OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

Air Toxics Hot Spots Program

Appendices A-F

Guidance Manual for Preparation of Health Risk Assessments

Air, Community, and Environmental Research Branch

Office of Environmental Health Hazard Assessment

California Environmental Protection Agency

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Appendix A:

Air Toxics Hot Spots Program

List of Substances*

*The List of Substances presented in Appendix A is periodically updated by the California Air Resources Board (ARB). The most recent update at the time of preparation of this document was August 27, 2007. Future updates may be obtained from the ARB web site (http://www.arb.ca.gov/ab2588/2588guid.htm).

Appendix A-I

Substances For Which

Emissions Must Be Quantified

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Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
75070	Acetaldehyde		c	20	1	2	3	4				
60355	Acetamide		c	2	1	2	3	4				
75058	Acetonitrile	06/91		200	1	2						
98862	Acetophenone	06/91		100	1	2						
53963	2-Acetylaminofluorene [PAH-Derivative, POM]		c	100	1	2		4	5			
107028	Acrolein			0.05	1	2						
79061	Acrylamide		c	0.01	1	2	3	4				
79107	Acrylic acid	06/91		5	1	2						
107131	Acrylonitrile		c	0.1	1	2	3	4	5			
107051	Allyl chloride		c	5	1	2		4				
7429905	Aluminum	06/91		100	1							
1344281	Aluminum oxide (fibrous forms)	06/91		100							7	
117793	2-Aminoanthraquinone [PAH-Derivative, POM]		c	5	1	2		4	5			
92671	4-Aminobiphenyl [POM]		c	100	1	2	3	4	5			
61825	Amitrole		c	0.1			3	4	5			
7664417	Ammonia			200	1	2						
6484522	Ammonium nitrate	06/91		100	1							
7783202	Ammonium sulfate	06/91		100	1							
62533	Aniline	09/90	c	5	1	2		4				
90040	o-Anisidine		c	100	1	2	3	4	5			
-	Anthracene [PAH, POM], (see PAH)											
7440360	Antimony	06/91		1							7	
*	Antimony compounds including but not limited to:	06/91		1	1	2						[7]
1309644	Antimony trioxide	09/90	c	1	1	2	3	4				[7]
7440382	Arsenic		c	0.01	1	2	3	4	5			
1016	Arsenic compounds (inorganic) including but not limited to:		c	0.01	1	2	3	4	5			[7]
7784421	Arsine			0.01	1	2					7	[7]
1017	Arsenic compounds (other than inorganic)	06/91		0.1	1							[7]
-	Asbestos (see Mineral fibers)											
7440393	Barium	06/91		1							7	
*	Barium Compounds	06/91		1	1							[7]

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-	Benz[a]anthracene [PAH, POM], (see PAH)											
71432	Benzene		c	2	1	2	3	4	5			
92875	Benzidine (and its salts) [POM]		c	0.0001	1	2	3	4	5			
1020	Benzidine-based dyes [POM] including but not limited to:		c	0.0001	1	2	3					
1937377	Direct Black 38 [PAH-Derivative, POM]		c	0.0001	1	2		4	5			
2602462	Direct Blue 6 [PAH-Derivative, POM]		c	0.0001	1	2		4	5			
16071866	Direct Brown 95 (technical grade) [POM]	09/89	c	0.0001	1	2		4				
-	Benzo[a]pyrene [PAH, POM], (see PAH)											
-	Benzo[b]fluoranthene [PAH, POM], (see PAH)											
271896	Benzofuran	06/91	c	100				4				
98077	Benzoic trichloride {Benzotrichloride}		c	10	1	2		4	5			
-	Benzo[j]fluoranthene [PAH, POM] (see PAH)											
-	Benzo[k]fluoranthene [PAH, POM] (see PAH)											
98884	Benzoyl chloride	06/91		100	1							
94360	Benzoyl peroxide	06/91		100							7	
100447	Benzyl chloride		c	1	1	2		4				
7440417	Beryllium		c	0.001	1	2	3	4	5			
*	Beryllium compounds	09/89	c	0.001	1	2	3	4	5			[7]
92524	Biphenyl [POM]	06/91		0.5	1	2						
111444	Bis(2-chloroethyl) ether {DCEE}	09/89	c	0.05	1	2		4				
542881	Bis(chloromethyl) ether		c	0.001	1	2	3	4	5			
103231	Bis(2-ethylhexyl) adipate	06/91		100	1							
7726956	Bromine			0.5		2						
*	Bromine compounds (inorganic) including but not limited to:			100	1	2						[7]
7789302	Bromine pentafluoride	11/06		100							7	
10035106	Hydrogen bromide	11/06		20							7	
7758012	Potassium bromate			0.1	1		3	4				[7]
75252	Bromoform	06/91		100	1	2		4				
106990	1,3-Butadiene		c	0.1	1	2	3	4	5			
540885	t-Butyl acetate	11/06		200							7	

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141322	Butyl acrylate	06/91		100	1							
71363	n-Butyl alcohol	06/91		100	1							
78922	sec-Butyl alcohol	06/91		100	1							
75650	tert-Butyl alcohol	06/91		100	1							
85687	Butyl benzyl phthalate	06/91		100	1							
7440439	Cadmium		c	0.01	1	2	3	4	5			
*	Cadmium compounds		c	0.01	1	2	3	4	5			[7]
156627	Calcium cyanamide	06/91		100	1	2						
105602	Caprolactam	06/91		100	1	2						
2425061	Captafol	09/89	c	100				4				
133062	Captan	09/90	c	100	1	2		4				
63252	Carbaryl [PAH-Derivative, POM]	06/91		100	1	2						
1050	Carbon black extracts		c	2	1		3	4				
75150	Carbon disulfide	09/89		200	1	2		4				
56235	Carbon tetrachloride		c	1	1	2	3	4	5			
463581	Carbonyl sulfide	06/91		100	1	2						
1055	Carrageenan (degraded)		c	100			3	4				
120809	Catechol	06/91		100	1	2						
133904	Chloramben	06/91		100	1	2						
57749	Chlordane	09/89	c	10	1	2		4				
108171262	Chlorinated paraffins (average chain length, C12; approximately 60% Chlorine by weight)	09/89	c	2			3	4	5			
7782505	Chlorine			0.5	1	2						
10049044	Chlorine dioxide	06/91		1	1							
79118	Chloroacetic acid	06/91		100	1	2						
532274	2-Chloroacetophenone	06/91		0.1	1	2						
106478	p-Chloroaniline	07/96	c	100				4			7	
1058	Chlorobenzenes including but not limited to:	06/91		100	1							
108907	Chlorobenzene			200	1	2						
25321226	Dichlorobenzenes (mixed isomers) including:	06/91		100	1						7	
95501	1,2-Dichlorobenzene	06/91		200	1						7	
541731	1,3-Dichlorobenzene	06/91		100	1						7	

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106467	p-Dichlorobenzene {1,4-Dichlorobenzene}		c	5	1	2	3		5			
120821	1,2,4-Trichlorobenzene	06/91		200	1	2						
510156	Chlorobenzilate [POM] {Ethyl-4,4'-dichlorobenzilate}	09/90	c	100	1	2		4				
67663	Chloroform		c	10	1	2	3	4	5			
107302	Chloromethyl methyl ether (technical grade)		c	100	1	2		4	5			
1060	Chlorophenols including but not limited to:		c	100	1		3					
95578	2-Chlorophenol	11/06		10	1		3					
120832	2,4-Dichlorophenol	06/91	c	100	1						7	
87865	Pentachlorophenol	09/90	c	10	1	2		4				
25167833	Tetrachlorophenols including but not limited to:	11/06		10							7	
58902	2,3,4,6-Tetrachlorophenol	07/96	c	100	1						7	
95954	2,4,5-Trichlorophenol	06/91	c	100	1	2						
88062	2,4,6-Trichlorophenol		c	2	1	2		4				
95830	4-Chloro-o-phenylenediamine		c	10			3	4	5			
76062	Chloropicrin			2							7	
126998	Chloroprene			5	1	2						
95692	p-Chloro-o-toluidine		c	0.5			3	4				
7440473	Chromium	06/91		0.001							7	
*	Chromium compounds (other than hexavalent)	06/91		0.001	1	2						[7]
18540299	Chromium, hexavalent (and compounds) including but not limited to:		c	0.0001	1	2	3	4	5			[7]
10294403	Barium chromate	06/91	c	0.001	1	2			5			[7]
13765190	Calcium chromate	06/91	c	0.001	1	2			5			[7]
1333820	Chromium trioxide	06/91	c	0.0001	1	2			5			[7]
7758976	Lead chromate	06/91	c	0.001	1	2			5			[7]
10588019	Sodium dichromate	06/91	c	0.0001	1	2			5			[7]
7789062	Strontium chromate	06/91	c	0.001	1	2			5			[7]
-	Chrysene [PAH, POM], (see PAH)											
7440484	Cobalt	06/91		0.5							7	
*	Cobalt compounds	06/91		0.5	1	2						[7]
1066	Coke oven emissions		c	0.05	1	2	3	4	5			

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7440508	Copper			0.1		2						
*	Copper compounds	09/89		0.1	1	2						[7]
1070	Creosotes		c	0.05	1		3	4				
120718	p-Cresidine		c	1			3	4	5			
1319773	Cresols (mixtures of) {Cresylic acid} including:			5	1	2						
108394	m-Cresol	06/91		5	1	2						
95487	o-Cresol	06/91		5	1	2						
106445	p-Cresol	06/91		5	1	2						
4170303	Crotonaldehyde	07/96	c	50							7	
98828	Cumene	06/91		200	1	2						
80159	Cumene hydroperoxide	06/91		100	1							
135206	Cupferron		c	0.5				4	5			
57125	Cyanide compounds (inorganic) including but not limited to:	06/91		0.05	1	2						[8]
74908	Hydrocyanic acid			10		2						
110827	Cyclohexane	06/91		200	1							
108930	Cyclohexanol	07/96		200							7	
66819	Cycloheximide			2						6		
	Decabromodiphenyl oxide [POM] (see Polybrominated diphenyl ethers)	06/91										
1075	Dialkylnitrosamines including but not limited to:			0.001	1							
924163	N-Nitrosodi-n-butylamine		c	0.0001	1		3	4	5			
1116547	N-Nitrosodiethanolamine		c	100	1		3	4	5			
55185	N-Nitrosodiethylamine		c	0.001	1		3	4	5			
62759	N-Nitrosodimethylamine		c	0.01	1	2	3	4	5			
621647	N-Nitrosodi-n-propylamine		c	0.01	1		3	4	5			
10595956	N-Nitrosomethylethylamine		c	0.001	1		3	4				
615054	2,4-Diaminoanisole		c	5			3	4				
1078	Diaminotoluenes (mixed isomers) including but not limited to:	09/90	c	100	1			4				
95807	2,4-Diaminotoluene {2,4-Toluene diamine}		c	0.05	1	2	3	4	5			
334883	Diazomethane	06/91	c	5	1	2						
226368	Dibenz[a,h]acridine [POM]		c	0.5	1	2	3	4	5			

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224420	Dibenz[a,j]acridine [POM]		c	0.5	1	2	3	4	5			
-	Dibenz[a,h]anthracene [PAH, POM], (see PAH)											
194592	7H-Dibenzo[c,g]carbazole		c	0.05	1	2	3	4	5			
-	Dibenzo[a,e]pyrene [PAH, POM], (see PAH)											
-	Dibenzo[a,h]pyrene [PAH, POM], (see PAH)											
-	Dibenzo[a,i]pyrene [PAH, POM], (see PAH)											
-	Dibenzo[a,l]pyrene [PAH, POM], (see PAH)											
132649	Dibenzofuran [POM]	06/91		100	1	2						
-	Dibenzofurans (chlorinated) (see Polychlorinated dibenzofurans) [POM]											
96128	1,2-Dibromo-3-chloropropane {DBCP}		c	0.01	1	2	3	4	5			
96139	2,3-Dibromo-1-propanol	07/96	c	50				4				
84742	Dibutyl phthalate	06/91		100	1	2						
-	p-Dichlorobenzene (1,4-Dichlorobenzene) (see Chlorobenzenes)											
91941	3,3'-Dichlorobenzidine [POM]		c	0.1	1	2	3	4	5			
72559	Dichlorodiphenyldichloroethylene {DDE} [POM]	09/89	c	100	1	2		4				
75343	1,1-Dichloroethane {Ethylidene dichloride}	09/90	c	20	1	2		4				
94757	Dichlorophenoxyacetic acid, salts and esters {2,4-D}	06/91		100	1	2						
78875	1,2-Dichloropropane {Propylene dichloride}	09/90	c	20	1	2		4				
542756	1,3-Dichloropropene		c	10	1	2	3	4	5			
62737	Dichlorovos {DDVP}	09/89	c	0.5	1	2		4				
115322	Dicofol [POM]	06/91		100	1	2						
--	Diesel engine exhaust	09/90	c		1		3	4				[9]
9901	Diesel engine exhaust, particulate matter **{**Diesel PM**}**	09/90	c	0.1	1		3	4				[9]
9902	Diesel engine exhaust, total organic gas	09/90	c	10	1		3	4				[9]
#	Diesel fuel (marine)	06/91	c									
111422	Diethanolamine	06/91		20	1	2						
117817	Di(2-ethylhexyl) phthalate {DEHP}		c	20	1	2	3	4	5			
64675	Diethyl sulfate		c	100	1	2	3	4	5			
119904	3,3'-Dimethoxybenzidine [POM]		c	100	1	2	3	4	5			
60117	4-Dimethylaminoazobenzene [POM]		c	0.01	1	2	3	4	5			

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121697	N,N-Dimethylaniline	06/91		200	1	2						
57976	7,12-Dimethylbenz[a]anthracene [PAH-Derivative, POM]	09/90	c	0.0001	1	2		4				
119937	3,3'-Dimethylbenzidine {o-Tolidine} [POM]		c	10	1	2	3	4	5			
79447	Dimethyl carbamoyl chloride		c	100	1	2	3	4	5			
68122	Dimethyl formamide	09/90	c	100	1	2	3					
57147	1,1-Dimethylhydrazine		c	0.1	1	2	3	4	5			
131113	Dimethyl phthalate	06/91		50	1	2						
77781	Dimethyl sulfate		c	0.01	1	2	3	4	5			
534521	4,6-Dinitro-o-cresol (and salts)	06/91		100	1	2						
51285	2,4-Dinitrophenol	06/91		100	1	2						
42397648	1,6-Dinitropyrene [PAH-Derivative, POM]	06/91	c	0.001	1	2	3	4				
42397659	1,8-Dinitropyrene [PAH-Derivative, POM]	06/91	c	0.05	1	2	3	4				
25321146	Dinitrotoluenes (mixed isomers) including but not limited to:	06/91		100							7	
121142	2,4-Dinitrotoluene	09/89	c	0.5	1	2		4				
606202	2,6-Dinitrotoluene	06/91		100							7	
123911	1,4-Dioxane		c	5	1	2	3	4	5			
-	Dioxins (Chlorinated dibenzodioxins) (see Polychlorinated dibenzo-p-dioxins) [POM]											
630933	Diphenylhydantoin [POM]		c	100	1	2		4				
122667	1,2-Diphenylhydrazine {Hydrazobenzene} [POM]		c	100	1	2		4	5			
1090	Environmental Tobacco Smoke		c	2	1		3	4				
106898	Epichlorohydrin		c	2	1	2	3	4	5			
106887	1,2-Epoxybutane	06/91		100	1	2						
1091	Epoxy resins	09/89		100						6		
140885	Ethyl acrylate		c	200	1	2	3	4	5			
100414	Ethyl benzene	06/91		200	1	2						
75003	Ethyl chloride {Chloroethane}			200	1	2		4				
-	Ethyl-4,4'-dichlorobenzilate (see Chlorobenzilate)											
74851	Ethylene	06/91		200							7	
106934	Ethylene dibromide {EDB, 1,2-Dibromoethane}		c	0.5	1		3	4	5	6		
107062	Ethylene dichloride {EDC, 1,2-Dichloroethane}		c	2	1	2	3	4	5			

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107211	Ethylene glycol	06/91		200	1	2						
151564	Ethyleneimine {Aziridine}	06/91		100	1	2						
75218	Ethylene oxide		c	0.5	1	2	3	4	5	6		
96457	Ethylene thiourea		c	2	1	2	3	4	5			
1101	Fluorides and compounds including but not limited to:	09/89		100		2						
7664393	Hydrogen fluoride			50	1	2					7	
1103	Fluorocarbons (brominated)			200						6		[10]
1104	Fluorocarbons (chlorinated) including but not limited to:			200	1					6		[10]
76131	Chlorinated fluorocarbon {CFC-113} {1,1,2-Trichloro-1,2,2-trifluoroethane}			200	1	2				6		
75456	Chlorodifluoromethane {Freon 22}	07/96		200	1					6	7	
75718	Dichlorodifluoromethane {Freon 12}	11/06		200							7	
75434	Dichlorofluoromethane {Freon 21}	07/96		200	1					6	7	
75694	Trichlorofluoromethane {Freon 11}	07/96		200	1					6	7	
50000	Formaldehyde		c	5	1	2	3	4	5	6		
110009	Furan	07/96	c	5				4				
--	Gasoline engine exhaust including but not limited to:	09/89	c				3					[9]
--	Gasoline engine exhaust (condensates & extracts)	06/91	c					4				[9]
9910	Gasoline engine exhaust, particulate matter	09/90	c	100			3	4				[9]
9911	Gasoline engine exhaust, total organic gas	09/90	c	100			3	4				[9]
1110	Gasoline vapors		c	200	1	2	3	4				[11]
111308	Glutaraldehyde			0.1	1					6		
1115	Glycol ethers and their acetates including but not limited to:			100	1	2				6		
111466	Diethylene glycol	09/90		100	1					6		
111966	Diethylene glycol dimethyl ether	09/90		100	1	2				6		
112345	Diethylene glycol monobutyl ether	09/90		100	1	2				6		
111900	Diethylene glycol monoethyl ether	09/90		100	1	2				6		
111773	Diethylene glycol monomethyl ether	09/90		100	1	2				6		
25265718	Dipropylene glycol	09/90		100	1					6		

