	0.140	0.136	0.132	0.130	0.123	0.119	0.119	0.120	0.114	0.104	0.104	0.112	0.114	0.110	0.097	0.089	0.086	0.083	0.079	0.073
SOUTH COAST	0.324	0.317	0.303	0.311	0.335	0.322	0.324	0.312	0.311	0.285	0.241	0.229	0.242	0.237	0.202	0.185	0.213	0.216	0.200	0.161

Table B-26

Nitrogen Dioxide

Maximum 1-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE	0.060	0.080	0.080	0.080	0.070	0.070	0.150	0.060	0.060	0.060	0.057	0.059	0.061	0.051	0.052	0.060	0.086	0.090	0.088	0.059
MOJAVE DESERT	0.160	0.140	0.150	0.130	0.100	0.120	0.190	0.350	0.240	0.360	0.138	0.140	0.087	0.107	0.196	0.113	0.105	0.102	0.101	0.095
MOUNTAIN COUNTIES			0.050	0.040															0.043	0.019
NORTH CENTRAL COAST	0.060	0.090	0.110	0.070	0.070	0.070	0.060	0.060	0.070	0.070	0.067	0.054	0.060	0.056	0.085	0.054	0.071	0.042	0.049	0.053
NORTH COAST					0.030				0.080	0.050	0.079	0.078	0.044	0.061	0.052	0.066	0.042	0.052	0.080	0.053
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.160	0.130	0.120	0.100	0.180	0.130	0.160	0.240	0.190	0.120	0.111	0.099	0.145	0.092	0.101	0.110	0.085	0.172	0.090	0.102
SALTON SEA	0.090	0.080	0.080	0.080	0.110	0.090	0.090	0.090	0.090	0.090	0.227	0.217	0.164	0.128	0.257	0.286	0.192	0.139	0.138	0.189
SAN DIEGO	0.230	0.210	0.220	0.260	0.280	0.230	0.180	0.160	0.190	0.130	0.157	0.140	0.124	0.142	0.132	0.172	0.117	0.148	0.126	0.148
SAN FRANCISCO BAY AREA	0.180	0.190	0.160	0.170	0.160	0.150	0.150	0.150	0.110	0.120	0.107	0.116	0.108	0.118	0.098	0.128	0.114	0.108	0.080	0.081
SAN JOAQUIN VALLEY	0.190	0.160	0.190	0.150	0.210	0.210	0.160	0.130	0.190	0.160	0.144	0.119	0.110	0.103	0.112	0.108	0.099	0.115	0.107	0.092
SOUTH CENTRAL COAST	0.200	0.160	0.150	0.150	0.160	0.120	0.160	0.160	0.100	0.110	0.133	0.127	0.110	0.115	0.097	0.099	0.124	0.113	0.064	0.103
SOUTH COAST	0.350	0.350	0.330	0.420	0.540	0.340	0.280	0.380	0.300	0.260	0.247	0.239	0.250	0.200	0.255	0.307	0.214	0.251	0.262	0.163

Table B-27

Maximum Annual Average (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE	0.012	0.011	0.010	0.012	0.012		0.012	0.012		0.011	0.012	0.011	0.011	0.011	0.010	0.011	0.011	0.011	0.012	0.010
MOJAVE DESERT	0.021	0.025	0.021	0.016	0.018	0.026	0.019	0.014	0.025	0.020	0.024	0.023	0.021	0.020	0.022	0.024	0.025	0.024	0.025	0.024
MOUNTAIN COUNTIES																				
NORTH CENTRAL COAST	0.014	0.015	0.014	0.005	0.014	0.014	0.012	0.011	0.012	0.012	0.012		0.011	0.010	0.010	0.005	0.007	0.007	0.007	0.006
NORTH COAST											0.008	0.009		0.010	0.010	0.010	0.011	0.010	0.010	0.009
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.019	0.021	0.022	0.022	0.025	0.019	0.023	0.024	0.021	0.017	0.022	0.022	0.022	0.019	0.021	0.021	0.019	0.019	0.020	0.015
SALTON SEA	0.014	0.020		0.019	0.022	0.024	0.021	0.021		0.019	0.021	0.021	0.020		0.016	0.018	0.016	0.017	0.016	0.016
SAN DIEGO	0.031	0.032	0.030	0.032	0.035	0.031	0.029	0.029	0.027	0.023	0.024	0.026	0.022	0.024	0.023	0.026	0.024	0.022	0.022	0.021
SAN FRANCISCO BAY AREA	0.032	0.035	0.033	0.031	0.032	0.032	0.030	0.031	0.027	0.027	0.028	0.027	0.025	0.025	0.025	0.026	0.025	0.024	0.019	0.018
SAN JOAQUIN VALLEY	0.028	0.031	0.030	0.030	0.032	0.033	0.031	0.030	0.027	0.024	0.024	0.029	0.029	0.024	0.023	0.027	0.024	0.022	0.024	0.020
SOUTH CENTRAL COAST	0.031	0.030	0.022	0.017	0.024	0.027	0.025	0.024	0.022	0.023	0.022	0.024	0.019	0.020	0.021	0.022	0.020	0.019	0.017	0.015
SOUTH COAST	0.057	0.060	0.061	0.055	0.061	0.057	0.055	0.055	0.051	0.050	0.050	0.046	0.042	0.043	0.043	0.051	0.044	0.041	0.040	0.035

Table B-28

Oxides of Nitrogen (NOx)

Maximum 1-Hour Concentration (ppm)**

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS*																				
LAKE COUNTY																				
LAKE TAHOE	0.190	0.240	0.210	0.190	0.220	0.290	0.270	0.190	0.180	0.120	0.139	0.132	0.140	0.109	0.128	0.126	0.190	0.216	0.188	0.280
MOUNTAIN COUNTIES			0.080	0.060															0.055	0.051
MOJAVE DESERT	0.400	0.420	0.400	0.400	0.790	0.410	0.500	0.440	0.710	0.440	0.455	0.410	0.423	0.510	0.465	0.585	0.537	0.454	0.469	0.471
NORTH COAST					0.050				0.210	0.290	0.573									
NORTH CENTRAL COAST	0.220	0.240	0.180	0.230	0.310	0.240	0.220	0.220	0.240	0.210	0.239	0.277	0.295	0.257	0.223	0.238	0.143	0.154	0.164	0.140
NORTHEAST PLATEAU*																				
SOUTH COAST	1.520	1.510	1.170	1.080	1.280	1.200	0.990	1.200	1.420	1.060	1.108	0.850	1.037	0.910	0.889	0.899	0.855	0.750	0.892	0.738
SOUTH CENTRAL COAST	0.770	0.790	0.700	0.810	0.680	0.600	0.600	0.630	0.570	0.470	0.561	0.575	0.823	0.454	0.536	0.550	0.430	0.276	0.314	0.395
SAN DIEGO	0.690	0.840	0.930	0.800	0.980	0.780	0.760	0.640	0.660	0.531	0.605	0.506	0.606	0.609	0.486	0.609	0.598	0.632	0.605	0.658
SAN FRANCISCO BAY AREA***	0.880	1.050	0.760	0.720	0.750	0.870	0.850	0.760	0.630	0.810	0.625	0.548	0.831	0.593	0.544	0.586	0.560	0.519	0.420	0.398
SAN JOAQUIN VALLEY	0.850	0.700	1.060	0.710	0.870	0.870	0.840	0.760	0.650	0.640	0.702	0.600	0.659	0.560	0.671	0.700	0.556	0.652	0.438	0.407
SALTON SEA	0.240	0.270	0.230	0.210	0.210	0.320	0.270	0.230	0.220	0.220	0.917	0.918	0.835	0.677	0.758	0.773	0.822	0.793	0.785	0.656
SACRAMENTO VALLEY	0.600	0.580	0.470	0.390	0.790	0.788	0.920	0.700	0.770	0.730	0.737	0.571	0.604	0.698	0.618	0.582	0.541	0.648	0.991	0.520

* No NOx data available
** All available data were used for the annual maximum 1-hour NOx.
*** SFB NOx for 1994-2003 was calculated using hourly NO + NO2

Table B-29

Maximum Annual Average (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS*																				
LAKE COUNTY*																				
LAKE TAHOE		0.021	0.021	0.022	0.021	0.023	0.022	0.023	0.020	0.016	0.018	0.015	0.015	0.015	0.012	0.014	0.015	0.015	0.015	0.013
MOJAVE DESERT	0.043	0.047	0.043	0.029	0.044	0.048	0.043	0.060	0.045	0.045	0.048	0.048	0.043	0.044	0.045	0.054	0.051	0.050	0.054	0.050
MOUNTAIN COUNTIES**																				
NORTH COAST										0.026										
NORTH CENTRAL COAST	0.021	0.023	0.020	0.018	0.022	0.021	0.028	0.022	0.021	0.020	0.018	0.017	0.017	0.016	0.015	0.018	0.011		0.011	0.010
NORTHEAST PLATEAU*																				
SOUTH COAST	0.145	0.135	0.129	0.118	0.132	0.137	0.121	0.116	0.122	0.107	0.129	0.108	0.106	0.122	0.119	0.132	0.115	0.102	0.098	0.090
SOUTH CENTRAL COAST	0.070	0.071	0.061	0.029	0.040	0.057	0.045	0.051	0.051	0.049	0.053	0.041	0.042	0.042	0.045	0.047	0.034	0.028	0.027	0.026
SAN DIEGO	0.066	0.070	0.063	0.076	0.080	0.066	0.065	0.058	0.054	0.050	0.051	0.046	0.047	0.049	0.045	0.055	0.056	0.038	0.044	0.040
SAN FRANCISCO BAY AREA***	0.078	0.096	0.079	0.067	0.072	0.082	0.075		0.065	0.069	0.066	0.056	0.054	0.055	0.052	0.057	0.054	0.051	0.046	0.035
SAN JOAQUIN VALLEY	0.058	0.074	0.075	0.064	0.077	0.079	0.078	0.061	0.059	0.063	0.048	0.050	0.052	0.044	0.043	0.052	0.049	0.044	0.045	0.041
SALTON SEA	0.021	0.027	0.025	0.023	0.028	0.030	0.026	0.027		0.025	0.026	0.032	0.028	0.024	0.022	0.037	0.041	0.029	0.033	0.028
SACRAMENTO VALLEY	0.048	0.050	0.045	0.039	0.046	0.053	0.058	0.055	0.042	0.049	0.047	0.043	0.045	0.041	0.043	0.047	0.044	0.038	0.042	0.040

* No NOx data available
** No Valid Annual Averages
*** SFB NOx for 1994-2003 was calculated using hourly NO + NO2

Representative Days: The data collected must be representative according to the following definition. There must be no more than two missing hours in any of the three consecutive eight hour periods within a day. For an entire day, no more than two consecutive hours can be missed. Therefore, for an entire day, if there were three consecutive hours missed, the day would be invalidated. Representative Days were used for all years except 1994-2003.
Data Represenativeness: For representative statistics computed from all individual values, such as the mean of all hours, 75 percent of the values in the respective period are required. Data Representativeness of 75% was applied to daily (94-03), monthly, and annual values.

Table B-30

Sulfur Dioxide

Peak 1-Hour Indicator (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE																				
MOJAVE DESERT	0.04	0.04	0.03	0.03	0.07	0.06	0.06	0.04	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
MOUNTAIN COUNTIES																				
NORTH CENTRAL COAST	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.03	0.04	0.05	0.04	0.03	0.01	0.01	0.01	0.02	0.03	0.03
NORTH COAST										0.01	0.01									
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.02	0.03	0.03		0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
SALTON SEA	0.02												0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.00
SAN DIEGO	0.09	0.07	0.06	0.06	0.07	0.07	0.07	0.06	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.05	0.04
SAN FRANCISCO BAY AREA	0.07	0.07	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.05	0.04	0.04	0.05	0.04	0.05	0.06	0.06	0.05	0.04
SAN JOAQUIN VALLEY	0.09	0.09	0.09	0.08	0.07	0.06	0.06	0.04	0.04	0.03	0.02	0.02	0.03	0.03		0.01	0.02	0.02		
SOUTH CENTRAL COAST	0.10	0.34	0.32	0.32	0.25	0.16	0.16	0.14	0.13	0.13	0.03	0.16	0.17	0.16	0.16	0.14	0.14	0.14	0.16	0.14
SOUTH COAST	0.11	0.10	0.09	0.07	0.07	0.06	0.06	0.06	0.11	0.10	0.10	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.04	0.04

Table B-31

Sulfur Dioxide

Maximum 24-Hour Concentration (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE																				
MOJAVE DESERT	0.00	0.01	0.01	0.00	0.02	0.03	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MOUNTAIN COUNTIES																				
NORTH CENTRAL COAST	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
NORTH COAST					0.01				0.01	0.00	0.00									
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.01	0.01	0.01		0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01
SALTON SEA	0.00										0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00
SAN DIEGO	0.04	0.02	0.03	0.04	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01
SAN FRANCISCO BAY AREA	0.05	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.03	0.02	0.02	0.01
SAN JOAQUIN VALLEY	0.03	0.05	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.01	0.00	0.01		0.00
SOUTH CENTRAL COAST	0.02	0.07	0.06	0.04	0.04	0.02	0.09	0.02	0.02	0.05	0.01	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.02	0.02
SOUTH COAST	0.06	0.04	0.04	0.02	0.04	0.02	0.04	0.02	0.03	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.04	0.02	0.02	0.01

Table B-32

Maximum Annual Average (ppm)

AIR BASIN	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GREAT BASIN VALLEYS																				
LAKE COUNTY																				
LAKE TAHOE																				
MOJAVE DESERT	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOUNTAIN COUNTIES																				
NORTH CENTRAL COAST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NORTH COAST					0.00				0.00	0.00	0.00									
NORTHEAST PLATEAU																				
SACRAMENTO VALLEY	0.00	0.00	0.00		0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SALTON SEA	0.00										0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN DIEGO	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN FRANCISCO BAY AREA	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN JOAQUIN VALLEY	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00		0.00
SOUTH CENTRAL COAST	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH COAST	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B-33

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APPENDIX C

Emissions, Air Quality, and Health Risk for Ten Toxic Air Contaminants

Appendix C: *Emissions, Air Quality, and Health Risk for Ten Toxic Air Contaminants*

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Introduction

This appendix contains TAC emissions data for all counties in California. It also contains air quality and health risk data for counties and individual sites within California's five most populous air basins: South Coast Air Basin, San Francisco Bay Area Air Basin, San Joaquin Valley Air Basin, San Diego Air Basin, and Sacramento Valley Air Basin. It is important to note that some counties are located in more than one air basin. For these counties, the data are for that portion of the county located in each air basin. The ten toxic air contaminants (TACs) presented here are the same as the TACs discussed in Chapter 5: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (diesel PM). Based on available data, these TACs pose the most substantial health risks in California. There may be other TACs that pose a substantial risk, but for which data are not available.

The countywide emissions data represent tons per year from the 2004 emission inventory year. The data for stationary sources include emissions data associated with the air toxics "Hot Spots" Program. The toxic air contaminant emissions for each area-wide and mobile source category are calculated by applying a speciation profile, maintained by ARB staff, to the total organic gas and total particulate matter criteria pollutant emissions associated with that category.

For all source categories associated with diesel fuel combustion, all "PM" emitted from these sources was considered "diesel PM." The area-wide source emission estimates were made by either the local districts or the ARB staff. These estimates have been speciated for toxics. The other mobile source emission estimates are primarily from ARB's OFFROAD model, speciated for toxics. For the categories not currently included in the model, the emission estimates have been developed by either local districts or ARB staff. Districts may also provide estimates for categories normally developed by ARB staff. Finally, the on-road mobile source emission estimates are based on the current model, EMFAC 2002, version 2.2 (April 2003, with SCAG June 2002 activity data). Again, the emission estimates have been speciated for toxics.

