

APPENDIX A

TABLES

**Table A-1
Examples of TACs Addressed in the Final Draft Air Toxics Control Plan
(Based on California State Approved Risk Factors)**

TAC	Potential Impacts	
	Carcinogenic	Noncancer Impacts
1,1,1 Trichloroethane (Methyl Chloroform)	Carcinogenic	Central and Peripheral Nervous System
1,3-Butadiene	Carcinogenic	
Ammonia		Eye Irritation; Respiratory System
Arsenic	Carcinogenic	Reproductive/Developmental
Benzene	Carcinogenic	Reproductive/Developmental; Hematological System; Immune System
Carbon tetrachloride	Carcinogenic	Reproductive/Developmental; Central Nervous System/Peripheral Nervous System; Gastrointestinal/Liver
Chlorinated dioxins and Chlorinated dibenzofurans	Carcinogenic	Alimentary system (liver); Reproductive System; Development; Endocrine System; Respiratory System; Hematopoietic System
Chlorine		Eye Irritation; Respiratory System
Diesel particulate	Carcinogenic	Respiratory System; Eye and Nasal Irritation; Immune System; Mutagenic
Ethylbenzene		Development; Alimentary System (liver); Kidney; Endocrine System
Ethylene glycol monoethyl ether		Respiratory System; Reproductive System; Hematopoietic System
Ethylene glycol monomethyl ether		Reproductive System

TAC	Potential Impacts	
Ethylene glycol monomethyl ether acetate		Central Nervous and Reproductive System
Ethylene oxide	Carcinogenic	
Formaldehyde	Carcinogenic	Eye Irritation; Immune System; Respiratory System
Hexavalent Chromium	Carcinogenic	
Hydrogen chloride		Eye Irritation; Respiratory System
Isopropyl alcohol		Eye and Respiratory Irritation; Kidney; Development
Lead	Carcinogenic	
Mercury and Mercury Compounds		Nervous and Reproductive System
Methyl bromide		Respiratory and Reproductive System; Central Nervous System; Development
Methylene chloride	Carcinogenic	Cardiovascular System; Central Nervous System
Methyl ethyl ketone		Eye and Respiratory Irritation
Methyl t-butyl ether		Kidney; Eye Irritation; Alimentary System (liver)
Nickel and Nickel Compounds	Carcinogenic	Respiratory Irritation; Immune System; Hematopoietic System
Nickel oxide	Carcinogenic	Respiratory System; Hematopoietic System

TAC	Potential Impacts	
	Carcinogenic	Noncancer Impacts
PAHs	Carcinogenic	
Perchloroethylene	Carcinogenic	Central Nervous System; Eye and Respiratory Irritation; Kidney; Gastrointestinal System/Liver
Phosphoric acid		Respiratory System
Propylene glycol monomethyl ether		Alimentary System (liver)
Propylene oxide		Eye Irritation; Reproductive and Respiratory System
Styrene		Eye and Respiratory Irritation
Toluene		Central Nervous System; Eye and Respiratory Irritation; Reproductive
Trichloroethylene	Carcinogenic	
Xylene		Eye and Respiratory Irritation

**Table A-2
AQMD Rules Adopted or Amended Pursuant to AB 1807**

Rule	Title	Description	Adoption Date
461	Gasoline Transfer and Dispensing	Reduces benzene emission from the retail sale of gasoline	July 1989
1469	Hexavalent Chromium Emissions from Chrome Plating and Chromic Acid Anodizing Operations	Establishes emission control requirements for chrome plating and chromic acid anodizing operations	Oct. 1998 (originally Rule 1169, June 3, 1988)
1404	Hexavalent Chromium Emissions from Cooling Towers	Bans use of additives containing hexavalent chromium in industrial and comfort cooling towers	April 1990
1405	Control of Ethylene Oxide and Chlorofluorocarbon Emissions from Sterilization or Fumigation Processes	Limits ethylene oxide emissions from commercial and medical sterilization equipment, and from quarantine equipment and areas	Dec. 1990
1406	Control of Dioxin Emissions from Medical Waste Incinerators	Requires the use of T-BACT for all medical waste incinerators to limit dioxin and other toxic emissions	April 1991
1414	Asbestos-containing Serpentine Materials in Surfacing Applications	Eliminates any future use of asbestos-containing serpentine material for the surfacing of unpaved areas	May 1991
1407	Control of Emissions of Arsenic, Cadmium, and Nickel from Non-ferrous Metal Melting Operations	Limits emissions of toxic metals from non-ferrous metal melting operations	July 1994
1421	Control of Perchloroethylene Emissions from Dry Cleaning Systems	Reduces perchloroethylene emissions from dry cleaning operations	June 1997 (first adopted Dec. 1994)

Table A-3
Modeled Estimated Risks(a) Comparison of the Network Averaged Modeled Risk to
Measured Risk at the Ten MATES II Sites

	Benzen	1,3 Butadiene	Carbonvls	Other	Diesel	Total
Anaheim	119	87	52	108	963	1330
Burbank	93	62	46	118	842	1161
Compton	96	65	45	102	994	1302
Fontana	48	19	33	87	752	939
Huntington Park	88	61	47	132	867	1195
Downtown L.A.	94	65	50	120	1176	1505
Long Beach	88	58	43	95	920	1204
Pico Rivera	77	43	41	101	869	1131
Rubidoux	57	26	35	72	797	987
Wilmington	81	46	59	164	1182	1531
Modeled Average	84	53	45	110	936	1228
Modeled Average*	83	53	43	104	898	1182
Monitored Average**	92	118	38	149	1017	1414

(b) Model Estimated Risk at the Ten MATES II Sites in 2010 with
Implementation of the 1997/99 AQMP

	Benzen	1,3 Butadiene	Carbonvls	Other	Diesel	Total
Anaheim	36	18	17	104	736	911
Burbank	30	17	18	102	615	782
Compton	29	14	17	92	774	926
Fontana	20	10	15	84	606	735
Huntington Park	30	21	21	121	659	852
Downtown L.A.	29	17	19	112	928	1105
Long Beach	31	23	20	87	729	890
Pico Rivera	25	11	17	92	648	793
Rubidoux	23	9	15	66	593	706
Wilmington	27	16	21	159	875	1099
Modeled Average	28	16	18	102	716	880
Modeled Average*	28	16	18	96	689	847
Estimated Monitored Average**	31	36	16	138	780	1013

(c) Model Estimated Risk at the Ten MATES II Sites in 2010 with Implementation of the 1997/99 AQMP and the Air Toxic Reduction Plan

	Benzen	1,3 Butadiene	Carbonyls	Other	Diesel	Total
Anaheim	33	18	17	76	463	607
Burbank	28	17	18	91	400	554
Compton	27	14	17	84	477	619
Fontana	19	10	15	77	391	512
Huntington Park	27	21	21	110	419	598
Downtown L.A.	27	17	19	101	563	727
Long Beach	29	23	20	80	446	598
Pico Rivera	23	11	17	84	412	547
Rubidoux	21	9	15	62	398	505
Wilmington	25	16	21	149	516	727
Modeled Average	26	16	18	91	449	599
Modeled Average*	26	16	18	85	437	581
Estimated Monitored Average**	29	36	16	122	495	695

* Eight monitoring site average excluding Wilmington and Compton where elemental carbon was not measured.

**Based on the modeling analysis for 2010, the estimated monitored results were derived assuming that the same percentage reduction would be observed.

**Table A-4
Summary of Airborne Toxic Control Measures**

(The following information was provided by the California Air Resources Board.)

ATCM	Adoption Date	Description
Benzene Control for Gasoline Service Stations	October 1987	Requires existing gasoline service stations with an annual throughput of greater than 480,000 gallons, and all new service stations, to install Phase I and II vapor recovery systems by 1990. Other existing service stations must install vapor recovery when major modifications to underground piping are made.
Hexavalent Chromium Measure for Plating and Anodizing Shops	February 1988	Requires small, medium, and large plating or anodizing shops to achieve either 95, 99, or 99.8 percent reduction, respectively, of uncontrolled emissions or to emit hexavalent chromium at a rate less than 0.15, 0.03, or 0.006 milligram per ampere hour, respectively.
Hexavalent Chromium Measure for Cooling Towers	March 1989	Prohibits the use of hexavalent chromium in the circulating water of a cooling tower and requires the concentration of hexavalent chromium in the circulating water to be 0.15 parts per million or less.
Asbestos Control Measure for Serpentine Rock in Surfacing Applications	April 1990	Eliminates the use of serpentine rock containing greater than five percent asbestos for use in surfacing of unpaved areas.
Ethylene Oxide Control Measure for Sterilizers and Aerators	May 1990	Requires control of emissions from sterilizers, depending on ethylene oxide use, by 99 or 99.9 percent and emissions from aerators by 95 or 99 percent. Very small users of ethylene oxide are exempt, but are subject to reporting requirements.
Dioxins Control Measure for Medical Waste Incinerators	July 1990	Requires control of dioxin emissions from medical waste incinerators burning more than 25 tons per year, by 99 percent or to emit dioxins at a rate less than 10 nanograms per kilogram of waste. Operators must also conduct two consecutive annual source tests. Smaller facilities, depending on the amount of waste burned, are subject to source test and record-keeping and operator training requirements.

Non-Ferrous Metal Melting	January 1993	Requires certain non-ferrous metal melting facilities to reduce emissions of toxic particulate matter such as arsenic, cadmium and nickel by 99 percent. Operators must also comply with a fugitive emissions limit by implementing a dust control plan and complying with a visible emissions limit of less than 10 percent. A variety of exemptions are offered to small and low-emitting facilities.
Perchloroethylene Control Measure for Dry Cleaners	October 1993	Requires existing dry cleaning facilities to install or convert to closed-loop machines. New facilities must install closed-loop machines with secondary controls. This control measure also specifies operation and maintenance, reporting/recordkeeping, and training requirements. Implementation of the regulations will reduce perchloroethylene emissions from dry cleaning facilities by about 75 percent.

**Table A-5
Summary of Other Measures Adopted Which Reduce Air Toxics**

(The following information was provided by the California Air Resources Board.)