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34590948	Dipropylene glycol monomethyl ether	09/90		100	1					6		
629141	Ethylene glycol diethyl ether	09/90		100	1	2				6		
110714	Ethylene glycol dimethyl ether	09/90		100	1	2				6		
111762	Ethylene glycol monobutyl ether	09/90		200	1	2				6		
110805	Ethylene glycol monoethyl ether	09/89		50	1	2				6		
111159	Ethylene glycol monoethyl ether acetate	09/90		100	1	2				6		
109864	Ethylene glycol monomethyl ether	09/89		10	1	2				6		
110496	Ethylene glycol monomethyl ether acetate	09/90		200	1	2				6		
2807309	Ethylene glycol monopropyl ether	09/90		100	1	2				6		
107982	Propylene glycol monomethyl ether	09/90		200	1					6		
108656	Propylene glycol monomethyl ether acetate	09/90		100	1					6		
112492	Triethylene glycol dimethyl ether	09/90		100	1	2				6		
76448	Heptachlor	09/89	c	100	1	2		4				
118741	Hexachlorobenzene		c	0.1	1	2	3		5			
87683	Hexachlorobutadiene	06/91		0.1	1	2						
608731	Hexachlorocyclohexanes (mixed or technical grade), including but not limited to:		c	0.05	1		3	4	5			
319846	alpha-Hexachlorocyclohexane	07/96	c	0.1	1		3	4	5		7	
319857	beta-Hexachlorocyclohexane	07/96	c	0.1	1		3	4	5		7	
58899	Lindane {gamma-Hexachlorocyclohexane}	09/90	c	0.1	1	2		4				
77474	Hexachlorocyclopentadiene			2	1	2						
67721	Hexachloroethane	09/90	c	200	1	2		4				
680319	Hexamethylphosphoramide		c	100	1	2	3	4	5			
110543	Hexane	06/91		200	1	2						
302012	Hydrazine		c	0.01	1	2	3	4	5			
7647010	Hydrochloric acid			20	1	2						
-	Hydrocyanic acid (see Cyanide compounds)											
7783064	Hydrogen sulfide			5	1	2						
123319	Hydroquinone	06/91		100	1	2						
-	Indeno[1,2,3-cd]pyrene [PAH, POM], (see PAH)											
13463406	Iron pentacarbonyl	07/96		5							7	
1125	Isocyanates including but not limited to:			0.05						6		

Substances for Which Emissions Must Be Quantified

Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
822060	Hexamethylene-1,6-diisocyanate	06/91		0.05	1	2						
101688	Methylene diphenyl diisocyanate {MDI} [POM]	06/91		0.1	1	2						
624839	Methyl isocyanate			1	1	2						
-	Toluene-2,4-diisocyanate (see Toluene diisocyanates)											
-	Toluene-2,6-diisocyanate (see Toluene diisocyanates)											
78591	Isophorone	06/91		200	1	2						
78795	Isoprene, except from vegetative emission sources	07/96	c	200			3					
67630	Isopropyl alcohol	06/91		200	1							
80057	4,4'-Isopropylidenediphenol [POM]	06/91		100	1	2						
7439921	Lead		c	0.5	1			4		6		
1128	Lead compounds (inorganic) including but not limited to:		c	0.5	1		3					[7]
301042	Lead acetate		c	1	1	2		4	5			[7] [12]
-	Lead chromate (see Chromium, hexalent)											
7446277	Lead phosphate		c	2	1			4	5			[7]
1335326	Lead subacetate	09/90	c	2	1	2		4				[7] [12]
1129	Lead compounds (other than inorganic)	06/91		5	1	2						[7]
108316	Maleic anhydride			0.5	1	2						
7439965	Manganese			0.1	1	2						
*	Manganese compounds	09/89		0.1	1	2						[7]
7439976	Mercury			1	1	2		4		6		
*	Mercury compounds including but not limited to:	09/89		1	1	2		4				[7]
7487947	Mercuric chloride			1		2						[7]
593748	Methyl mercury {Dimethylmercury}			1		2						[7]
67561	Methanol			200	1	2						
72435	Methoxychlor [POM]	06/91		100	1	2						
75558	2-Methylaziridine {1,2-Propyleneimine}		c	100	1	2	3	4				
74839	Methyl bromide {Bromomethane}			20	1	2				6		
74873	Methyl chloride {Chloromethane}	06/91		20	1	2						
71556	Methyl chloroform {1,1,1-Trichloroethane}			200	1	2				6		
56495	3-Methylcholanthrene [PAH-Derivative, POM]	09/90	c	0.001	1	2		4				

Substances for Which Emissions Must Be Quantified

Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
3697243	5-Methylchrysene [PAH-Derivative, POM]		c	0.05	1	2	3	4	5			
101144	4,4'-Methylene bis(2-chloroaniline) {MOCA} [POM]		c	0.1	1	2	3	4	5			
75092	Methylene chloride {Dichloromethane}		c	50	1	2	3	4	5	6		
101779	4,4'-Methylenedianiline (and its dichloride) [POM]		c	0.1	1	2	3	4	5			
78933	Methyl ethyl ketone {2-Butanone}	06/91		200	1	2						
60344	Methyl hydrazine	06/91		100	1	2						
74884	Methyl iodide {Iodomethane}		c	100	1	2		4	5			
108101	Methyl isobutyl ketone {Hexone}	06/91		20	1	2						
75865	2-Methyllactonitrile {Acetone cyanohydrin}	07/96		50							7	
80626	Methyl methacrylate			200	1	2				6		
109068	2-Methylpyridine	07/96		100							7	
1634044	Methyl tert-butyl ether	06/91		200	1	2						
90948	Michler's ketone [POM]		c	0.1	1	2		4	5			
1136	Mineral fibers (fine mineral fibers which are man-made, and are airborne particles of a respirable size greater than 5 microns in length, less than or equal to 3.5 microns in diameter, with a length to diameter ratio of 3:1) including but not limited to:	06/91	c	100	1	2					7	
1056	Ceramic fibers	09/89	c	100	1	2	3	4				
1111	Glasswool fibers	09/89	c	100	1	2	3	4				
1168	Rockwool	09/89	c	100	1	2	3					
1181	Slagwool	09/89	c	100	1	2	3					
1135	Mineral fibers (other than man-made) including but not limited to:			100		2					7	
1332214	Asbestos		c	0.0001	1	2	3	4	5			
12510428	Erionite		c	100		2	3	4				
1190	Talc containing asbestiform fibers		c	100		2	3	4				
1313275	Molybdenum trioxide	06/91		100	1							
-	Naphthalene [PAH, POM], (see PAH)											
7440020	Nickel		c	0.1	1	2	3	4	5			
*	Nickel compounds including but not limited to:		c	1	1	2	3	4	5			[7]
373024	Nickel acetate	06/91	c	0.1	1	2			5			[7]
3333673	Nickel carbonate	06/91	c	0.1	1	2			5			[7]

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Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
13463393	Nickel carbonyl		c	0.1	1	2		4	5			[7]
12054487	Nickel hydroxide	06/91	c	0.1	1	2			5			[7]
1271289	Nickelocene	06/91	c	0.1	1	2			5			[7]
1313991	Nickel oxide	06/91	c	0.1	1	2			5			[7]
12035722	Nickel subsulfide		c	0.1	1	2		4	5			[7]
1146	Nickel refinery dust from the pyrometallurgical process	09/89	c	0.1				4				
7697372	Nitric acid	06/91		50	1							
139139	Nitrilotriacetic acid		c	100	1			4	5			
602879	5-Nitroacenaphthene [PAH-Derivative, POM]	11/06	c	2	1	2	3	4				
98953	Nitrobenzene			0.5	1	2						
92933	4-Nitrobiphenyl [POM]	09/89	c	100	1	2		4				
7496028	6-Nitrochrysene [PAH-Derivative, POM]	06/91	c	0.001	1	2	3	4				
607578	2-Nitrofluorene [PAH-Derivative, POM]	06/91	c	5	1	2	3	4				
302705	Nitrogen mustard N-oxide		c	0.05			3	4				
100027	4-Nitrophenol	06/91		100	1	2						
79469	2-Nitropropane		c	0.01	1	2	3	4	5			
5522430	1-Nitropyrene [PAH-Derivative, POM]	06/91	c	0.5	1	2	3	4				
57835924	4-Nitropyrene [PAH-Derivative, POM]	11/06	c	1				4				
86306	N-Nitrosodiphenylamine	11/06	c	10	1	2	3	4				
156105	p-Nitrosodiphenylamine [POM]		c	5	1	2		4	5			
684935	N-Nitroso-N-methylurea		c	100	1	2		4	5			
59892	N-Nitrosomorpholine		c	0.01	1	2	3	4	5			
100754	N-Nitrosopiperidine		c	1			3	4	5			
930552	N-Nitrosopyrrolidine		c	0.05			3	4	5			
*	Oleum (see Sulfuric acid and oleum)											
--	PAHs (Polycyclic aromatic hydrocarbons) [POM] including but not limited to:				1	2						[13]
1151	PAHs, total, w/o individ. components reported [PAH, POM]			50	1	2						
1150	PAHs, total, with individ. components also reported [PAH, POM]			50	1	2						
83329	Acenaphthene [PAH, POM]	07/96		50	1							

Substances for Which Emissions Must Be Quantified

Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
208968	Acenaphthylene [PAH, POM]	07/96		50	1							
120127	Anthracene [PAH, POM]	06/91		50	1	2					7	
56553	Benz[a]anthracene [PAH, POM]		c	0.5	1	2	3	4	5			
50328	Benzo[a]pyrene [PAH, POM]		c	0.05	1	2	3	4	5			
205992	Benzo[b]fluoranthene		c	0.5	1	2	3	4	5			
192972	Benzo[e]pyrene [PAH, POM]	07/96		0.5	1							
191242	Benzo[g,h,i]perylene [PAH, POM]	07/96		0.5	1							
205823	Benzo[j]fluoranthene [PAH, POM]		c	0.5	1	2	3	4	5			
207089	Benzo[k]fluoranthene [PAH, POM]		c	0.5	1	2	3	4	5			
218019	Chrysene [PAH, POM]	09/90	c	5	1	2		4				
53703	Dibenz[a,h]anthracene [PAH, POM]		c	0.1	1	2	3	4	5			
192654	Dibenzo[a,e]pyrene [PAH, POM]		c	0.05	1	2	3	4	5			
189640	Dibenzo[a,h]pyrene [PAH, POM]		c	0.001	1	2	3	4	5			
189559	Dibenzo[a,i]pyrene [PAH, POM]		c	0.001	1	2	3	4	5			
191300	Dibenzo[a,l]pyrene [PAH, POM]		c	0.001	1	2	3	4	5			
206440	Fluoranthene [PAH, POM]	07/96	c	0.5	1							
86737	Fluorene [PAH, POM]	07/96	c	0.5	1							
193395	Indeno[1,2,3-cd]pyrene [PAH, POM]		c	0.5	1	2	3	4	5			
91576	2-Methyl naphthalene [PAH, POM]	07/96	c	50	1							
91203	Naphthalene [PAH, POM]		c	0.1	1	2						
198550	Perylene [PAH, POM]	07/96	c	0.5	1							
85018	Phenanthrene [PAH, POM]	07/96	c	0.5	1							
129000	Pyrene [PAH, POM]	07/96	c	0.5	1							
#	PAH-Derivatives (Polycyclic aromatic hydrocarbon derivatives) [POM] (including but not limited to those substances listed in Appendix A with the bracketed designation [PAH-Derivative, POM])	06/91										[14]
56382	Parathion	06/91		100	1	2						
1336363	PCBs (Polychlorinated biphenyls), total [POM] including but not limited to:		c	0.01	1	2	3	4	5	6		
32598133	3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	11/06	c	0.01		2	3	4	5			
70362504	3,4,4',5-Tetrachlorobiphenyl (PCB 81)	11/06	c	0.01		2	3	4	5			

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32598144	2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	11/06	c	0.01		2	3	4	5			
74472370	2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	11/06	c	0.002		2	3	4	5			
31508006	2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	11/06	c	0.01		2	3	4	5			
65510443	2,3',4,4',5'-Pentachlorobiphenyl (PCB 123)	11/06	c	0.01		2	3	4	5			
57465288	3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	11/06	c	0.00001		2	3	4	5			
38380084	2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	11/06	c	0.002		2	3	4	5			
69782907	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	11/06	c	0.002		2	3	4	5			
52663726	2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	11/06	c	0.1		2	3	4	5			
32774166	3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	11/06	c	0.0001		2	3	4	5			
39635319	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	11/06	c	0.01		2	3	4	5			
82688	Pentachloronitrobenzene {Quintobenzene}	06/91		100	1	2						
79210	Peracetic acid	06/91		100	1							
127184	Perchloroethylene {Tetrachloroethene}		c	5	1	2	3	4	5	6		
2795393	Perfluorooctanoic acid {PFOA} and its salts, esters, and sulfonates	11/06		10							7	
108952	Phenol			200	1	2						
106503	p-Phenylenediamine	06/91		100	1	2						
90437	2-Phenylphenol [POM]	06/91		100	1	2						
75445	Phosgene			2	1	2						
7723140	Phosphorus			0.1	1	2						
--	Phosphorus compounds:	09/89				2						
7803512	Phosphine			0.01	1	2					7	
7664382	Phosphoric acid	09/89		50	1	2						
10025873	Phosphorus oxychloride	09/89		0.1		2						
10026138	Phosphorus pentachloride	09/89		0.1		2						
1314563	Phosphorus pentoxide	09/89		0.1		2						
7719122	Phosphorus trichloride	09/89		0.1		2						
126738	Tributyl phosphate	09/89		100		2						
78400	Triethyl phosphine	09/89		100		2						
512561	Trimethyl phosphate	09/89		100		2						
78308	Triorthocresyl phosphate [POM]	09/89		0.5	1	2						
115866	Triphenyl phosphate [POM]	09/89		100	1	2						

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101020	Triphenyl phosphite [POM]	09/89		100	1	2						
85449	Phthalic anhydride			0.01	1	2						
2222	Polybrominated diphenyl ethers {PBDEs}, including but not limited to:	11/06		1							7	
1163195	Decabromodiphenyl oxide [POM]	06/91		1	1	2						
--	Polychlorinated dibenzo-p-dioxins {PCDDs or Dioxins} [POM], including but not limited to:		c		1	2						
1086	Dioxins, total, w/o individ. isomers reported {PCDDs} [POM]		c	0.000001	1	2						
1085	Dioxins, total, with individ. isomers also reported {PCDDs} [POM]		c	0.000001	1	2						
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin {TCDD} [POM]		c	0.000001	1	2	3	4	5			
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin [POM]		c	0.000001	1	2						
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin [POM]		c	0.000001	1	2		4				
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin [POM]		c	0.000001	1	2						
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin [POM]		c	0.000001	1	2						
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [POM]		c	0.000001	1	2						
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin [POM]	07/96	c	0.000001	1	2						
41903575	Total Tetrachlorodibenzo-p-dioxin [POM]	07/96	c	0.000001	1	2						
36088229	Total Pentachlorodibenzo-p-dioxin [POM]	07/96	c	0.000001	1	2						
34465468	Total Hexachlorodibenzo-p-dioxin [POM]	07/96	c	0.000001	1	2						
37871004	Total Heptachlorodibenzo-p-dioxin [POM]	07/96	c	0.000001	1	2						
--	Polychlorinated dibenzofurans {PCDFs or Dibenzofurans} [POM], including but not limited to:		c		1	2						
1080	Dibenzofurans (Polychlorinated dibenzofurans) {PCDFs} [POM]		c	0.000001	1	2						
51207319	2,3,7,8-Tetrachlorodibenzofuran [POM]		c	0.000001	1	2						
57117416	1,2,3,7,8-Pentachlorodibenzofuran [POM]		c	0.000001	1	2						
57117314	2,3,4,7,8-Pentachlorodibenzofuran [POM]		c	0.000001	1	2						
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran [POM]		c	0.000001	1	2						
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran [POM]		c	0.000001	1	2						