Readers may note that the stationary source diesel PM emission estimates differ from those presented in previous editions of the almanac and in the ARB's October 2000 report entitled: *"Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles"* (Diesel Risk Reduction Plan). This is because they incorporate more recent data and have been calculated with updated methodologies developed for new regulations. These regulations are those that were recommended in the Diesel Risk Reduction Plan. The on-road mobile source emissions cited in the Diesel Risk Reduction Plan are based on an earlier version of EMFAC 2001 (EMFAC 1.99(f) 6/26/00) and the other mobile inventory includes revised estimates for ship diesel PM emissions.

In addition to the emissions data, air quality and health risk data are available for 1990 through 2003. It is important to note that the data reflect concentrations measured at a specific location or, in the case of the air basin summary data, spatially averaged concentrations. Therefore, the ambient concentrations and health risks for other locations may be higher or lower. Furthermore, the information reflects data collected only at monitoring sites operated by the ARB.

County Emissions (tons/year) for Ten Toxic Air Contaminants by Air Basin

Great Basin Valleys Air Basin

TAC	Alpine	Inyo	Mono
Acetaldehyde	7	15	32
Benzene	25	16	56
1,3-Butadiene	6	4	14
Carbon Tetrachloride	0	0	0
Chromium, Hexavalent	< .01	< .01	0.02
para-DiChlorobenzene	< 1	< 1	< 1
Formaldehyde	24	27	73
Methylene Chloride	< 1	2	1
Perchloroethylene	< 1	4	3
Diesel PM	0	18	13

Table C-1

Lake County Air Basin

TAC	Lake
Acetaldehyde	39
Benzene	76
1,3-Butadiene	19
Carbon Tetrachloride	0
Chromium, Hexavalent	< .01
para-DiChlorobenzene	3
Formaldehyde	89
Methylene Chloride	8
Perchloroethylene	13
Diesel PM	49

Table C-2

Lake Tahoe Air Basin

TAC	El Dorado[1]	Placer[1]
Acetaldehyde	39	18
Benzene	36	13
1,3-Butadiene	10	3
Carbon Tetrachloride	< .01	0
Chromium, Hexavalent	< .01	< .01
para-DiChlorobenzene	2	< 1
Formaldehyde	76	28
Methylene Chloride	5	4
Perchloroethylene	6	3
Diesel PM	31	5

Table C-3 [1] This Air Basin includes only a portion of this county.

County Emissions (tons/year) for Ten Toxic Air Contaminants by Air Basin

Mojave Desert Air Basin

TAC	Kern[1]	Los Angeles[1]	Riverside[1]	San Bernardino[1]
Acetaldehyde	112	61	9	159
Benzene	91	85	9	235
1,3-Butadiene	41	21	2	50
Carbon Tetrachloride	0.02	< .01	0.04	0.10
Chromium (Hexavalent)	0.29	0.02	< .01	0.01
para-DiChlorobenzene	6	19	1	23
Formaldehyde	349	162	18	485
Methylene Chloride	14	100	4	79
Perchloroethylene	14	53	5	112
Diesel PM	150	223	13	612

Table C-4

[1] This Air Basin includes only a portion of this county.

Mountain Counties Air Basin

TAC	Amador	Calaveras	El Dorado[1]	Mariposa	Nevada	Placer[1]	Plumas	Sierra	Tuolumne
Acetaldehyde	34	44	81	24	106	18	67	12	57
Benzene	50	73	87	41	87	23	151	37	99
1,3-Butadiene	17	23	21	10	22	6	47	11	26
Carbon Tetrachloride	0	0	0	0	0	0	0	0	0
Chromium, Hexavalent	< .01	< .01	< .01	< .01	< .01	< .01	< .01	< .01	0.08
para-DiChlorobenzene	2	2	7	< 1	5	1	1	< 1	3
Formaldehyde	70	95	144	52	175	37	177	37	133
Methylene Chloride	5	5	17	2	21	6	2	< 1	9
Perchloroethylene	5	7	18	3	15	5	4	< 1	9
Diesel PM	32	36	55	16	70	35	54	4	51

Table C-5

[1] This Air Basin includes only a portion of this county.

North Central Coast Air Basin

TAC	Monterey	San Benito	Santa Cruz
Acetaldehyde	106	16	63
Benzene	190	21	90
1,3-Butadiene	60	14	17
Carbon Tetrachloride	0	0	0
Chromium, Hexavalent	0.01	< .01	< .01
para-DiChlorobenzene	22	3	14
Formaldehyde	265	37	128
Methylene Chloride	72	8	54
Perchloroethylene	89	10	78
Diesel PM	314	62	135

Table C-6

County Emissions (tons/year) for Ten Toxic Air Contaminants by Air Basin

North Coast Air Basin

TAC	Del Norte	Humboldt	Mendocino	Sonoma	Trinity
Acetaldehyde	21	88	67	30	19
Benzene	15	87	68	64	29
1,3-Butadiene	16	24	16	13	14
Carbon Tetrachloride	0	0	0	0	0
Chromium, Hexavalent	< .01	< .01	0.01	0.04	< .01
para-DiChlorobenzene	2	7	5	3	< 1
Formaldehyde	35	157	123	73	39
Methylene Chloride	5	18	14	13	2
Perchloroethylene	6	28	21	14	3
Diesel PM	39	214	148	88	12

Table C-7

[1] This Air Basin includes only a portion of this county.

Northeast Plateau Air Basin

TAC	Lassen	Modoc	Siskiyou
Acetaldehyde	60	22	82
Benzene	99	11	99
1,3-Butadiene	24	5	64
Carbon Tetrachloride	0	0	0
Chromium, Hexavalent	< .01	< .01	< .01
para-DiChlorobenzene	2	< 1	2
Formaldehyde	134	38	159
Methylene Chloride	4	1	6
Perchloroethylene	6	2	9
Diesel PM	61	53	123

Table C-8

Sacramento Valley Air Basin

TAC	Butte	Colusa	Glenn	Placer	Sacramento	Shasta	Solano[1]	Sutter	Tehama	Yolo	Yuba
Acetaldehyde	102	16	21	87	221	136	31	39	49	59	44
Benzene	129	34	40	114	355	147	57	68	37	62	50
1,3-Butadiene	38	19	17	24	72	42	12	10	10	14	19
Carbon Tetrachloride	0	0	0	0	0.05	0	0	0	< .01	0	0
Chromium, Hexavalent	< .01	< .01	< .01	< .01	0.03	< .01	< .01	0.03	< .01	< .01	< .01
para-DiChlorobenzene	12	1	2	12	67	10	7	5	3	9	4
Formaldehyde	228	62	49	205	541	262	79	105	82	127	116
Methylene Chloride	32	3	3	51	176	22	19	10	7	25	7
Perchloroethylene	33	3	5	36	255	35	16	12	10	25	9
Diesel PM	232	74	87	201	744	213	124	189	119	290	82

Table C-9

[1] This Air Basin includes only a portion of this county.

County Emissions (tons/year) for Ten Toxic Air Contaminants by Air Basin

Salton Sea Air Basin

TAC	Imperial	Riverside[1]
Acetaldehyde	101	36
Benzene	152	74
1,3-Butadiene	38	17
Carbon Tetrachloride	0	0
Chromium, Hexavalent	0.02	< .01
para-DiChlorobenzene	9	18
Formaldehyde	290	107
Methylene Chloride	20	65
Perchloroethylene	27	43
Diesel PM	269	164

Table C-10 [1] This Air Basin includes only a portion of this county.

San Diego Air Basin

TAC	San Diego
Acetaldehyde	508
Benzene	899
1,3-Butadiene	215
Carbon Tetrachloride	0.12
Chromium, Hexavalent	0.24
para-DiChlorobenzene	161
Formaldehyde	1324
Methylene Chloride	378
Perchloroethylene	638
Diesel PM	1527

Table C-11

San Francisco Bay Area Air Basin

TAC	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano[1]	Sonoma[1]
Acetaldehyde	303	169	53	34	145	151	262	112	90
Benzene	410	336	120	66	202	238	513	123	129
1,3-Butadiene	88	65	26	14	39	59	102	43	26
Carbon Tetrachloride	0.03	1.46	< .01	< .01	0	< .01	< .01	< .01	0.02
Chromium, Hexavalent	0.03	0.01	< .01	< .01	< .01	0.02	0.02	0.02	< .01
para-DiChlorobenzene	78	51	13	7	42	39	93	15	22
Formaldehyde	636	474	141	86	344	403	709	325	195
Methylene Chloride	259	131	35	19	113	119	324	41	83
Perchloroethylene	199	110	42	13	111	113	226	28	46
Diesel PM	914	706	159	110	764	400	904	162	294

Table C-12 [1] This Air Basin includes only a portion of this county.

County Emissions (tons/year) for Ten Toxic Air Contaminants by Air Basin

San Joaquin Valley Air Basin

TAC	Fresno	Kern[1]	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare
Acetaldehyde	252	195	109	64	79	165	125	150
Benzene	326	757	72	86	99	233	161	165
1,3-Butadiene	80	55	40	25	36	53	50	107
Carbon Tetrachloride	< .01	< .01	0	0	0	0	0	0
Chromium, Hexavalent	0.05	0.04	0.02	< .01	< .01	0.03	0.03	< .01
para-DiChlorobenzene	46	36	7	7	12	33	26	21
Formaldehyde	590	1210	324	168	185	401	289	350
Methylene Chloride	129	70	15	16	26	74	60	46
Perchloroethylene	179	92	23	26	41	117	91	66
Diesel PM	1006	749	186	217	309	677	456	524

Table C-13

[1] This Air Basin includes only a portion of this county.

South Central Coast Air Basin

TAC	San Luis Obispo	Santa Barbara	Ventura
Acetaldehyde	83	102	126
Benzene	122	336	280
1,3-Butadiene	35	56	105
Carbon Tetrachloride	0	< .01	0.05
Chromium, Hexavalent	< .01	< .01	0.03
para-DiChlorobenzene	14	22	39
Formaldehyde	202	540	380
Methylene Chloride	44	107	158
Perchloroethylene	64	81	75
Diesel PM	246	264	469

Table C-14

South Coast Air Basin

TAC	Los Angeles[1]	Orange	Riverside[1]	San Bernardino[1]
Acetaldehyde	922	317	205	202
Benzene	2446	874	396	413
1,3-Butadiene	477	159	86	93
Carbon Tetrachloride	0.37	< .01	< .01	< .01
Chromium, Hexavalent	0.37	0.05	0.04	0.04
para-DiChlorobenzene	497	156	70	72
Formaldehyde	3098	1020	599	564
Methylene Chloride	2647	1083	266	472
Perchloroethylene	1819	566	183	243
Diesel PM	4490	1670	996	795

Table C-15

[1] This Air Basin includes only a portion of this county.

Air Quality and Health Risk

The air quality and health risk data in the following tables cover the time period of 1990 through 2003. Annual average concentrations and health risks are listed by site for California's five most populous air basins. The ten TACs presented here are ones that pose the most substantial health risk in California based on available data: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel PM. The ambient data for all TACs except diesel PM are based on concentrations measured at sites in California's TAC monitoring network. The annual average concentration is calculated as the mean of the monthly means, and the concentration is available only if a full year of data is available. The associated health risk is based on the annual average concentration and represents the estimated number of excess cancer cases per million people exposed to the specified concentration for 70 years.

For diesel PM, the ARB previously made a preliminary estimation of concentrations for the State's 15 air basins using a PM-based exposure method. The method uses the ARB emission inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies with chemical speciation of ambient data. These data were used, along with receptor modeling techniques, to estimate statewide outdoor concentrations of diesel PM. Details on the method and the resulting estimates can be found in the ARB report entitled: *"Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles,"* (October 2000).

Numerous factors influence the ambient TAC measurements, and a number of assumptions are embodied in the summary statistics. These factors are described in Chapter 1 under the heading *"Interpreting the Emission and Air Quality Statistics."* These factors must be considered when using the statistics presented here. Finally, it is important to note that the data provided reflect concentrations measured at a specific location or, in the case of the air basin summary data, spatially averaged concentrations. The ambient concentrations and health risks for other locations may be higher or lower.

South Coast Air Basin

Los Angeles County: Azusa

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg											1.10	1.31		1.25
	Health Risk											5	6		6
Benzene	Annual Avg											0.69		0.62	0.60
	Health Risk											64		57	55
1,3-Butadiene	Annual Avg											0.15		0.14	0.08
	Health Risk											55		51	29
Carbon Tetrachloride	Annual Avg											0.09		0.09	0.10
	Health Risk											24		24	25
Chromium, Hexavalent	Annual Avg											0.12			0.09
	Health Risk											19			14
para-Dichlorobenzene	Annual Avg											0.10		0.15	0.15
	Health Risk											7		10	10
Formaldehyde	Annual Avg											3.05	3.80		3.45
	Health Risk											22	28		25
Methylene Chloride	Annual Avg											1.32		1.00	0.96
	Health Risk											5		3	3
Perchloroethylene	Annual Avg											0.18		0.15	0.11
	Health Risk											7		6	4
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk												**208**	**34**	**151**	**171**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-16

South Coast Air Basin

Los Angeles County: Burbank - West Palm Avenue

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	3.16	3.89		3.06	2.46	0.79			1.94	2.70	1.70	1.93	1.96	
	Health Risk	15	19		15	12	4			9	13	8	9	10	
Benzene	Annual Avg	4.79	3.91	3.44	2.63	3.33	2.45	1.91	1.48	1.66	1.64	1.27	1.06	1.01	
	Health Risk	444	362	319	244	308	227	177	137	154	151	117	98	93	
1,3-Butadiene	Annual Avg	0.78	0.62	0.73	0.75	0.75	0.61	0.51	0.42	0.48	0.48	0.35	0.33	0.28	
	Health Risk	294	234	272	282	283	227	192	158	182	181	130	123	106	
Carbon Tetrachloride	Annual Avg	0.14	0.13				0.10	0.08		0.11		0.09	0.09	0.09	
	Health Risk	37	35				28	22		30		25	23	24	
Chromium, Hexavalent	Annual Avg			0.65	0.37	0.43	1.24			0.23	0.20	0.19		0.12	
	Health Risk			97	55	64	186			34	29	28		18	
para-Dichlorobenzene	Annual Avg		0.23	0.22	0.19	0.14	0.20	0.10	0.11			0.13	0.15	0.17	
	Health Risk		15	15	12	9	13	7	7			8	10	11	
Formaldehyde	Annual Avg	4.05	3.59		3.66	3.92	4.58			4.72	6.07	4.14	4.87	5.48	
	Health Risk	30	26		27	29	34			35	45	30	36	40	
Methylene Chloride	Annual Avg	3.25	1.69	1.42	2.01	1.94	1.82	1.41	1.11	1.07		0.80	0.60	0.60	
	Health Risk	11	6	5	7	7	6	5	4	4		3	2	2	
Perchloroethylene	Annual Avg	1.19	0.79	0.61	0.62	0.66	0.49	0.44	0.37	0.50		0.37	0.30	0.25	
	Health Risk	48	31	24	25	26	19	18	15	20		15	12	10	
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**879**	**728**	**732**	**667**	**738**	**744**	**421**	**321**	**468**	**419**	**364**	**313**	**314**	