Measure	Description
Low Emission Vehicle and Clean Fuels Program	This measure requires the phased-in sale of increasingly cleaner vehicles and mandates availability of cleaner fuels to consumers. The most recent amendments include the application of passenger car exhaust emission standards to most sport utility vehicles (SUVs), pick-up trucks and mini-vans; lower tailpipe standards for all vehicles; more stringent requirements for phasing in cleaner vehicles; an up to 80% reduction in most evaporative emission standards; and additional mechanisms for the generation of zero-emission vehicle (ZEV) credits. The measures reduce emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde. Diesel PM is indirectly reduced through the elimination of the TLEV standards after the 2003 model year, which lowers the standards for diesel-fueled passenger vehicles, should they be introduced into the California market. Requires the use of vehicles 50 to 85 % cleaner than new 1993 vehicles. Estimated emission reductions in 2010 are about 20% of benzene and 1,3 butadiene statewide.
Reformulated Diesel	In 1988,CARB adopted regulations governing diesel fuel quality. The regulations limit the sulfur and aromatic hydrocarbon content of diesel fuels to reduce emissions of sulfur dioxide, PM and NOx. In 1989, USEPA adopted nationwide regulations that limited the sulfur content of diesel fuels to the California levels. Both the California and national limits were implemented on October 1, 1993. Since the introduction of cleaner diesel fuel, emissions from diesel vehicles have been reduced by 82 percent for sulfur dioxide, 25 percent for PM, and 7 percent for NOx. Emissions of toxic substances, including benzene, have also been reduced.
Reformulated Gasoline Phase 2	To reduce emissions from motor vehicles and their fuels, the CARB adopted a reformulated gasoline (RFG) program to substantially reduce emissions from existing vehicles. California Phase 1 reformulated gasoline (RFG) was implemented in 1992. Phase 1 RFG lowered Reid Vapor Pressure to 7.8 psi, removed lead, and required deposit control additives. California Phase 2 RFG limits eight gasoline properties and was introduced in 1996. Phase 2 RFG is referred to as “cleaner-burning gasoline.” Cleaner burning gasoline reduced ozone precursor emissions from motor vehicles by 300 tons per day and is equivalent to removing 3.5 million vehicles from California roads. Potency weighted toxic

	<p>emissions (primarily benzene and 1,3 butadiene) were reduced by 40%.</p>
<p>Reformulated Gasoline Phase 3</p>	<p>The CARB recently adopted “Phase 3” improvements to California’s RFG gasoline program to further reduce emissions and to provide additional flexibility in lowering or removing the oxygen content. The key objectives of the Phase 3 gasoline are to:</p> <ul style="list-style-type: none"> – remove MTBE from California gasoline; – maintain the significant emission benefits obtained from the current Phase 2 program; – provide additional flexibility to California refiners to facilitate removal of MTBE; – identify additional opportunities for further emission reductions that are cost-effective; – be sensitive to the increasing need to import gasoline to meet the increasing demand for gasoline in California; and – provide flexibility where possible, without sacrificing emission benefits, to facilitate the expected significant use of ethanol in California gasoline. <p>Potency weighted toxic emissions were further reduced by 4% from the Phase 2 Cleaner Burning Gasoline levels.</p>
<p>Consumer Products</p>	<p>The Consumer Products Regulations contain a number of provisions to restrict use of toxics or track usage, such that mitigation measures can be put in place if use of toxics increases.</p> <ul style="list-style-type: none"> – Antiperspirant and Deodorant Regulation: includes a provision that prohibits the use of TACs in products. – Consumer Products Regulation: includes provisions to track use of methylene chloride and perchloroethylene such that mitigation measures can be put in place if usage increases. Also, when VOC limits are developed, staff ensures that the limits are achievable such that reformulation can be accomplished without the use of TACs. – Aerosol Coatings Regulation: includes provisions that restrict the use of methylene chloride and perchloroethylene. In the case of methylene chloride, although it is an exempt VOC, manufacturers must include the percentage of methylene chloride to determine compliance with the VOC limit. <p>The regulation also contains a “no new use” provision for perchloroethylene. Products that contain perchloroethylene can continue to use it in existing products, but cannot use it in any new products, or reformulate their existing products in such a way that the perchloroethylene content increases.</p> <ul style="list-style-type: none"> – VOC exemption process for all consumer product regulations: prior to proposing low reactive VOCs for exemption, staff works with the

	<p>Office of Environmental Health Hazard Assessment to determine if there are any potential adverse health risks associated with use of the compound.</p>
<p>Public Transit Bus Fleet Rule and Emission Standards for New Urban Buses</p>	<p>Reduces emissions by encouraging the purchase or lease of low-emissions, alternative fuel buses by transit agencies. Transit agencies are given the flexibility to choose between two compliance paths, either the diesel path or the alternative fuel path. Both paths include a PM retrofit requirement beginning in 2003, and include a 0.01 g/bhp-hr new engine PM standard, beginning in 2004 for the diesel path and 2007 for the alternative fuel path. The use of low-sulfur fuel is mandated for diesel-fueled buses beginning July 1, 2002. In addition, transit agencies are required to purchase zero emission buses on a mandated schedule. The low emission bus engine standards, together with the zero emission bus purchase requirements, will reduce diesel PM emissions by 50 lbs/day in 2010, increasing to 67 lbs/day by 2020.</p>
<p>Heavy-Duty On-Road CI Engines</p>	<p>The Heavy-Duty Vehicle Inspection Program reduces excessive smoke emissions and tampering on gasoline and diesel fueled vehicles above 6000 pounds GVWR through inspections at CHP inspection facilities and scales, at fleet yards, and in random roadside stops. Violators receive citations and are required to perform corrective actions. The Periodic Smoke Inspection program focuses on annual self inspections of heavy-duty diesel vehicles by fleet owners (fleet being two or more vehicles). The projected combined emission benefits for these programs are reductions in diesel PM of 5.2 tpd in 1999, declining to 3.2 tpd by 2010.</p>
<p>Heavy-Duty On-Road CI Engines</p>	<p>California and national standards for emissions from heavy-duty on-road diesel trucks are harmonized. The PM standard has been reduced from 0.60 g/bhp-hr (1990 model year) to 0.25 g/bhp-hr (1991 – 1993 model years) to 0.10 g/bhp-hr (1994 and newer models). To further reduce emissions, USEPA adopted regulations in October 1997 specifying more stringent emission standards for all 2004 and subsequent model year heavy-duty diesel engines. CARB’s amendments align California’s standards for 2004 and later model year new diesel heavy-duty engines, and for new replacement diesel heavy-duty engines, with the federal requirements. Like the adopted federal requirements, the amendments include a NOx plus nonmethane hydrocarbon (NMHC) emission standard of 2.4 g/bhp-hr; or 2.5 g/bhp-hr with a 0.5 g/bhp-hr NMHC cap, but the PM standards did not change.</p>
<p>Small Off-Road Engines and Equipment Regulations</p>	<p>Emission standards for small off-road engines, less than 25 horsepower, are phased in beginning with the 1995 model year. The measure reduces emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde.</p>

<p>Large Spark-Ignited Off-Road Equipment</p>	<p>Emission standards and test procedures for new 2001 and later off-road large spark-ignition engines (LSI) include separate emission standards for small (less than or equal to 1.0 L engine displacement) and large (greater than 1.0 L engine displacement) LSI engines, a new-engine certification program, an in-use compliance testing program for the large LSI, a three year phase-in period (Tier 1) for large LSI to provide manufacturers with added flexibility in achieving the new standards, and special provisions for small-volume manufacturers, including exclusion from the Tier 1 emission requirements. The standards will reduce emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde.</p>
<p>Off-Highway Recreational Vehicles</p>	<p>Increasingly stringent exhaust emission standards for off-highway motorcycles, go-karts, golf carts, and all-terrain vehicles, beginning with the 1995 model year, reduce emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde.</p>
<p>Marine Outboard and Personal Watercraft Engines</p>	<p>Progressively more stringent emission standards are phased in over three implementation dates. The first tier, starting in 2001, implements the U.S. EPA 2006 standards. Tier 2, to be implemented in 2004, tightens the exhaust emission standards to 80 percent of U.S. EPA's 2006 standards. Tier 3, to be implemented in 2008, tightens the standard to 35 percent of U.S. EPA's 2006 standard. The exhaust emission standards are in-use standards and allow for corporate averaging of engines. The regulation includes provisions for certification labeling, environmental consumer awareness labeling, in-use compliance and recall provisions, defects warranty requirements for emission control equipment, production-line testing and selective enforcement auditing. Emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde are reduced.</p>
<p>On-Road Motorcycles</p>	<p>CARB adopted the first on-road motorcycle regulation in 1975 to reduce ozone-forming emissions from this mobile source category. The regulation established exhaust and evaporative emission standards for hydrocarbons beginning with the 1978 model year.</p> <p>Recently amended standards require reduced emissions effective in model year 2004, and declining with model year 2008. The standards reduce emissions of benzene, 1,3-butadiene, formaldehyde, and acetaldehyde.</p>

**Table A-6
Summary of Measures Currently Under Development to Reduce Air Toxics**

(The following information was provided by the California Air Resources Board)

Measure	Description
<p>ATCM to Reduce Chlorinated Toxic Air Contaminants from Automotive Repair Facilities</p>	<p>The proposed control measure would minimize emissions of perchloroethylene, methylene chloride, and trichloroethylene from automotive maintenance and repair facilities by establishing a limit on the content of these compounds in automotive consumer products and prohibiting the use of these compounds in automotive maintenance and repair facilities. The proposed control measure is scheduled to be heard by the CARB Board in April 2000.</p>
<p>Revisions to the Asbestos ATCM</p>	<p>The current ATCM was adopted by CARB in 1990 and focused on reducing public exposures to asbestos associated with the use of serpentine materials in surfacing applications.</p>
<p>Diesel PM Actions</p> <ul style="list-style-type: none"> - Risk Management Guidance - Needs Assessment 	<p>CARB staff will prepare risk management guidelines to assist the districts in evaluating the health impact of exposure to particulate matter emissions from new stationary diesel-fueled engines. CARB staff will also develop specific guidance to assist the districts in implementing requirements of the AB 2588 Hot Spots Program. The guidelines are expected to be completed in fall 2000.</p> <p>CARB, in consultation with the districts, affected industries, and the public, is developing a "Needs Assessment" report to identify the current public health impact of toxic air contaminants from diesel-fueled vehicles and engines; determine the effectiveness of programs currently in place; and determine what technically and economically feasible strategies could be pursued to further reduce emissions. As a result of the "Needs Assessment" report, we anticipate significant regulatory activity over the next five years to address emissions from diesel-fueled engines. For mobile sources, CARB staff will be examining the feasibility of lower new engine standards, retrofit requirements, captive fleet rules, inspection and maintenance requirements, in-use compliance requirement and on-board diagnostic requirements. For stationary and portable source, CARB staff will be examining the feasibility of lower new engine standards and retrofit/replacement requirements for existing engines. This report is expected to be completed in fall 2000.</p>