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72918219	1,2,3,7,8,9-Hexachlorodibenzofuran [POM]		c	0.000001	1	2						
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran [POM]		c	0.000001	1	2						
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran [POM]		c	0.000001	1	2						
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran [POM]		c	0.000001	1	2						
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran [POM]	07/96	c	0.000001	1	2						
55722275	Total Tetrachlorodibenzofuran [POM]	07/96	c	0.000001	1	2						
30402154	Total Pentachlorodibenzofuran [POM]	07/96	c	0.000001	1	2						
55684941	Total Hexachlorodibenzofuran [POM]	07/96	c	0.000001	1	2						
38998753	Total Heptachlorodibenzofuran [POM]	07/96	c	0.000001	1	2						
#	POM (Polycyclic organic matter) (including but not limited to those substances listed in Appendix A with the bracketed designation of [POM], [PAH, POM], or [PAH-Derivative, POM])	09/89			1	2						[15]
1120714	1,3-Propane sultone		c	0.05	1	2	3	4	5			
57578	beta-Propiolactone		c	10	1	2	3	4	5			
123386	Propionaldehyde	06/91		200	1	2						
114261	Propoxur {Baygon}	06/91		100	1	2						
115071	Propylene			200	1	2						
75569	Propylene oxide		c	10	1	2	3	4	5			
-	1,2-Propyleneimine (see 2-Methylaziridine)											
110861	Pyridine	06/91		100							7	
91225	Quinoline	06/91		100	1	2						
106514	Quinone	06/91		100	1	2						
1165	Radionuclides including but not limited to:		c	100	1	2		4				[16]
24267569	Iodine-131	09/89	c	100	1	2		4				
1166	Radon and its decay products	09/89	c	100	1			4				
50555	Reserpine [POM]		c	100	1	2		4	5			
#	Residual (heavy) fuel oils	06/91	c									
7782492	Selenium			0.5		2						
*	Selenium compounds including but not limited to:			0.5	1	2						[7]
7783075	Hydrogen selenide	11/06		0.1							7	
7446346	Selenium sulfide	09/90	c	0.1		2		4	5			[7]

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1175	Silica, crystalline (respirable)			0.1	1		3	4				
7440224	Silver	06/91		2							7	
*	Silver compounds	06/91		2	1							[7]
1310732	Sodium hydroxide			2	1	2						
100425	Styrene		c	100	1	2	3			6		
96093	Styrene oxide		c	100	1	2	3	4				
*	Sulfuric acid and oleum											
8014957	Oleum	11/06		100							7	
7446719	Sulfur trioxide	11/06		100							7	
7664939	Sulfuric acid	06/91		2	1							
100210	Terephthalic acid	06/91		100	1							
79345	1,1,2,2-Tetrachloroethane	09/90	c	1	1	2		4				
-	Tetrachlorophenols (see Chlorophenols)											
7440280	Thallium	06/91		100							7	
*	Thallium compounds	06/91	c	100							7	[7]
62555	Thioacetamide		c	0.01			3	4	5			
62566	Thiourea		c	0.1	1		3	4	5			
7550450	Titanium tetrachloride	06/91		100	1	2						
108883	Toluene			200	1	2		4		6		
-	2,4-Toluenediamine (see 2,4-Diaminotoluene)											
26471625	Toluene diisocyanates including but not limited to:	06/91	c	0.1	1		3					
584849	Toluene-2,4-diisocyanate		c	0.1	1	2	3		5			
91087	Toluene-2,6-diisocyanate		c	0.1	1	2	3		5			
95534	o-Toluidine		c	10	1	2	3	4	5			
8001352	Toxaphene {Polychlorinated camphenes}		c	100	1	2	3	4	5			
-	1,1,1-Trchloroethane (see Methyl chloroform)											
79005	1,1,2-Trichloroethane {Vinyl trichloride}	06/91	c	1	1	2		4				
79016	Trichloroethylene		c	20	1	2		4				
-	2,4,6-Trichlorophenol (see Chlorophenols)											
96184	1,2,3-Trichloropropane	07/96	c	200			3	4			7	
121448	Triethylamine	06/91		20	1	2						
1582098	Trifluralin	06/91		100	1	2						

Substances for Which Emissions Must Be Quantified												
Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3]	**Carcinogen** [Note 4]	**Applicable Degree of Accuracy (lb/yr)** [Note 5]	**Source List(s)** [Note 6]							**Other Note(s)**
25551137	Trimethylbenzenes including but not limited to:	11/06		100	1							
95636	1,2,4-Trimethylbenzene	06/91		5	1							
540841	2,2,4-Trimethylpentane	06/91		100	1	2						
51796	Urethane {Ethyl carbamate}		c	0.1	1	2	3	4	5			
7440622	Vanadium (fume or dust)	06/91		10							7	[17]
1314621	Vanadium pentoxide	11/06		10		2						
108054	Vinyl acetate	06/91		200	1	2						
593602	Vinyl bromide		c	20	1	2	3	4				
75014	Vinyl chloride		c	0.5	1	2	3	4	5			
100403	4-Vinylcyclohexene	07/96	c	5			3					
75025	Vinyl fluoride	07/96	c	200			3					
75354	Vinylidene chloride			20	1	2						
1206	Wood preservatives (containing arsenic and chromate)	09/89		100						6		
1330207	Xylenes (mixed**)** including:			200	1	2				6		
108383	m-Xylene	06/91		200	1	2						
95476	o-Xylene	06/91		200	1	2						
106423	p-Xylene	06/91		200	1	2						
7440666	Zinc			2		2						
*	Zinc compounds including but not limited to:	09/89		2	1	2						[7]
1314132	Zinc oxide			2		2						[7]

Appendix A-II

Substances for Which Production, Use, or Other Presence Must Be Reported

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
26148685	A-alpha-C {2-Amino-9H-pyrido[2,3-b]indole}	09/89	c			3	4				[18]
34256821	Acetochlor	09/89	c				4				
62476599	Acifluorfen [POM]	09/90	c	1	2		4				
3688537	AF-2		c			3	4				
1000	Aflatoxins		c			3	4	5			
15972608	Alachlor	09/89	c				4				
309002	Aldrin	09/89	c				4				
107186	Allyl alcohol	06/91								7	
60093	p-Aminoazobenzene {4-Aminoazobenzene} [POM]		c	1	2	3	4				
97563	o-Aminoazotoluene [POM]		c	1	2	3	4	5			
6109973	3-Amino-9-ethylcarbazole hydrochloride [POM]	09/89	c	1	2		4	5			
125848	Aminoglutethimide	09/90					4				
82280	1-Amino-2-methylanthraquinone [PAH-Derivative, POM]		c	1	2		4	5			
68006837	2-Amino-3-methyl-9H-pyrido(2,3-b) indole {MeA-alpha-C}	09/89	c			3	4				
712685	2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole		c			3	4				
134292	o-Anisidine hydrochloride		c				4	5			
104949	p-Anisidine	06/91								7	
140578	Aramite		c			3	4				
492808	Auramine [POM]		c	1	2	3	4	5			
446866	Azathioprine		c	1	2	3	4	5			
103333	Azobenzene [POM]	09/90	c	1	2		4				
98873	Benzal chloride	06/91								7	
55210	Benzamide	06/91								7	
1694093	Benzyl violet 4B [POM]		c	1	2	3	4				
1025	Betel quid with tobacco		c			3	4				
494031	N-N-Bis(2-chloroethyl)-2-naphthylamine {Chlornaphazine} [PAH-Derivative, POM]		c	1	2	3	4	5			
108601	Bis(2-chloro-1-methylethyl) ether	06/91								7	
1030	Bitumens, extracts of steam-refined and air-refined bitumens		c			3	4				
1035	Bleomycins		c			3					
75274	Bromodichloromethane	09/90	c				4				

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
1689845	Bromoxynil	06/91					4				
25013165	Butylated hydroxyanisole {BHA}		c			3	4				
123728	Butyraldehyde	06/91								7	
3068880	beta-Butyrolactone		c			3	4				
630080	Carbon monoxide	09/89					4				
143500	Chlordecone {Kepone}		c			3	4				
6164983	Chlordimeform	09/89	c				4				
115286	Chlorendic acid	09/89	c			3	4	5			
124481	Chlorodibromomethane	09/90	c				4				
563473	3-Chloro-2-methylpropene	09/89	c				4	5			
1065	Chlorophenoxy herbicides		c			3					
1897456	Chlorothalonil	09/89	c				4				
1059	p-Chloro-o-toluidine (strong acid salts)	06/91	c			3					
4680788	C. I. Acid Green 3 [POM] Note: "C.I." means "color index"	06/91		1	2					7	
569642	C. I. Basic Green 4 [POM]	06/91		1	2					7	
989388	C. I. Basic Red 1 [POM]	06/91		1	2					7	
569619	C. I. Basic Red 9 monohydrochloride [POM]	09/89	c	1	2		4	5			
2832408	C. I. Disperse Yellow 3 [POM]	06/91		1	2					7	
87296	Cinnamyl anthranilate [POM]	09/89	c	1	2		4	5			
6358538	Citrus Red No. 2 [POM]		c	1	2	3	4				
8007452	Coal tars	09/89	c			3	4	5			
21725462	Cyanazine	09/90					4				
14901087	Cycasin		c			3	4				
13121705	Cyhexatin	09/89					4	5			
3468631	D and C Orange No. 17 [PAH-Derivative, POM]	09/90	c	1	2		4				
81889	D and C Red No. 19 [POM]	09/90	c	1	2		4				
2092560	D and C Red No. 8 [PAH-Derivative, POM]	06/91	c	1	2		4				
5160021	D and C Red No. 9 [PAH-Derivative, POM]	09/90	c	1	2		4				
1596845	Daminozide	09/90	c				4				
50293	DDT {1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane} [POM]		c	1	2	3	4	5			
613354	N,N'-Diacetylbenzidine [POM]		c	1	2	3	4				
2303164	Diallate	06/91								7	
39156417	2,4-Diaminoanisole sulfate		c				4	5			

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
101804	4,4'-Diaminodiphenyl ether [POM]		c	1	2	3	4	5			
764410	1,4-Dichloro-2-butene	09/90	c				4				
28434868	3,3'-Dichloro-4,4'-diaminodiphenyl ether [POM]	09/89	c	1	2	3	4				
72548	Dichlorodiphenyldichloroethane {DDD} [POM]	09/89	c	1	2		4				
540590	1,2-Dichloroethylene	06/91								7	
78886	2,3-Dichloropropene	06/91								7	
60571	Dieldrin	09/89	c				4				
1464535	Diepoxybutane		c			3	4	5			
1615801	1,2-Diethylhydrazine		c			3	4				
84662	Diethyl phthalate	06/91								7	
101906	Diglycidyl resorcinol ether {DGRE}		c			3	4	5			
94586	Dihydrosafrole		c			3	4				
20325400	3,3'-Dimethoxybenzidine dihydrochloride [POM]	06/91	c	1	2		4				
55738540	trans-2-[(Dimethylamino)methylimino]-5-[2-(5-nitro-2-furyl)vinyl-1,3,4-oxadiazol		c			3	4				
540738	1,2-Dimethylhydrazine		c			3	4				
105679	2,4-Dimethylphenol {2,4-Xylenol}	06/91								7	
513371	Dimethylvinylchloride {DMVC}	09/89	c				4	5			
25154545	Dinitrobenzenes (mixtures of) including:	09/90					4			7	
99650	m-Dinitrobenzene	06/91								7	
528290	o-Dinitrobenzene	06/91								7	
100254	p-Dinitrobenzene	06/91								7	
39300453	Dinocap	09/90					4				
88857	Dinoseb	09/89					4				
117840	n-Dioctyl phthalate	06/91								7	
2475458	Disperse Blue 1 [PAH-Derivative, POM]	06/91	c	1	2	3	4				
541413	Ethyl chloroformate	06/91								7	
62500	Ethyl methanesulfonate		c			3	4				
2164172	Fluometuron	06/91								7	
133073	Folpet	09/89	c				4				
3570750	2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole		c			3	4				
60568050	Furmecyclox	09/90	c				4				
67730114	Glu-P-1 {2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole}		c			3	4				

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
67730103	Glu-P-2 {2-Aminodipyrido[1,2-a:3',2'-d]imidazole}		c			3	4				
765344	Glycidaldehyde		c			3	4				
556525	Glycidol	09/90	c				4				
16568028	Gyromitrin {Acetaldehyde methylformylhydrazone}		c				4				
2784943	HC Blue 1	09/89	c				4	5			
1024573	Heptachlor epoxide	09/89	c				4				
1335871	Hexachloronaphthalene [PAH-Derivative, POM]	06/91		1	2					7	
10034932	Hydrazine sulfate		c				4	5			
76180966	IQ {2-Amino-3-methylimidazo[4,5-f]quinoline}		c			3	4				
78842	Isobutyraldehyde	06/91								7	
120581	Isosafrole	09/90	c				4				
4759482	Isotretinoin						4				
77501634	Lactofen [POM]	09/89	c	1	2		4				
1131	Lubricant base oils and derived products, specifically vacuum distillates, acid treated oils, aromatic oils, mildly solvent-refined oils, mildly hydrotreated-oils and used engine oils.	09/89	c			3	4	5			
8018017	Mancozeb	09/90	c				4				
12427382	Maneb	09/90	c				4				
59052	Methotrexate	09/89					4				
96333	Methyl acrylate	06/91								7	
590965	Methylazoxymethanol	09/90	c				4				
592621	Methylazoxymethanol acetate	09/89	c			3	4				
101611	4,4'-Methylene bis (N,N-dimethyl) benzenamine [POM]		c	1	2		4	5			
838880	4,4'-Methylene bis(2-methylaniline) [POM]	09/89	c	1	2	3	4				
74953	Methylene bromide	06/91								7	
66273	Methyl methanesulfonate		c			3	4				
129157	2-Methyl-1-nitroanthraquinone (uncertain purity) [PAH-Derivative, POM]		c	1	2	3	4				
70257	N-Methyl-N'-nitro-N-nitrosoguanidine		c			3	4				
-	N-Methyl-N-nitrosourethane (see N-Nitroso-N-methylurethane)										
924425	N-Methyloacrylamide	09/90	c				4				
9006422	Metiram	09/90					4				
1140	Mineral oils (untreated and mildly treated oils; and those used in occupations such as mulespinning, metal machining, and jute		c			3	4	5			

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
	processing).										
2385855	Mirex		c			3	4	5			
315220	Monocrotaline		c			3	4				
505602	Mustard gas {Sulfur mustard}		c			3	4	5			
134327	1-Naphthylamine [PAH-Derivative, POM]	09/90	c	1	2		4				
91598	2-Naphthylamine [PAH-Derivative, POM]		c	1	2	3	4	5			
54115	Nicotine	09/90					4				
1148	Nitrilotriacetic acid (salts) including but not limited to:	06/91	c			3					
18662538	Nitrilotriacetic acid, trisodium salt monohydrate	06/91	c				4				
99592	5-Nitro-o-anisidine		c				4	5			
1836755	Nitrofen (technical grade)		c			3	4	5			
51752	Nitrogen mustard {Mechlorethamine}	09/89	c			3	4	5			
55867	Nitrogen mustard hydrochloride	06/91	c				4	5			
55630	Nitroglycerin	06/91								7	
88755	2-Nitrophenol	06/91								7	
57835924	4-Nitropyrene [PAH-Derivative, POM]	09/89	c	1	2	3	4				
759739	N-Nitroso-N-ethylurea	09/89	c				4	5			
60153493	3-(N-Nitrosomethylamino)propionitrile	09/89	c			3	4				
64091914	4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone {NNK}		c			3	4				
615532	N-Nitroso-N-methylurethane		c			3	4				
4549400	N-Nitrosomethylvinylamine		c			3	4	5			
16543558	N-Nitrosonornicotine		c			3	4	5			
13256229	N-Nitrososarcosine		c			3	4	5			
303479	Ochratoxin A [POM]	09/90	c	1	2		4				
2234131	Octachloronaphthalene [PAH-Derivative, POM]	06/91		1	2					7	
2646175	Oil Orange SS [PAH-Derivative, POM]		c	1	2	3	4				
20816120	Osmium tetroxide	06/91								7	
794934	Panfuran S {Dihydroxymethylfuratrizine}		c			3	4				
122601	Phenyl glycidyl ether	09/90	c			3	4				
57410	Phenytoin [POM]		c	1	2	3	4	5			
88891	Picric acid	06/91								7	
1155	Polybrominated biphenyls {PBBs{ [POM]		c	1	2	3	4	5			

Substances for Which Production, Use, or Other Presence Must be Reported

Emittent ID [Note 1]	Substance Name [Note 2]	Add Date [Note 3]	Carcinogen [Note 4]	Source List(s) [Note 6]							Other Note(s)
53973981	Polygeenan	09/89	c				4				
3761533	Ponceau MX [PAH-Derivative, POM]		c	1	2	3	4				
3564098	Ponceau 3R [PAH-Derivative, POM]		c	1	2	3	4				
36791045	Ribavirin	09/90					4				
94597	Safrole		c			3	4	5			
1180	Shale oils		c			3	4				
132274	Sodium o-phenylphenate [POM]		c	1	2	3	4				
128449	Sodium saccharin	09/89	c				4				
1185	Soots		c			3	4				
10048132	Sterigmatocystin [POM]		c	1	2	3	4				
95067	Sulfallate		c			3	4	5			
5216251	p-alpha,alpha,alpha-Tetrachlorotoluene	09/90	c				4				
961115	Tetrachlorvinphos	06/91								7	
509148	Tetranitromethane	09/90	c				4				
139651	4,4'-Thiodianiline [POM]		c	1	2	3	4				
1314201	Thorium dioxide		c				4	5			
1200	Tobacco products, smokeless		c			3	4				
1205	alpha-chlorinated Toluenes		c			3					
636215	o-Toluidine hydrochloride		c				4	5			
106490	p-Toluidine	09/90	c				4				
52686	Trichlorfon	06/91								7	
68768	Tris(aziridinyl)-p-benzoquinone {Triaziquone}	09/90	c				4				
52244	Tris(1-aziridinyl) phosphine sulfide {Thiotepa}		c			3	4	5			
126727	Tris(2,3-dibromopropyl)phosphate	09/89	c				4				
62450060	Trp-P-1 {3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole}		c			3	4				
62450071	Trp-P-2 {3-Amino-1-methyl-5H-pyrido[4,3-b]indole}		c			3	4				
72571	Trypan blue [PAH-Derivative, POM]		c	1	2	3	4				
106876	4-Vinyl-1-cyclohexene diepoxide {Vinyl cyclohexene dioxide}	09/90	c				4				
81812	Warfarin [POM]			1	2		4				
87627	2,6-Xylidene	06/91					4				
12122677	Zineb	09/90	c				4				