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-17

South Coast Air Basin

Los Angeles County: North Main Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	2.68	2.78	2.50	2.89	2.35	1.28	2.33			1.43	0.84	1.45	1.30	1.39
	Health Risk	13	13	12	14	11	6	11			7	4	7	6	7
Benzene	Annual Avg	3.50	3.25	2.97	2.54	2.45	2.24	1.86		1.36	1.50	1.04	1.03		0.85
	Health Risk	324	301	275	235	227	207	173		126	139	97	95		79
1,3-Butadiene	Annual Avg	0.60	0.55	0.64	0.73	0.59	0.60	0.54		0.42	0.43	0.30	0.31		0.19
	Health Risk	226	206	242	276	221	225	204		158	162	111	118		70
Carbon Tetrachloride	Annual Avg	0.14	0.13				0.10	0.08		0.11		0.10	0.09		0.10
	Health Risk	36	35				27	21		30		26	23		25
Chromium, Hexavalent	Annual Avg				0.24	0.27	0.23	0.17			0.11	0.13		0.13	0.07
	Health Risk				36	40	35	25			16	19		20	11
para-Dichlorobenzene	Annual Avg		0.19	0.22	0.19	0.16	0.19	0.12				0.16	0.17		0.16
	Health Risk		13	14	12	10	13	8				11	11		10
Formaldehyde	Annual Avg	3.50	3.00	2.30	3.23	3.54	4.13	5.87			3.88	2.42	4.30	4.32	3.79
	Health Risk	26	22	17	24	26	30	43			29	18	32	32	28
Methylene Chloride	Annual Avg	1.28	2.72	0.68	1.05	1.06	1.51	1.10		0.80	1.20	0.68	0.74		0.59
	Health Risk	4	9	2	4	4	5	4		3	4	2	3		2
Perchloroethylene	Annual Avg	0.55	0.60	0.54	0.59	0.50	0.57	0.50		0.23		0.19	0.18		0.11
	Health Risk	22	24	21	24	20	23	20		9		7	7		4
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**651**	**623**	**583**	**625**	**559**	**571**	**509**		**326**	**357**	**295**	**296**	**58**	**236**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-18

South Coast Air Basin

Los Angeles County: North Long Beach

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	2.49	2.52		2.36	2.18	0.81		1.43			1.16	1.11		1.06
	Health Risk	12	12		11	11	4		7			6	5		5
Benzene	Annual Avg	3.53	2.45	2.60	1.99	2.04	1.69		1.24	1.16	1.11	1.00		0.71	0.71
	Health Risk	327	227	241	185	188	157		115	108	103	92		65	65
1,3-Butadiene	Annual Avg	0.59	0.44	0.52	0.58	0.45	0.45		0.36	0.34	0.32	0.28		0.20	0.14
	Health Risk	223	165	197	216	168	169		137	127	121	104		75	53
Carbon Tetrachloride	Annual Avg	0.14	0.13				0.10			0.12		0.10		0.09	0.09
	Health Risk	37	34				26			31		26		24	24
Chromium, Hexavalent	Annual Avg			0.44	0.34	0.22	0.25		0.15	0.11	0.12	0.12		0.08	
	Health Risk			66	51	33	38		22	16	18	18		12	
para-Dichlorobenzene	Annual Avg		0.17	0.26	0.19	0.12	0.17		0.16			0.13		0.18	0.20
	Health Risk		11	17	13	8	11		10			8		12	13
Formaldehyde	Annual Avg	2.97	2.76		3.22	3.06	3.29		3.68			2.88	2.96		2.79
	Health Risk	22	20		24	23	24		27			21	22		21
Methylene Chloride	Annual Avg	2.05	0.88	1.00	1.15	0.84	0.98		0.74	0.60		0.65		0.27	0.31
	Health Risk	7	3	3	4	3	3		3	2		2		1	1
Perchloroethylene	Annual Avg	0.48	0.36	0.35	0.43	0.32	0.32		0.23	0.19		0.17		0.10	0.08
	Health Risk	19	14	14	17	13	13		9	8		7		4	3
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**647**	**486**	**538**	**521**	**447**	**445**		**330**	**292**	**242**	**284**	**27**	**193**	**185**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-19

South Coast Air Basin

Riverside County: Riverside - Rubidoux

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.87	2.54	1.86	2.19	2.08	0.89	1.84			1.36	1.49	1.58	1.66	1.66
	Health Risk	9	12	9	11	10	4	9			7	7	8	8	8
Benzene	Annual Avg	2.55	2.22	1.90	1.77	2.01	1.45	1.03			0.87	0.85	0.69		0.62
	Health Risk	236	206	176	164	186	134	95			80	79	63		58
1,3-Butadiene	Annual Avg	0.34	0.31	0.29	0.38	0.36	0.33	0.27			0.21	0.19	0.18		0.12
	Health Risk	128	117	110	143	136	125	100			78	72	66		44
Carbon Tetrachloride	Annual Avg	0.13	0.14				0.10	0.08				0.10	0.09		0.09
	Health Risk	34	36				27	21				25	23		24
Chromium, Hexavalent	Annual Avg			0.33	0.33	0.36	0.38	0.22			0.19	0.35		0.41	0.35
	Health Risk			50	50	55	56	33			29	52		62	52
para-Dichlorobenzene	Annual Avg		0.13	0.13	0.16	0.12	0.17	0.11				0.14	0.15		0.17
	Health Risk		9	8	10	8	11	7				9	10		12
Formaldehyde	Annual Avg	1.75	2.70	1.53	2.73	2.50	2.65	4.15			3.55	3.17	4.73	4.36	4.18
	Health Risk	13	20	11	20	18	19	31			26	23	35	32	31
Methylene Chloride	Annual Avg		0.69	0.60	1.10	0.93	0.98	0.83			0.58	0.69	0.44		0.45
	Health Risk		2	2	4	3	3	3			2	2	2		2
Perchloroethylene	Annual Avg	0.24	0.28	0.20	0.20	0.19	0.18	0.18				0.13	0.11		0.06
	Health Risk	9	11	8	8	8	7	7				5	4		2
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**429**	**413**	**374**	**410**	**424**	**386**	**306**			**222**	**274**	**211**	**102**	**233**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-20

South Coast Air Basin

San Bernardino County: Fontana - Arrow Highway

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg														
	Health Risk														
Benzene	Annual Avg									0.98					
	Health Risk									91					
1,3-Butadiene	Annual Avg									0.24					
	Health Risk									92					
Carbon Tetrachloride	Annual Avg									0.11					
	Health Risk									30					
Chromium, Hexavalent	Annual Avg														
	Health Risk														
para-Dichlorobenzene	Annual Avg														
	Health Risk														
Formaldehyde	Annual Avg														
	Health Risk														
Methylene Chloride	Annual Avg									0.59					
	Health Risk									2					
Perchloroethylene	Annual Avg									0.18					
	Health Risk									7					
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk										**222**					

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-21

South Coast Air Basin

San Bernardino County: Upland - San Bernardino Road

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	2.12	3.28	2.36	2.84	2.42	1.09	2.13							
	Health Risk	10	16	11	14	12	5	10							
Benzene	Annual Avg	2.73	2.70	2.14	1.92	2.15	1.62	1.11	1.11						
	Health Risk	253	250	198	178	199	150	103	103						
1,3-Butadiene	Annual Avg	0.35	0.34	0.31	0.39	0.34	0.31	0.26	0.25						
	Health Risk	131	128	116	147	126	117	97	95						
Carbon Tetrachloride	Annual Avg	0.13	0.14		0.10		0.10	0.08							
	Health Risk	35	36		27		26	20							
Chromium, Hexavalent	Annual Avg			0.22	0.16	0.16	0.20	0.12							
	Health Risk			33	24	24	30	17							
para-Dichlorobenzene	Annual Avg		0.13	0.14	0.14	0.10	0.13	0.10	0.14						
	Health Risk		9	9	9	7	9	7	9						
Formaldehyde	Annual Avg	2.35	3.34	1.98	3.25	2.67	3.21	5.20							
	Health Risk	17	25	15	24	20	24	38							
Methylene Chloride	Annual Avg	1.41	1.59	0.82	0.87	0.72	1.13	0.66	1.70						
	Health Risk	5	6	3	3	3	4	2	6						
Perchloroethylene	Annual Avg	0.42	0.72	0.36	0.40	0.29	0.26	0.20	0.21						
	Health Risk	17	29	15	16	11	11	8	8						
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**468**	**499**	**400**	**442**	**402**	**376**	**302**	**221**						

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-22

South Coast Air Basin

Air Basin Summary

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	2.46	3.00	2.46	2.67	2.30	0.97	2.08	1.77	1.54	1.63	1.26	1.47	1.41	1.47
	Health Risk	12	15	12	13	11	5	10	9	7	8	6	7	7	7
Benzene	Annual Avg	3.42	2.91	2.61	2.17	2.40	1.89	1.45	1.34	1.25	1.20	0.97	0.86	0.77	0.75
	Health Risk	317	269	242	201	222	175	134	124	116	111	90	80	71	69
1,3-Butadiene	Annual Avg	0.53	0.45	0.50	0.57	0.50	0.46	0.39	0.38	0.35	0.33	0.25	0.25	0.21	0.15
	Health Risk	200	170	187	212	187	173	146	142	133	123	94	94	79	55
Carbon Tetrachloride	Annual Avg	0.14	0.13		0.11		0.10	0.08		0.11		0.10	0.09	0.09	0.09
	Health Risk	36	35		28		27	21		30		25	23	24	25
Chromium, Hexavalent	Annual Avg			0.39	0.29	0.29	0.46	0.18	0.17	0.15	0.14	0.18		0.18	0.16
	Health Risk			59	43	43	69	27	25	22	22	27		27	24
para-Dichlorobenzene	Annual Avg		0.17	0.19	0.17	0.13	0.17	0.11	0.13			0.13	0.15	0.16	0.17
	Health Risk		11	13	11	8	11	7	9			9	10	11	11
Formaldehyde	Annual Avg	2.92	3.08	2.22	3.22	3.14	3.57	5.06	4.47	3.79	4.06	3.13	4.13	4.16	3.83
	Health Risk	22	23	16	24	23	26	37	33	28	30	23	30	31	28
Methylene Chloride	Annual Avg	1.86	1.51	0.90	1.23	1.10	1.28	0.95	1.14	0.85	0.92	0.83	0.63	0.57	0.59
	Health Risk	6	5	3	4	4	4	3	4	3	3	3	2	2	2
Perchloroethylene	Annual Avg	0.58	0.55	0.41	0.45	0.39	0.36	0.32	0.27	0.26		0.21	0.18	0.15	0.11
	Health Risk	23	22	16	18	16	15	13	11	10		8	7	6	4
Diesel PM***	Annual Avg	(3.6)					(2.7)					(2.4)			
	Health Risk	(1080)					(810)					(720)			
Average Basin Health Risk		**616**	**550**	**548**	**554**	**514**	**505**	**398**	**357**	**349**	**297**	**285**	**253**	**258**	**225**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.
*** The Diesel PM concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Table C-23

San Francisco Bay Area Air Basin

Alameda County: Fremont - Chapel Way

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.28	1.60	1.02	1.28	1.23	0.35	0.88	0.65	0.72					0.69
	Health Risk	6	8	5	6	6	2	4	3	4					3
Benzene	Annual Avg	1.92	1.67	1.21	1.35	1.25	1.24	0.58		0.76	0.61	0.53	0.44	0.42	0.36
	Health Risk	178	155	112	125	116	115	54		71	57	49	41	39	33
1,3-Butadiene	Annual Avg	0.28	0.26	0.19	0.32	0.25	0.27	0.20		0.24	0.18	0.14	0.13	0.12	0.08
	Health Risk	106	97	72	120	95	101	75		90	66	51	50	43	29
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08				0.10	0.09	0.09	0.10
	Health Risk	35	34		28		27	20				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.20	0.19	0.21	0.20	0.11		0.10	0.10	0.10			0.05
	Health Risk			30	28	32	30	16		15	15	16			7
para-Dichlorobenzene	Annual Avg			0.11	0.11	0.10	0.12	0.10				0.10	0.13	0.15	0.16
	Health Risk			7	7	7	8	7				7	9	10	11
Formaldehyde	Annual Avg	1.84	1.98	1.30	1.37	1.78	2.02	2.16	1.79	1.96					2.15
	Health Risk	14	15	10	10	13	15	16	13	14					16
Methylene Chloride	Annual Avg	0.76	0.58	0.52	0.83	0.50	0.62	0.50				0.50	0.28	0.23	0.30
	Health Risk	3	2	2	3	2	2	2				2	1	1	1
Perchloroethylene	Annual Avg	0.19	0.21	0.13	0.11	0.09	0.12	0.07				0.08	0.06	0.05	0.04
	Health Risk	8	8	5	5	3	5	3				3	2	2	2
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**350**	**319**	**243**	**332**	**274**	**305**	**197**	**16**	**194**	**138**	**153**	**126**	**119**	**127**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-24

San Francisco Bay Area Air Basin

Contra Costa County: Concord - 2975 Treat Boulevard

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.41			1.39	1.46	0.62	0.86	0.76		0.87				
	Health Risk	7			7	7	3	4	4		4				
Benzene	Annual Avg	1.84	1.58	1.41	1.13	1.08	1.09	0.48	0.56	0.57	0.57				
	Health Risk	171	147	130	105	100	101	44	52	53	53				
1,3-Butadiene	Annual Avg	0.32	0.27	0.25	0.31	0.23	0.24	0.15	0.18	0.19	0.16				
	Health Risk	118	100	95	114	87	91	56	66	72	58				
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08							
	Health Risk	34	33		29		27	22							
Chromium, Hexavalent	Annual Avg				0.19	0.18	0.21	0.11	0.11		0.10				
	Health Risk				28	27	32	16	17		15				
para-Dichlorobenzene	Annual Avg			0.15	0.13	0.14	0.13	0.13	0.14						
	Health Risk			10	8	9	9	8	9						
Formaldehyde	Annual Avg	1.99			1.99	1.69	2.21	2.30	2.05		2.64				
	Health Risk	15			15	12	16	17	15		19				
Methylene Chloride	Annual Avg	0.67	0.51	0.66	0.54	0.54	0.55	0.55	0.50						
	Health Risk	2	2	2	2	2	2	2	2						
Perchloroethylene	Annual Avg	0.34	0.42	0.39	0.20	0.10	0.15	0.08	0.10						
	Health Risk	13	17	16	8	4	6	3	4						
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**360**	**299**	**253**	**316**	**248**	**287**	**172**	**169**	**125**	**149**				

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-25

San Francisco Bay Area Air Basin

Contra Costa County: Richmond - 13th Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg			0.78		0.92	0.36	0.59							
	Health Risk			4		4	2	3							
Benzene	Annual Avg		1.92	1.54	1.76	1.70	1.44	1.00							
	Health Risk		177	143	163	157	133	92							
1,3-Butadiene	Annual Avg		0.27	0.26	0.39	0.31	0.30	0.25							
	Health Risk		102	98	148	116	113	94							
Carbon Tetrachloride	Annual Avg		0.12		0.11		0.10	0.08							
	Health Risk		33		29		25	21							
Chromium, Hexavalent	Annual Avg			0.19		0.15	0.26	0.13							
	Health Risk			28		23	39	19							
para-Dichlorobenzene	Annual Avg		0.14	0.12	0.12	0.10	0.12	0.19							
	Health Risk		9	8	8	7	8	13							
Formaldehyde	Annual Avg			1.08		1.32	2.22	4.27							
	Health Risk			8		10	16	31							
Methylene Chloride	Annual Avg		0.62	0.54	0.67	0.50	0.54	0.65							
	Health Risk		2	2	2	2	2	2							
Perchloroethylene	Annual Avg		0.15	0.09	0.09	0.06	0.04	0.03							
	Health Risk		6	4	4	2	2	1							
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk			**329**	**295**	**354**	**321**	**340**	**276**							

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-26

San Francisco Bay Area Air Basin

Contra Costa County: San Pablo - El Portal

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg										0.55				
	Health Risk										3				
Benzene	Annual Avg									0.56	0.42				
	Health Risk									52	39				
1,3-Butadiene	Annual Avg									0.15	0.12				
	Health Risk									56	45				
Carbon Tetrachloride	Annual Avg														
	Health Risk														
Chromium, Hexavalent	Annual Avg										0.10				
	Health Risk										15				
para-Dichlorobenzene	Annual Avg														
	Health Risk														
Formaldehyde	Annual Avg										1.24				
	Health Risk										9				
Methylene Chloride	Annual Avg														
	Health Risk														
Perchloroethylene	Annual Avg														
	Health Risk														
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk										**108**	**111**				