<p>- Cleaner Diesel Fuel for Locomotives</p>	<p>Emissions test of criteria pollutants and toxic emissions from six locomotives were completed in mid-1999 at Southwest Research. CARB is evaluating whether it is appropriate to require the use of California motor vehicle grade diesel fuel in locomotives. The Board hearing for locomotive diesel fuel is scheduled for June 2000.</p>
<p>- Cleaner Diesel Fuel</p>	<p>Cleaner diesel fuel may substantially reduce emissions from existing mobile and stationary diesel engines and allow for significantly improved after-treatment control technology for these engines. As such, CARB is evaluating changes in diesel fuel specifications.</p>

**Table A-7
Existing NESHAPS (Promulgated & Implemented)**

Aerospace industry
Chromium Electroplating <ul style="list-style-type: none"> • Chromic acid anodizing • Decorative chromium electroplating • Hard chromium electroplating
Coke Oven
Commercial Sterilizers <ul style="list-style-type: none"> • Commercial sterilization facilities
Degreasing Organic Cleaners <ul style="list-style-type: none"> • Halogenated solvent cleaners
Dry Cleaning <ul style="list-style-type: none"> • Commercial dry cleaning dry-to-dry • Commercial dry cleaning transfer machines • Industrial dry cleaning dry-to-dry • Industrial dry cleaning transfer machine
Gasoline Distribution (stage I)
Hazardous Waste Combustion
Industrial Cooling Towers
Magnetic Tape
Marine Vessel (loading operation)
Off-Site Waste Recovery Operations
Polymers & Resin I <ul style="list-style-type: none"> • Butyl rubber • Epichlorohydrin elastomers • Ethylene propylene rubber • Hypalon (TM) Production • Neoprene Production • Nitrile butadiene rubber • Polybutadiene rubber • Polysulfide Rubber • Styrene-Butadiene Rubber & Latex

Table A-7 Concluded

Polymers & Resins II <ul style="list-style-type: none">• Epoxy resins production• Non-nylon polyamides production
Polymers & Resins IV <ul style="list-style-type: none">• Acrylonitrile-butadiene-styrene• Methyl methacrylate-acrylonitrile• Methyl methacrylate-butadiene• Polystyrene• Styrene acrylonitrile• Polyethylene terephthalate
Printing/Publishing
Secondary Lead Smelters
Shipbuilding & Ship Repair
Wood Furniture
Pharmaceuticals Production
Pulp and Paper Production

**Table A-8
NESHAPs Promulgated but not Fully Implemented**

NESHAP Source Categories	Adoption Date	Compliance Date	Comments
Generic MACT <ul style="list-style-type: none"> • Acetal resins • Hydrogen fluoride • Polycarbonates production • Acrylic/modacrylic fibers 	June 29, 1999	New: June 29, 1999 or upon start up whichever is later Existing: June 29, 2002	
Pesticide active ingredient production	June 23, 1999	New: June 9, 1999 or upon start up whichever is later Existing: June 23, 2002	Pursuant to section 112(i)(3)(B) of the CAA, the owner of the existing source may request an extension of up to 1 additional year to comply with the requirement.
Steel pickling-HCL process facilities and HCL regeneration plants	June 22, 1999	New: June 22, 1999 or upon start up whichever is later Existing: June 23, 2001	New construction or reconstruction is defined as on or after September 18, 1997
Oil & natural gas production and natural gas transmission and storage	June 17, 1999	New: June 17, 1999 or upon start up whichever is later Existing: June 17, 2002	New construction or reconstruction is defined as on or after February 6, 1998
Portland cement manufacturing industry	June 14, 1999	New: June 9, 1999 or upon start up whichever is later Existing: June 10, 2002	New construction or reconstruction is defined as on or after March 24, 1998

Table A-8 Continued

NESHAP Source Categories	Adoption Date	Compliance Date	Comments
Wool fiberglass manufacturing	June 14, 1999	New: June 14, 1999 or upon start up whichever is later Existing: June 14, 2002	The owner of the existing source may request an extension of up to 1 additional year to comply with the requirement.
Phosphoric acid manufacturing and phosphate fertilizers production	June 10, 1999	New: June 10, 1999 or upon start up whichever is later Existing: June 10, 2002	New construction or reconstruction is defined as on or after December 27, 1996
Primary lead smelting	June 4, 1999	New: June 4, 1999 or upon start up whichever is later Existing: June 4, 2001	
Mineral wool production	June 1, 1999	New: June 1, 1999 or upon start up whichever is later Existing: June 2, 2002	The owner of the existing source may request an extension of up to 1 additional year to comply with the requirement.
Polyether polyols production	June 1, 1999	New: June 1, 1999 or upon start up whichever is later Existing: June 1, 2002	New construction or reconstruction is defined as on or after September 4, 1997
Ferroalloys production: ferromanganese and siliconmanganese	May 20, 1999	New: May 20, 1999 or upon start up whichever is later Existing: May 21, 2001	New construction or reconstruction is defined as on or after August 4, 1998

Table A-8 Concluded

NESHAP Source Categories	Adoption Date	Compliance Date	Comments
Flexible polyurethane Foam production	October 07, 1998	New: October 07, 1998 or upon start up whichever is later Existing: October 08, 2001	

**Table A-9
Proposed NESHAPS**

NESHAP Source Categories	Proposed Date
Combustion Sources at Kraft, Soda, and Sulfite at Pulp and Paper Mills Production	April 15, 1998
Nutritional Yeast	October 19, 1998
Petroleum Refineries-Catalytic Cracking, Catalytic Reforming & Sulfur Plant Units	September 11, 1998
Primary Copper Smelting	April 20, 1998
Publicly Owned Treatment Works (POTW)	December 1, 1998

**Table A-10
Future NESHAPs**

Alumina Processing
Asphalt Concrete Manufacturing
Asphalt Roofing and Processing
Asphalt/Coal Tar Application on Metal Parts
Auto & Light Duty (surface coating)
Boat Manufacturing
Brick and Structural Clay Products Manufacturing
Carbon Black
Cellulose Manufacturing <ul style="list-style-type: none"> • Caroxymethylcellulose Production • Cellulose Food Casing Manufacturing • Cellophane Production • Methylcellulose Production • Rayon Production
Chlorine Production
Clay Products Manufacturing
Coke By-Product Plants
Coke Oven: Pushing, Quenching & Battery Stacks
Combustion Gas Turbines
Cyanide Chemical Manufacturing <ul style="list-style-type: none"> • Sodium Cyanide Production • Hydrogen Cyanide Production
Engine Test Firing
Ethylene Processes
Flexible Polyurethane Foam Fabrication Operation
Friction Products Manufacturing
Fume Silica Production
Hydrochloric Acid
Industrial/Commercial Institutional Boilers
Integrated Iron & Steel Manufacturing
Iron & Steel Foundries

Table A-10 Continued

Large Appliance (surface coating)
Leather Tanning & Finishing Operation
Lime Manufacturing
Metal Can (surface coating)
Metal Coil (surface coating)
Metal Furniture (surface coating)
Misc. Metal Parts (surface coating)
Misc. Organic NESHAP (MON) <ul style="list-style-type: none"> • Alkyd Resin Production • Ammonium Sulfate Production • Benzyltrimethylammonium Chloride Production • Carbonyl Sulfide Production • Chelating Agents Production • Chlorinated Paraffins Production • Ethyllidene Norbomene Production • Explosives Production • Hydrazine Production • Maleic Anhydride Copolymers Production • Manufacture of Paints, Coatings & Adhesives OBPA/1,3-diisocyanate Production • Photographic Chemicals Production • Phthalate Plasticizers Production • Polyester Resins Production • Polymerized Vinylidene Chloride Production • Polymethyl Methacrylate Resin Production • Polyvinyl Alcohol Production • Polyvinyl Butyral Production • Quaternary Ammonium Comp. Production • Rubber Chemicals Production • Symmetrical Tetrachloropyridine Production
Municipal Solid Waste Landfills
Organic Liquids Distribution (non-gasoline)
Paint Stripping Operation
Paper & Other Web (surface coating)
Petroleum Solvent Dry Cleaning
Plastic Parts & Products
Plywood and Composite Wood Products

Table A-10 Concluded

Polyvinyl Chloride & Copolymers Production
Primary Magnesium refining
Printing Coating & Dyeing of Fabrics
Process Heaters
Recip. Internal Combustion Engines
Refractories Manufacturing
Reinforced Plastics Composites Production
Rocket Engine Test
Rubber Tire Production
Semiconductor Manufacturing
Sewage Sludge Incinerators
Site Remediation
Spandex Production
Taconite Iron Ore Processing
Uranium Hexafluoride Production
Vegetable Oil Production
Wet Formed Fiberglass Mat Production
Wood Building Products (formerly Flat Wood Paneling)

APPENDIX B

ENVIRONMENTAL JUSTICE INITIATIVES

Environmental Justice Initiatives

In October 1997, the South Coast Air Quality Management District's (AQMD) Governing Board adopted a resolution that directed staff to implement ten Environmental Justice Initiatives. For purposes of carrying out the proposed Initiatives, the Governing Board approved the following working definition of the term "environmental justice":

Environmental justice means equitable environmental policymaking and enforcement to protect the health of all persons who live or work in the South Coast Air Quality Management District (AQMD), regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution.

Guiding Principles

The Environmental Justice Initiatives were developed considering four guiding principles. These principles were the driving force behind the decision-making process defining the purpose and scope of the ten initiatives adopted by the Governing Board.

1. All Basin residents have the right to live and work in an environment of clean air, free of airborne health threats.
2. Government is obligated to protect the public health.
3. The public and private sectors have the right to be informed of scientific findings concerning hazardous and toxic emission levels, and to participate in the development and implementation of adequate environmental regulations in their communities.
4. The Governing Board is to uphold the civic expectation that the public and private sectors of the Basin will engage in practices that contribute to a healthy economy and truly livable environment.

Environmental Justice Initiatives

The Environmental Justice Initiatives, along with a set of guiding principles, provide a strategy to ensure that clean air benefits are accorded to all citizens and communities of the South Coast Air Basin (Basin). These Initiatives will help to identify and address potential areas of the AQMD where citizens may be disproportionately impacted by air pollutants.

The Initiatives touch upon most facets of AQMD's Work Program, including monitoring, emissions source inventory, computer modeling, planning, rulemaking, permitting, enforcement, education, technical innovation, and public outreach. These Initiatives helped to identify and address potential areas within the AQMD's jurisdiction where citizens may be disproportionately impacted by air pollutants. They were designed to ensure that the AQMD's policies and programs include full disclosure and participation at the community level. They also complement the region's control strategy.