Appendix A-III

Substances Which Need Not Be Reported Unless Manufactured By the Facility

Substances Which Need Not Be Reported Unless Manufactured By the Facility									
Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3])	**Carcinogen** [Note 4]	**Source Lists** [Note 6]					**Other Note(s)**
546883	Acetohydroxamic acid	09/90					4		
50760	Actinomycin D	09/90	c				4		
23214928	Adriamycin [PAH-Derivative, POM]		c	1	2	3	4	5	
28981977	Alprazolam [POM]	09/90		1	2		4		
39831555	Amikacin sulfate	09/90					4		
54626	Aminopterin						4		
1005	Analgesic mixtures containing phenacetin		c			3	4	5	
1010	Androgenic (anabolic) steroids including but not limited to:		c			3	4		
58184	Methyltestosterone	09/90					4		
434071	Oxymetholone		c				4	5	
58220	Testosterone and its esters including but not limited to:	09/89					4		
315377	Testosterone enanthate	09/90					4		
50782	Aspirin	06/91					4		
115026	Azaserine		c			3	4		
5411223	Benzphetamine hydrochloride [POM]	09/90		1	2		4		
154938	Bischloroethyl nitrosourea		c			3	4		
55981	1,4-Butanediol dimethanesulfonate {Busulfen/Myleran}		c			3	4	5	
41575944	Carboplatin	09/90					4		
474259	Chenodiol	09/90					4		
305033	Chlorambucil		c			3	4	5	
56757	Chloramphenicol		c			3	4		
1620219	Chlorcyclizine hydrochloride [POM]			1	2		4		
13010474	1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea {CCNU}		c			3	4	5	
13909096	1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea {Methyl CCNU}		c			3			
15663271	Cisplatin		c			3	4		
50419	Clomiphene citrate [POM]	09/90		1	2		4		
50180	Cyclophosphamide		c			3	4		
147944	Cytarabine	09/89					4		
4342034	Dacarbazine		c			3	4	5	
17230885	Danazol	09/90					4		
20830813	Daunomycin [PAH-Derivative, POM]		c	1	2	3	4		
23541506	Daunorubicin hydrochloride [PAH-Derivative, POM]	09/90		1	2		4		
84173	Dienestrol [POM]	09/90	c	1	2		4		

Substances Which Need Not Be Reported Unless Manufactured By the Facility									
Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3])	**Carcinogen** [Note 4]	**Source Lists** [Note 6]					**Other Note(s)**
564250	Doxycycline	09/90					4		
379793	Ergotamine tartrate [POM]	09/90		1	2		4		
1095	Estrogens, non-steroidal including but not limited to:		c			3		5	
56531	Diethylstilbestrol [POM]		c	1	2	3	4	5	
1100	Estrogens, steroidal including but not limited to:		c			3		5	
1068	Conjugated estrogens	09/90	c				4		
50282	Estradiol 17 beta		c				4	5	
53167	Estrone		c				4	5	
57636	Ethinyl estradiol		c				4	5	
72333	Mestranol		c			3	4	5	
33419420	Etoposide [POM]	09/90			2				
54350480	Etretinate						4		
51218	Fluorouracil	09/89					4		
76437	Fluoxymesterone	09/90					4		
13311847	Flutamide	09/90					4		
67458	Furazolidone	09/90	c				4		
126078	Griseofulvin		c			3	4		
23092173	Halazepam [POM]	09/90		1	2		4		
3778732	Ifosfamide	09/90					4		
9004664	Iron dextran complex		c			3	4	5	
303344	Lasiocarpine	09/89	c			3	4		
554132	Lithium carbonate	06/91					4		
919164	Lithium citrate	06/91					4		
846491	Lorazepam [POM]	09/90		1	2		4		
595335	Megestrol acetate	06/91					4		
148823	Melphalan		c			3	4	5	
9002680	Menotropins	09/90					4		
6112761	Mercaptopurine	09/90					4		
531760	Merphalan	09/89	c				4		
3963959	Methacycline hydrochloride	06/91					4		
60560	Methimazole	09/90					4		
15475566	Methotrexate sodium	09/90					4		
484208	5-Methoxypsoralen		c			3			

Substances Which Need Not Be Reported Unless Manufactured By the Facility									
Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3])	**Carcinogen** [Note 4]	**Source Lists** [Note 6]					**Other Note(s)**
56042	Methylthiouracil		c			3	4		
443481	Metronidazole		c			3	4	5	
59467968	Midazolam hydrochloride [POM]	09/90		1	2		4		
62015398	Misoprostol	09/90					4		
50077	Mitomycin C		c			3	4		
70476823	Mitoxantrone hydrochloride [PAH-Derivative, POM]	09/90		1	2		4		
139913	5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone		c			3	4		
86220420	Nafarelin acetate [PAH-Derivative, POM]	09/90		1	2		4		
3771195	Nafenopin [POM]		c	1	2	3	4		
1405103	Neomycin sulfate	09/90					4		
56391572	Netilmicin sulfate	09/90					4		
61574	Niridazole		c			3	4		
67209	Nitrofurantoin	06/91	c				4		
59870	Nitrofurazone	09/90	c				4		
555840	1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone		c			3	4		
531828	N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide		c			3	4		
6533002	Norgestrel	09/90					4		
79572	Oxytetracycline	06/91					4		
115673	Paramethadione	09/90					4		
52675	Penicillamine	06/91					4		
57330	Pentobarbital sodium	09/90					4		
63989	Phenacemide	09/90					4		
62442	Phenacetin		c			3	4	5	
94780	Phenazopyridine hydrochloride		c			3	4	5	
3546109	Phenesterin	09/89	c				4	5	
50066	Phenobarbital		c			3	4		
59961	Phenoxybenzamine [POM]	09/89	c	1	2		4		
63923	Phenoxybenzimide hydrochloride [POM]	09/90	c	1	2	3	4	5	
54911	Pipobroman	09/90					4		
18378897	Plicamycin [PAH-Derivative, POM]	09/90		1	2		4		
366701	Procarbazine hydrochloride		c			3	4	5	
57830	Progesterone		c			3	4	5	
1160	Progestins including but not limited to:		c			3			

Substances Which Need Not Be Reported Unless Manufactured By the Facility									
Emittent ID [Note 1]	**Substance Name** [Note 2]	**Add Date** [Note 3])	**Carcinogen** [Note 4]	**Source Lists** [Note 6]					**Other Note(s)**
71589	Medroxyprogesterone acetate		c			3	4		
68224	Norethisterone		c				4	5	
51525	Propylthiouracil		c			3	4	5	
302794	all-trans-Retinoic acid	09/89					4		
1167	Retinol/retinyl esters	09/89	c				4		
81072	Saccharin		c			3	4	5	
3810740	Streptomycin sulfate	06/91					4		
18883664	Streptozotocin		c			3	4	5	
54965241	Tamoxifen citrate [POM]	09/90		1	2		4		
846504	Temazepam [POM]	09/90		1	2		4		
64755	Tetracycline hydrochloride	06/91					4		
50351	Thalidomide						4		
154427	Thioguanine	09/90					4		
49842071	Tobramycin sulfate	09/90					4		
299752	Treosulfan		c			3	4		
28911015	Triazolam [POM]	09/90		1	2		4		
13647353	Trilostane	09/90					4		
127480	Trimethadione	06/91					4		
66751	Uracil mustard		c			3	4		
26995915	Urofollitropin	09/90					4		
99661	Valproate						4		
143679	Vinblastine sulfate [POM]	09/90		1	2		4		
2068782	Vincristine sulfate [POM]	09/90		1	2		4		

NOTES TO APPENDIX A:

[1] Emittent ID (the emittent identification number) is the Chemical Abstract Service (CAS) number where available, or an ARB-assigned 4-digit emittent ID code.

A dash ("-") is shown for the Emittent ID for substances which are alphabetized under a group header or synonym elsewhere on the list. Refer to the cross reference indicated in parenthesis, "( )".

A double dash ("- -") is shown for the Emittent ID to indicate that the entry is a non-reportable group header for the substances immediately following it.

An asterisk ("*") is shown for the Emittent ID to indicate that the emissions of unspecified metal compounds shall be reported as the metal atom equivalent. See Note [7].

A pound sign ("#") is shown for the Emittent ID to indicate that the individual, component listed substances must be reported for this mixture or group.

[2] Individual substances listed under a group heading must be reported individually. Other, unspecified substances in the group must be summed and reported using the emittent ID of the group heading.

The square bracket designation, "[ ]", indicates that the substance is a component of the chemical group heading(s) within the brackets.

The braces designation, "{ }", indicates a synonym for the substance listed.

[3] The date the Board approved addition of the substance to the original list. The original list was approved by the Board in July 1988.

[4] The letter "c" indicates that for purposes of this section the substance shall be treated as a human carcinogen or potential human carcinogen.

[5] Applicable degree of accuracy (in lbs/year except where noted). Radionuclides must be reported in Curie units, and the accuracy must be considered accordingly. Refer to section VII.E. and Appendix B.

[6] Substances are required to be included on the Hot Spots list based on the following lists cited in Health & Safety Code section 44321:

1 = California Air Resources Board (44321(c));

2 = Environmental Protection Agency (44321(e));

3 = International Agency for Research on Cancer;

4 = Governor's List of Carcinogens and Reproductive Toxicants; (44321(a); Labor Code section 6382(b)(1)): (44321(b); HSC section 25249.8):

5 = National Toxicology Program (44321(a));

6 = Hazard Evaluation System and Information Service (44321(d));

7 = Added pursuant to HSC section 44321 (f).

[7] Emissions of unspecified metal compounds shall be reported as the amount of the metal atom equivalent, using the metal emittent identification number for the metal itself (or the emittent identification number indicated on the table, such as for reporting inorganic versus other-than-inorganic arsenic compounds).

For unspecified metal compounds which contain two or more listed metals (e.g., zinc chromate), each component metal shall be reported as the amount of the appropriate metal atom equivalent (i.e., the zinc portion of the weight as zinc equivalent and the chromate portion as hexavalent chromium equivalent.

For specific, individually listed metal compounds (e.g., Lead chromate), emissions shall be reported for the compound (as pounds of whole compound), using the emittent identification number for that compound.

[8] Compounds of the form "X-CN", where formal dissociation can occur. Report as the amount of Cyanide equivalent in the compound using an emittent identification code of 1073.

[9] Emissions of these mixtures shall be reported as emissions of total particulate matter and total organic gas, using the following emittent identification numbers:

9901 Diesel exhaust, particulate matter 9910 Gasoline exhaust, particulate matter

9902 Diesel exhaust, total organic gas

9911 Gasoline exhaust, total organic gas

Individually listed substances from gasoline exhaust must also be reported. Emissions of diesel engine exhaust particulate matter (diesel PM), shall be reported as diesel PM using emittent ID 9901.

[10] The emittent identification number 1105 has been discontinued for all facilities reporting for the first time and for all updates. Use the listed replacement emittent identification codes 1103 and 1104.

[11] Emissions of the individual, component listed substances must be reported in addition to the total gasoline vapors emissions.

[12] These lead compounds are listed here so that the inorganic lead fraction will be quantified and reported if these individual compounds cannot be quantified.

[13] PAH: (Polycyclic Aromatic Hydrocarbon) - An organic compound consisting of a fused ring structure containing at least two (2) benzene rings, and which may also contain additional fused rings not restricted exclusively to hexagonal rings.

The structure does not include any heteroatoms or substituent groups. The structure includes only carbon and hydrogen.

PAHs are a subgroup of POM and have a boiling point of greater than or equal to 100 C.

[14] PAH-DERIVATIVE: (Polycyclic Aromatic Hydrocarbon Derivative) - An organic compound consisting of a fused ring structure containing at least two (2) benzene rings, and which may also contain additional fused rings not restricted exclusively to hexagonal rings. The fused ring structure does not contain heteroatoms. The structure does contain one or more substituent groups.

PAH-Derivatives are a subgroup of POM and have a boiling point of greater than or equal to 100 C.

[15] POM: (Polycyclic Organic Matter) - Includes organic compounds with more than one benzene ring, and which have a boiling point of greater than or equal to 100 C.

[16] Radionuclides and other radioactive substances shall be reported in units of Curies per year (for annual average emissions) and in units of milliCuries per hour (for maximum hourly emissions).

[17] Emissions of Vanadium (fume or dust) shall be reported as the amount of the vanadium atom equivalent, using the identification number 7440622.

[18] The emittent identification number 1001 has been replaced with the CAS number 26148685.

NOTE: The notation “11/06” indicates most recently added substances.

Appendix B: Regulations and Legislation

B.1. Air Toxics Hot Spots Program Overview

(Air Resources Board, 2011: see http://www.arb.ca.gov/ab2588/overview.htm)

INTRODUCTION

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in September 1987. Under this, stationary sources are required to report the types and quantities of certain substances their facilities routinely release into the air. Emissions of interest are those that result from the routine operation of a facility or that are predictable, including but not limited to continuous and intermittent releases and process upsets or leaks.

The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, and to notify nearby residents of significant risks. In September 1992, the "Hot Spots" Act was amended by Senate Bill (SB) 1731 (Calderon) to address the reduction of significant risks. The bill requires that owners of significant-risk facilities reduce their risks below the level of significance.

The Act requires that toxic air emissions from stationary sources (facilities) be quantified and compiled into an inventory according to criteria and guidelines developed by the ARB, that each facility be prioritized to determine whether a risk assessment must be conducted, that the risk assessments be conducted according to methods developed by the Office of Environmental Health Hazard Assessment (OEHHA), that the public be notified of significant risks posed by nearby facilities, and that emissions which result in a significant risk be reduced. Since the amendment of the statute in 1992 by enactment of SB 1731, facilities that pose a potentially significant health risks to the public are required to reduce their risks, thereby reducing the near-source exposure of Californians to toxic air pollutants. Owners of facilities found to pose significant risks by a district must prepare and implement risk reduction audit and plans within 6 months of the determination.

The Air Resources Board (ARB) is required to develop a program to make the emission data collected under the "Hot Spots" Program available to the public. If requested, districts must make health risk assessments available for public review. Districts must also publish annual reports which summarize the health risk assessment program, rank facilities according to the cancer risk posed, identify the facilities posing non-cancer health risks, and describe the status of the development of control measures.

The "Hot Spots" Program has complemented the ARB's existing air toxics identification and control programs. It has located sources of substances not previously under evaluation, and it has provided exposure information necessary to prioritize substances for control measures and develop regulatory action. Also, the preparation of the "Hot Spots" emission inventory made facility owners aware of their toxics problems. As a result, facilities have taken voluntary steps to reduce emissions of air toxics. Limited district and facility surveys have identified voluntary reductions of over 1.9 million pounds per year in the emission of air toxics from just 21 facilities in California. The benefits that come from this type of action are less risk to workers and to the public, reduced operation costs, demonstration of emission reduction options for other sources, and improved community relations.

The Act was further modified by AB 564, chaptered on September 19, 1996. The passage of AB 564 amended the Hot Spots statute in several ways, including adding provisions that: exempt specified low priority facilities from further compliance with the Hot Spots program; reinstate exempted facilities if specified criteria are met; specify an alternative evaluation process for facilities subject to district permit programs; and other changes to exempt specified facilities from further compliance with the Hot Spots Program.

B.2. Health and Safety Code Related to Air Toxics Hot Spots.

PART 6. AIR TOXICS "HOT SPOTS" INFORMATION AND ASSESSMENT
(Part 6 added by Stats. 1987, Ch. 1252, Sec. 1. Operative July 1, 1988, pursuant to Section 44384. Note: Sections 44380 and 44384 became operative Jan. 1, 1988.)

CHAPTER 1: LEGISLATIVE FINDINGS AND DEFINITIONS

44300. This part shall be known and may be cited as the Air Toxics "Hot Spots" Information and Assessment Act of 1987.

44301. The Legislature finds and declares all of the following:

(a) In the wake of recent publicity surrounding planned and unplanned releases of toxic chemicals into the atmosphere, the public has become increasingly concerned about toxics in the air.

(b) The Congressional Research Service of the Library of Congress has concluded that 75 percent of the United States population lives in proximity to at least one facility that manufactures chemicals. An incomplete 1985 survey of large chemical companies conducted by the Congressional Research Service documented that nearly every chemical plant studied routinely releases into the surrounding air significant levels of substances proven to be or potentially hazardous to public health.