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-27

San Francisco Bay Area Air Basin

San Francisco County: San Francisco - Arkansas Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.32				0.98	0.40		0.75	0.54			0.57	0.54	0.68
	Health Risk	6				5	2		4	3			3	3	3
Benzene	Annual Avg		1.49	1.25		1.07	0.95	0.53	0.51	0.63	0.65	0.48	0.38		0.39
	Health Risk		138	116		99	88	49	48	59	61	45	35		36
1,3-Butadiene	Annual Avg		0.25	0.23		0.26	0.23	0.18	0.17	0.22	0.17	0.13	0.11		0.08
	Health Risk		95	88		97	85	68	62	81	65	48	42		32
Carbon Tetrachloride	Annual Avg		0.12				0.10	0.08				0.10	0.09		0.09
	Health Risk		33				26	21				25	23		25
Chromium, Hexavalent	Annual Avg				0.19	0.18	0.25	0.12	0.13	0.10		0.12		0.09	0.15
	Health Risk				29	26	37	18	19	15		18		13	22
para-Dichlorobenzene	Annual Avg		0.15	0.13		0.10	0.15	0.12	0.12			0.11	0.14		0.15
	Health Risk		10	9		7	10	8	8			7	9		10
Formaldehyde	Annual Avg	1.71				1.33	1.58		1.62	1.45			1.51	2.03	1.71
	Health Risk	13				10	12		12	11			11	15	13
Methylene Chloride	Annual Avg		3.22	0.88		0.60	0.63	0.66	0.50			0.60	0.26		0.17
	Health Risk		11	3		2	2	2	2			2	1		1
Perchloroethylene	Annual Avg		0.23	0.13		0.11	0.09	0.08	0.07			0.07	0.07		0.04
	Health Risk		9	5		4	4	3	3			3	3		1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**19**	**296**	**221**	**29**	**250**	**266**	**169**	**158**	**169**	**126**	**148**	**127**	**31**	**143**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-28

San Francisco Bay Area Air Basin

Santa Clara County: San Jose - 4th Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.53	1.55	1.41	1.58	1.27	0.35	1.04	0.97	0.77	0.93	0.79	0.76		
	Health Risk	7	8	7	8	6	2	5	5	4	4	4	4		
Benzene	Annual Avg	3.02	2.44	2.03	1.89	1.88	1.55	0.97	0.93	1.04	0.73	0.70			
	Health Risk	280	226	188	175	174	144	89	86	97	68	65			
1,3-Butadiene	Annual Avg	0.55	0.39	0.44	0.49	0.39	0.35	0.31	0.29	0.29	0.23	0.19			
	Health Risk	207	145	164	182	145	131	117	108	110	85	72			
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08				0.10			
	Health Risk	33	34		28		27	20				25			
Chromium, Hexavalent	Annual Avg			0.29	0.25	0.25	0.33	0.17	0.13	0.11	0.10	0.13			
	Health Risk			43	37	38	49	25	20	17	15	19			
para-Dichlorobenzene	Annual Avg			0.12	0.12	0.10	0.12	0.14	0.12			0.12			
	Health Risk			8	8	7	8	10	8			8			
Formaldehyde	Annual Avg	2.27	2.00	2.09	1.83	2.16	2.28	2.70	2.56	2.24	2.69	2.24	2.27		
	Health Risk	17	15	15	13	16	17	20	19	16	20	16	17		
Methylene Chloride	Annual Avg	0.83	6.65	0.66	0.58	0.80	0.69	0.55	0.75			0.50			
	Health Risk	3	23	2	2	3	2	2	3			2			
Perchloroethylene	Annual Avg	0.16	0.15	0.10	0.09	0.06	0.07	0.07	0.10			0.09			
	Health Risk	6	6	4	4	3	3	3	4			4			
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**553**	**457**	**431**	**457**	**392**	**383**	**291**	**253**	**244**	**192**	**215**	**21**		

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-29

San Francisco Bay Area Air Basin

Santa Clara County: San Jose - Jackson Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg														0.84
	Health Risk														4
Benzene	Annual Avg														0.58
	Health Risk														53
1,3-Butadiene	Annual Avg														0.13
	Health Risk														49
Carbon Tetrachloride	Annual Avg														0.10
	Health Risk														25
Chromium, Hexavalent	Annual Avg														0.10
	Health Risk														15
para-Dichlorobenzene	Annual Avg														0.15
	Health Risk														10
Formaldehyde	Annual Avg														2.79
	Health Risk														21
Methylene Chloride	Annual Avg														0.19
	Health Risk														1
Perchloroethylene	Annual Avg														0.04
	Health Risk														2
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk															**180**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-30

San Francisco Bay Area Air Basin

Air Basin Summary

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.30	1.40	1.03	1.31	1.17	0.42	0.83	0.73	0.65	0.76	0.68	0.73	0.63	0.74
	Health Risk	6	7	5	6	6	2	4	4	3	4	3	4	3	4
Benzene	Annual Avg	2.18	1.82	1.49	1.49	1.40	1.26	0.71	0.61	0.71	0.60	0.56	0.43	0.45	0.44
	Health Risk	202	169	138	138	129	116	66	56	66	55	52	39	42	41
1,3-Butadiene	Annual Avg	0.36	0.29	0.28	0.37	0.29	0.28	0.22	0.19	0.22	0.17	0.15	0.13	0.14	0.10
	Health Risk	135	108	103	138	108	104	82	70	82	64	56	50	51	37
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08				0.09	0.09	0.09	0.10
	Health Risk	34	33		29		26	21				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.23	0.20	0.19	0.25	0.13	0.12	0.10	0.10	0.12		0.07	0.10
	Health Risk			34	29	29	37	19	17	15	15	18		11	14
para-Dichlorobenzene	Annual Avg		0.12	0.12	0.12	0.11	0.13	0.14	0.12			0.11	0.14	0.15	0.15
	Health Risk		8	8	8	7	8	9	8			7	9	10	10
Formaldehyde	Annual Avg	1.87	1.73	1.43	1.56	1.66	2.06	2.62	1.85	1.76	2.09	1.77	2.32	2.57	2.22
	Health Risk	14	13	11	11	12	15	19	14	13	15	13	17	19	16
Methylene Chloride	Annual Avg	1.04	2.32	0.65	0.72	0.59	0.60	0.58	0.55			0.53	0.27	0.22	0.22
	Health Risk	4	8	2	2	2	2	2	2			2	1	1	1
Perchloroethylene	Annual Avg	0.20	0.23	0.17	0.13	0.08	0.09	0.07	0.07			0.08	0.06	0.05	0.04
	Health Risk	8	9	7	5	3	4	3	3			3	2	2	2
Diesel PM***	Annual Avg	(2.5)					(1.9)					(1.6)			
	Health Risk	(750)					(570)					(480)			
Average Basin Health Risk		**403**	**355**	**308**	**366**	**296**	**314**	**225**	**174**	**179**	**153**	**179**	**145**	**163**	**150**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.
*** The Diesel PM concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Table C-31

San Joaquin Valley Air Basin

Kern County: Bakersfield - Chester Avenue

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.87	1.83	1.60	2.00										
	Health Risk	9	9	8	10										
Benzene	Annual Avg	2.68	2.22	1.54	1.47										
	Health Risk	248	205	143	136										
1,3-Butadiene	Annual Avg	0.39	0.31	0.24	0.33										
	Health Risk	146	115	90	123										
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.10										
	Health Risk	33	33		27										
Chromium, Hexavalent	Annual Avg			0.21	0.21										
	Health Risk			31	31										
para-Dichlorobenzene	Annual Avg			0.12	0.17										
	Health Risk			8	11										
Formaldehyde	Annual Avg	2.44	1.62	1.36	1.85										
	Health Risk	18	12	10	14										
Methylene Chloride	Annual Avg	0.92	0.65	0.52	0.99										
	Health Risk	3	2	2	3										
Perchloroethylene	Annual Avg	0.09	0.13	0.08	1.48										
	Health Risk	3	5	3	59										
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**460**	**381**	**295**	**414**										

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-32

San Joaquin Valley Air Basin

Kern County: Bakersfield - 5558 California Avenue

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg						0.49	1.59	1.22	1.27	1.69	1.19	1.27	1.37	1.51
	Health Risk						2	8	6	6	8	6	6	7	7
Benzene	Annual Avg						1.14	0.78	0.57	0.70	0.71	0.58	0.55	0.51	0.41
	Health Risk						106	72	53	65	66	54	51	47	37
1,3-Butadiene	Annual Avg						0.21	0.21	0.16	0.20	0.15	0.13	0.14	0.10	0.06
	Health Risk						78	79	60	75	58	47	52	37	24
Carbon Tetrachloride	Annual Avg						0.10	0.08				0.09	0.09	0.09	0.10
	Health Risk						26	21				25	23	24	25
Chromium, Hexavalent	Annual Avg						0.26	0.13	0.10	0.10	0.10	0.10		0.08	0.05
	Health Risk						39	19	15	15	16	16		12	8
para-Dichlorobenzene	Annual Avg						0.11	0.11	0.12			0.11	0.13	0.15	0.15
	Health Risk						7	7	8			7	9	10	10
Formaldehyde	Annual Avg						1.92	3.48	3.12	2.99	3.67	2.79	3.44	3.15	3.43
	Health Risk						14	26	23	22	27	21	25	23	25
Methylene Chloride	Annual Avg						0.54	0.64	0.50		0.50	0.58	0.26	0.10	0.11
	Health Risk						2	2	2		2	2	1	0	0
Perchloroethylene	Annual Avg						0.09	0.12	0.04			0.07	0.06	0.05	0.04
	Health Risk						4	5	2			3	2	2	1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk							**278**	**239**	**169**	**183**	**177**	**181**	**169**	**162**	**137**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-33

San Joaquin Valley Air Basin

Fresno County: Fresno - 1st Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg		2.29		1.89	1.40	0.67			1.50		1.43	1.60	1.55	1.71
	Health Risk		11		9	7	3			7		7	8	8	8
Benzene	Annual Avg		2.42	1.34	1.35	1.44	1.24	0.79	1.00	0.83	0.80	0.73	0.61	0.63	0.55
	Health Risk		224	124	125	133	115	73	92	76	74	68	56	58	51
1,3-Butadiene	Annual Avg		0.46	0.26	0.34	0.36	0.30	0.23	0.23	0.27	0.21	0.20	0.18	0.19	0.13
	Health Risk		173	99	129	134	113	88	87	100	80	73	68	73	48
Carbon Tetrachloride	Annual Avg		0.12		0.11		0.10	0.08				0.10	0.09	0.09	0.10
	Health Risk		32		28		26	21				25	23	23	26
Chromium, Hexavalent	Annual Avg			0.21	0.15	0.14	0.22	0.10	0.11	0.10	0.10	0.13		0.06	0.05
	Health Risk			31	22	21	33	16	16	15	15	20		9	8
para-Dichlorobenzene	Annual Avg			0.10	0.10	0.14	0.13	0.11	0.14			0.10	0.14	0.15	0.15
	Health Risk			7	7	9	8	7	9			7	9	10	10
Formaldehyde	Annual Avg		2.32		1.64	2.01	2.41			3.42		3.56	4.32	4.16	3.72
	Health Risk		17		12	15	18			25		26	32	31	27
Methylene Chloride	Annual Avg		0.62	0.54	0.69	0.59	0.58	0.50	0.52			0.50	0.27	0.24	0.15
	Health Risk		2	2	2	2	2	2	2			2	1	1	1
Perchloroethylene	Annual Avg		0.14	0.10	0.10	0.06	0.07	0.04	0.04			0.06	0.05	0.03	0.03
	Health Risk		6	4	4	2	3	2	2			2	2	1	1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk			**465**	**267**	**338**	**323**	**321**	**209**	**208**	**223**	**169**	**230**	**199**	**214**	**180**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-34

San Joaquin Valley Air Basin

Stanislaus County: Modesto - I Street (Courthouse)

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg		1.51	1.37	1.75	1.44	0.51	1.17	1.25						
	Health Risk		7	7	8	7	2	6	6						
Benzene	Annual Avg														
	Health Risk														
1,3-Butadiene	Annual Avg														
	Health Risk														
Carbon Tetrachloride	Annual Avg														
	Health Risk														
Chromium, Hexavalent	Annual Avg			0.27	0.23	0.22	0.32	0.16	0.11						
	Health Risk			40	34	33	48	25	17						
para-Dichlorobenzene	Annual Avg														
	Health Risk														
Formaldehyde	Annual Avg		1.43	1.32	1.82	1.86	2.16	2.58	2.43						
	Health Risk		11	10	13	14	16	19	18						
Methylene Chloride	Annual Avg														
	Health Risk														
Perchloroethylene	Annual Avg														
	Health Risk														
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk			**18**	**57**	**55**	**54**	**66**	**50**	**41**						

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-35

San Joaquin Valley Air Basin

Stanislaus County: Modesto - 14th Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg										1.65				
	Health Risk										8				
Benzene	Annual Avg	2.25	1.86	1.20	1.23	1.14	1.20	0.70	0.77	0.85	0.61				
	Health Risk	208	172	111	114	105	111	65	71	78	56				
1,3-Butadiene	Annual Avg	0.38	0.35	0.22	0.35	0.29	0.30	0.24	0.21	0.26	0.16				
	Health Risk	142	133	84	131	110	112	89	78	98	61				
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.09	0.07		0.11					
	Health Risk	34	35		30		25	20		30					
Chromium, Hexavalent	Annual Avg										0.10				
	Health Risk										15				
para-Dichlorobenzene	Annual Avg		0.11	0.10	0.12	0.10	0.11	0.10	0.15						
	Health Risk		7	7	8	7	7	7	10						
Formaldehyde	Annual Avg										3.09				
	Health Risk										23				
Methylene Chloride	Annual Avg	0.65	0.61	0.55	0.65	0.62	0.58	0.50	0.59	0.51					
	Health Risk	2	2	2	2	2	2	2	2	2					
Perchloroethylene	Annual Avg	0.15	0.15	0.12	0.11	0.09	0.05	0.04	0.05	0.04					
	Health Risk	6	6	5	4	3	2	2	2	1					
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**392**	**355**	**209**	**289**	**227**	**259**	**185**	**163**	**209**	**163**				

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-36

San Joaquin Valley Air Basin

San Joaquin County: Stockton - Hazelton Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.47	1.75	1.07	1.31	1.10		0.90	0.90	1.00	1.07	0.64	0.59	0.80	0.81
	Health Risk	7	9	5	6	5		4	4	5	5	3	3	4	4
Benzene	Annual Avg	2.01	1.95	1.37		1.23	1.05	0.64	0.52	0.69	0.65	0.58	0.45	0.52	0.44
	Health Risk	186	181	127		113	97	60	48	64	60	54	42	48	40
1,3-Butadiene	Annual Avg	0.34	0.32	0.22		0.28	0.25	0.21	0.18	0.21	0.18	0.16	0.13	0.15	0.10
	Health Risk	126	121	82		106	94	77	68	77	68	58	49	55	36
Carbon Tetrachloride	Annual Avg	0.13	0.14				0.10	0.08		0.12		0.10	0.09	0.09	0.10
	Health Risk	35	36				26	20		30		26	23	24	26
Chromium, Hexavalent	Annual Avg			0.22	0.25	0.25		0.14			0.10	0.12		0.12	0.13
	Health Risk			33	37	37		21			15	18		18	20
para-Dichlorobenzene	Annual Avg		0.10	0.10		0.10	0.11	0.10	0.11			0.11	0.13	0.15	0.15
	Health Risk		7	7		7	7	7	7			7	9	10	10
Formaldehyde	Annual Avg	1.81	1.88	1.24	1.38	1.56		2.35	2.24	2.33	2.68	1.61	1.48	2.07	1.91
	Health Risk	13	14	9	10	12		17	16	17	20	12	11	15	14
Methylene Chloride	Annual Avg	0.63	0.50	0.60		0.50	0.75	0.53	0.50	0.50	0.50	0.53	0.27	0.14	0.16
	Health Risk	2	2	2		2	3	2	2	2	2	2	1	1	1
Perchloroethylene	Annual Avg	0.13	0.11	0.12		0.07	0.06	0.07	0.09	0.03		0.11	0.05	0.04	0.03
	Health Risk	5	5	5		3	2	3	4	1		4	2	1	1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**374**	**375**	**270**	**53**	**285**	**229**	**211**	**149**	**196**	**170**	**184**	**140**	**176**	**152**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-37