1. **TOWN HALL MEETINGS.** The AQMD will schedule and host a series of monthly town hall meetings to better enable residents to exercise their right of participation in the policy making process.
2. **AMBIENT MONITORING OF AIR TOXICS.** AQMD staff, with peer review feedback, will design and conduct a program of ambient monitoring for toxic hot spots. Expanded, accurate, reliable and suitable data on exposure levels will enable us to apply that knowledge to effective problem solving.
3. **COMMUNITY RESPONSE TEAMS.** The Acting Executive Officer will create AQMD rapid-deployment community response teams to respond to community emergencies related to airborne emissions.
4. **CEQA COMMENTING.** AQMD staff will reconstruct its CEQA commenting function and as a commenting Responsible Agency, will pursue a more active role in analyzing and communicating emissions impacts to lead agencies. The CEQA process offers a thorough review of environmental impacts, provides information to all interested parties, and can thus guide but not usurp local land-use decisions and local resolution of potential environmental inequities.
5. **ENVIRONMENTAL JUSTICE TASK FORCE.** The Governing Board will convene an Environmental Justice Task Force to determine any corrective measures necessary to address environmental justice concerns and issues; specifically, concerns expressed regarding disproportionate risk from emissions credit trading programs, including that related to Rule 1142 - Marine Tank Vessel Operations.
6. **CITY OF LOS ANGELES FORUM.** The Governing Board will request the City of Los Angeles to include air quality as a topic to be discussed at its Environmental Justice Forum scheduled for this October, in order to leverage inter-community resources and expertise.
7. **CLEAN-UP INCENTIVES FOR DIESEL FUEL.** The Governing Board will pursue a set of Initiatives at the local, state and federal level to incentivize the early clean-up or removal of diesel engines in the Basin. Research indicates that low-income communities and communities of color experience disproportionate air quality impacts associated with diesel engine use.
8. **FIELD INSPECTION TECHNOLOGY.** The AQMD staff will formulate a plan to use modern advances in technology for enhanced field inspection purposes to better detect pollution problems identified by the public and investigate ways to enhance AQMD's field presence.
9. **PORTABLE EQUIPMENT PERMITTING.** The Governing Board will consider amendments to the current permitting practices for portable equipment to further ensure that the movement and subsequent operation of such equipment does not cause localized adverse air quality impacts, especially as relates to sensitive receptors such as schools.

This Initiative will be pursued in a manner which complements the existing statewide registration program.

10. **PUBLIC COMMENT, RULES 1401 AND 1402.** The Governing Board will re-open for public comment the toxics significance thresholds for cancer and non-cancer impacts contained in Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, and consideration of adding additional compounds and non-carcinogenic impact prevention into Rule 1401 - New Source Review of Carcinogenic Air Contaminants.

APPENDIX C

CURRENT MOBILE SOURCE CONTROL PROGRAMS

Current Mobile Source Control Programs

Under current criteria pollutant regulatory control programs, air toxics emissions from mobile sources are expected to drop significantly in the future. The current mobile source regulatory programs require decreases in hydrocarbons and oxides of nitrogen. In addition, it is anticipated that as future cleaner motor vehicles become available, mobile source emissions of hydrocarbons and fine particulate emissions will decrease. Despite this decrease, mobile source emissions would still be major contributors to the overall risk levels in the South Coast Air Basin.

The current mobile source regulatory program in California is based on 16 short-term control measures and two long-term “black box” measures provided in the California Ozone SIP approved by EPA in September 1996. In addition to the 16 measures, the CARB has indicated that four new control measures identified after the approval of the California Ozone SIP are feasible to implement. The table provides a list of the 16 SIP and four new control measures. Of the 20 mobile source control measures, all but four have been adopted in one form or another. One of the two long-term measures has been partially adopted as part of the CARB Phase II low emission vehicle program. Two of the 20 measures shown in Table C-1 are currently under evaluation by EPA as part of its public consultative process. Relative to off-road mobile equipment emission reductions, both EPA and CARB have set emission standards for several mobile equipment categories. It is expected that the current control program will provide a significant portion of the on-road motor vehicle reductions.

**Table C-1
Mobile Source Control Measures in the 1997 AQMP**

Source Category and Control Measure	Responsible Agency	Potential Toxic Reductions	
		VOC*	PM
Passenger Cars/Light-Duty Vehicles <ul style="list-style-type: none"> ● M1: Car Scrappage ● M2: Advanced Technology ● New: Tier 2 Standards (Based on CARB low emission vehicle II Program) 	<p align="center">CARB</p> <p align="center">CARB</p> <p align="center">EPA</p>	<p>X</p> <p>X</p>	
<ul style="list-style-type: none"> ● Medium and Heavy-Duty Gasoline Trucks ● M3: Accelerated emission standard ● M8: Emission standard 	<p align="center">CARB</p> <p align="center">CARB</p>	<p>X</p> <p>X</p>	
Heavy-Duty Diesel Trucks/Buses <ul style="list-style-type: none"> ● M4: Cleaner engine incentives ● M5: 2004 standard, plus early reductions ● M6: Emission standard ● New: Off-Cycle Settlement (standard in 2002) 	<p align="center">CARB</p> <p align="center">CARB</p> <p align="center">EPA</p> <p align="center">CARB/EPA</p>	<p>Neg.</p> <p>X</p> <p>Neg.</p> <p>Neg.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>
Off-Road Diesel Equipment <ul style="list-style-type: none"> ● M9: Emission standards to be adopted in 1999 ● M10: Emission standards 	<p align="center">CARB</p> <p align="center">EPA</p>	<p>X</p> <p>X</p>	<p>X</p> <p>X</p>
Off-Road Gasoline/LPG Equipment			
<ul style="list-style-type: none"> ● M11: Emission standards 	CARB	X	
<ul style="list-style-type: none"> ● M12: Emission standards (Proposed in 1999) 	EPA	X	X

**Table C-1 (cont.)
Mobile Source Control Measures in the 1997 AQMP (cont.)**

Source Category and Control Measure	Responsible Agency	Potential Toxic Reductions	
		VOC*	PM
Marine Vessels			
<ul style="list-style-type: none"> M13: Emission standards and operational controls 	EPA	Neg.	X
Locomotives			
<ul style="list-style-type: none"> M14: Emission standards and MOA with railroads 	EPA	Neg.	X
Aircraft			
<ul style="list-style-type: none"> M15: Emission standards 	EPA	X	X
Marine Pleasurecraft			
<ul style="list-style-type: none"> M16: Emission standards New: Emission standards (beyond U.S. EPA M16) 	EPA CARB	X X	
Cleaner-Burning Gasoline			
<ul style="list-style-type: none"> New: Combustion chamber deposits 	CARB		X
Small Off-Road Engines			
<ul style="list-style-type: none"> Baseline: Changes to the emission standards 	CARB	X	
Long Term Commitment			
<ul style="list-style-type: none"> On-Road Categories (including M17: In-use Compliance Program for Heavy Duty Trucks) Off-Road Categories 	CARB CARB	X X	

* VOC includes benzene, 1,3-butadiene, formaldehyde, and acetaldehyde

Neg. = Negligible

APPENDIX D

FEDERAL AND STATE REQUIREMENTS

Federal and State Requirements

The final draft Air Toxics Control Plan must rely upon other federal and state programs to reduce air toxics for sources not under AQMD regulatory authority. A summary of the major current federal and state programs that affect toxics emissions follows.

Federal Programs

Clean Air Act Amendments

The 1990 amendments to the Clean Air Act (CAA) mandated significant new air quality programs and substantially enhanced some existing ones. Among the major new programs were the acid rain provisions (Title IV), the operating permits program (Title V), and provisions to phase out ozone-depleting substances (Title VI). Existing programs with major changes due to the amendments included attainment provisions for National Ambient Air Quality Standards (NAAQS) and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) program, both under Title I of the CAA.

Title III requires EPA to promulgate NESHAPs on a specified schedule for certain categories of sources which emit one or more of the 188 listed Hazardous Air Pollutants (HAPs). Emission standards may be different between “major sources” and “area sources” of HAPs. Major sources are defined as stationary sources with potential to emit over 10 tons per year of any HAP or over 25 TPY of any combination of HAPs. All other sources are considered area sources.

Emission standards are promulgated in two phases. In the first phase (1992 through 2000), EPA is required to develop technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring Maximum Achievable Control Technology (MACT). For area sources, the standards may be different, based on generally available control technology. In the second phase (2001 through 2008), EPA is required to promulgate health risk-based emissions standards where such standards are deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

Regulatory Activity Before 1990

Despite the lack of regulations issued under section 112 of CAA, emissions of many HAPs still were controlled and reduced even before the 1990 Amendments. This was due to activities of other EPA environmental programs that were useful in reducing air toxics. Some of these programs were information gathering requirements under the Toxic Substances Control Act, toxic release inventory requirements under the Emergency Planning and Community Right-to-Know Act, and information dissemination, health assessments, and regulatory actions under other environmental legislation. Other CAA programs reducing air toxics are:

- ✓ National Ambient Air Quality Standards (NAAQS): Since the early 1970s, EPA and the states have implemented the National Ambient Air Quality Standards to control criteria

pollutants, including ozone and particulate matter. Although this program focuses on controlling emissions of criteria pollutants, it also results in reducing toxic air contaminants. For example, controls on volatile organic compound emissions to attain the ozone standard can significantly reduce emissions of toxics.

- ✓ New Source Performance Standards (NSPS): Like the National Ambient Air Quality Standards program, new source performance standards promulgated under section 111 of the Clean Air Act have reduced emissions of toxic air pollutants. Section 111 standards sources are source-specific and limit emissions of specific pollutants that may include various toxics. For example, the NSPS for electric utility steam generating units, incinerators, sewage treatment plants, and other similar sources establish limitations on particulate matter, which also reduce emissions of toxic metals.

State and Local Programs

The California legislature has adopted several state bills to control toxic air contaminants. CARB and local air pollution control districts are required to implement the provisions of many of these bills. The most significant are summarized below:

The Tanner Toxic Act (AB 1807): The Tanner Toxics Act established the California toxic air contaminant control program (AB 1807, H&SC Section 39666, et seq.) to identify and control toxic air contaminants. Under the Tanner Act (AB 1807), CARB is required to identify a substance as a TAC based on the review of the scientific data and the recommendations by both the Office of Environmental and Health Hazard Assessment (OEHHA) and the Scientific Review Panel (SRP). After designation, CARB investigates appropriate measures to limit emissions of the TACs. These measures may include emission limitations, control technologies, operation and maintenance requirements, closed system engineering, cost, or substitution of compounds. CARB then prepares a report on the appropriate degree of regulation and adopts Air Toxics Control Measures (ATCMs). These control measures are the minimum regulations that must be imposed by each of the local air districts in the form of regulations. Districts must adopt rules that are at least as stringent as the state's.