(c) Generalized emissions inventories compiled by air pollution control districts and air quality management districts in California confirm the findings of the Congressional Research Service survey as well as reveal that many other facilities and businesses which do not actually manufacture chemicals do use hazardous substances in sufficient quantities to expose, or in a manner that exposes, surrounding populations to toxic air releases.

(d) These releases may create localized concentrations or air toxics "hot spots" where emissions from specific sources may expose individuals and population groups to elevated risks of adverse health effects, including, but not limited to, cancer and contribute to the cumulative health risks of emissions from other sources in the area. In some cases where large populations may not be significantly affected by adverse health risks, individuals may be exposed to significant risks.

(e) Little data is currently available to accurately assess the amounts, types, and health impacts of routine toxic chemical releases into the air. As a result, there exists significant uncertainty about the amounts of potentially hazardous air pollutants which are released, the location of those releases, and the concentrations to which the public is exposed.

(f) The State of California has begun to implement a long-term program to identify, assess, and control ambient levels of hazardous air pollutants, but additional legislation is needed to provide for the collection and evaluation of information concerning the amounts, exposures, and short- and long-term health effects of hazardous substances regularly released to the surrounding atmosphere from specific sources of hazardous releases.

(g) In order to more effectively implement control strategies for those materials posing an unacceptable risk to the public health, additional information on the sources of potentially hazardous air pollutants is necessary.
(h) It is in the public interest to ascertain and measure the amounts and types of hazardous releases and potentially hazardous releases from specific sources that may be exposing people to those releases, and to assess the health risks to those who are exposed.

44302. The definitions set forth in this chapter govern the construction of this part.

44303. "Air release" or "release" means any activity that may cause the issuance of air contaminants, including the actual or potential spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a substance into the ambient air and that results from the routine operation of a facility or that is predictable, including, but not limited to, continuous and intermittent releases and predictable process upsets or leaks.

44304. "Facility" means every structure, appurtenance, installation, and improvement on land which is associated with a source of air releases or potential air releases of a hazardous material.

44306. "Health risk assessment" means a detailed comprehensive analysis prepared pursuant to Section 44361 to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and populationwide health risks associated with those levels of exposure.

44307. "Operator" means the person who owns or operates a facility or part of a facility.

44308. "Plan" means the emissions inventory plan which meets the conditions specified in Section 44342.

44309. "Report" means the emissions inventory report specified in Section 44341.

CHAPTER 2: FACILITIES SUBJECT TO THIS PART

44320. This part applies to the following:
(a) Any facility which manufactures, formulates, uses, or releases any of the substances listed pursuant to Section 44321 or any other substance which reacts to form a substance listed in Section 44321 and which releases or has the potential to release total organic gases, particulates, or oxides of nitrogen or sulfur in the amounts specified in Section 44322.
(b) Except as provided in Section 44323, any facility which is listed in any current toxics use or toxics air emission survey, inventory, or report released or compiled by a district. A district may, with the concurrence of the state board, waive the application of this part pursuant to this subdivision for any facility which

the district determines will not release any substance listed pursuant to Section 44321 due to a shutdown or a process change.

44321. For the purposes of Section 44320, the state board shall compile and maintain a list of substances that contains, but is not limited to, all of the following:

(a) Substances identified by reference in paragraph (1) of subdivision (b) of Section 6382 of the Labor Code and substances placed on the list prepared by the National Toxicology Program and issued by the United States Secretary of Health and Human Services pursuant to paragraph (4) of subsection (b) of Section 241 of Title 42 of the United States Code. For the purposes of this subdivision, the state board may remove from the list any substance which meets both of the following criteria:
  (1) No evidence exists that it has been detected in air.
  (2) The substance is not manufactured or used in California, or, if manufactured or used in California, because of the physical or chemical characteristics of the substance or the manner in which it is manufactured or used, there is no possibility that it will become airborne.

(b) Carcinogens and reproductive toxins referenced in or compiled pursuant to Section 25249.8, except those which meet both of the criteria identified in subdivision (a).

(c) Substances designated by the state board as toxic air contaminants pursuant to subdivision (b) of Section 39657 and substances on the candidate list of potential toxic air contaminants and the list of designated toxic air contaminants prepared by the state board pursuant to Article 3 (commencing with Section 39660) of Chapter 3.5 of Part 2, including, but not limited to, all substances currently under review and scheduled or nominated for review and substances identified and listed for which health effects information is limited.

(d) Substances for which an information or hazard alert has been issued by the repository of current data established pursuant to Section 147.2 of the Labor Code.

(e) Substances reviewed, under review, or scheduled for review as air toxics or potential air toxics by the Office of Air Quality Planning and Standards of the Environmental Protection Agency, including substances evaluated in all of the following categories or their equivalent: preliminary health and source screening, detailed assessment, intent to list, decision not to regulate, listed, standard proposed, and standard promulgated.

(f) Any additional substances recognized by the state board as presenting a chronic or acute threat to public health when present in the ambient air, including, but not limited to, any neurotoxicants or chronic respiratory toxicants not included within subdivision (a), (b), (c), (d), or (e).

44322. This part applies to facilities specified in subdivision (a) of Section 44320 in accordance with the following schedule:

(a) For those facilities that release, or have the potential to release, 25 tons per year or greater of total organic gases, particulates, or oxides of nitrogen or sulfur, this part becomes effective on July 1, 1988.

(b) For those facilities that release, or have the potential to release, more than 10 but less than 25 tons per year of total organic gases, particulates, or oxides of nitrogen or sulfur, this part becomes effective July 1, 1989.
(c) For those facilities that release, or have the potential to release, less than 10 tons per year of total organic gases, particulates, or oxides of nitrogen or sulfur, the state board shall, on or before July 1, 1990, prepare and submit a report to the Legislature identifying the classes of those facilities to be included in this part and specifying a timetable for their inclusion.

44323. A district may prepare an industrywide emissions inventory and health risk assessment for facilities specified in subdivision (b) of Section 44320 and subdivisions (a) and (b) of Section 44322, and shall prepare an industrywide emissions inventory for the facilities specified in subdivision (c) of Section 44322, in compliance with this part for any class of facilities that the district finds and determines meets all of the following conditions:
(a) All facilities in the class fall within one four-digit Standard Industrial Classification Code.
(b) Individual compliance with this part would impose severe economic hardships on the majority of the facilities within the class.
(c) The majority of the class is composed of small businesses.
(d) Releases from individual facilities in the class can easily and generically be characterized and calculated.

44324. This part does not apply to any facility where economic poisons are employed in their pesticidal use, unless that facility was subject to district permit requirements on or before August 1, 1987. As used in this section, "pesticidal use" does not include the manufacture or formulation of pesticides.

44325. Any solid waste disposal facility in compliance with Section 41805.5 is in compliance with the emissions inventory requirements of this part.

CHAPTER 3: AIR TOXICS EMISSION INVENTORIES

44340.
(a) The operator of each facility subject to this part shall prepare and submit to the district a proposed comprehensive emissions inventory plan in accordance with the criteria and guidelines adopted by the state board pursuant to Section 44342.
(b) The proposed plan shall be submitted to the district on or before August 1, 1989, except that, for any facility to which subdivision (b) of Section 44322 applies, the proposed plan shall be submitted to the district on or before August 1, 1990. The district shall approve, modify, and approve as modified, or return for revision and resubmission, the plan within 120 days of receipt.
(c) The district shall not approve a plan unless all of the following conditions are met:
(1) The plan meets the requirements established by the state board pursuant to Section 44342.

(2) The plan is designed to produce, from the list compiled and maintained pursuant to Section 44321, a comprehensive characterization of the full range of hazardous materials that are released, or that may be released, to the surrounding air from the facility. Air release data shall be collected at, or calculated for, the primary locations of actual and potential release for each hazardous material. Data shall be collected or calculated for all continuous, intermittent, and predictable air releases.
(3) The measurement technologies and estimation methods proposed provide state-of-the-art effectiveness and are sufficient to produce a true representation of the types and quantities of air releases from the facility.
(4) Source testing or other measurement techniques are employed wherever necessary to verify emission estimates, as determined by the state board and to the extent technologically feasible. All testing devices shall be appropriately located, as determined by the state board.
(5) Data are collected or calculated for the relevant exposure rate or rates of each hazardous material according to its characteristic toxicity and for the emission rate necessary to ensure a characterization of risk associated with exposure to releases of the hazardous material that meets the requirements of Section 44361. The source of all emissions shall be displayed or described.

44341. Within 180 days after approval of a plan by the district, the operator shall implement the plan and prepare and submit a report to the district in accordance with the plan. The district shall transmit all monitoring data contained in the approved report to the state board.

44342. The state board shall, on or before May 1, 1989, in consultation with the districts, develop criteria and guidelines for site-specific air toxics emissions inventory plans which shall be designed to comply with the conditions specified in Section 44340 and which shall include at least all of the following:

(a) For each class of facility, a designation of the hazardous materials for which emissions are to be quantified and an identification of the likely source types within that class of facility. The hazardous materials for quantification shall be chosen from among, and may include all or part of, the list specified in Section 44321.
(b) Requirements for a facility diagram identifying each actual or potential discrete emission point and the general locations where fugitive emissions may occur. The facility diagram shall include any nonpermitted and nonprocess sources of emissions and shall provide the necessary data to identify emission characteristics. An existing facility diagram which meets the requirements of this section may be submitted.
(c) Requirements for source testing and measurement. The guidelines may specify appropriate uses of estimation techniques including, but not limited to, emissions factors, modeling, mass balance analysis, and projections, except that source testing shall be required wherever necessary to verify emission estimates to the extent technologically feasible. The guidelines shall specify conditions and

locations where source testing, fence-line monitoring, or other measurement techniques are to be required and the frequency of that testing and measurement.

(d) Appropriate testing methods, equipment, and procedures, including quality assurance criteria.

(e) Specifications for acceptable emissions factors, including, but not limited to, those which are acceptable for substantially similar facilities or equipment, and specification of procedures for other estimation techniques and for the appropriate use of available data.

(f) Specification of the reporting period required for each hazardous material for which emissions will be inventoried.

(g) Specifications for the collection of useful data to identify toxic air contaminants pursuant to Article 2 (commencing with Section 39660) of Chapter 3.5 of Part 2.

(h) Standardized format for preparation of reports and presentation of data.

(i) A program to coordinate and eliminate any possible overlap between the requirements of this chapter and the requirements of Section 313 of the Superfund Amendment and Reauthorization Act of 1986 (Public Law 99-499). The state board shall design the guidelines and criteria to ensure that, in collecting data to be used for emissions inventories, actual measurement is utilized whenever necessary to verify the accuracy of emission estimates, to the extent technologically feasible.

44343. The district shall review the reports submitted pursuant to Section 44341 and shall, within 90 days, review each report, obtain corrections and clarifications of the data, and notify the Office of Environmental Health Hazard Assessment, the Department of Industrial Relations, and the city or county health department of its findings and determinations as a result of its review of the report.

44344. Except as provided in Section 44391, emissions inventories developed pursuant to this chapter shall be updated every four years, in accordance with the procedures established by the state board. Those updates shall take into consideration improvements in measurement techniques and advancing knowledge concerning the types and toxicity of hazardous material released or potentially released.

44344.4.

(a) Except as provided in subdivision (d) and in Section 44344.7, a facility shall be exempt from further compliance with this part if the facility's prioritization scores for cancer and noncancer health effects are both equal to or less than one, based on the results of the most recent emissions inventory or emissions inventory update. An exempt facility shall no longer be required to pay any fee or submit any report to the district or the state board pursuant to this part.

(b) Except for facilities that are exempt from this part pursuant to subdivision (a), a facility for which the prioritization scores for cancer and noncancer health effects are both equal to or less than 10, based on the results of the most recent emissions inventory or emissions inventory update, shall not be required to pay any fee or submit any report to the district or the state board pursuant to this part,

except for the quadrennial emissions inventory update required pursuant to Section 44344. A district may, by regulation, establish a fee to be paid by a facility operator in connection with the operator's submission to the district of a quadrennial emissions inventory update pursuant to this subdivision. The fee shall not be greater than one hundred twenty-five dollars ($125). A district may increase the fee above that amount upon the adoption of written findings that the costs of processing the emission inventory update exceed one hundred twenty-five dollars ($125). However, the district shall not adopt a fee greater than that supported by the written findings.

(c) For the purposes of this part, "prioritization score" means a facility's numerical score for cancer health effects or noncancer health effects, as determined by the district pursuant to Section 44360 in a manner consistent with facility prioritization guidelines prepared by the California Air Pollution Control Officers Association and approved by the state board.

(d) Notwithstanding subdivision (a) and Section 44344.7, if a district has good cause to believe that a facility may pose a potential threat to public health and that the facility therefore does not qualify for an exemption claimed by the facility pursuant to subdivision (a), the district may require the facility to document the facility's emissions and health impacts, or the changes in emissions expected to occur as a result of a particular physical change, a change in activities or operations at the facility, or a change in other factors. The district may deny the exemption if the documentation does not support the claim for the exemption.

44344.5.

(a) The operator of any new facility that previously has not been subject to this part shall prepare and submit an emissions inventory plan and report.

(b) Notwithstanding subdivision (a), a new facility shall not be required to submit an emissions inventory plan and report if all of the following conditions are met:

(1) The facility is subject to a district permit program established pursuant to Section 42300.

(2) The district conducts an assessment of the potential emissions or their associated risks, whichever the district determines to be appropriate, attributable to the new facility and finds that the emissions will not result in a significant risk. A risk assessment conducted pursuant to this paragraph shall comply with paragraph (2) of subdivision (b) of Section 44360.

(3) The district issues a permit authorizing construction or operation of the new facility.

44344.6. A district shall redetermine a facility's prioritization score, or evaluate the prioritization score as calculated and submitted by the facility, within 90 days from the date of receipt of a quadrennial emissions inventory update pursuant to Section 44344 or subdivision (b) of Section 44344.4, within 90 days from the date of receipt of an emissions inventory update submitted pursuant to Section 44344.7, or within 90 days from the date of receiving notice that a facility has completed the implementation of a plan prepared pursuant to Section 44392.

44344.7.

(a) A facility exempted from this part pursuant to subdivision (a) of Section 44344.4 shall, upon receipt of a notice from the district, again be subject to this part and the operator shall submit an emissions inventory update for those sources and substances for which a physical change in the facility or a change in activities or operations has occurred, as follows:
  (1) The facility emits a substance newly listed pursuant to Section 44321.
  (2) A sensitive receptor has been established or constructed within 500 meters of the facility after the facility became exempt.
  (3) The facility emits a substance for which the potency factor has increased.

(b) The operator of a facility exempted from this part pursuant to subdivision (a) of Section 44344.4 shall submit an emissions inventory update for those sources and substances for which a particular physical change in the facility or a change in activities or operations occurs if, as a result of the particular change, either of the following has occurred:
  (1) The facility has begun emitting a listed substance not included in the previous emissions inventory.
  (2) The facility has increased its emissions of a listed substance to a level greater than the level previously reported for that substance, and the increase in emissions exceeds 100 percent of the previously reported level.

(c) Notwithstanding subdivision (b), a physical change or change in activities or operations at a facility shall not cause the facility to again be subject to this part if all of the following conditions are met:
  (1) The physical change or change in activities or operations is subject to a district permit program established pursuant to Section 42300.
  (2) The district conducts an assessment of the potential changes in emissions or their associated risks, whichever the district determines to be appropriate, attributable to the physical change or change in activities or operations and finds that the changes in emissions will not result in a significant risk. A risk assessment conducted pursuant to this paragraph shall comply with paragraph (2) of subdivision (b) of Section 44360.
  (3) The district issues a permit for the physical change or change in activities or operations.

44345.

(a) On or before July 1, 1989, the state board shall develop a program to compile and make available to other state and local public agencies and the public all data collected pursuant to this chapter.

(b) In addition, the state board, on or before March 1, 1990, shall compile, by district, emissions inventory data for mobile sources and area sources not subject to district permit requirements, and data on natural source emissions, and shall incorporate these data into data compiled and released pursuant to this chapter.

44346.

(a) If an operator believes that any information required in the facility diagram specified pursuant to subdivision (b) of Section 44342 involves the release of a trade secret, the operator shall nevertheless make the disclosure to the district, and shall notify the district in writing of that belief in the report.

(b) Subject to this section, the district shall protect from disclosure any trade secret designated as such by the operator, if that trade secret is not a public record.

(c) Upon receipt of a request for the release of information to the public which includes information which the operator has notified the district is a trade secret and which is not a public record, the following procedure applies:

(1) The district shall notify the operator of the request in writing by certified mail, return receipt requested.

(2) The district shall release the information to the public, but not earlier than 30 days after the date of mailing the notice of the request for information, unless, prior to the expiration of the 30-day period, the operator obtains an action in an appropriate court for a declaratory judgment that the information is subject to protection under this section or for a preliminary injunction prohibiting disclosure of the information to the public and promptly notifies the district of that action.

(d) This section does not permit an operator to refuse to disclose the information required pursuant to this part to the district.

(e) Any information determined by a court to be a trade secret, and not a public record pursuant to this section, shall not be disclosed to anyone except an officer or employee of the district, the state, or the United States, in connection with the official duties of that officer or employee under any law for the protection of health, or to contractors with the district or the state and its employees if, in the opinion of the district or the state, disclosure is necessary and required for the satisfactory performance of a contract, for performance of work, or to protect the health and safety of the employees of the contractor.