San Joaquin Valley Air Basin

Air Basin Summary

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.94	1.84	1.38	1.73	1.29	0.54	1.28	1.19	1.30	1.56	1.09	1.15	1.24	1.34
	Health Risk	9	9	7	8	6	3	6	6	6	8	5	6	6	7
Benzene	Annual Avg	2.45	2.11	1.36	1.32	1.33	1.16	0.73	0.71	0.76	0.69	0.63	0.54	0.55	0.46
	Health Risk	227	196	126	122	123	107	68	66	71	64	58	50	51	43
1,3-Butadiene	Annual Avg	0.41	0.36	0.24	0.34	0.32	0.26	0.22	0.20	0.23	0.18	0.16	0.15	0.15	0.10
	Health Risk	154	135	89	127	121	99	83	73	88	67	59	56	55	36
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.11		0.10	0.08		0.11		0.10	0.09	0.09	0.10
	Health Risk	34	34		29		26	20		30		25	23	24	26
Chromium, Hexavalent	Annual Avg			0.23	0.21	0.19	0.28	0.13	0.11	0.10	0.10	0.12		0.09	0.08
	Health Risk			34	31	29	42	20	16	15	15	18		13	12
para-Dichlorobenzene	Annual Avg		0.11	0.11	0.13	0.11	0.11	0.10	0.13			0.11	0.13	0.15	0.15
	Health Risk		7	7	9	7	8	7	9			7	9	10	10
Formaldehyde	Annual Avg	2.45	1.81	1.46	1.67	1.80	2.10	2.96	2.77	2.86	3.44	2.61	3.08	3.13	3.02
	Health Risk	18	13	11	12	13	15	22	20	21	25	19	23	23	22
Methylene Chloride	Annual Avg	0.76	0.59	0.55	0.76	0.59	0.61	0.54	0.53	0.52	0.50	0.53	0.27	0.16	0.14
	Health Risk	3	2	2	3	2	2	2	2	2	2	2	1	1	1
Perchloroethylene	Annual Avg	0.13	0.13	0.10	0.47	0.07	0.07	0.07	0.06	0.04		0.08	0.05	0.04	0.03
	Health Risk	5	5	4	19	3	3	3	2	2		3	2	2	1
Diesel PM***	Annual Avg	(2.6)					(1.7)					(1.3)			
	Health Risk	(780)					(510)					(390)			
Average Basin Health Risk		**450**	**401**	**280**	**360**	**304**	**305**	**231**	**194**	**235**	**181**	**196**	**170**	**185**	**158**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.
*** The Diesel PM concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Table C-38

San Diego Air Basin

San Diego County: Chula Vista

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.10	1.21	0.99	1.16	1.32	0.64	0.83	0.91	0.70	0.91	0.75	0.78	0.75	0.72
	Health Risk	5	6	5	6	6	3	4	4	3	4	4	4	4	3
Benzene	Annual Avg	2.00	1.21	1.03	0.80	1.08	0.81		0.63	0.61		0.55	0.42	0.42	
	Health Risk	186	112	95	74	100	75		58	56		51	39	39	
1,3-Butadiene	Annual Avg	0.28	0.18	0.18	0.23	0.26	0.21		0.16	0.15		0.14	0.11	0.11	
	Health Risk	105	69	69	85	98	77		61	57		51	41	40	
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.10		0.10					0.09	0.09	0.09	
	Health Risk	35	34		27		26					25	23	24	
Chromium, Hexavalent	Annual Avg			0.24	0.20	0.17	0.20	0.11	0.10	0.10	0.11	0.10		0.05	0.06
	Health Risk			37	30	25	29	16	15	15	16	16		8	9
para-Dichlorobenzene	Annual Avg		0.10	0.11	0.13	0.12	0.11		0.13				0.15	0.15	
	Health Risk		7	7	8	8	7		8				10	10	
Formaldehyde	Annual Avg	1.26	1.30	1.10	1.46	2.08	1.81	2.10	2.37	2.00	2.49	2.14	2.54	2.56	2.30
	Health Risk	9	10	8	11	15	13	15	17	15	18	16	19	19	17
Methylene Chloride	Annual Avg	0.58	0.59	0.81	1.01	0.57	0.57		0.62			0.65	0.16	0.13	
	Health Risk	2	2	3	3	2	2		2			2	1	0	
Perchloroethylene	Annual Avg	0.24	0.23	0.21	0.14	0.13	0.15		0.10			0.08	0.06	0.05	
	Health Risk	9	9	8	6	5	6		4			3	2	2	
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**351**	**249**	**232**	**250**	**259**	**238**	**35**	**169**	**146**	**38**	**168**	**139**	**146**	**29**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-39

San Diego Air Basin

San Diego County: El Cajon - Redwood Avenue

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.56	1.78	1.46	1.66			1.23			1.17	0.92	1.11	1.20	1.06
	Health Risk	8	9	7	8			6			6	4	5	6	5
Benzene	Annual Avg	2.50	2.20	1.94	1.51		1.14	0.86	0.89	0.91	0.98	0.74	0.59	0.56	0.56
	Health Risk	231	203	179	140		106	79	82	84	91	69	54	52	52
1,3-Butadiene	Annual Avg	0.39	0.33	0.33	0.40		0.28	0.25	0.24	0.24	0.24	0.18	0.16	0.13	0.10
	Health Risk	145	125	125	150		105	95	88	90	90	68	61	50	38
Carbon Tetrachloride	Annual Avg	0.13	0.13				0.10	0.08				0.10	0.09	0.09	0.09
	Health Risk	35	33				27	21				25	23	24	24
Chromium, Hexavalent	Annual Avg			0.24	0.18			0.10	0.11		0.10	0.10		0.04	0.04
	Health Risk			36	26			16	17		15	15		6	6
para-Dichlorobenzene	Annual Avg			0.12	0.13		0.12	0.11	0.13				0.15	0.15	0.15
	Health Risk			8	8		8	7	8				10	10	10
Formaldehyde	Annual Avg	2.01	1.76	1.42	2.06			3.14			2.84	2.32	2.63	3.41	3.05
	Health Risk	15	13	10	15			23			21	17	19	25	22
Methylene Chloride	Annual Avg	0.59	1.07	1.87	1.25		0.70	0.61	0.52		0.52	0.87	0.19	0.18	0.18
	Health Risk	2	4	7	4		2	2	2		2	3	1	1	1
Perchloroethylene	Annual Avg	0.33	0.31	0.32	0.26		0.35	0.17	0.15			0.10	0.07	0.07	0.06
	Health Risk	13	12	13	10		14	7	6			4	3	3	2
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**449**	**399**	**385**	**361**		**262**	**256**	**203**	**174**	**225**	**205**	**176**	**177**	**160**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-40

San Diego Air Basin

Air Basin Summary

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.33	1.50	1.22	1.41	1.48	0.64	1.03	1.00	0.86	1.04	0.84	0.95	0.97	0.89
	Health Risk	6	7	6	7	7	3	5	5	4	5	4	5	5	4
Benzene	Annual Avg	2.25	1.70	1.48	1.16	1.39	0.98	0.76	0.76	0.76	0.86	0.65	0.51	0.49	0.48
	Health Risk	208	158	137	107	129	90	71	70	70	79	60	47	45	45
1,3-Butadiene	Annual Avg	0.33	0.26	0.26	0.31	0.31	0.24	0.21	0.20	0.20	0.22	0.16	0.14	0.12	0.09
	Health Risk	125	97	97	117	115	91	78	75	74	83	60	51	45	33
Carbon Tetrachloride	Annual Avg	0.13	0.13		0.10		0.10	0.08				0.09	0.09	0.09	0.09
	Health Risk	35	34		27		26	20				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.24	0.19	0.16	0.18	0.11	0.11	0.10	0.10	0.10		0.05	0.05
	Health Risk			36	28	23	27	16	16	15	15	15		7	8
para-Dichlorobenzene	Annual Avg		0.10	0.11	0.13	0.15	0.12	0.11	0.13				0.15	0.15	0.15
	Health Risk		7	8	8	10	8	7	8				10	10	10
Formaldehyde	Annual Avg	1.64	1.53	1.26	1.76	2.25	2.13	2.62	2.62	2.27	2.67	2.23	2.59	2.99	2.68
	Health Risk	12	11	9	13	17	16	19	19	17	20	16	19	22	20
Methylene Chloride	Annual Avg	0.59	0.83	1.34	1.13	0.73	0.63	0.59	0.57		0.53	0.76	0.17	0.16	0.16
	Health Risk	2	3	5	4	3	2	2	2		2	3	1	1	1
Perchloroethylene	Annual Avg	0.28	0.27	0.26	0.20	0.21	0.25	0.15	0.13			0.09	0.06	0.06	0.05
	Health Risk	11	11	11	8	8	10	6	5			4	2	2	2
Diesel PM***	Annual Avg	(2.9)					(1.9)					(1.4)			
	Health Risk	(870)					(570)					(420)			
Average Basin Health Risk		**399**	**328**	**309**	**319**	**312**	**273**	**224**	**200**	**180**	**204**	**187**	**158**	**161**	**148**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.
*** The Diesel PM concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Table C-41

Sacramento Valley Air Basin

Butte County: Chico - Manzanita Avenue

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg				1.55	1.11	0.54	1.15	1.17	0.96	1.41	0.89	1.10	1.33	1.14
	Health Risk				8	5	3	6	6	5	7	4	5	6	6
Benzene	Annual Avg				1.10	1.14	0.85	0.67		0.55	0.64	0.52	0.50	0.54	0.45
	Health Risk				102	106	78	62		51	59	48	46	50	42
1,3-Butadiene	Annual Avg				0.30	0.25	0.21	0.22		0.17	0.15	0.14	0.16	0.15	0.11
	Health Risk				111	94	77	81		64	56	54	59	58	42
Carbon Tetrachloride	Annual Avg				0.11		0.10	0.08					0.09	0.09	0.09
	Health Risk				29		26	21					23	23	24
Chromium, Hexavalent	Annual Avg				0.15	0.13	0.16	0.10	0.10	0.10	0.10	0.10	0.10	0.06	0.05
	Health Risk				23	19	24	16	15	15	15	15	15	9	7
para-Dichlorobenzene	Annual Avg				0.10	0.13	0.10	0.12					0.13	0.15	0.15
	Health Risk				7	8	7	8					9	10	10
Formaldehyde	Annual Avg				2.08	1.78	2.04	2.99	3.42	2.63	4.15	2.76	3.25	4.47	3.82
	Health Risk				15	13	15	22	25	19	31	20	24	33	28
Methylene Chloride	Annual Avg				0.81	0.50	0.53	0.58					0.36	0.09	0.07
	Health Risk				3	2	2	2					1	0	0
Perchloroethylene	Annual Avg				0.06	0.27	0.05	0.05					0.02	0.02	0.02
	Health Risk				2	11	2	2					1	1	1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk					**300**	**258**	**234**	**220**	**46**	**154**	**168**	**141**	**183**	**190**	**160**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-42

Sacramento Valley Air Basin

Butte County: Chico - Salem Street

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.27													
	Health Risk	6													
Benzene	Annual Avg	1.96	1.91												
	Health Risk	182	177												
1,3-Butadiene	Annual Avg	0.40	0.36												
	Health Risk	151	136												
Carbon Tetrachloride	Annual Avg	0.12	0.12												
	Health Risk	32	33												
Chromium, Hexavalent	Annual Avg														
	Health Risk														
para-Dichlorobenzene	Annual Avg														
	Health Risk														
Formaldehyde	Annual Avg	1.49													
	Health Risk	11													
Methylene Chloride	Annual Avg	0.53	0.57												
	Health Risk	2	2												
Perchloroethylene	Annual Avg	0.05	0.05												
	Health Risk	2	2												
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**386**	**350**												

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-43

Sacramento Valley Air Basin

Placer County: Roseville - North Sunrise Boulevard

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg					0.96	0.25	0.90	0.93	0.88		0.77	0.39	0.95	0.93
	Health Risk					5	1	4	4	4		4	2	5	5
Benzene	Annual Avg					0.91	0.75	0.44	0.46	0.45	0.48	0.39	0.34	0.34	0.36
	Health Risk					84	70	40	42	42	44	36	32	32	34
1,3-Butadiene	Annual Avg					0.19	0.17	0.14	0.12	0.14	0.11	0.10	0.09	0.08	0.08
	Health Risk					73	63	51	46	52	40	36	35	29	29
Carbon Tetrachloride	Annual Avg						0.10	0.08				0.09	0.09	0.09	0.09
	Health Risk						26	20				25	23	24	25
Chromium, Hexavalent	Annual Avg					0.13	0.19	0.11	0.10	0.10	0.10	0.10		0.05	0.05
	Health Risk					19	29	16	15	15	15	15		7	8
para-Dichlorobenzene	Annual Avg					0.28	0.17	0.10	0.15			0.10	0.13	0.15	0.15
	Health Risk					19	11	7	10			7	9	10	10
Formaldehyde	Annual Avg					1.71	1.78	2.52	2.42	2.42		2.25	1.57	3.12	3.23
	Health Risk					13	13	19	18	18		17	12	23	24
Methylene Chloride	Annual Avg					0.82	0.54	0.50	0.50			0.52	0.23	0.08	0.09
	Health Risk					3	2	2	2			2	1	0	0
Perchloroethylene	Annual Avg					0.07	0.05	0.06	0.06			0.05	0.03	0.03	0.02
	Health Risk					3	2	2	3			2	1	1	1
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk						**219**	**217**	**161**	**140**	**131**	**99**	**144**	**115**	**131**	**136**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-44

Sacramento Valley Air Basin

Sacramento County: Citrus Heights - Sunrise Boulevard

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.32													
	Health Risk	6													
Benzene	Annual Avg	2.08	1.85	1.41											
	Health Risk	192	171	130											
1,3-Butadiene	Annual Avg	0.35	0.30	0.31											
	Health Risk	133	114	115											
Carbon Tetrachloride	Annual Avg	0.12	0.12												
	Health Risk	33	32												
Chromium, Hexavalent	Annual Avg														
	Health Risk														
para-Dichlorobenzene	Annual Avg			0.11											
	Health Risk			7											
Formaldehyde	Annual Avg	1.66													
	Health Risk	12													
Methylene Chloride	Annual Avg	0.76	0.54	0.50											
	Health Risk	3	2	2											
Perchloroethylene	Annual Avg	0.10	0.09	0.08											
	Health Risk	4	4	3											
Diesel PM	Annual Avg	No Monitoring Data Available													
	Health Risk														
Total Health Risk		**383**	**323**	**257**											

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.