Air Toxics "Hot Spots" Information and Assessment Act (AB 2588): The Air Toxics "Hot Spots" Information and Assessment Act (AB2588) is a state law enacted in 1987. The law requires certain facilities to submit information regarding emissions of more than 550 toxic air contaminants to their local air pollution control districts. The AB 2588 toxics list was developed using the TACs list and candidate TACs list, Proposition 65 (another important California legislative action) chemicals, certain hazardous chemicals identified under the California Labor Code, certain substances listed by the National Toxicology Program, and any additional substances recognized by the CARB as presenting a chronic or acute threat to public health. The Act addresses public concerns that emissions from individual facilities might cause local concentration of air toxics "Hot Spots" at a level where individuals may be exposed to an excess risk of adverse health effects. The program requires facilities to notify all exposed persons if it is determined that there is a significant health risk.

Senate Bill 1731: Senate Bill (SB) 1731 (H&SC, Section 44390, *et seq.*) requires local air districts to establish a program to reduce risks from existing facilities in the AB 2588 program which are deemed by the district to pose a significant health risk. AQMD Rule 1402 – Control of Toxic Air Contaminants from Existing Sources, is designed to implement SB 1731. Rule 1402 requires facilities that pose a significant health risk to prepare and implement a risk reduction plan within five years of initial plan submittal. SB 1731 applies to existing facilities, but does not establish a mechanism for reviewing new facilities that emit the same compounds.

Waters Bill (AB 3205): AB 3205 (H&SC Section, 42301.6 through 42301.9) addresses sources of hazardous air pollutants near schools. It requires new or modified sources of hazardous air emissions located within 1000 feet from the outer boundary of a school to give public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1000 foot radius.

Air Monitoring of Disposal Sites (AB 3374): AB 3374 (H&SC Section 41805.5, *et seq.*) requires owners of solid waste disposal sites or inactive sites to submit to local air pollution districts a solid waste air quality assessment test report.

APPENDIX E

BASELINE AND FUTURE AIR TOXIC EMISSIONS

Baseline and Future Air Toxic Emissions

An emissions inventory of toxic air contaminants (TACs) and their sources is essential to identify the major contributors of each TAC and the control strategies required to reduce exposure. In this appendix, annual emission rates for the important TACs in the South Coast Air Basin (Basin) are estimated for the base year of 1998 and for the 2010 future year with the implementation of the 2010 control measures in the 1997 AQMP, as amended in 1999. Information necessary to produce an emission inventory for the Basin is obtained from the AQMD and other government agencies including: California Air Resources Board (CARB), California Department of Transportation, and the Southern California Association of Governments (SCAG). Each of these agencies is responsible for collecting and developing data (e.g., industry growth factors, travel activity levels, emission factors, emissions, etc.) and methodologies (e.g., demographic forecast improvements) required to generate a comprehensive emissions inventory.

Inventoried Toxic Air Contaminants

Annual emission rates are provided in this appendix for the following TACs: diesel particulate matter (PM), 1,3-butadiene, acetaldehyde, benzene, formaldehyde, methylene chloride, para-dichlorobenzene, perchloroethylene, trichloroethylene, hexavalent chromium, and nickel. Measurements during MATES II indicate that these TACs account for 93 percent of the risk from ambient air in the Basin. Table E-1 shows the list of contaminants inventoried along with their percentage contribution to the total inhalation risk.

Inventory Methodology

The toxic emissions inventory for MATES II consists of three components: (1) On-Road Mobile Sources; (2) Area and Off-Road Mobile Sources; and (3) Major Point Sources and AB2588 Sources. The following is the description of how each portion of the inventory was developed. More than 100 toxic compounds have been incorporated into the emissions inventory, although only the high-risk compounds in the ambient air in the Basin are presented here.

On-Road Mobile Sources

On-road mobile sources include cars, trucks, buses and motorcycles. The on-road mobile source emissions inventory is a product of: CARB's EMFAC7G emissions factors for 1998, developed by CARB; an interpolation of SCAG's transportation model between 1994 and 2000 for vehicle miles traveled (VMT) and speed corrections; and distribution of emissions using California Department of Transportation and CARB's model, DTIM2, to 2 by 2 km grids.

The above process produces the emissions inventory for criteria pollutants (VOC, NO_x, PM, CO, SO_x). The toxic compound emissions inventory is obtained by applying latest CARB speciation profiles to the volatile organic compound (VOC) and particulate matter (PM) emissions.

The California EPA has classified the particle portion of diesel exhaust (from internal combustion engines) as a toxic air contaminant. These emissions are classified as PM emissions with profile codes 425 and 116, and are primarily generated by on-road diesel engines, off-road diesel engines, trains, motor ships, and commercial diesel boats.

Stationary Point Sources

The AQMD maintains two major emissions databases: (1) the Annual Emissions Reporting (AER) system, containing emissions information on criteria pollutants and some toxic compounds; and (2) the Toxic Hot Spot (AB 2588) program containing emissions information on numerous toxic compounds. For the MATES II project, a contractor was hired to update the emissions inventory of major toxic compounds by utilizing the existing information, augmented by special studies. The following steps were taken in developing the stationary point source toxic emissions inventory:

1. The AB 2588 database was updated by conducting a survey of top emitters. The non-surveyed facility emissions were updated by applying growth factors to adjust for economic changes from the early 1990s to 1998. Appropriate control factors were applied to sources whose emissions have been reduced due to existing rules and regulations.
2. The non-AB 2588 facility emissions were analyzed by utilizing the 1997 AQMP point source inventory. This database contains information on criteria pollutants such as PM and VOC. Appropriate PM or VOC speciation profiles were applied to these emissions in order to obtain specific toxic compound emissions. Appropriate growth and control factors were applied to the 1993 data to reflect 1998 conditions. In addition, several larger sources were reviewed to determine if their emissions are correctly projected to 1998.

Area and Off-Road Sources

Area and off-road sources represent numerous small sources of emissions that can collectively have significant emissions and can contribute to high risks. Examples of area sources are dry cleaners, gasoline stations, auto body shops, and chrome platers. Examples of off-road sources are construction equipment, motor boats and airplanes. Area source emissions are distributed throughout the modeling domain using surrogates such as population, retail and non-retail sales, or employment. For the MATES II study, appropriate growth and control factors were applied to the 1993 area and off-road source emissions to reflect 1998 conditions. Three area sources,

namely dry cleaners, gasoline stations, and chrome platers, were spatially distributed using surrogates as discussed below.

Perchloroethylene Dry Cleaning

Perchloroethylene dry cleaning countywide emissions were apportioned according to the permitted annual emissions and located at their specific address. The perchloroethylene dry cleaning emissions were derived from California import and domestic-production records. Total perchloroethylene emissions were approximately 6.6 tons per day, distributed over 1,300 facilities in the Basin.

Retail Gasoline Dispensing

The retail gasoline dispensing countywide emissions were apportioned according to the permitted annual emissions and located at their specific address. The retail gasoline dispensing emissions were derived from gasoline shipping and taxable sales records. Retail gasoline dispensing emissions of approximately 18 tons per day were distributed over 3,000 facilities in the Basin.

Hexavalent Chromium Plating

The AB 2588 program contains the larger chromium plating facilities. There are approximately 74 plating facilities in the AB 2588 program. In addition, there are approximately 84 aerospace facilities that may do plating in the AB 2588 program. The facility counts are rough approximations because some of the plating facilities may not use (and thereby emit) chromium (specifically, hexavalent chromium). Some aerospace companies contract out their plating needs, and some facilities that do chromium plating do not belong to specific emission source categories.

To augment the AB 2588 facility list, a search was performed to identify the smaller chromium plating facilities. Small chromium plating facilities were then represented by calculated annual emissions, and located at their specific address. Four types of sources were identified: hard chrome plating tanks, decorative chrome plating tanks, chrome anodizing tanks, and spray booths. Through the aforementioned process, 87 smaller chromium facilities were identified, assigned emissions, and added to the MATES II modeling inventory.

Current (1998) Toxic Emissions

Table E-2 summarizes the 1998 toxic emissions by major source category for the toxics listed in Table E-1. A major source category refers to a group of emission sources with similar characteristics. Emissions result primarily from the combustion of fuels, evaporation of solvents or fuels, and the processing of materials. Hence, stationary sources are grouped under: fuel combustion; waste burning; solvent use; petroleum processing, storage, and transfer; industrial processes; and other miscellaneous processes. Mobile sources are subdivided into source categories by type of vehicle: (1) on-road, and (2) other (off-road) mobile sources. On-road mobile sources include light-duty passenger vehicles; light-, medium-, and heavy-duty trucks; motorcycles; and urban buses. Other mobile sources include off-road vehicles, trains, ships, aircraft, and mobile equipment. Emissions from AB 2588 core facilities are shown as a line item in the table. Emissions from these facilities are assumed to be unchanged from 1998 to 2010.

Toxic Emissions in 2010 with the Implementation of the 1997 AQMP

Table E-3 summarizes the 2010 toxic emissions by major source after the implementation of the 2010 control measures in the 1997 AQMP. Comparing Tables E-2 and E-3 shows significant reductions (i.e., greater than 50%) in acetaldehyde, 1,3-butadiene, benzene, and formaldehyde. Nearly all of these reductions occur in the on-road source category. This observation is further illustrated in the next section through several charts and tables.

Discussion

Figure E-1 shows the relative contributions by source categories (i.e., on-road, off-road, and stationary) to total emissions levels in 1998 and 2010 (with the implementation of the 2010 control measures in the 1997 AQMP). The pie charts for each year are shown side by side so that comparisons can be easily made. As a result of the CARB's LEV and reformulated gasoline programs, emissions of acetaldehyde, benzene, 1,3-butadiene, and formaldehyde are reduced by 53, 69, 69, and 56 percent, respectively, with the implementation of the 1997 AQMP control measures. Also, diesel particulate emissions are reduced by 20 percent. This has the effect of significantly altering the source contribution pattern for these pollutants. In 1998, on-road sources are the largest contributor to the acetaldehyde, benzene, 1,3-butadiene, formaldehyde, and diesel particulate inventories whereas, with the implementation of the 2010 control measures in the 1997 AQMP, off-road sources become the dominant contributor and the stationary source share is increased.

Figure E-2 summarizes the overall emission distribution changes that occur with the implementation of the 1997 AQMP control strategy. In this figure, the emissions given in Tables E-2 and E-3 have been weighted by their unit risk factor and then the weighted emissions are apportioned to the three source categories of on-road, off-road, and stationary. Figure E-2 shows the toxicity-weighted emissions for 1998 and 2010 with the implementation of the 1997 AQMP control strategy. For 1998, 95 percent of the toxicity-weighted emissions come from on-road and

off-road sources, with on-road sources accounting for more than half. Stationary sources account for five percent. Implementation of the 1997 AQMP control strategy changes that apportionment by 2010. Table E-4 shows a comparison of the key TACs driving the cancer risk for the Basin in 1998 and after implementation of the 1997 AQMP. The ranking is based on the toxicity-weighted emissions and their relative contribution to the overall Basin-wide risk. A significant fraction (i.e., 93 percent) of the toxicity-weighted emissions still comes from on-road and off-road sources; however, the dominant category is off-road instead of on-road. The stationary source contribution to the toxicity-weighted emissions increases to seven percent.