(f) Any officer or employee of the district or former officer or employee who, by virtue of that employment or official position, has possession of, or has access to, any trade secret subject to this section, and who, knowing that disclosure of the information to the general public is prohibited by this section, knowingly and willfully discloses the information in any manner to any person not entitled to receive it is guilty of a misdemeanor. Any contractor of the district and any employee of the contractor, who has been furnished information as authorized by this section, shall be considered an employee of the district for purposes of this section.

(g) Information certified by appropriate officials of the United States as necessary to be kept secret for national defense purposes shall be accorded the full protections against disclosure as specified by those officials or in accordance with the laws of the United States.

(h) As used in this section, "trade secret" and "public record" have the meanings and protections given to them by Section 6254.7 of the Government Code and Section 1060 of the Evidence Code. All information collected pursuant to this chapter, except for data used to calculate emissions data required in the facility

diagram, shall be considered "air pollution emission data," for the purposes of this section.

CHAPTER 4: RISK ASSESSMENT

44360.

(a) Within 90 days of completion of the review of all emissions inventory data for facilities specified in subdivision (a) of Section 44322, but not later than December 1, 1990, the district shall, based on examination of the emissions inventory data and in consultation with the state board and the State Department of Health Services, prioritize and then categorize those facilities for the purposes of health risk assessment. The district shall designate high, intermediate, and low priority categories and shall include each facility within the appropriate category based on its individual priority. In establishing priorities pursuant to this section, the district shall consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, including, but not limited to, hospitals, schools, day care centers, worksites, and residences, and any other factors that the district finds and determines may indicate that the facility may pose a significant risk to receptors. The district shall hold a public hearing prior to the final establishment of priorities and categories pursuant to this section.

(b)

(1) Within 150 days of the designation of priorities and categories pursuant to subdivision (a), the operator of every facility that has been included within the highest priority category shall prepare and submit to the district a health risk assessment pursuant to Section 44361. The district may, at its discretion, grant a 30-day extension for submittal of the health risk assessment.

(2) Health risk assessments required by this chapter shall be prepared in accordance with guidelines established by the Office of Environmental Health Hazard Assessment. The office shall prepare draft guidelines which shall be circulated to the public and the regulated community and shall adopt risk assessment guidelines after consulting with the state board and the Risk Assessment Committee of the California Air Pollution Control Officers Association and after conducting at least two public workshops, one in the northern and one in the southern part of the state. The adoption of the guidelines is not subject to Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The scientific review panel established pursuant to Section 39670 shall evaluate the guidelines adopted under this paragraph and shall recommend changes and additional criteria to reflect new scientific data or empirical studies.

(3) The guidelines established pursuant to paragraph (2) shall impose only those requirements on facilities subject to this subdivision that are necessary to ensure that a required risk assessment is accurate and complete and shall specify the type of site-specific factors that districts may take into account in determining when a single health risk assessment may be allowed under subdivision (d). The guidelines shall, in addition, allow the operator of a

facility, at the operator's option, and to the extent that valid and reliable data are available, to include for consideration by the district in the health risk assessment any or all of the following supplemental information:

(A) Information concerning the scientific basis for selecting risk parameter values that are different than those required by the guidelines and the likelihood distributions that result when alternative values are used.

(B) Data from dispersion models, microenvironment characteristics, and population distributions that may be used to estimate maximum actual exposure.

(C) Risk expressions that show the likelihood that any given risk estimate is the correct risk value.

(D) A description of the incremental reductions in risk that occur when exposure is reduced.

(4) To ensure consistency in the use of the supplemental information authorized by subparagraphs (A), (B), (C), and (D) of paragraph (3), the guidelines established pursuant to paragraph (2) shall include guidance for use by the districts in considering the supplemental information when it is included in the health risk assessment.

(c) Upon submission of emissions inventory data for facilities specified in subdivisions (b) and (c) of Section 44322, the district shall designate facilities for inclusion within the highest priority category, as appropriate, and any facility so designated shall be subject to subdivision (b). In addition, the district may require the operator of any facility to prepare and submit health risk assessments, in accordance with the priorities developed pursuant to subdivision (a).

(d) The district shall, except where site specific factors may affect the results, allow the use of a single health risk assessment for two or more substantially identical facilities operated by the same person.

(e) Nothing contained in this section, Section 44380.5, or Chapter 6 (commencing with Section 44390) shall be interpreted as requiring a facility operator to prepare a new or revised health risk assessment using the guidelines established pursuant to paragraph (2) of subdivision (a) of this section if the facility operator is required by the district to begin the preparation of a health risk assessment before those guidelines are established.

44361.

(a) Each health risk assessment shall be submitted to the district. The district shall make the health risk assessment available for public review, upon request. After preliminary review of the emissions impact and modeling data, the district shall submit the health risk assessment to the Office of Environmental Health Hazard Assessment for review and, within 180 days of receiving the health risk assessment, the State office shall submit to the district its comments on the data and findings relating to health effects. The district shall consult with the state board as necessary to adequately evaluate the emissions impact and modeling data contained within the risk assessment.

(b) For the purposes of complying with this section, the Office of Environmental Health Hazard Assessment may select a qualified independent contractor to review the data and findings relating to health effects. The office shall not select an independent contractor to review a specific health risk assessment who may have a conflict of interest with regard to the review of that health risk assessment. Any review by an independent contractor shall comply with the following requirements:
(1) Be performed in a manner consistent with guidelines provided by the office.
(2) Be reviewed by the office for accuracy and completeness.
(3) Be submitted by the office to the district in accordance with this section.

(c) The district shall reimburse the Office of Environmental Health Hazard Assessment or the qualified independent contractor designated by the office pursuant to subdivision (b), within 45 days of its request, for its actual costs incurred in reviewing a health risk assessment pursuant to this section.

(d) If a district requests the Office of Environmental Health Hazard Assessment to consult with the district concerning any requirement of this part, the district shall reimburse the office, within 45 days of its request, for the costs incurred in the consultation.

(e) Upon designation of the high priority facilities, as specified in subdivision (a) of Section 44360, the Office of Environmental Health Hazard Assessment shall evaluate the staffing requirements of this section and may submit recommendations to the Legislature, as appropriate, concerning the maximum number of health risk assessments to be reviewed each year pursuant to this section.

44362.

(a) Taking the comments of the Office of Environmental Health Hazard Assessment into account, the district shall approve or return for revision and resubmission and then approve, the health risk assessment within one year of receipt. If the health risk assessment has not been revised and resubmitted within 60 days of the district's request of the operator to do so, the district may modify the health risk assessment and approve it as modified.

(b) Upon approval of the health risk assessment, the operator of the facility shall provide notice to all exposed persons regarding the results of the health risk assessment prepared pursuant to Section 44361 if, in the judgment of the district, the health risk assessment indicates there is a significant health risk associated with emissions from the facility. If notice is required under this subdivision, the notice shall include only information concerning significant health risks attributable to the specific facility for which the notice is required. Any notice shall be made in accordance with procedures specified by the district.

44363.

(a) Commencing July 1, 1991, each district shall prepare and publish an annual report which does all of the following:
   (1) Describes the priorities and categories designated pursuant to Section 44360 and summarizes the results and progress of the health risk assessment program undertaken pursuant to this part.
   (2) Ranks and identifies facilities according to the degree of cancer risk posed both to individuals and to the exposed population.
   (3) Identifies facilities which expose individuals or populations to any noncancer health risks.
   (4) Describes the status of the development of control measures to reduce emissions of toxic air contaminants, if any.

(b) The district shall disseminate the annual report to county boards of supervisors, city councils, and local health officers and the district board shall hold one or more public hearings to present the report and discuss its content and significance.

44364. The state board shall utilize the reports and assessments developed pursuant to this part for the purposes of identifying, establishing priorities for, and controlling toxic air contaminants pursuant to Chapter 3.5 (commencing with Section 39650) of Part 2.

44365.

(a) If the state board finds and determines that a district's actions pursuant to this part do not meet the requirements of this part, the state board may exercise the authority of the district pursuant to this part to approve emissions inventory plans and require the preparation of health risk assessments.

(b) This part does not prevent any district from establishing more stringent criteria and requirements than are specified in this part for approval of emissions inventories and requiring the preparation and submission of health risk assessments. Nothing in this part limits the authority of a district under any other provision of law to assess and regulate releases of hazardous substances.

44366.

(a) In order to verify the accuracy of any information submitted by facilities pursuant to this part, a district or the state board may proceed in accordance with Section 41510.

CHAPTER 5: FEES AND REGULATIONS

44380.

(a) The state board shall adopt a regulation which does all of the following:
   (1) Sets forth the amount of revenue which the district must collect to recover the reasonable anticipated cost which will be incurred by the state board and the Office of Environmental Health Hazard Assessment to implement and administer this part.

(2) Requires each district to adopt a fee schedule which recovers the costs of the district and which assesses a fee upon the operator of every facility subject to this part, except as specified in subdivision (b) of Section 44344.4. A district may request the state board to adopt a fee schedule for the district if the district's program costs are approved by the district board and transmitted to the state board by April 1 of the year in which the request is made.

(3) Requires any district that has an approved toxics emissions inventory compiled pursuant to this part by August 1 of the preceding year to adopt a fee schedule, as described in paragraph (2), which imposes on facility operators fees which are, to the maximum extent practicable, proportionate to the extent of the releases identified in the toxics emissions inventory and the level of priority assigned to that source by the district pursuant to Section 44360.

(b) Commencing August 1, 1992, and annually thereafter, the state board shall review and may amend the fee regulation.

(c) The district shall notify each person who is subject to the fee of the obligation to pay the fee. If a person fails to pay the fee within 60 days after receipt of this notice, the district, unless otherwise provided by district rules, shall require the person to pay an additional administrative civil penalty. The district shall fix the penalty at not more than 100 percent of the assessed fee, but in an amount sufficient in its determination, to pay the district's additional expenses incurred by the person's noncompliance. If a person fails to pay the fee within 120 days after receipt of this notice, the district may initiate permit revocation proceedings. If any permit is revoked, it shall be reinstated only upon full payment of the overdue fee plus any late penalty, and a reinstatement fee to cover administrative costs of reinstating the permit.

(d) Each district shall collect the fees assessed pursuant to subdivision (a). After deducting the costs to the district to implement and administer this part, the district shall transmit the remainder to the Controller for deposit in the Air Toxics Inventory and Assessment Account, which is hereby created in the General Fund. The money in the account is available, upon appropriation by the Legislature, to the state board and the Office of Environmental Health Hazard Assessment for the purposes of administering this part.

(e) For the 1997-98 fiscal year, air toxics program revenues for the state board and the Office of Environmental Health Hazard Assessment shall not exceed two million dollars ($2,000,000), and for each fiscal year thereafter, shall not exceed one million three hundred fifty thousand dollars ($1,350,000). Funding for the Office of Environmental Health Hazard Assessment for conducting risk assessment reviews shall be on a fee-for-service basis.

44380.1. A facility shall be granted an exemption by a district from paying a fee in accordance with Section 44380 if all of the following criteria are met:

(a) The facility primarily handles, processes, stores, or distributes bulk agricultural commodities or handles, feeds, or rears livestock.

(b) The facility was required to comply with this part only as a result of its particulate matter emissions.

(c) The fee schedule adopted by the district or the state board for these types of facilities is not solely based on toxic emissions weighted for potency or toxicity.

44380.5. In addition to the fee assessed pursuant to Section 44380, a supplemental fee may be assessed by the district, the state board, or the Office of Environmental Health Hazard Assessment upon the operator of a facility that, at the operator's option, includes supplemental information authorized by paragraph (3) of subdivision (b) of Section 44360 in a health risk assessment, if the review of that supplemental information substantially increases the costs of reviewing the health risk assessment by the district, the state board, or the office. The supplemental fee shall be set by the state board in the regulation required by subdivision (a) of Section 44380 and shall be set in an amount sufficient to cover the direct costs to review the information supplied by an operator pursuant to paragraph (3) of subdivision (b) of Section 44360.

44381.

(a) Any person who fails to submit any information, reports, or statements required by this part, or who fails to comply with this part or with any permit, rule, regulation, or requirement issued or adopted pursuant to this part, is subject to a civil penalty of not less than five hundred dollars ($500) or more than ten thousand dollars ($10,000) for each day that the information, report, or statement is not submitted, or that the violation continues.

(b) Any person who knowingly submits any false statement or representation in any application, report, statement, or other document filed, maintained, or used for the purposes of compliance with this part is subject to a civil penalty of not less than one thousand dollars ($1,000) or more than twenty-five thousand dollars ($25,000) per day for each day that the information remains uncorrected.

44382. Every district shall, by regulation, adopt the requirements of this part as a condition of every permit issued pursuant to Chapter 4 (commencing with Section 42300) of Part 4 for all new and modified facilities.

44384. Except for Section 44380 and this section, all provisions of this part shall become operative on July 1, 1988.

CHAPTER 6: FACILITY RISK REDUCTION AUDIT AND PLAN

44390. For purposes of this chapter, the following definitions apply:

(a) "Airborne toxic risk reduction measure" or "ATRRM" means those in-plant changes in production processes or feedstocks that reduce or eliminate toxic air emissions subject to this part. ATRRM's may include:
  (1) Feedstock modification.
  (2) Product reformulations.
  (3) Production system modifications.
  (4) System enclosure, emissions control, capture, or conversion.
  (5) Operational standards and practices modification.

(b) Airborne toxic risk reduction measures do not include measures that will increase risk from exposure to the chemical in another media or that increase the risk to workers or consumers.
(c) "Airborne toxic risk reduction audit and plan" or "audit and plan" means the audit and plan specified in Section 44392.

44391.
(a) Whenever a health risk assessment approved pursuant to Chapter 4 (commencing with Section 44360) indicates, in the judgment of the district, that there is a significant risk associated with the emissions from a facility, the facility operator shall conduct an airborne toxic risk reduction audit and develop a plan to implement airborne toxic risk reduction measures that will result in the reduction of emissions from the facility to a level below the significant risk level within five years of the date the plan is submitted to the district. The facility operator shall implement measures set forth in the plan in accordance with this chapter.
(b) The period to implement the plan required by subdivision (a) may be shortened by the district if it finds that it is technically feasible and economically practicable to implement the plan to reduce emissions below the significant risk level more quickly or if it finds that the emissions from the facility pose an unreasonable health risk.
(c) A district may lengthen the period to implement the plan required by subdivision (a) by up to an additional five years if it finds that a period longer than five years will not result in an unreasonable risk to public health and that requiring implementation of the plan within five years places an unreasonable economic burden on the facility operator or is not technically feasible.
(d)
  (1) The state board and districts shall provide assistance to smaller businesses that have inadequate technical and financial resources for obtaining information, assessing risk reduction methods, and developing and applying risk reduction techniques.
  (2) Risk reduction audits and plans for any industry subject to this chapter which is comprised mainly of small businesses using substantially similar technology may be completed by a self-conducted audit and checklist developed by the state board. The state board, in coordination with the districts, shall provide a copy of the audit and checklist to small businesses within those industries to assist them to meet the requirements of this chapter.
(e) The audit and plan shall contain all the information required by Section 44392.
(f) The plan shall be submitted to the district, within six months of a district's determination of significant risk, for review of completeness. Operators of facilities that have been notified prior to January 1, 1993, that there is a significant risk associated with emissions from the facility shall submit the plan by July 1, 1993. The district's review of completeness shall include a substantive analysis of the emission reduction measures included in the plan, and the ability

of those measures to achieve emission reduction goals as quickly as feasible as provided in subdivisions (a) and (b).

(g) The district shall find the audit and plan to be satisfactory within three months if it meets the requirements of this chapter, including, but not limited to, subdivision (f). If the district determines that the audit and plan does not meet those requirements, the district shall remand the audit and plan to the facility specifying the deficiencies identified by the district. A facility operator shall submit a revised audit and plan addressing the deficiencies identified by the district within 90 days of receipt of a deficiency notice.

(h) Progress on the emission reductions achieved by the plan shall be reported to the district in emissions inventory updates. Emissions inventory updates shall be prepared as required by the audit and plan found to be satisfactory by the district pursuant to subdivision (g).

(i) If new information becomes available after the initial risk reduction audit and plan, on air toxics risks posed by a facility, or emission reduction technologies that may be used by a facility that would significantly impact risks to exposed persons, the district may require the plan to be updated and resubmitted to the district.

(j) This section does not authorize the emission of a toxic air contaminant in violation of an airborne toxic control measure adopted pursuant to Chapter 3.5 (commencing with Section 39650) or in violation of Section 41700.

44392. A facility operator subject to this chapter shall conduct an airborne toxic risk reduction audit and develop a plan which shall include at a minimum all of the following:

(a) The name and location of the facility.

(b) The SIC code for the facility.

(c) The chemical name and the generic classification of the chemical.

(d) An evaluation of the ATRRM's available to the operator.

(e) The specification of, and rationale for, the ATRRMs that will be implemented by the operator. The audit and plan shall document the rationale for rejecting ATRRMs that are identified as infeasible or too costly.

(f) A schedule for implementing the ATRRMs. The schedule shall meet the time requirements of subdivision (a) of Section 44391 or the time period for implementing the plan set by the district pursuant to subdivision (b) or (c) of Section 44391, whichever is applicable.

(g) The audit and plan shall be reviewed and certified as meeting this chapter by an engineer who is registered as a professional engineer pursuant to Section 6762 of the Business and Professions Code, by an individual who is responsible for the processes and operations of the site, or by an environmental assessor registered pursuant to Section 25570.3.