Table C-45

Sacramento Valley Air Basin

Air Basin Summary

Annual Average Concentrations and Health Risks															
TAC	**Conc.*/Risk****	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Acetaldehyde	Annual Avg	1.29			1.37	1.04	0.39	1.03	1.05	0.92	1.23	0.83	0.74	1.14	1.04
	Health Risk	6			7	5	2	5	5	4	6	4	4	6	5
Benzene	Annual Avg	2.02	1.88	1.35	1.00	1.02	0.80	0.56	0.55	0.50	0.56	0.45	0.42	0.44	0.41
	Health Risk	187	174	125	92	95	74	51	51	47	52	42	39	41	38
1,3-Butadiene	Annual Avg	0.38	0.33	0.28	0.29	0.22	0.19	0.18	0.16	0.15	0.13	0.12	0.13	0.12	0.09
	Health Risk	142	125	106	108	83	70	66	60	58	48	45	47	44	35
Carbon Tetrachloride	Annual Avg	0.12	0.12		0.11		0.10	0.08				0.09	0.09	0.09	0.09
	Health Risk	33	32		29		26	21				25	23	24	25
Chromium, Hexavalent	Annual Avg			0.17	0.14	0.13	0.18	0.11	0.10	0.10	0.10	0.10	0.10	0.05	0.05
	Health Risk			26	21	19	26	16	15	15	15	15	15	8	8
para-Dichlorobenzene	Annual Avg			0.11	0.10	0.20	0.14	0.11	0.14			0.10	0.13	0.15	0.15
	Health Risk			7	7	14	9	7	10			7	9	10	10
Formaldehyde	Annual Avg	1.57			1.77	1.75	1.91	2.76	2.92	2.52	3.61	2.51	2.41	3.79	3.53
	Health Risk	12			13	13	14	20	22	19	27	18	18	28	26
Methylene Chloride	Annual Avg	0.65	0.56	0.55	0.98	0.66	0.53	0.54	0.52		0.60	0.57	0.29	0.08	0.08
	Health Risk	2	2	2	3	2	2	2	2		2	2	1	0	0
Perchloroethylene	Annual Avg	0.07	0.07	0.06	0.05	0.17	0.05	0.06	0.05			0.06	0.03	0.03	0.02
	Health Risk	3	3	3	2	7	2	2	2			2	1	1	1
Diesel PM***	Annual Avg	(2.5)					(1.6)					(1.2)			
	Health Risk	(750)					(480)					(360)			
Average Basin Health Risk		**385**	**336**	**269**	**282**	**238**	**225**	**190**	**167**	**143**	**150**	**160**	**157**	**162**	**148**

* Concentrations for Hexavalent Chromium are expressed as ng/m³, and concentrations for Diesel PM are expressed as µg/m³. Concentrations for all other TACs are expressed as ppb.
** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information are not available.
*** The Diesel PM concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Table C-46

APPENDIX D

Surface Area, Population, and Average Daily Vehicle Miles Traveled

Appendix D: *Surface Area, Population, and Average Daily Vehicle Miles Traveled*

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Introduction

This appendix provides information on the square mile surface area, population, and average number of vehicle miles traveled (VMT) each day in California. The trend data for population and daily VMT cover the period 1980 through 2020. Data are listed for each air basin, for each county within each air basin, and for the State as a whole. In cases where a county is split between two or more air basins, the data reflect only that portion of the county within the respective air basin. It is important to note that the average daily VMT listed in the following tables has been divided by 1000.

Surface areas were calculated based on United States Census Bureau data from the 2000 Census. The surface areas shown reflect land portions of air basins only and exclude water bodies, including bays, lakes, and rivers.

The population data were derived from reports developed by the California Department of Finance (DOF), Demographic Research Unit. Split county fractions for 1990 and 2000 were derived using census 1990 and 2000 data. County and air basin fractions for years not listed above were interpolated. The population data do not reflect any adjustment for the estimated census undercount.

The estimates of daily vehicle miles traveled (VMT) for the years 1980 through 2020 are found in ARB's revised motor vehicle emissions inventory model, EMFAC2002 version 2.2 (refer to *www.arb.ca.gov/msei/msei.htm*). The VMT estimates have been revised from those published in last year's Almanac,based on changes in vehicle population, mileage accrual rates, and the data provided by regional transportation planning agencies (RTPAs). For recent calendar years, the VMT estimates in large urbanized areas are provided by RTPAs as an output of their travel demand models. For historical years (pre-1999), the VMT is calculated as the product of vehicle population backcast from Department of Motor Vehicles data and mileage accrual rates (annual miles traveled by type and age of vehicle) calculated from the Bureau of Automotive Repair database for the Smog Check program. In this case, lower estimates of vehicle population and lower mileage accrual rates, along with subtle changes in the vehicle age distribution, combine to generate lower VMT estimates for all but the most recent years. More detailed information about the methodologies used in developing both the population and VMT trends is available from the ARB staff at (916) 322-7062.

California

Surface Area = 155959 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	23781900	26402300	29828585	31711255	34036350	37473100	40262100	42711100	45821800
Avg. Daily VMT(1000s)	389107	517683	677171	731207	796075	872885	957360	1032915	1109515

Table D-1

Great Basin Valleys Air Basin

Surface Area = 13986 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	27700	27900	29390	30870	32200	34300	36000	37600	39400
Avg. Daily VMT(1000s)	687	763	935	899	937	1093	1310	1496	1669

Table D-2

Alpine County

Surface Area = 739 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1100	1100	1090	1170	1200	1300	1400	1600	1700
Avg. Daily VMT(1000s)	26	27	36	37	41	47	55	62	69

Table D-3

Inyo County

Surface Area = 10203 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	17900	18000	18200	18300	18100	18800	19400	20000	20700
Avg. Daily VMT(1000s)	404	418	547	536	565	656	778	875	963

Table D-4

Mono County

Surface Area = 3044 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	8700	8800	10100	11400	12900	14200	15200	16000	17000
Avg. Daily VMT(1000s)	257	318	352	326	331	390	477	559	637

Table D-5

Lake County Air Basin

Surface Area = 1258 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	36800	45600	51000	56600	58600	69200	77600	84400	93000
Avg. Daily VMT(1000s)	807	1090	1276	1495	1545	1825	2236	2686	3128

Table D-6

Lake Tahoe Air Basin

Surface Area = 224 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	36200	36200	39400	43700	46700	55300	62800	69000	75000
Avg. Daily VMT(1000s)	600	695	856	1024	1082	1245	1484	1718	1935

Table D-7

El Dorado County

Surface Area = 157 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	27700	27500	30000	32800	34500	40700	46200	50700	55100
Avg. Daily VMT(1000s)	418	447	535	625	643	738	887	1046	1187

Table D-8 A portion of El Dorado County lies within the Mountain Counties Air Basin.

Placer County

Surface Area = 66 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	8500	8700	9400	10900	12200	14600	16600	18300	19900
Avg. Daily VMT(1000s)	182	248	321	399	439	507	597	672	748

Table D-9 Portions of Placer County lie within the Mountain Counties and Sacramento Valley Air Basins.

Mojave Desert Air Basin

Surface Area = 27287 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	357400	485700	676400	749300	820700	921200	1012700	1103700	1217700
Avg. Daily VMT(1000s)	5320	9087	18237	20231	22576	27466	32784	38533	44686

Table D-10

Kern County

Surface Area = 3786 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	82600	96300	111400	115400	112900	130700	147700	164900	184500
Avg. Daily VMT(1000s)	1672	2473	3218	3607	4022	5018	6201	7639	8724

Table D-11 A portion of Kern County lies within the San Joaquin Valley Air Basin.

Los Angeles County

Surface Area = 1522 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	97500	160500	231300	262100	300200	319300	333000	344900	363800
Avg. Daily VMT(1000s)	1982	3240	6300	6147	6567	8132	9933	11940	14333

Table D-12 A portion of Los Angeles County lies within the South Coast Air Basin.

Riverside County

Surface Area = 3054 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	10400	13100	18500	22200	25800	31000	35900	40900	46800
Avg. Daily VMT(1000s)	73	123	245	322	390	455	517	579	640

Table D-13 Portions of Riverside County lie within the Salton Sea and South Coast Air Basins.

San Bernardino County

Surface Area = 18923 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	166900	215800	315200	349600	381800	440200	496100	553000	622600
Avg. Daily VMT(1000s)	1593	3251	8474	10155	11597	13861	16133	18375	20989

Table D-14 A portion of San Bernardino County lies within the South Coast Air Basin.

Mountain Counties Air Basin

Surface Area = 12226 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	229600	272800	345920	385760	410550	471900	522200	561900	599500
Avg. Daily VMT(1000s)	5217	6739	9171	10431	11084	13252	15639	17882	20135

Table D-15

Amador County

Surface Area = 593 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	19500	22200	30450	33400	35300	37600	39300	40300	41300
Avg. Daily VMT(1000s)	565	700	983	1127	1149	1468	1712	1927	2257

Table D-16

Calaveras County

Surface Area = 1020 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	20900	25000	32450	38350	40700	47800	53400	57900	62200
Avg. Daily VMT(1000s)	569	689	985	1172	1209	1542	2016	2544	3132

Table D-17

El Dorado County

Surface Area = 1553 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	58800	71600	97300	112100	123800	146300	165800	182200	197800
Avg. Daily VMT(1000s)	1230	1661	2204	2685	2874	3386	3780	4156	4413

Table D-18 A portion of El Dorado County lies within the Lake Tahoe Air Basin.

Mariposa County

Surface Area = 1451 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	11200	12500	14400	16450	17050	19600	21500	23000	24300
Avg. Daily VMT(1000s)	264	310	449	503	487	570	691	797	903

Table D-19

Nevada County

Surface Area = 958 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	52500	64700	79000	87100	92300	106300	117300	125600	133200
Avg. Daily VMT(1000s)	1117	1582	2062	2273	2434	2869	3456	3963	4492

Table D-20

Placer County

Surface Area = 908 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	12000	15100	20500	21800	22200	26500	30200	33200	36200
Avg. Daily VMT(1000s)	237	344	412	504	746	918	1034	1169	1251

Table D-21 Portions of Placer County lie within the Lake Tahoe and Sacramento Valley Air Basins.

Plumas County

Surface Area = 2553 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	17400	18600	19800	20800	20800	21900	22700	23100	23500
Avg. Daily VMT(1000s)	350	403	562	615	667	736	818	863	899

Table D-22

Sierra County

Surface Area = 953 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	3100	3200	3320	3560	3600	3700	3800	3800	3800
Avg. Daily VMT(1000s)	68	77	100	92	99	109	122	130	136

Table D-23

Tuolumne County

Surface Area = 2235 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	34200	39900	48700	52200	54800	62200	68200	72800	77200
Avg. Daily VMT(1000s)	817	973	1414	1460	1419	1654	2010	2333	2652

Table D-24

North Central Coast Air Basin

Surface Area = 5156 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	506400	565800	623000	645950	712600	798400	877000	954700	1048100
Avg. Daily VMT(1000s)	9059	12267	16058	16656	18324	19953	21723	23255	24988

Table D-25

Monterey County

Surface Area = 3321 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	292100	327400	356800	360400	402400	450300	493100	535700	590700
Avg. Daily VMT(1000s)	5757	7645	9911	10123	11346	12276	13237	14185	15250

Table D-26

San Benito County

Surface Area = 1389 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	25200	29900	36900	44350	53800	63600	72000	79100	86800
Avg. Daily VMT(1000s)	579	830	1188	1353	1498	1711	1983	2235	2518

Table D-27

Santa Cruz County

Surface Area = 445 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	189100	208500	229300	241200	256400	284500	311900	339900	370600
Avg. Daily VMT(1000s)	2723	3792	4959	5180	5480	5966	6503	6835	7220

Table D-28

North Coast Air Basin

Surface Area = 12339 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	244400	258200	286750	303250	310800	336900	357500	373900	390900
Avg. Daily VMT(1000s)	5480	6531	8691	9098	9210	10258	11726	12868	13942

Table D-29

Del Norte County

Surface Area = 1008 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	18300	19100	24450	27850	27600	31500	34500	36800	39000
Avg. Daily VMT(1000s)	413	406	575	594	565	676	829	997	1172

Table D-30

Humboldt County

Surface Area = 3572 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	108900	110600	119400	125000	126500	132500	136500	139200	142100
Avg. Daily VMT(1000s)	2111	2418	3152	3207	3194	3482	3927	4224	4452

Table D-31

Mendocino County

Surface Area = 3508 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	67000	73400	80600	83800	86700	95500	103200	109700	116700
Avg. Daily VMT(1000s)	1315	1549	2142	2302	2363	2709	3198	3593	3960

Table D-32

Sonoma County

Surface Area = 1071 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	38200	42300	49300	53100	57000	63600	68900	73200	77700
Avg. Daily VMT(1000s)	1392	1886	2452	2638	2734	2998	3313	3524	3762

Table D-33

A portion of Sonoma County lies within the San Francisco Bay Area Air Basin.

Trinity County

Surface Area = 3179 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	12000	12800	13000	13500	13000	13800	14400	15000	15400
Avg. Daily VMT(1000s)	249	272	370	357	354	393	459	530	596

Table D-34

Northeast Plateau Air Basin

Surface Area = 14788 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	70500	75200	81025	83875	88050	97100	103800	109300	114900
Avg. Daily VMT(1000s)	1507	1707	2291	2518	2251	2521	2897	3200	3472

Table D-35

Lassen County

Surface Area = 4557 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	21800	24300	27700	28900	34150	39800	43400	46400	49500
Avg. Daily VMT(1000s)	397	450	609	721	720	813	931	1019	1099

Table D-36

Modoc County

Surface Area = 3944 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	8700	9400	9675	9975	9400	10100	10700	11100	11500
Avg. Daily VMT(1000s)	184	197	241	259	250	296	352	408	472

Table D-37

Siskiyou County

Surface Area = 6287 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	40000	41500	43650	45000	44500	47200	49700	51800	53900
Avg. Daily VMT(1000s)	926	1060	1441	1538	1281	1412	1614	1773	1901

Table D-38

Sacramento Valley Air Basin

Surface Area = 14994 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1500900	1688200	1977600	2155550	2344950	2647200	2904700	3128100	3374700
Avg. Daily VMT(1000s)	27881	35762	47540	52178	54681	62630	70184	77831	84078

Table D-39

Butte County

Surface Area = 1639 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	144900	161600	183200	197500	203900	235000	259800	281200	308900
Avg. Daily VMT(1000s)	2525	3140	4320	4549	4496	4996	5762	6456	7138

Table D-40

Colusa County

Surface Area = 1151 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	12900	14600	16300	17850	18900	24200	29200	33900	39200
Avg. Daily VMT(1000s)	362	441	531	547	550	636	751	855	959

Table D-41

Glenn County

Surface Area = 1314 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	21500	22900	24850	26400	26550	31800	36700	41300	46500
Avg. Daily VMT(1000s)	522	651	725	772	685	789	947	1099	1252

Table D-42

Placer County

Surface Area = 429 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	97900	114900	145000	179000	215200	257300	292500	321900	350800
Avg. Daily VMT(1000s)	2231	2783	3736	4672	6034	7428	8373	9461	10055

Table D-43 Portions of Placer County lie within the Lake Tahoe and Mountain Counties Air Basins.

Sacramento County
Surface Area = 966 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	787900	890700	1046900	1120700	1229700	1368500	1486500	1591100	1707600
Avg. Daily VMT(1000s)	14618	18996	24774	27057	27090	30519	33091	35567	37370

Table D-44

Shasta County
Surface Area = 3785 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	116600	129100	148000	159700	164400	185700	203500	217500	231000
Avg. Daily VMT(1000s)	2190	2728	3802	4009	4068	4633	5504	6192	6787

Table D-45

Solano County
Surface Area = 511 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	63800	76000	98300	109100	121300	136300	149000	160000	171700
Avg. Daily VMT(1000s)	961	1258	2085	2334	2703	3152	3522	4150	4870

Table D-46 A portion of Solano County lies within the San Francisco Bay Area Air Basin.