The emission reductions expected from the 1997 AQMP and the draft Air Toxics Control Plan are summarized in Figure E-3 for the key pollutants of benzene, methylene chloride, perchloroethylene, diesel particulate, hexavalent chromium, and nickel. These pollutants were chosen for illustration because they are included in strategies in the plan. The reductions attributed to the plan include emissions reductions from PAR 1402 and PR 1190. Reductions from PAR 1402 are estimated by proportionally reducing a facility's toxic emissions until its inhalation risks are below ten in one million. It is assumed the PR 1190 results in 35 tons per year reduction of diesel particulates. Emission reductions from the plan control measures are calculated from the measure's control efficiency and the industry and equipment affected.

Implementation of the 1997 AQMP control strategies results in significant reductions in benzene, nickel and to a lesser extent diesel particulate. Implementation of the plan substantially reduces emissions of methylene chloride, perchloroethylene, and diesel particulate.

Table E-1

1998 Key Toxic Air Contaminants and their Contribution to the Ambient Cancer Risk

Toxic Air Contaminant	Risk Contribution (%)*
Diesel particulate	72.0
1,3-butadiene	8.4
Benzene	6.5
Formaldehyde	2.0
Hexavalent chromium	1.8
Perchloroethylene	0.8
Para-Dichlorobenzene	0.7
Acetaldehyde	0.6
Methylene chloride	0.2
Nickel	0.2
Trichloroethylene	0.1

* Based on an eight station average from the MATES II study.

Table E-2
1998 Toxics Emission Inventory (in lbs/day) for the South Coast Air Basin.

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
100 Fuel Combustion												
110	Agricultural	1.42	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.02	0.01
120	Oil and Gas Production	55.57	0.02	0.00	0.00	0.00	0.00	121.01	1.10	0.00	0.02	0.01
130	Petroleum Refining	1.12	0.01	0.00	0.00	0.00	0.00	2.44	0.12	0.00	0.01	0.03
140	Other Manufacturing/Industrial	150.93	3.48	0.00	0.00	0.00	0.00	598.79	109.87	815.34	0.10	0.24
150	Electric Utilities	12.63	0.04	0.00	0.00	0.00	0.00	31.58	0.41	0.00	0.01	0.28
160	Other Service and Commerce	94.48	3.82	0.00	0.00	0.00	0.00	255.41	17.76	0.00	0.14	0.18
170	Residential	171.61	0.00	0.00	0.00	0.00	0.00	437.33	85.34	0.00	0.02	0.01
199	Other	11.19	1.80	0.00	0.00	0.00	0.00	32.26	8.44	0.00	0.06	0.05
	Total	498.96	9.16	0.00	0.00	0.00	0.00	1478.97	223.04	815.34	0.36	0.81
200 Waste Burning												
210	Agricultural Debris	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Range Management	0.00	13.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
230	Forest Management	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	Incineration	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other	0.00	0.00	0.00	0.00	0.00	0.00	9.53	0.00	0.00	0.00	0.00
	Total	1.39	148.84	0.00	0.00	0.00	0.00	9.53	0.00	0.00	0.00	0.01
300 Solvent Use												
310	Dry Cleaning	0.00	0.00	0.00	0.00	16106.30	0.00	0.00	0.00	0.00	0.00	0.00
320	Degreasing	0.00	0.00	0.00	8056.99	8594.22	2551.34	0.00	0.00	0.00	0.00	0.00
330	Architectural Coating	115.48	0.00	0.00	2117.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	Other Surface Coating	10.16	0.00	0.00	186.32	0.00	0.00	30.14	0.00	0.00	0.00	0.00
350	Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	Printing	0.00	0.00	0.00	0.00	0.00	0.00	8.77	0.00	0.00	0.00	0.00
370	Consumer Products	0.00	0.00	3531.72	409.76	1034.15	0.00	58.54	0.00	0.00	0.00	0.00
380	Industrial Solvent Use	0.11	0.00	0.00	0.00	569.43	0.00	0.00	0.00	0.00	0.00	0.00
399	Other	8.74	0.00	0.00	0.00	351.78	0.00	0.00	0.00	0.00	0.00	0.00
	Total	134.49	0.00	3531.72	10770.55	26655.87	2551.34	97.44	0.00	0.00	0.00	0.00
400 Petroleum Process, Storage & Transfer												
410	Oil and Gas Extraction	318.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	Petroleum Refining	2.44	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
430	Petroleum Marketing	205.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other	8.78	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Total	Petroleum Process, Storage & Transfer	534.63	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
500 Industrial Processes												
510	Chemical	0.00	0.00	0.00	0.00	0.00	0.00	37.81	0.00	0.00	0.00	0.30
520	Food and Agricultural	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	Mineral Processes	0.52	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.04	0.22
570	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	1.64	0.00	0.00	0.04	1.88
580	Wood and Paper	0.06	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
599	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.58	0.00	0.00	0.00	0.00	0.00	39.66	0.00	0.00	0.09	2.40
600 Miscellaneous Processes												
610	Pesticide Application	1542.93	0.00	203.92	23.66	59.71	0.00	3.38	0.00	0.00	0.00	0.00
620	Farming Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33
640	Entrained Road Dust - Paved	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.48
650	Entrained Road Dust - Unpaved	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.83
660	Unplanned Fires	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.33
680	Waste Disposal	0.00	0.00	0.00	0.00	719.51	0.00	0.00	0.00	0.00	0.00	0.59
685	Natural Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	NOx/SOx RECLAIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
691	ERC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
692	Hi/LO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
693	NSR Exemption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
694	Rule 518.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
695	ODC Conversion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
699	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	1542.93	0.00	203.92	23.66	779.22	0.00	3.38	0.00	0.00	0.00	85.29
700 On-Road Vehicles												
710	Light-Duty Passenger	14133.12	2582.24	0.00	0.00	0.00	0.00	6922.97	1610.57	674.52	0.20	1.14
720	Light- and Medium-Duty Trucks	6204.22	1224.73	0.00	0.00	0.00	0.00	3104.16	698.20	346.85	0.09	0.50
730	Heavy-Duty Gas Trucks	522.93	86.42	0.00	0.00	0.00	0.00	303.18	63.13	0.00	0.08	0.46
740	Heavy-Duty Diesel Trucks	808.48	76.77	0.00	0.00	0.00	0.00	5945.02	2970.89	22769.86	0.00	0.36
750	Motorcycles	250.89	61.20	0.00	0.00	0.00	0.00	199.09	47.84	0.00	0.01	0.06
760	Heavy-Duty Diesel - Urban Bus	25.90	2.46	0.00	0.00	0.00	0.00	190.44	95.17	115.07	0.00	0.00
799	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	21945.53	4033.82	0.00	0.00	0.00	0.00	16664.85	5485.80	23906.30	0.39	2.52

(continued)

(continued)

Table E-2. Concluded.

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
800	Other Mobile											
810	Off-Road Vehicles	2886.70	695.27	0.00	0.00	0.00	0.00	2672.39	658.44	95.34	0.24	1.35
815	Commercial Boats	38.03	4.84	0.00	0.00	0.00	0.00	225.57	110.75	200.00	0.00	0.00
820	Trains	83.06	7.89	0.00	0.00	0.00	0.00	610.76	305.21	1053.15	0.00	0.02
830	Ships	191.17	16.81	0.00	0.00	0.00	0.00	1302.49	650.57	5176.44	0.00	0.08
850	Aircraft - Government	13.92	3.36	0.00	0.00	0.00	0.00	10.66	4.24	0.00	0.00	0.00
860	Aircraft - Other	474.73	269.57	0.00	0.00	0.00	0.00	1974.94	627.28	0.00	0.04	0.05
870	Mobile Equipment	1849.63	328.02	0.00	0.00	0.00	0.00	8799.08	3196.60	15861.37	0.02	0.38
880	Utility Equipment	996.13	240.35	0.00	0.00	0.00	0.00	903.47	217.18	0.00	0.06	0.33
891	Seeps/Biogenics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
892	Channel Shipping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
893	OCS and Related Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
894	Tideland Platforms	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	6533.38	1566.10	0.00	0.00	0.00	0.00	16499.34	5770.27	22386.30	0.37	2.21
900	Unspecified Sources	0.06	0.01	0.00	6.09	0.00	0.00	0.05	0.01	0.00	0.00	0.00
	AB 2588 Core Facilities	266.81	2.01	4.48	1673.60	2249.10	57.99	674.73	57.11	5.42	1.00	21.63
Total	Stationary and Area Sources	2979.85	160.02	3740.12	12473.90	29684.20	2609.33	2303.81	280.17	820.76	1.45	110.14
Total	On-Road Vehicles	21945.53	4033.82	0.00	0.00	0.00	0.00	16664.85	5485.80	23906.30	0.39	2.52
Total	Other Mobile	6533.38	1566.10	0.00	0.00	0.00	0.00	16499.34	5770.27	22386.30	0.37	2.21
Grand Total		31458.76	5759.93	3740.12	12473.90	29684.20	2609.33	35468.00	11536.23	47113.37	2.20	114.88