44393. The plan prepared pursuant to Section 44391 shall not be considered to be the equivalent of a pollution prevention program or a source reduction program, except insofar as the audit and plan elements are consistent with source reduction, as defined in Section 25244.14, or subsequent statutory definitions of pollution prevention.

44394. Any facility operator who does not submit a complete airborne toxic risk reduction audit and plan or fails to implement the measures set forth in the plan as set forth in this chapter is subject to the civil penalty specified in subdivision (a) of Section 44381, and any facility operator who, in connection with the audit or plan, knowingly submits any false statement or representation is subject to the civil penalty specified in subdivision (b) of Section 44381.

B.3. Toxic Air Contaminants Program Overview

(Air Resources Board, 2011: see http://www.arb.ca.gov/toxics/background.htm)

AB 1807 Program

In 1983, the California Legislature established a two-step process of risk identification and risk management to address the potential health effects from air toxic substances and protect the public health of Californians. During the first step (identification), the ARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified as a toxic air contaminant (TAC) in California. During this process, the ARB and the OEHHA staff draft a report that serves as the basis for this determination. The ARB staff assesses the potential for human exposure to a substance and the OEHHA staff evaluates the health effects. A thorough public process assures accountability and public input. Public workshops are conducted to allow for direct exchanges of information with interested constituencies. The draft risk assessments themselves are published and widely distributed with a public notice requesting comment to further assure involvement. The final risk assessment (identification) report includes a record of the public comments and how they were addressed. After the ARB and the OEHHA staff hold several comment periods and workshops, the report is then submitted to an independent, nine member, Scientific Review Panel (SRP), who review the report for its scientific accuracy. If the SRP approves the report, they develop specific scientific findings which are officially submitted to the ARB. The ARB staff then prepares a hearing notice and draft regulation to formally identify the substance as a TAC. Based on the input from the public and the information gathered from the report, the Board will decide whether to identify a substance as a TAC. Any person may petition the Board to review a previous determination by providing new evidence.

In the second step (risk management), the ARB reviews the emission sources of an identified TAC to determine if any regulatory action is necessary to reduce the risk. The analysis includes a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk. Public outreach is an essential element in the development of a control plan and any control measure to ensure that the ARB efforts are cost-effective and appropriately balance public health protection and economic growth.

In 1993, the California Legislature amended the AB 1807 program for the identification and control of TACs (AB 2728). Specifically, AB 2728 required the ARB to identify the 189 federal hazardous air pollutants as TACs. For those substances that have not previously been identified under AB 1807 and identified under AB 2728, health effects values will need to be developed. This report will serve as a basis for that evaluation. For substances that were not identified as TACs and are on the TAC Identification List, this report will provide information to evaluate which substances may be entered into the air toxics identification process.

B.4. Senate Bill 352. Schoolsites: sources of pollution

CHAPTER 668
FILED WITH SECRETARY OF STATE OCTOBER 3, 2003
APPROVED BY GOVERNOR OCTOBER 2, 2003

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1.
The Legislature finds and declares all of the following:

(a) Many studies have shown significantly increased levels of pollutants, particularly diesel particulates, in close proximity to freeways and other major diesel sources. A recent study of Los Angeles area freeways measured diesel particulate levels up to 25 times higher near freeways than those levels elsewhere. Much of the pollution from freeways is associated with acute health effects, exacerbating asthma and negatively impacting the ability of children to learn.
(b) Cars and trucks release at least forty different toxic air contaminants, including, but not limited to, diesel particulate, benzene, formaldehyde, 1,3-butadiene and acetaldehyde. Levels of these pollutants are generally concentrated within 500 feet of freeways and very busy roadways.
(c) Current state law governing the siting of schools does not specify whether busy freeways should be included in environmental impact reports of nearby "facilities." Over 150 schools are already estimated to be within 500 feet of extremely high traffic roadways.
(d) A disproportionate number of economically disadvantaged pupils may be attending schools that are close to busy roads, putting them at an increased risk of developing bronchitis from elevated levels of several pollutants associated with traffic. Many studies have confirmed that increased wheezing and bronchitis occurs among children living in high traffic areas.
(e) It is therefore the intent of the Legislature to protect school children from the health risks posed by pollution from heavy freeway traffic and other nonstationary sources in the same way that they are protected from industrial pollution.

SECTION 2.

Section 17213 of the Education Code is amended to read:
17213. The governing board of a school district may not approve a project involving the acquisition of a schoolsite by a school district, unless all of the following occur:
(a) The school district, as the lead agency, as defined in Section 21067 of the Public Resources Code, determines that the property purchased or to be built upon is not any of the following:
(1) The site of a current or former hazardous waste disposal site or solid waste disposal site, unless if the site was a former solid waste disposal site, the governing board of the school district concludes that the wastes have been removed.

(2) A hazardous substance release site identified by the Department of Toxic Substances Control in a current list adopted pursuant to Section 25356 of the Health and Safety Code for removal or remedial action pursuant to Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code.

(3) A site that contains one or more pipelines, situated underground or aboveground, that carries hazardous substances, acutely hazardous materials, or hazardous wastes, unless the pipeline is a natural gas line that is used only to supply natural gas to that school or neighborhood.

(b) The school district, as the lead agency, as defined in Section 21067 of the Public Resources Code, in preparing the environmental impact report or negative declaration has consulted with the administering agency in which the proposed schoolsite is located, pursuant to Section 2735.3 of Title 19 of the California Code of Regulations, and with any air pollution control district or air quality management district having jurisdiction in the area, to identify both permitted and nonpermitted facilities within that district's authority, including, but not limited to, freeways and other busy traffic corridors, large agricultural operations, and railyards, within one-fourth of a mile of the proposed schoolsite, that might reasonably be anticipated to emit hazardous air emissions, or to handle hazardous or acutely hazardous materials, substances, or waste. The school district, as the lead agency, shall include a list of the locations for which information is sought.

(c) The governing board of the school district makes one of the following written findings:

(1) Consultation identified none of the facilities or significant pollution sources specified in subdivision (b).

(2) The facilities or other pollution sources specified in subdivision (b) exist, but one of the following conditions applies:

(A) The health risks from the facilities or other pollution sources do not and will not constitute an actual or potential endangerment of public health to persons who would attend or be employed at the school.

(B) The governing board finds that corrective measures required under an existing order by another governmental entity that has jurisdiction over the facilities or other pollution sources will, before the school is occupied, result in the mitigation of all chronic or accidental hazardous air emissions to levels that do not constitute an actual or potential endangerment of public health to persons who would attend or be employed at the proposed school. If the governing board makes this finding, the governing board shall also make a subsequent finding, prior to the occupancy of the school, that the emissions have been mitigated to these levels.

(C) For a schoolsite with a boundary that is within 500 feet of the edge of the closest traffic lane of a freeway or other busy traffic corridor, the governing board of the school district determines, through analysis pursuant to paragraph (2) of subdivision (b) of Section 44360 of the Health and Safety Code, based on appropriate air dispersion modeling, and after considering any potential mitigation measures, that the air quality at the proposed site

is such that neither short-term nor long-term exposure poses significant health risks to pupils.

(D) The governing board finds that neither of the conditions set forth in subparagraph (B) or (C) can be met, and the school district is unable to locate an alternative site that is suitable due to a severe shortage of sites that meet the requirements in subdivision (a) of Section 17213. If the governing board makes this finding, the governing board shall adopt a statement of Overriding Considerations pursuant to Section 15093 of Title 14 of the California Code of Regulations.

(d) As used in this section:

(1) "Hazardous air emissions" means emissions into the ambient air of air contaminants that have been identified as a toxic air contaminant by the State Air Resources Board or by the air pollution control officer for the jurisdiction in which the project is located. As determined by the air pollution control officer, hazardous air emissions also means emissions into the ambient air from any substance identified in subdivisions (a) to (f), inclusive, of Section 44321 of the Health and Safety Code.

(2) "Hazardous substance" means any substance defined in Section 25316 of the Health and Safety Code.

(3) "Acutely hazardous material" means any material defined pursuant to subdivision (a) of Section 25532 of the Health and Safety Code.

(4) "Hazardous waste" means any waste defined in Section 25117 of the Health and Safety Code.

(5) "Hazardous waste disposal site" means any site defined in Section 25114 of the Health and Safety Code.

(6) "Administering agency" means any agency designated pursuant to Section 25502 of the Health and Safety Code.

(7) "Handle" means handle as defined in Article 1 (commencing with Section 25500) of Chapter 6.95 of Division 20 of the Health and Safety Code.

(8) "Facilities" means any source with a potential to use, generate, emit or discharge hazardous air pollutants, including, but not limited to, pollutants that meet the definition of a hazardous substance, and whose process or operation is identified as an emission source pursuant to the most recent list of source categories published by the California Air Resources Board.

(9) "Freeway or other busy traffic corridors" means those roadways that, on an average day, have traffic in excess of 50,000 vehicles in a rural area as defined in Section 50101 of the Health and Safety Code, and 100,000 vehicles in an urban area, as defined in Section 50104.7 of the Health and Safety Code.

SECTION 3.

Section 21151.8 of the Public Resources Code is amended to read:

21151.8.

(a) An environmental impact report or negative declaration may not be approved for any project involving the purchase of a schoolsite or the construction of a new

elementary or secondary school by a school district unless all of the following occur:

(1) The environmental impact report or negative declaration includes information that is needed to determine if the property proposed to be purchased, or to be constructed upon, is any of the following:
   (A) The site of a current or former hazardous waste disposal site or solid waste disposal site and, if so, whether the wastes have been removed.
   (B) A hazardous substance release site identified by the Department of Toxic Substances Control in a current list adopted pursuant to Section 25356 of the Health and Safety Code for removal or remedial action pursuant to Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code.
   (C) A site that contains one or more pipelines, situated underground or aboveground, that carries hazardous substances, acutely hazardous materials, or hazardous wastes, unless the pipeline is a natural gas line that is used only to supply natural gas to that school or neighborhood, or other nearby schools.
   (D) A site that is within 500 feet of the edge of the closest traffic lane of a freeway or other busy traffic corridor.

(2) The school district, as the lead agency, in preparing the environmental impact report or negative declaration has notified in writing and consulted with the administering agency in which the proposed schoolsite is located, pursuant to Section 2735.3 of Title 19 of the California Code of Regulations, and with any air pollution control district or air quality management district having jurisdiction in the area, to identify both permitted and nonpermitted facilities within that district's authority, including, but not limited to, freeways and busy traffic corridors, large agricultural operations, and railyards, within one-fourth of a mile of the proposed schoolsite, that might reasonably be anticipated to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste. The notification by the school district, as the lead agency, shall include a list of the locations for which information is sought.

(3) The governing board of the school district makes one of the following written findings:
   (A) Consultation identified no facilities of this type or other significant pollution sources specified in paragraph (2).
   (B) The facilities or other pollution sources specified in paragraph (2) exist, but one of the following conditions applies:
      (i) The health risks from the facilities or other pollution sources do not and will not constitute an actual or potential endangerment of public health to persons who would attend or be employed at the proposed school.
      (ii) Corrective measures required under an existing order by another agency having jurisdiction over the facilities or other pollution sources will, before the school is occupied, result in the mitigation of all chronic or accidental hazardous air emissions to levels that do not constitute an actual or potential endangerment of public health to persons who

would attend or be employed at the proposed school. If the governing board makes a finding pursuant to this clause, it shall also make a subsequent finding, prior to occupancy of the school, that the emissions have been so mitigated.

(iii) For a schoolsite with a boundary that is within 500 feet of the edge of the closest traffic lane of a freeway or other busy traffic corridor, the governing board of the school district determines, through analysis pursuant to paragraph (2) of subdivision (b) of Section 44360 of the Health and Safety Code, based on appropriate air dispersion modeling, and after considering any potential mitigation measures, that the air quality at the proposed site is such that neither short-term nor long-term exposure poses significant health risks to pupils.

(C) The facilities or other pollution sources specified in paragraph (2) exist, but conditions in clause (i), (ii) or (iii) of subparagraph (B) cannot be met, and the school district is unable to locate an alternative site that is suitable due to a severe shortage of sites that meet the requirements in subdivision (a) of Section 17213 of the Education Code. If the governing board makes this finding, the governing board shall adopt a statement of Overriding Considerations pursuant to Section 15093 of Title 14 of the California Code of Regulations.

(4) Each administering agency, air pollution control district, or air quality management district receiving written notification from a lead agency to identify facilities pursuant to paragraph (2) shall provide the requested information and provide a written response to the lead agency within 30 days of receiving the notification. The environmental impact report or negative declaration shall be conclusively presumed to comply with this section as to the area of responsibility of any agency that does not respond within 30 days.

(b) If a school district, as a lead agency, has carried out the consultation required by paragraph (2) of subdivision (a), the environmental impact report or the negative declaration shall be conclusively presumed to comply with this section, notwithstanding any failure of the consultation to identify an existing facility or other pollution source specified in paragraph (2) of subdivision (a).

(c) As used in this section and Section 21151.4, the following definitions shall apply:

(1) "Hazardous substance" means any substance defined in Section 25316 of the Health and Safety Code.

(2) "Acutely hazardous material" means any material defined pursuant to subdivision (a) of Section 25532 of the Health and Safety Code.

(3) "Hazardous waste" means any waste defined in Section 25117 of the Health and Safety Code.

(4) "Hazardous waste disposal site" means any site defined in Section 25114 of the Health and Safety Code.

(5) "Hazardous air emissions" means emissions into the ambient air of air contaminants that have been identified as a toxic air contaminant by the State Air Resources Board or by the air pollution control officer for the jurisdiction in which the project is located. As determined by the air pollution control officer, hazardous air emissions also means emissions into the ambient air from any

substances identified in subdivisions (a) to (f), inclusive, of Section 44321 of the Health and Safety Code.

(6) "Administering agency" means an agency designated pursuant to Section 25502 of the Health and Safety Code.

(7) "Handle" means handle as defined in Article 1 (commencing with Section 25500) of Chapter 6.95 of Division 20 of the Health and Safety Code.

(8) "Facilities" means any source with a potential to use, generate, emit or discharge hazardous air pollutants, including, but not limited to, pollutants that meet the definition of a hazardous substance, and whose process or operation is identified as an emission source pursuant to the most recent list of source categories published by the California Air Resources Board.

(9) "Freeway or other busy traffic corridors" means those roadways that, on an average day, have traffic in excess of 50,000 vehicles in a rural area, as defined in Section 50101 of the Health and Safety Code, and 100,000 vehicles in an urban area, as defined in Section 50104.7 of the Health and Safety Code.

B.5. Senate Bill 25, Children's Environmental Health Protection.

CHAPTER 731
FILED WITH SECRETARY OF STATE OCTOBER 10, 1999
APPROVED BY GOVERNOR OCTOBER 7, 1999

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1.
The Legislature finds and declares all of the following:

(a) Infants and children have a higher ventilation rate than adults relative to their body weight and lung surface area, resulting in a greater dose of pollution delivered to their lungs.
(b) Children have narrower airways than adults. Thus, irritation or inflammation caused by air pollution that would produce only a slight response in an adult can result in a potentially significant obstruction of the airway in a young child.
(c) Children spend significantly more time outdoors, especially in the summer, when ozone air pollution levels are typically highest. National statistics show that children spend an average of 50 percent more time outdoors than adults.
(d) Air pollution is known to exacerbate asthma and be a trigger for asthma attacks in infants and children, 500,000 of whom are afflicted with this chronic lung disease in California.
(e) Infant's and children's developing organs and tissues are more susceptible to damage from some environmental contaminants than are adult organs and tissues.
(f) It is the intent of the Legislature in enacting this act, to require that the state's air quality standards and airborne toxic control measures be reviewed to determine if they adequately protect the health of infants and children, and that these standards and measures be revised if they are determined to be inadequate.
(g) It is also the intent of the Legislature in enacting this act to require the State Air Resources Board and the Office of Environmental Health Hazard Assessment to consider the health impacts to all populations of children, including special subpopulations of infants and children that comprise a meaningful portion of the general population, such as children with asthma, cystic fibrosis, or other respiratory conditions or diseases, in setting or revising standards pursuant to this act.

SECTION 2.
Part 3 (commencing with Section 900) is added to Division 1 of the Health and Safety Code, to read:
PART 3. CHILDREN'S ENVIRONMENTAL HEALTH CENTER 900. There is hereby created the Children's Environmental Health Center within the Environmental Protection Agency. The primary purposes of the center shall include all of the following:

(a) To serve as the chief advisor to the Secretary for Environmental Protection and to the Governor on matters within the jurisdiction of the Environmental Protection

Agency relating to environmental health and environmental protection as each of those matters relates to children.

(b) To assist the boards, departments, and offices within the Environmental Protection Agency to assess the effectiveness of statutes, regulations, and programs designed to protect children from environmental hazards.

(c) To coordinate within the Environmental Protection Agency and with other state agencies, regulatory efforts, research and data collection, and other programs and services that impact the environmental health of children, and coordinate with appropriate federal agencies conducting related regulatory efforts and research and data collection.

(d) In consultation with the State Air Resources Board and the Office of Environmental Health Hazard Assessment, and notwithstanding Section 7550.5 of the Government Code, to report to the Legislature and the Governor no later than December 31, 2001, on the progress of the state board and the office toward implementing the act that added this part during the 1999-2000 Regular Session and to make recommendations for any statutory or regulatory changes that may be necessary to carry out the intent of that act to protect the public health, including infants and children, from air pollutants and toxic air contaminants.