Sutter County
Surface Area = 603 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	52600	57800	64800	74200	79400	90400	99600	107200	115600
Avg. Daily	895	1164	1616	1769	1921	2333	2922	3534	4196

Table D-47

Tehama County
Surface Area = 2951 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	39100	44000	49850	54600	56000	63400	71500	78200	85100
Avg. Daily VMT(1000s)	714	823	1295	1325	1279	1427	1658	1825	1959

Table D-48

Yolo County
Surface Area = 1013 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	113900	123500	141800	154600	169200	188600	205000	219500	236400
Avg. Daily VMT(1000s)	2200	2932	3519	3924	4577	5206	5812	6535	7007

Table D-49

Yuba County
Surface Area = 631 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	49800	53100	58600	61900	60400	66000	71400	76300	81900
Avg. Daily VMT(1000s)	663	846	1137	1220	1278	1511	1842	2157	2485

Table D-50

Salton Sea Air Basin

Surface Area = 6304 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	230100	270400	354200	422200	471600	572800	669500	766800	883900
Avg. Daily VMT(1000s)	5232	7060	11284	13002	11392	12677	14181	15672	17480

Table D-51

Imperial County

Surface Area = 4174 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	92500	98600	110100	136200	146100	182500	217500	252000	294200
Avg. Daily VMT(1000s)	2289	2695	3800	4019	4090	4725	5490	6231	7064

Table D-52

Riverside County

Surface Area = 2129 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	137600	171800	244100	286000	325500	390300	452000	514800	589700
Avg. Daily VMT(1000s)	2943	4365	7484	8983	7302	7952	8691	9441	10416

Table D-53 Portions of Riverside County lie within the Mojave Desert and South Coast Air Basins.

San Diego Air Basin and County

Surface Area = 4200 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1873300	2109300	2504900	2615200	2830100	3149900	3388400	3591300	3863500
Avg. Daily VMT(1000s)	31707	43517	63591	67943	73909	82660	87481	93886	97542

Table D-54

San Francisco Bay Area Air Basin

Surface Area = 5340 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	5095400	5473900	5874400	6182500	6639400	7180000	7544800	7779600	8088700
Avg. Daily VMT(1000s)	90066	109789	133990	144854	159271	172581	193300	202212	213900

Table D-55

Alameda County

Surface Area = 738 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1109500	1196000	1276100	1335100	1452000	1580200	1671200	1735800	1811800
Avg. Daily VMT(1000s)	19704	24193	28991	29721	32844	33918	40723	42306	44378

Table D-56

Contra Costa County

Surface Area = 720 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	658500	710900	806300	872800	954100	1021400	1071400	1108100	1152900
Avg. Daily VMT(1000s)	12175	15390	19335	21371	23780	26978	29988	32063	34603

Table D-57

Marin County

Surface Area = 520 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	222700	220200	229900	238400	247500	257600	263500	267300	273800
Avg. Daily VMT(1000s)	3714	4521	5620	6028	6652	7690	7857	8045	8374

Table D-58

Napa County

Surface Area = 754 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	99300	102900	111000	117300	125200	135700	143900	150500	158400
Avg. Daily VMT(1000s)	1479	1739	2184	2693	3000	3575	3887	4154	4453

Table D-59

San Francisco County

Surface Area = 47 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	680500	727500	723200	739900	780800	793500	787500	765900	755800
Avg. Daily VMT(1000s)	8350	10041	11687	11939	12661	12607	13867	14194	14605

Table D-60

San Mateo County

Surface Area = 449 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	588100	617300	648200	675900	710300	765800	794600	809100	834500
Avg. Daily VMT(1000s)	12253	14516	17965	20271	21677	23538	25136	25912	27234

Table D-61

Santa Clara County

Surface Area = 1291 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1300200	1410500	1495300	1573500	1692000	1867400	1987800	2063000	2163000
Avg. Daily VMT(1000s)	24779	29689	35537	38834	43103	46770	52405	53915	56104

Table D-62

Solano County

Surface Area = 318 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	173400	197300	244200	258400	274000	307800	336500	361200	387800
Avg. Daily VMT(1000s)	3332	4282	5656	5725	6469	7543	8429	9937	11656

Table D-63 A portion of Solano County lies within the Sacramento Valley Air Basin.

Sonoma County

Surface Area = 504 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	263200	291300	340200	371200	403500	450600	488400	518700	550700
Avg. Daily VMT(1000s)	4280	5418	7015	8272	9085	9962	11008	11686	12493

Table D-64 A portion of Sonoma County lies within the North Coast Air Basin.

San Joaquin Valley Air Basin

Surface Area = 23490 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1979800	2275800	2645200	2972600	3210800	3666300	4090900	4492900	4959900
Avg. Daily VMT(1000s)	32884	42075	60357	71772	81055	94209	107741	122270	135618

Table D-65

Fresno County

Surface Area = 5963 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	517400	582800	670200	756000	804500	893300	970900	1043100	1134600
Avg. Daily VMT(1000s)	8036	10288	14149	16980	18920	21821	24732	27856	30471

Table D-66

Kern County

Surface Area = 4355 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	323500	377500	436600	503600	553000	640600	723900	807800	904100
Avg. Daily VMT(1000s)	6239	8024	11219	12695	14819	17533	20632	24212	27631

Table D-67 A portion of Kern County lies within the Mojave Desert Air Basin.

Kings County

Surface Area = 1391 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	74200	83900	101900	115900	130200	149600	165300	180800	198700
Avg. Daily VMT(1000s)	980	1249	1828	2887	3114	3545	3885	4260	4632

Table D-68

Madera County

Surface Area = 2136 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	63900	74800	88500	109900	126600	152600	178900	203000	229200
Avg. Daily VMT(1000s)	1562	1957	2512	2819	3553	4540	5442	6595	7386

Table D-69

Merced County

Surface Area = 1929 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	135500	157000	179400	199000	210500	239900	266700	292400	322700
Avg. Daily VMT(1000s)	2511	2963	4849	5640	6331	7152	8365	9605	10809

Table D-70

San Joaquin County

Surface Area = 1399 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	350200	417200	481900	522100	567000	645600	727800	803400	887600
Avg. Daily VMT(1000s)	5748	7691	10881	13190	14866	17052	19318	21587	23577

Table D-71

Stanislaus County

Surface Area = 1494 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	267700	302000	373600	415300	449800	522700	587600	646800	712100
Avg. Daily VMT(1000s)	3784	4823	8291	9585	10549	11992	13392	14730	16282

Table D-72

Tulare County

Surface Area = 4824 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	247400	280600	313100	350800	369200	422000	469800	515600	570900
Avg. Daily VMT(1000s)	4024	5080	6628	7976	8903	10574	11975	13425	14830

Table D-73

South Central Coast Air Basin

Surface Area = 7887 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	988800	1119300	1255900	1319000	1405100	1540000	1668200	1796200	1950800
Avg. Daily VMT(1000s)	13928	19051	26992	28218	30885	33432	35736	38009	40320

Table D-74

San Luis Obispo County

Surface Area = 3304 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	156600	184200	217800	230200	247700	287000	323100	357000	390900
Avg. Daily VMT(1000s)	2649	3735	5200	5418	5974	6668	7533	8131	8743

Table D-75

Santa Barbara County

Surface Area = 2737 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	300000	338200	369000	383700	400700	434400	467700	505200	552700
Avg. Daily VMT(1000s)	4819	6496	9216	9004	9585	10233	10736	11250	11655

Table D-76

Ventura County

Surface Area = 1845 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	532200	596900	669100	705100	756700	818600	877400	934000	1007200
Avg. Daily VMT(1000s)	6460	8820	12576	13796	15326	16531	17467	18628	19922

Table D-77

South Coast Air Basin

Surface Area = 6480 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	10604600	11698000	13083500	13744900	14654200	15932600	16946000	17861700	19121800
Avg. Daily VMT(1000s)	158732	221550	275902	290888	317873	337083	358938	381397	406622

Table D-78

Los Angeles County

Surface Area = 2538 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	7402800	8030400	8629000	8839000	9260200	9849800	10272200	10639000	11221000
Avg. Daily VMT(1000s)	111447	152496	178897	181009	190484	194908	202547	213854	225490

Table D-79 A portion of Los Angeles County lies within the Mojave Desert Air Basin.

Orange County

Surface Area = 789 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	1944800	2166300	2412000	2604500	2854600	3099700	3266700	3384300	3541700
Avg. Daily VMT(1000s)	28211	41177	53543	58532	65356	70251	74629	78690	83767

Table D-80

Riverside County

Surface Area = 2024 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	521700	651500	925600	1070600	1203600	1443300	1671600	1903700	2180800
Avg. Daily VMT(1000s)	8452	12671	22304	26846	34479	40563	46039	50025	54848

Table D-81 Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins.

San Bernardino County

Surface Area = 1129 square miles

Parameter	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population	735300	849800	1116900	1230800	1335800	1539800	1735500	1934700	2178300
Avg. Daily VMT(1000s)	10622	15206	21158	24501	27554	31361	35723	38828	42517

Table D-82 A portion of San Bernardino County lies within the Mojave Desert Air Basin.

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APPENDIX E

Natural Sources

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Introduction

Appendix E contains estimates of emissions from natural processes occurring in terrestrial, marine, or aquatic ecosystems. Natural source air emissions include a variety of compounds and occur as a result of geologic or meteorological activity (such as petroleum seeps, or wildfires), or living processes by flora and fauna (such as emissions from vegetation foliage, or from soil microbes). Emissions resulting from anthropogenic activities, such as soil ammonia (NH_3) emissions resulting from fertilizer application, burning of agricultural crop residues, prescribed burning of natural areas, wildfires that are managed for resources benefit, and windblown dust from crop fields and pastures are provided in Chapter 2. Windblown dust emissions from dry lake beds have also not been included.

For this edition of the Almanac, categories of natural sources include geogenic (petroleum seeps) and biogenic (vegetation) sources, and wildfires. Other categories may be added in future editions. Natural emissions are strongly affected by seasonal influences on factors such as temperature and moisture conditions, or wind regimes. Emissions during "peak season" are often orders of magnitude greater than emissions during dormant periods. Emissions for some categories (for example see Figure E-1) are therefore reported with respect to time of year, in addition to annual averages. Emissions can fluctuate greatly from year-to-year due to variation in meteorology or land cover/land use. Methods for forecasting future natural emissions due to changes in climate or land cover/land use remain in the realm of on-going scientific research, and have not been applied in this edition of the Almanac.

Statewide

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**2225**	**2482**	**79**	**24**	**253**	**215**	**76**
Biogenic Sources*	2067	0	0	0	0	0	15
Geogenic Sources*	29	0	0	0	0	0	36
Wildfires**	128	2482	79	24	253	215	25

* Biogenic and geogenic emissions are not year-specific.
** Wildfire emissions reflect 10-year averages.

Table E-1

Biogenic Sources

Biogenic volatile organic compounds (BVOCs) are emitted into the atmosphere from terrestrial ecosystems such as vegetation. BVOCs include isoprene, monoterpenes, methylbutenol (MBO), and other biogenic VOCs (OVOCs). These compounds are of interest because of their roles in atmospheric chemistry and climate. In the presence of anthropogenic NOx compounds, isoprene has been found to play a significant role in ozone chemistry. Monoterpenes and MBO are moderately reactive. OVOCs are a general category comprised of less reactive compounds, such as methanol and acetone. Isoprene, monoterpenes, MBO, and a fraction of the OVOCs are considered as reactive organic gas (ROG).

Plant BVOC emissions vary by compound and by orders of magnitude among various plant species. BVOCs play roles in plant physiology and chemical defense from pests and plant diseases. BVOC emissions are strongly influenced by environmental factors such as temperature and sunlight. Biophysical and environmental mechanisms controlling the synthesis and emission of isoprene, monoterpenes, and MBO have been studied across a variety of plant species and landscapes. Less is known about OVOCs. As a result, the BVOC research community has developed BVOC emission models, which have been routinely applied by the climate research, air quality, and emissions modeling community. A statewide model was developed to estimate BVOC emissions from vegetation over the course of a calendar year. The model runs at a 4 km x 4 km spatial resolution and generates hourly emissions of isoprene, monoterpenes, MBO, and OVOCs. Emissions from vegetation were estimated from plant species leaf mass and emission factors, and environmental adjustment algorithms representing light and temperature dependence of BVOC emissions. Leaf mass density estimates, used to scale emissions from leaf to landscapes, were based on Geographic Information System (GIS) land use/land cover databases, species leaf weight factors, and monthly satellite leaf area index (LAI) data. Temporal and spatial variation in the model was driven by monthly estimates of leaf mass densities and hourly light and temperature. The annual statewide emission of BVOC (reported here as ROG) is estimated to be over 750,000 tons, composed of 37 percent isoprene, 30 percent MBO, 24 percent monoterpenes, and 9 percent OVOC. As shown in Figure E-1, the majority of biogenic emissions are produced during the ozone season (May through October).

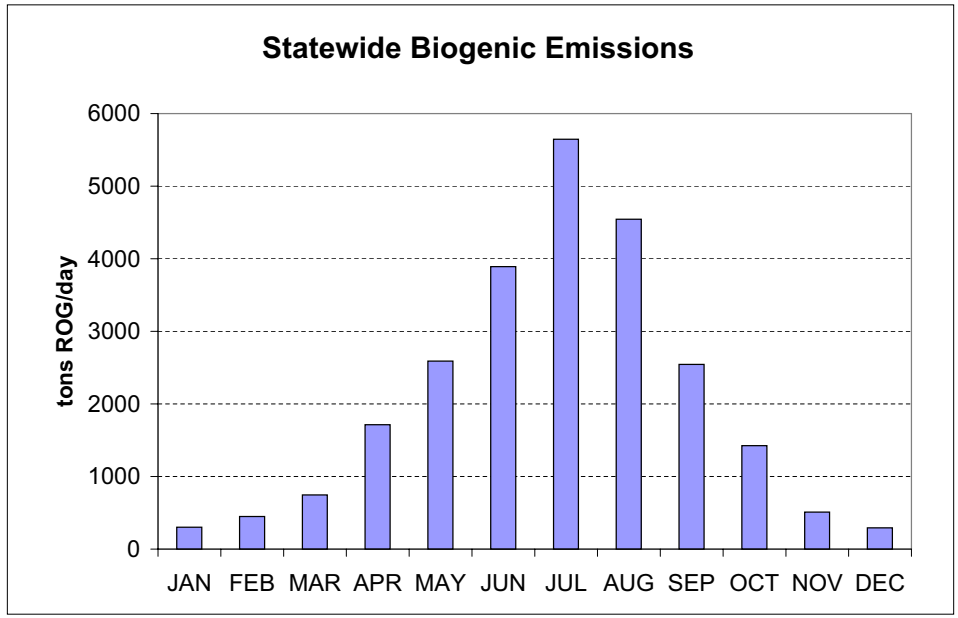

Figure E-1

Geogenic Sources

Petroleum gas and oil seeps occur naturally in California and have been active for millennia. Oil and gas seeps form where oil or natural gas emerge from subsurface sources to the ground or water surface. Seeps are associated with water springs in which oil floats to the surface of the water, and gas bubbles out into the atmosphere. Large seeps may be comprised of nearly pure oil, asphaltum, or semisolid bitumen. Most seeps are mixed with varying amounts of sand, clay, and biomass debris. Terrestrial seep flows vary with the seasons, with elevated flows occurring during warm weather. Seismic activity can create new seeps or cause increased flows from existing seeps. Major marine seeps are located off the coast of Santa Barbara County. Other seeps occur in regions of oil and gas production throughout the state.

Wildfires

A wildfire is a natural event that burns a variety of vegetation types ranging in age, size, and density. This wildfire category does not include prescribed fires such as agriculture burning, forest management fires, or Wildland Fire Use (WFU). A prescribed burn is a fire ignited by a planned management action whereas a WFU is a naturally ignited lightning fire that is managed for resources benefit.

Wildfires can vary significantly from year to year; an area may have extreme wildfire behavior one year and the following year have none. Emissions for PM_{10}, $PM_{2.5}$, CO, NO_x, SO_2, NO_2, NH_3, CH_4, and ROG (Total Non-Methane Hydrocarbon, reported here as ROG) are estimated by Air Basin and County. About 97 percent of wildfires burn between May and October, with August the highest month. The wildfire emission estimates presented in this 2004 Almanac are based on a 10-year average that was calculated from actual 1994-2003 wildfire activity. Figure E-2 is a map showing all of the wildfires that burned between 1994 and 2003 in California. The tables that follow show the 10-year average emissions per air basin and county.