2010 Toxics Emission Inventory (in lbs/day) for the Basin After the Implementation of the 1997 AQMP Control Strategy.

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
100 Fuel Combustion												
110	Agricultural	1.35	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.02	0.01
120	Oil and Gas Production	54.22	0.01	0.00	0.00	0.00	0.00	112.67	0.48	0.00	0.02	0.01
130	Petroleum Refining	0.33	0.00	0.00	0.00	0.00	0.00	0.71	0.04	0.00	0.01	0.03
140	Other Manufacturing/Industrial	112.80	3.05	0.00	0.00	0.00	0.00	511.42	105.36	793.42	0.10	0.24
150	Electric Utilities	3.64	0.01	0.00	0.00	0.00	0.00	9.76	0.14	0.00	0.00	0.14
160	Other Service and Commerce	80.18	2.61	0.00	0.00	0.00	0.00	205.42	11.86	0.00	0.17	0.19
170	Residential	185.53	0.00	0.00	0.00	0.00	0.00	487.01	105.34	0.00	0.02	0.01
199	Other	6.82	1.08	0.00	0.00	0.00	0.00	19.79	5.21	0.00	0.05	0.05
	Total	444.88	6.76	0.00	0.00	0.00	0.00	1346.93	228.43	793.42	0.38	0.67
200 Waste Burning												
210	Agricultural Debris	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Range Management	0.00	12.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
230	Forest Management	0.00	208.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	Incineration	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other	0.00	0.00	0.00	0.00	0.00	0.00	3.56	0.00	0.00	0.00	0.00
	Total	1.03	221.86	0.00	0.00	0.00	0.00	3.56	0.00	0.00	0.00	0.01
300 Solvent Use												
310	Dry Cleaning	0.00	0.00	0.00	0.00	18854.14	0.00	0.00	0.00	0.00	0.00	0.00
320	Degreasing	0.00	0.00	0.00	9893.69	6814.19	1243.51	0.00	0.00	0.00	0.00	0.00
330	Architectural Coating	33.31	0.00	0.00	610.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	Other Surface Coating	5.84	0.00	0.00	107.07	0.00	0.00	16.99	0.00	0.00	0.00	0.00
350	Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	Printing	0.00	0.00	0.00	0.00	0.00	0.00	6.03	0.00	0.00	0.00	0.00
370	Consumer Products	0.00	0.00	722.30	83.80	211.50	0.00	11.97	0.00	0.00	0.00	0.00
380	Industrial Solvent Use	0.04	0.00	0.00	0.00	204.93	0.00	0.00	0.00	0.00	0.00	0.00
399	Other	8.75	0.00	0.00	0.00	135.78	0.00	0.00	0.00	0.00	0.00	0.00
	Total	47.94	0.00	722.30	10695.27	26220.54	1243.51	34.99	0.00	0.00	0.00	0.00
400 Petroleum Process, Storage & Transfer												
410	Oil and Gas Extraction	114.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	Petroleum Refining	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	Petroleum Marketing	138.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other	4.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	258.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table E-3. Continued.

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
500 Industrial Processes												
510	Chemical	0.00	0.00	0.00	0.00	0.00	0.00	21.37	0.00	0.00	0.00	0.42
520	Food and Agricultural	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	Mineral Processes	0.16	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.20
570	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.04	1.90
580	Wood and Paper	0.04	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
599	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.21	0.00	0.00	0.00	0.00	0.00	22.59	0.00	0.00	0.09	2.52
600 Miscellaneous Processes												
610	Pesticide Application	1377.91	0.00	32.58	3.78	9.54	0.00	0.54	0.00	0.00	0.00	0.00
620	Farming Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.10
640	Entrained Road Dust - Paved	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.41
650	Entrained Road Dust - Unpaved	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
660	Unplanned Fires	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	Waste Disposal	0.00	0.00	0.00	0.00	536.87	0.00	0.00	0.00	0.00	0.00	0.66
685	Natural Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	NOx/SOx RECLAIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
691	ERC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
692	Hi/LO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
693	NSR Exemption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
694	Rule 518.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
695	ODC Conversion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
699	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	1377.91	0.00	32.58	3.78	546.41	0.00	0.54	0.00	0.00	0.00	59.87
700 On-Road Vehicles												
710	Light-Duty Passenger	2345.54	345.26	0.00	0.00	0.00	0.00	809.89	187.00	97.53	0.15	0.82
720	Light- and Medium-Duty Trucks	1097.72	184.17	0.00	0.00	0.00	0.00	415.02	97.72	18.08	0.08	0.46
730	Heavy-Duty Gas Trucks	157.50	20.58	0.00	0.00	0.00	0.00	65.25	9.92	0.00	0.09	0.51
740	Heavy-Duty Diesel Trucks	202.10	19.19	0.00	0.00	0.00	0.00	1486.07	742.63	12476.71	0.00	0.20
750	Motorcycles	199.71	48.69	0.00	0.00	0.00	0.00	159.69	38.37	0.00	0.01	0.07
760	Heavy-Duty Diesel - Urban Bus	7.57	0.72	0.00	0.00	0.00	0.00	55.63	27.80	34.52	0.00	0.00
799	Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	4010.13	618.62	0.00	0.00	0.00	0.00	2991.55	1103.44	12626.85	0.33	2.06

(continued)

(continued)

Table E-3. Concluded.

Code	Source Category	Benzene	1,3 Butadiene	p-Dichloro-benzene	Methylene chloride	Perchloro-ethylene	Trichloro-ethylene	Formaldehyde	Acetaldehyde	Diesel PM	Hex. chromium	Nickel
800	Other Mobile											
810	Off-Road Vehicles	1635.46	393.26	0.00	0.00	0.00	0.00	1542.22	388.15	132.60	0.34	1.87
815	Commercial Boats	23.94	3.24	0.00	0.00	0.00	0.00	133.60	65.22	289.32	0.00	0.00
820	Trains	61.07	5.80	0.00	0.00	0.00	0.00	449.06	224.41	989.04	0.00	0.02
830	Ships	144.40	13.35	0.00	0.00	0.00	0.00	1033.84	516.55	5881.64	0.00	0.09
850	Aircraft - Government	11.49	2.55	0.00	0.00	0.00	0.00	6.48	2.81	0.00	0.00	0.00
860	Aircraft - Other	518.75	362.29	0.00	0.00	0.00	0.00	2862.61	896.41	0.00	0.05	0.05
870	Mobile Equipment	727.41	101.04	0.00	0.00	0.00	0.00	4382.19	1917.55	17032.33	0.03	0.41
880	Utility Equipment	257.95	62.24	0.00	0.00	0.00	0.00	233.96	56.24	0.00	0.03	0.17
891	Seeps/Biogenics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
892	Channel Shipping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
893	OCS and Related Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
894	Tideland Platforms	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	3380.47	943.76	0.00	0.00	0.00	0.00	10643.96	4067.34	24324.93	0.44	2.62
900	Unspecified Sources	0.04	0.01	0.00	3.32	0.00	0.00	0.03	0.01	0.00	0.00	0.00
	AB 2588 Core Facilities	266.81	2.01	4.48	1673.60	2249.10	57.99	674.73	57.11	5.42	1.00	21.63
Total	Stationary and Area Sources	2396.82	230.64	759.36	12375.97	29016.05	1301.50	2083.37	285.55	798.84	1.47	84.70
Total	On-Road Vehicles	4010.13	618.62	0.00	0.00	0.00	0.00	2991.55	1103.44	12626.85	0.33	2.06
Total	Other Mobile	3380.47	943.76	0.00	0.00	0.00	0.00	10643.96	4067.34	24324.93	0.44	2.62
Grand	Total	9787.42	1793.02	759.36	12375.97	29016.05	1301.50	15718.89	5456.33	37750.62	2.25	89.38

Figure E-1

Relative Contribution by Source Category to the 1998 and 2010 (1997 AQMP scenario) Emission Scenarios

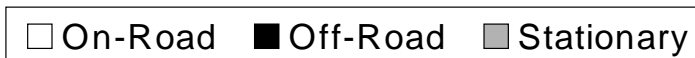
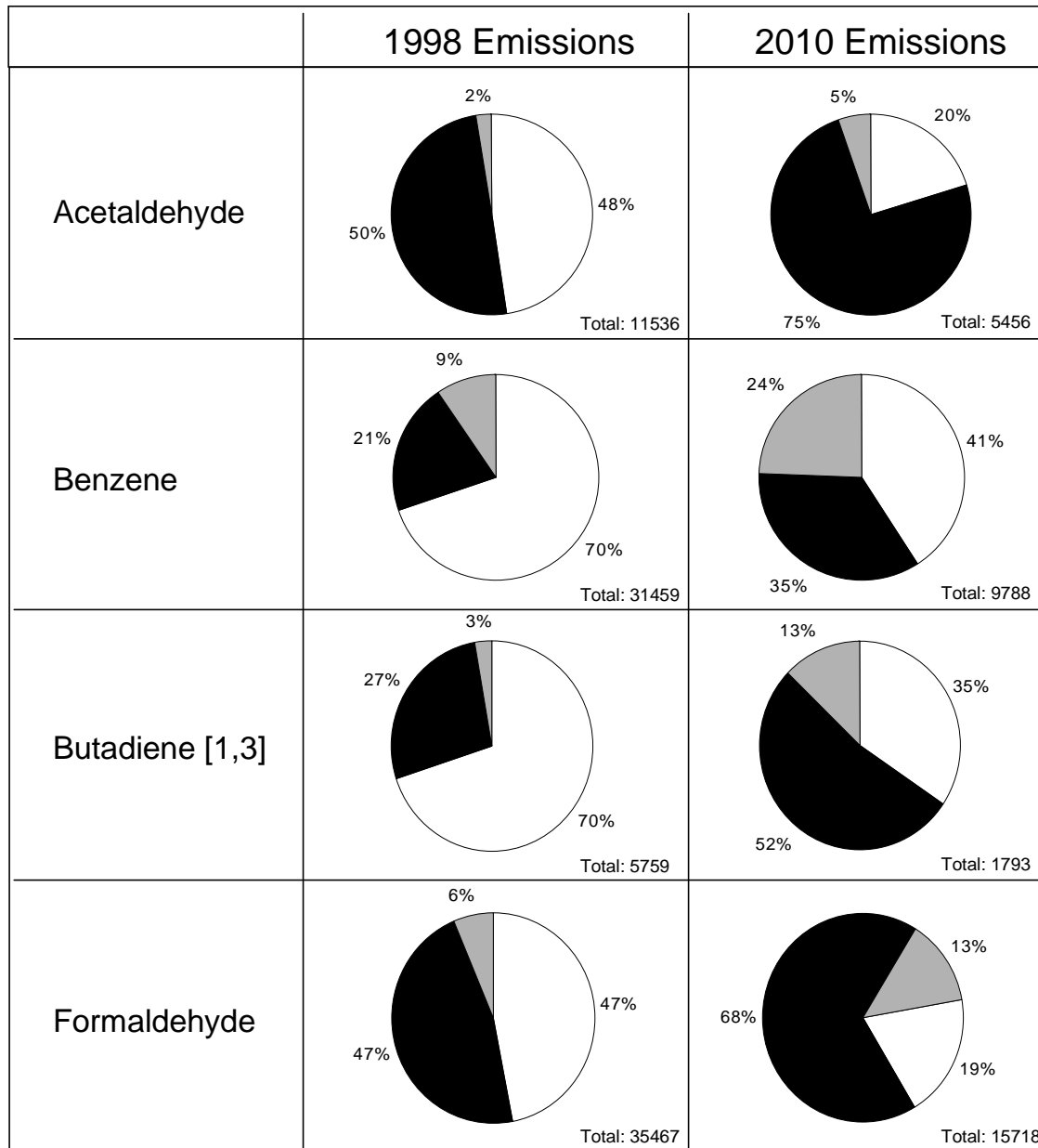


Figure E-1 Continued

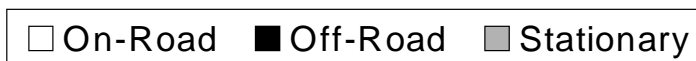
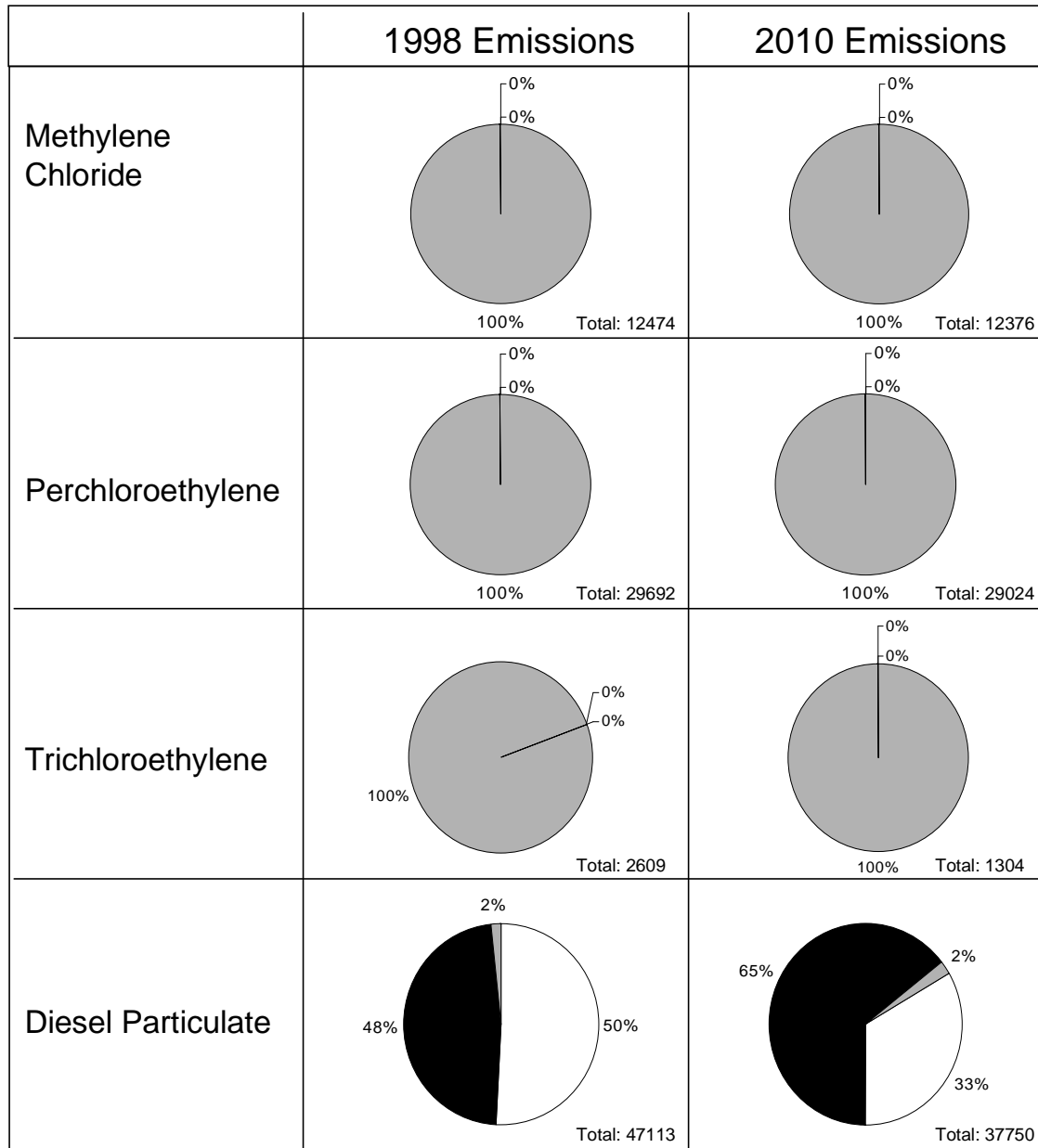
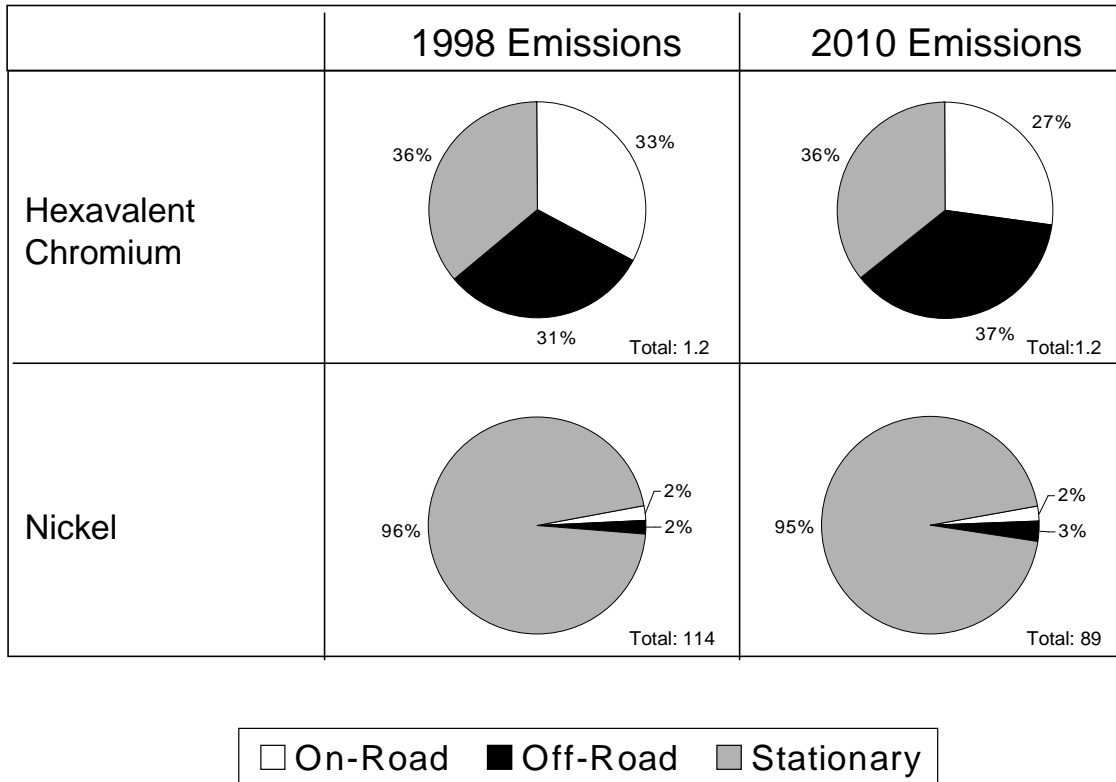


Figure E-1 Concluded



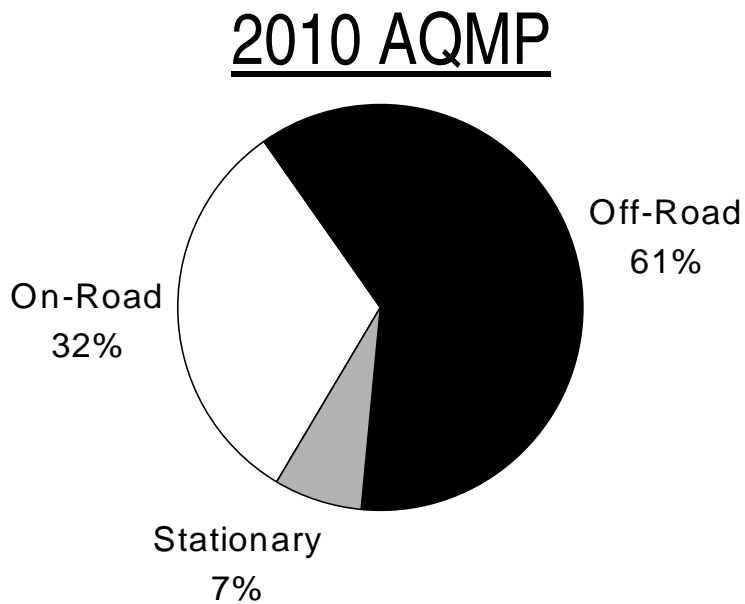
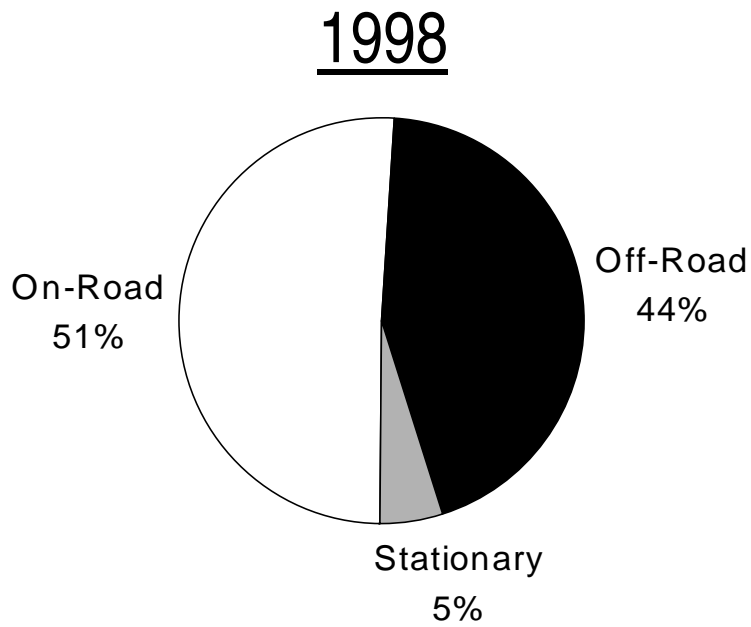


Figure E-2

Source Apportionment Using Toxicity-Weighted Emissions

**Table E-4
Order of Toxicity Based on Contribution to the Overall Basin-Wide Risk**

	<u>1998</u>	<u>2010*</u>
1	Diesel PM	Diesel PM
2	Butadiene [1,3]	Hexavalent Chromium
3	Benzene	Butadiene [1,3]
4	Hexavalent Chromium	Benzene
5	Formaldehyde	Perchloroethylene
6	Perchloroethylene	Formaldehyde
7	Acetaldehyde	Nickel
8	Nickel	Acetaldehyde
9	Methylene Chloride	Methylene Chloride
10	Trichloroethylene	Trichloroethylene

* The 2010 ranking is based on the remaining risk in 2010 after implementation of the 1997 AQMP, as amended in 1999.

Figure E-3

Remaining Emissions Expected For Key Toxic Air Contaminants