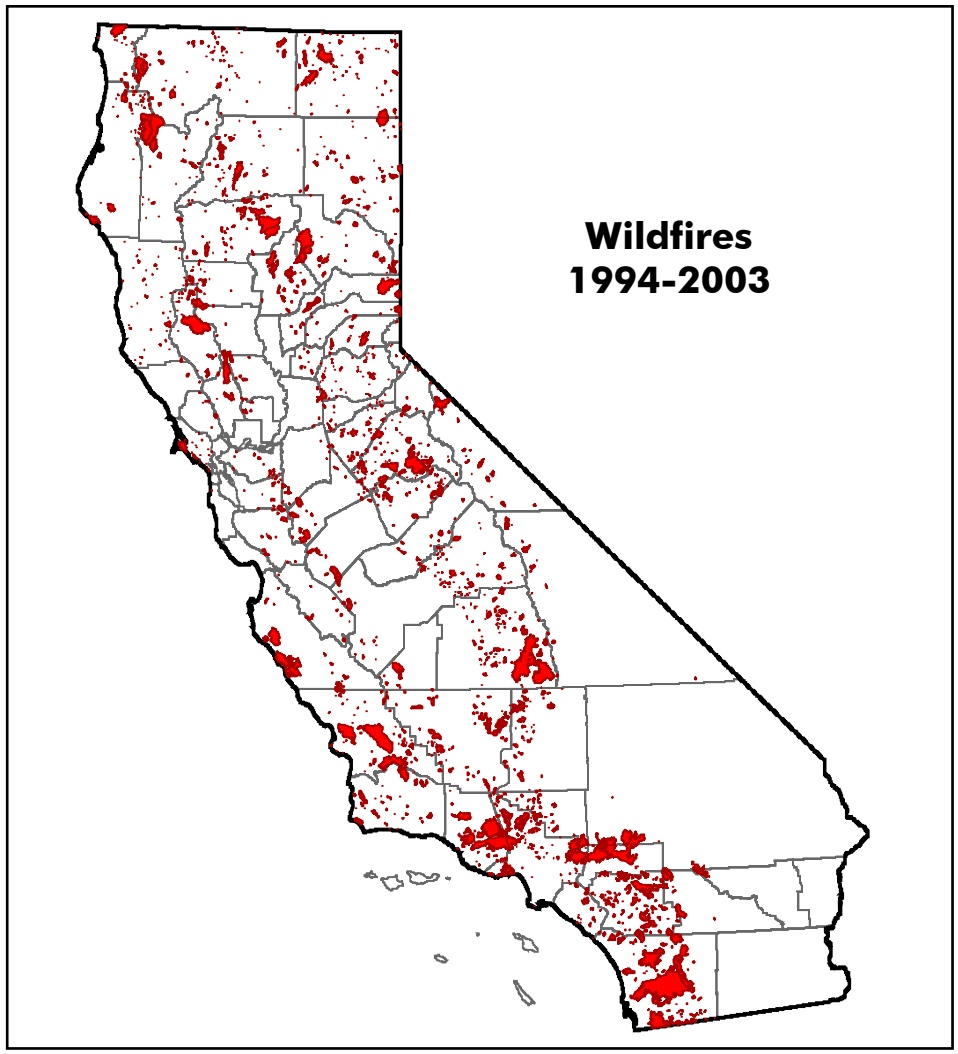

Figure E-2

Great Basin Valleys Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**37**	**8**	**0**	**0**	**1**	**1**	**3**
Biogenic Sources	36	0	0	0	0	0	2
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	8	0	0	1	1	0

Table E-2

Alpine County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**9**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	9	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-3

Inyo County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**7**	**2**	**0**	**0**	**0**	**0**	**2**
Biogenic Sources	7	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	0	2	0	0	0	0	0

Table E-4

Mono County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**21**	**6**	**0**	**0**	**1**	**1**	**1**
Biogenic Sources	21	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	6	0	0	1	1	0

Table E-5

Lake County Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**64**	**124**	**4**	**1**	**13**	**11**	**2**
Biogenic Sources	55	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	9	124	4	1	13	11	1

Table E-6

Lake Tahoe Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**3**	**1**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	3	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	1	0	0	0	0	0

Table E-7

El Dorado County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**2**	**1**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	2	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	1	0	0	0	0	0

Table E-8 A portion of El Dorado County lies within the Mountain Counties Air Basin.

Placer County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	1	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-9 Portions of Placer County lie within the Mountain Counties and Sacramento Valley Air Basins.

Mojave Desert Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**39**	**95**	**3**	**1**	**10**	**8**	**5**
Biogenic Sources	36	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	3
Wildfires	4	95	3	1	10	8	1

Table E-10

Kern County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**25**	**41**	**1**	**0**	**4**	**4**	**1**
Biogenic Sources	23	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	3	41	1	0	4	4	0

Table E-11 A portion of Kern County lies within the Mojave Desert Air Basin.

Los Angeles County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**6**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	6	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-12 A portion of Los Angeles County lies within the South Coast Air Basin.

Riverside County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**0**	**2**	**0**	**0**	**0**	**0**	**1**
Biogenic Sources	0	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	0	2	0	0	0	0	0

Table E-13 Portions of Riverside County lie within the Salton Sea and South Coast Air Basins.

San Bernardino County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**8**	**52**	**1**	**0**	**5**	**4**	**3**
Biogenic Sources	6	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	2
Wildfires	1	52	1	0	5	4	1

Table E-14 A portion of San Bernardino County lies within the Mojave Desert Air Basin.

Mountain Counties Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**330**	**396**	**12**	**4**	**40**	**34**	**6**
Biogenic Sources	305	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	25	396	12	4	40	34	4

Table E-15

Amador County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**15**	**1**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	15	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	1	0	0	0	0	0

Table E-16

Calaveras County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**39**	**15**	**0**	**0**	**2**	**1**	**0**
Biogenic Sources	38	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	15	0	0	2	1	0

Table E-17

El Dorado County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**50**	**5**	**0**	**0**	**1**	**0**	**0**
Biogenic Sources	49	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	5	0	0	1	0	0

Table E-18 A portion of El Dorado County lies within the Lake Tahoe Air Basin.

Mariposa County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**36**	**15**	**0**	**0**	**2**	**1**	**0**
Biogenic Sources	35	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	15	0	0	2	1	0

Table E-19

Nevada County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**36**	**7**	**0**	**0**	**1**	**1**	**0**
Biogenic Sources	36	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	7	0	0	1	1	0

Table E-20

Placer County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**28**	**34**	**1**	**0**	**3**	**3**	**0**
Biogenic Sources	26	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	2	34	1	0	3	3	0

Table E-21 Portions of Placer County lie within the Lake Tahoe and Sacramento Valley Air Basins.

Plumas County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**51**	**161**	**5**	**1**	**16**	**14**	**2**
Biogenic Sources	43	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	8	161	5	1	16	14	2

Table E-22

Sierra County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**20**	**38**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	17	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	3	38	1	0	4	3	0

Table E-23

Tuolumne County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**54**	**120**	**4**	**1**	**12**	**10**	**2**
Biogenic Sources	46	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	8	120	4	1	12	10	1

Table E-24

North Central Coast Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**73**	**44**	**1**	**0**	**5**	**4**	**2**
Biogenic Sources	72	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	44	1	0	5	4	0

Table E-25

Monterey County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**51**	**41**	**1**	**0**	**4**	**4**	**2**
Biogenic Sources	50	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	41	1	0	4	4	0

Table E-26

San Benito County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**17**	**3**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	17	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	3	0	0	0	0	0

Table E-27

Santa Cruz County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**5**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	5	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-28

North Coast Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**373**	**393**	**14**	**4**	**41**	**35**	**6**
Biogenic Sources	363	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	9	393	14	4	41	35	4

Table E-29

Del Norte County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**27**	**39**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	24	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	3	39	1	0	4	3	0

Table E-30

Humboldt County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**86**	**149**	**5**	**2**	**16**	**13**	**2**
Biogenic Sources	81	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	5	149	5	2	16	13	1

Table E-31

Mendocino County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**118**	**6**	**0**	**0**	**1**	**1**	**1**
Biogenic Sources	117	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	6	0	0	1	1	0

Table E-32

Sonoma County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**23**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	23	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-33 A portion of Sonoma County lies within the San Francisco Bay Area Air Basin.

Trinity County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**119**	**198**	**7**	**2**	**21**	**17**	**3**
Biogenic Sources	118	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	2	198	7	2	21	17	2

Table E-34

Northeast Plateau Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**283**	**212**	**7**	**2**	**22**	**19**	**6**
Biogenic Sources	269	0	0	0	0	0	2
Geogenic Sources	0	0	0	0	0	0	2
Wildfires	14	212	7	2	22	19	2

Table E-35

Lassen County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**59**	**47**	**1**	**0**	**5**	**4**	**2**
Biogenic Sources	56	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	3	47	1	0	5	4	0

Table E-36

Modoc County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**57**	**52**	**2**	**1**	**5**	**5**	**2**
Biogenic Sources	54	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	3	52	2	1	5	5	1

Table E-37

Siskiyou County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**166**	**113**	**4**	**1**	**12**	**10**	**2**
Biogenic Sources	159	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	8	113	4	1	12	10	1

Table E-38

Sacramento Valley Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**379**	**379**	**12**	**4**	**39**	**33**	**8**
Biogenic Sources	367	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	3
Wildfires	12	379	12	4	39	33	4

Table E-39

Butte County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**44**	**89**	**3**	**1**	**9**	**8**	**1**
Biogenic Sources	41	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	3	89	3	1	9	8	1

Table E-40

Colusa County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**23**	**15**	**1**	**0**	**2**	**1**	**1**
Biogenic Sources	22	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	15	1	0	2	1	0

Table E-41

Glenn County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**19**	**37**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	17	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	3	37	1	0	4	3	0

Table E-42

Placer County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**7**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	7	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-43 Portions of Placer County lie within the Lake Tahoe and Mountain Counties Air Basins.

Sacramento County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**10**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	10	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-44

Shasta County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**167**	**49**	**2**	**1**	**5**	**4**	**1**
Biogenic Sources	166	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	49	2	1	5	4	0

Table E-45

Solano County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**4**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	4	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-46 A portion of Solano County lies within the San Francisco Bay Area Air Basin.

Sutter County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**3**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	3	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-47

Tehama County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**71**	**170**	**5**	**2**	**17**	**15**	**2**
Biogenic Sources	66	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	4	170	5	2	17	15	2

Table E-48

Sacramento Valley Air Basin (continued)

Natural Source Emissions (tons/day, annual average)

Yolo County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**16**	**17**	**1**	**0**	**2**	**2**	**1**
Biogenic Sources	15	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	17	1	0	2	2	0

Table E-49

Yuba County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**15**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	15	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-50

Salton Sea Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**11**	**12**	**0**	**0**	**1**	**1**	**5**
Biogenic Sources	10	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	4
Wildfires	1	12	0	0	1	1	0

Table E-51

Imperial County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**3**	**0**	**0**	**0**	**0**	**0**	**4**
Biogenic Sources	3	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	4
Wildfires	0	0	0	0	0	0	0

Table E-52

Riverside County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**8**	**12**	**0**	**0**	**1**	**1**	**1**
Biogenic Sources	7	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	12	0	0	1	1	0

Table E-53 Portions of Riverside County lie within the Mojave Desert and South Coast Air Basins.

San Diego Air Basin and County

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**76**	**138**	**4**	**1**	**14**	**12**	**2**
Biogenic Sources	67	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	9	138	4	1	14	12	1

Table E-54

San Francisco Bay Area Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**106**	**49**	**2**	**1**	**5**	**4**	**1**
Biogenic Sources	105	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	49	2	1	5	4	1

Table E-55

Alameda County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**11**	**2**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	11	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	2	0	0	0	0	0

Table E-56

Contra Costa County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**11**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	11	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-57

Marin County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**7**	**4**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	7	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	4	0	0	0	0	0

Table E-58

Napa County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**27**	**37**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	26	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	1	37	1	0	4	3	0

Table E-59

San Francisco County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	1	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-60

San Mateo County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**7**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	7	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-61

Santa Clara County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**29**	**6**	**0**	**0**	**1**	**1**	**0**
Biogenic Sources	29	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	6	0	0	1	1	0

Table E-62

Solano County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**3**	**0**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	3	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	0	0	0	0	0	0

Table E-63 A portion of Solano County lies within the Sacramento Valley Air Basin.

Sonoma County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**10**	**1**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	10	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	1	0	0	0	0	0

Table E-64 A portion of Sonoma County lies within the North Coast Air Basin.

San Joaquin Valley Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**235**	**348**	**11**	**3**	**35**	**30**	**19**
Biogenic Sources	211	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	14
Wildfires	24	348	11	3	35	30	3

Table E-65

Fresno County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**64**	**15**	**0**	**0**	**1**	**1**	**3**
Biogenic Sources	63	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	3
Wildfires	1	15	0	0	1	1	0

Table E-66

Kern County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**19**	**17**	**1**	**0**	**2**	**1**	**4**
Biogenic Sources	18	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	4
Wildfires	1	17	1	0	2	1	0

Table E-67

A portion of Kern County lies within the Mojave Desert Air Basin.

Kings County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**4**	**1**	**0**	**0**	**0**	**0**	**2**
Biogenic Sources	4	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	2
Wildfires	0	1	0	0	0	0	0

Table E-68

Madera County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**38**	**3**	**0**	**0**	**0**	**0**	**1**
Biogenic Sources	38	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	0	3	0	0	0	0	0

Table E-69

Merced County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**6**	**1**	**0**	**0**	**0**	**0**	**2**
Biogenic Sources	6	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	2
Wildfires	0	1	0	0	0	0	0

Table E-70

San Joaquin County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**8**	**0**	**0**	**0**	**0**	**0**	**1**
Biogenic Sources	8	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	0	0	0	0	0	0	0

Table E-71

Stanislaus County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**13**	**16**	**1**	**0**	**2**	**1**	**1**
Biogenic Sources	12	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	1	16	1	0	2	1	0

Table E-72

Tulare County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**82**	**296**	**9**	**3**	**30**	**25**	**5**
Biogenic Sources	61	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	21	296	9	3	30	25	3

Table E-73

South Central Coast Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**123**	**120**	**4**	**1**	**12**	**10**	**5**
Biogenic Sources	93	0	0	0	0	0	0
Geogenic Sources	23	0	0	0	0	0	4
Wildfires	8	120	4	1	12	10	1

Table E-74

San Luis Obispo County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**36**	**62**	**2**	**1**	**6**	**5**	**3**
Biogenic Sources	32	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	2
Wildfires	4	62	2	1	6	5	1

Table E-75

Santa Barbara County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**54**	**12**	**0**	**0**	**1**	**1**	**1**
Biogenic Sources	35	0	0	0	0	0	0
Geogenic Sources	19	0	0	0	0	0	1
Wildfires	0	12	0	0	1	1	0

Table E-76

Ventura County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**33**	**46**	**1**	**0**	**5**	**4**	**2**
Biogenic Sources	26	0	0	0	0	0	0
Geogenic Sources	4	0	0	0	0	0	1
Wildfires	3	46	1	0	5	4	0

Table E-77

South Coast Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**86**	**164**	**5**	**2**	**17**	**14**	**6**
Biogenic Sources	76	0	0	0	0	0	3
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	11	164	5	2	17	14	2

Table E-78

Los Angeles County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**34**	**65**	**2**	**1**	**7**	**6**	**2**
Biogenic Sources	30	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	4	65	2	1	7	6	1

Table E-79 A portion of Los Angeles County lies within the Mojave Desert Air Basin.

Orange County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**9**	**2**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	9	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	2	0	0	0	0	0

Table E-80

Riverside County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**24**	**38**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	22	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	2	38	1	0	4	3	0

Table E-81 Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins.

San Bernardino County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**19**	**59**	**2**	**1**	**6**	**5**	**3**
Biogenic Sources	15	0	0	0	0	0	2
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	4	59	2	1	6	5	1

Table E-82 A portion of San Bernardino County lies within the Mojave Desert Air Basin.

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