SECTION 3.
Section 39606 of the Health and Safety Code is amended to read:
39606.

(a) The state board shall do both of the following:
  (1) Based upon similar meteorological and geographic conditions and consideration for political boundary lines whenever practicable,divide the state into air basins to fulfill the purposes of this division.
  (2) Adopt standards of ambient air quality for each air basin in consideration of the public health, safety, and welfare, including,but not limited to, health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy. These standards may vary from one air basin to another. Standards relating to health effects shall be based upon the recommendations of the Office of Environmental Health Hazard Assessment.

(b) In its recommendations for submission to the state board pursuant to paragraph (2) of subdivision (a), the Office of Environmental Health Hazard Assessment, to the extent that information is available, shall assess the following:
  (1) Exposure patterns, including, but not limited to, patterns determined by relevant data supplied by the state board, among infants and children that are likely to result in disproportionately high exposure to ambient air pollutants in comparison to the general population.
  (2) Special susceptibility of infants and children to ambient air pollutants in comparison to the general population.
  (3) The effects on infants and children of exposure to ambient air pollutants and other substances that have a common mechanism of toxicity.
  (4) The interaction of multiple air pollutants on infants and children, including the interaction between criteria air pollutants and toxic air contaminants.

(c) In assessing the factors specified in subdivision (b), the office shall use current principles, practices, and methods used by public health professionals who are experienced practitioners in the field of human health effects assessment. The scientific basis or scientific portion of the method used by the office to assess the factors set forth in subdivision (b) shall be subject to peer review as described in Section 57004 or in a manner consistent with the peer review requirements of Section 57004. Any person may submit any information for consideration by the entity conducting the peer review, which may receive oral testimony.

(d)

(1) No later than December 31, 2000, the state board in consultation with the office, shall review all existing health-based ambient air quality standards to determine whether, based on public health, scientific literature, and exposure pattern data, the standards adequately protect the health of the public, including infants and children, with an adequate margin of safety. The state board shall publish a report summarizing these findings.

(2) The state board shall revise the highest priority ambient air quality standard determined to be inadequate to protect infants and children with an adequate margin of safety, based on its report, no later than December 31, 2002. Following the revision of the highest priority standard, the state board shall revise any additional standards determined to be inadequate to protect infants and children with an adequate margin of safety, at the rate of at least one per year. The standards shall be established at levels that adequately protect the health of the public, including infants and children, with an adequate margin of safety (e) Nothing in this section shall restrict the authority of the state board to consider additional information in establishing ambient air quality standards or to adopt an ambient air quality standard designed to protect vulnerable populations other than infants and children.

SECTION 4.

Section 39617.5 is added to the Health and Safety Code, to read:

39617.5.

(a) Not later than January 1, 2003, the state board shall do all of the following:

(1) Evaluate the adequacy of the current monitoring network for its ability to gather the data necessary to determine the exposure of infants and children to air pollutants including criteria air pollutants and toxic air contaminants.

(2) Identify areas where the exposure of infants and children to air pollutants is not adequately measured by the current monitoring network.

(3) Recommend changes to improve air pollution monitoring networks and data collection to more accurately reflect the exposure of infants and children to air pollutants.

(b) In carrying out this section, the state board, in cooperation with the districts, shall expand its existing monitoring program in six communities around the state in nonattainment areas, as selected by the state board, to include special monitoring of children's exposure to air pollutants and toxic contaminants. The expanded program shall include placing air pollution monitors near schools, day care centers, and outdoor recreational facilities that are in close proximity to, or

downwind from, major industrial sources of air pollutants and toxic air contaminants, including, freeways and major traffic areas. The purpose of the air pollution monitors shall be to conduct sampling of air pollution levels affecting children. Monitoring may include the use of fixed, mobile, and other monitoring devices, as appropriate.

(c) The expanded monitoring program shall include the following:
  (1) Monitoring during multiple seasons and at multiple locations within each community at schools, day care centers, recreational facilities, and other locations where children spend most of their time.
  (2) A combination of upgrading existing fixed monitoring sites, establishing new fixed monitoring sites, and conducting indoor and outdoor sampling and personal exposure measurements in each community to provide the most comprehensive data possible on the levels of children's exposure to air pollutants and toxic air contaminants.

(d) Data collected from expanded air quality monitoring activities conducted pursuant to this section may be used for any purpose authorized by law, including, but not limited to, determinations as to whether an area has attained or has not attained the state and national ambient air quality standards, if the monitoring devices from which the data was collected meet the monitoring requirements specified in Section 58.14 of Title 40 of the Code of Federal Regulations for special purpose monitors, all other monitoring requirements of Part 58 of Title 40 of the Code of Federal Regulations, and all applicable requirements specified in regulations adopted by the state board.

SECTION 5.
Section 39660 of the Health and Safety Code is amended to read:
39660.

(a) Upon the request of the state board, the office, in consultation with and with the participation of the state board, shall evaluate the health effects of and prepare recommendations regarding substances, other than pesticides in their pesticidal use, which may be or are emitted into the ambient air of California and that may be determined to be toxic air contaminants.

(b) In conducting this evaluation, the office shall consider all available scientific data, including, but not limited to, relevant data provided by the state board, the State Department of Health Services, the Occupational Safety and Health Division of the Department of Industrial Relations, the Department of Pesticide Regulation, international and federal health agencies, private industry, academic researchers, and public health and environmental organizations. The evaluation shall be performed using current principles, practices, and methods used by public health professionals who are experienced practitioners in the fields of epidemiology, human health effects assessment, risk assessment, and toxicity.

(c)
  (1) The evaluation shall assess the availability and quality of data on health effects, including potency, mode of action, and other relevant biological factors, of the substance, and shall, to the extent that information is available, assess all of the following:

(A) Exposure patterns among infants and children that are likely to result in disproportionately high exposure to ambient air pollutants in comparison to the general population.
(B) Special susceptibility of infants and children to ambient air pollutants in comparison to the general population.
(C) The effects on infants and children of exposure to toxic air contaminants and other substances that have a common mechanism of toxicity.
(D) The interaction of multiple air pollutants on infants and children, including the interaction between criteria air pollutants and toxic air contaminants.

(2) The evaluation shall also contain an estimate of the levels of exposure that may cause or contribute to adverse health effects. If it can be established that a threshold of adverse health effects exists, the estimate shall include both of the following factors:
(A) The exposure level below which no adverse health effects are anticipated.
(B) An ample margin of safety that accounts for the variable effects that heterogeneous human populations exposed to the substance under evaluation may experience, the uncertainties associated with the applicability of the data to human beings, and the completeness and quality of the information available on potential human exposure to the substance. In cases in which there is no threshold of significant adverse health effects, the office shall determine the range of risk to humans resulting from current or anticipated exposure to the substance.

(3) The scientific basis or scientific portion of the method used by the office to assess the factors set forth in this subdivision shall be reviewed in a manner consistent with this chapter by the Scientific Review Panel on Toxic Air Contaminants established pursuant to Article 5 (commencing with Section 39670). Any person may submit any information for consideration by the panel, which may receive oral testimony.

(d) The office shall submit its written evaluation and recommendations to the state board within 90 days after receiving the request of the state board pursuant to subdivision (a). The office may, however, petition the state board for an extension of the deadline, not to exceed 30 days, setting forth its statement of the reasons that prevent the office from completing its evaluation and recommendations within 90 days. Upon receipt of a request for extension of, or noncompliance with, the deadline contained in this section, the state board shall immediately transmit to the Assembly Committee on Rules and the Senate Committee on Rules, for transmittal to the appropriate standing, select, or joint committee of the Legislature, a statement of reasons for extension of the deadline, along with copies of the office's statement of reasons that prevent it from completing its evaluation and recommendations in a timely manner.

(e)

(1) The state board or a district may request, and any person shall provide, information on any substance that is or may be under evaluation and that is manufactured, distributed, emitted, or used by the person of whom the request is made, in order to carry out its responsibilities pursuant to this chapter. To the extent practical, the state board or a district may collect the

information in aggregate form or in any other manner designed to protect trade secrets.

(2) Any person providing information pursuant to this subdivision may, at the time of submission, identify a portion of the information submitted to the state board or a district as a trade secret and shall support the claim of a trade secret, upon the written request of the state board or district board. Subject to Section 1060 of the Evidence Code, information supplied that is a trade secret, as specified in Section 6254.7 of the Government Code, and that is so marked at the time of submission, shall not be released to any member of the public. This section does not prohibit the exchange of properly designated trade secrets between public agencies when those trade secrets are relevant and necessary to the exercise of their jurisdiction if the public agencies exchanging those trade secrets preserve the protections afforded that information by this paragraph.

(3) Any information not identified as a trade secret shall be available to the public unless exempted from disclosure by other provisions of law. The fact that information is claimed to be a trade secret is public information. Upon receipt of a request for the release of information that has been claimed to be a trade secret, the state board or district shall immediately notify the person who submitted the information, and shall determine whether or not the information claimed to be a trade secret is to be released to the public. The state board or district board, as the case may be, shall make its determination within 60 days after receiving the request for disclosure, but not before 30 days following the notification of the person who submitted the information. If the state board or district decides to make the information public, it shall provide the person who submitted the information 10 days' notice prior to public disclosure of the information.

(f) The office and the state board shall give priority to the evaluation and regulation of substances based on factors related to the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community. In determining the importance of these factors, the office and the state board shall consider all of the following information, to the extent that it is available:

(1) Research and monitoring data collected by the state board and the districts pursuant to Sections 39607, 39617.5, 39701, and 40715, and by the United States Environmental Protection Agency pursuant to paragraph (2) of subsection (k) of Section 112 of the federal act (42 U.S.C. Sec. 7412(k)(2)).

(2) Emissions inventory data reported for substances subject to Part 6 (commencing with Section 44300) and the risk assessments prepared for those substances.

(3) Toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (42 U.S.C. Sec. 11023) and Section 6607 of the Pollution Prevention Act of 1990 (42 U.S.C. Sec. 13106).

(4) Information on estimated actual exposures to substances based on geographic and demographic data and on data derived from analytical methods that measure the dispersion and concentrations of substances in ambient air.

SECTION 6.
Article 4.5 (commencing with Section 39669.5) is added to Chapter 3.5 of Part 2 of Division 26 of the Health and Safety Code, to read:
Article 4.5. Special Provisions For Infants And Children
39669.5. The Legislature finds and declares that certain toxic air contaminants may pose risks that cause infants and children to be especially susceptible to illness and that certain actions are necessary to ensure their safety from toxic air contaminants.

(a) By July 1, 2001, the following shall occur
  (1) The office, in consultation with the state board, shall establish a list of up to five toxic air contaminants identified or designated by the state board pursuant to Section 39657 that may cause infants and children to be especially susceptible to illness. In developing the list, the office shall take into account public exposures to toxic air contaminants, whether by themselves or interacting with other toxic air contaminants or criteria pollutants, and the factors listed in subdivision (c) of Section 39660. The office shall submit a report containing the list and its reasons for including the toxic air contaminants on the list to the Scientific Review Panel on Toxic Air Contaminants established pursuant to Article 5 (commencing with Section 39670).
  (2) The scientific review panel, in a manner consistent with this chapter, shall review the list of toxic air contaminants submitted by the office pursuant to paragraph (1). As part of the review, any person may submit any information for consideration by the panel, which may receive oral testimony.

(b)
  (1) Within two years of the establishment of the list required pursuant to subdivision (a), the state board shall review and, as appropriate, revise any control measures adopted for the toxic air contaminants identified on the list, to reduce exposure to those toxic air contaminants pursuant to Article 4 (commencing with Section 39665), to protect public health, and particularly infants and children.
  (2) Within three years of the establishment of the list required pursuant to subdivision (a), for up to five of those toxic air contaminants for which no control measures have been previously adopted, the state board shall prepare a report on the need for regulations, following the procedure specified in Section 39665. The state board shall adopt within that same three-year timeframe, as appropriate, any new control measures to reduce exposure to those toxic air contaminants pursuant to Article 4 (commencing with Section 39665), to protect public health, particularly infants and children.

(c) Beginning July 1, 2004, the office shall annually evaluate at least 15 toxic air contaminants identified or designated by the state board pursuant to Section 39657, and provide threshold exposure levels and nonthreshold health values, as

appropriate, for those toxic air contaminants. The activities required pursuant to this subdivision shall continue until all toxic air contaminants are evaluated. The levels shall be established pursuant to the procedures adopted for health and risk assessments pursuant to paragraph (2) of subdivision (b) of Section 44360, and taking into account the factors listed in subdivision (c) of Section 39660. Based on this evaluation, and after review by the scientific review panel as prescribed in paragraph (2) of subdivision (a), the office shall update the list established pursuant to subdivision (a), by July 1, 2005, and each year thereafter. Within three years of the initial or subsequent listing update, for up to five of the toxic air contaminants contained on that list for which no control measures have been previously adopted, or for at least five of the toxic air contaminants if more than five toxic air contaminants have been identified, the state board shall prepare a report on the need for regulation, following the procedure specified in Section 39665. The state board shall adopt within that three-year timeframe, as appropriate, new control measures, pursuant to Article 4 (commencing with Section 39665), to reduce exposure to those toxic air contaminants, to protect public health, and particularly infants and children.

(d) Toxic air contaminants evaluated and listed pursuant to this section shall not include substances in those uses that are not subject to regulation by the state board pursuant to this chapter.

SECTION 7.
Section 40451 of the Health and Safety Code is amended to read:
40451.

(a) The south coast district shall use the Pollutant Standards Index developed by the Environmental Protection Agency and shall report and forecast pollutant levels daily for dissemination in the print and electronic media.

(b) Using existing communication facilities available to it, the south coast district shall notify all schools and, to the extent feasible and upon request, daycare centers in the South Coast Air Basin whenever any federal primary ambient air quality standard is predicted to be exceeded.

(c) Whenever it becomes available, the south coast district shall disseminate to schools, amateur adult and youth athletic organizations, and all public agencies operating parks and recreational facilities in the south coast district the latest scientific information and evidence regarding the need to restrict exercise and other outdoor activities during periods when federal primary air quality standards are exceeded.

(d) Once every two months and annually, the south coast district shall report on the number of days and locations that federal and state ambient air quality standards were exceeded and the number of days and locations of these occurrences.

SECTION 7.5.
Section 40451 of the Health and Safety Code is amended to read:
40451.

(a) The south coast district shall use the Pollutant Standards Index developed by the United States Environmental Protection Agency and shall report and forecast

pollutant levels daily for dissemination in the print and electronic media. Commencing July 1, 2001, the south coast district shall also include in its report and forecast levels of PM2.5 in excess of the 24-hour federal ambient air standard, as adopted in July 1997, or any standard adopted by the United States Environmental Protection Agency that succeeds that standard.

(b) Using existing communication facilities available to it, the south coast district shall notify all schools and, to the extent feasible and upon request, daycare centers in the South Coast Air Basin whenever any federal primary ambient air quality standard is predicted to be exceeded. Commencing July 1, 2001, using communication facilities available to it, the south coast district shall also notify all schools in the South Coast Air Basin when the ambient level of PM2.5 is predicted to exceed the 24-hour federal ambient air standard, as adopted in July 1997, or any standard adopted by the United States Environmental Protection Agency that succeeds that standard.

(c) Whenever it becomes available, the south coast district shall disseminate to schools, amateur adult and youth athletic organizations, and all public agencies operating parks and recreational facilities in the south coast district the latest scientific information and evidence regarding the need to restrict exercise and other outdoor activities during periods when federal primary air quality standards and the 24-hour federal ambient air standard for PM2.5, as adopted in July 1997, or any standards adopted by the United States Environmental Protection Agency that succeed those standards, are exceeded.

(d) Once every two months and annually, the south coast district shall report on the number of days and locations that federal and state ambient air quality standards were exceeded. Commencing July 1, 2001, the south coast district shall also include in that report the number of days and locations on and at which the 24-hour federal ambient air standard for PM2.5, as adopted in July 1997, or any standard adopted by the United States Environmental Protection Agency that succeeds that standard, is exceeded.

SECTION 8.

Section 7.5 of this bill incorporates amendments to Section 40451 of the Health and Safety Code proposed by both this bill and SB 1195. It shall only become operative if

(1) both bills are enacted and become effective on or before January 1, 2000,

(2) each bill amends Section 40451 of the Health and Safety Code, and

(3) this bill is enacted after SB 1195, in which case Section 7 of this bill shall not become operative.

SECTION 9.

Notwithstanding Section 17610 of the Government Code, if the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code. If the statewide cost of the claim for reimbursement does not exceed one million dollars ($1,000,000), reimbursement shall be made from the State Mandates Claims Fund.

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Appendix C:

Asbestos Conversion Factors & Cancer Potency Factor

C-1. Overview

The purpose of this appendix is to provide information about the asbestos conversion factors and inhalation cancer potency factor. The table below summarizes the available conversion factors and inhalation cancer potency factor for asbestos. The subsequent sections of this appendix provide information on how the conversion factors and cancer potency factor were derived.

PCM Fibers to TEM Structure Conversion Factor	1 PCM Fiber = 320 TEM Structures
Mass to Fiber Conversion Factor	0.003 μg = 100 asbestos PCM Fibers
Asbestos Inhalation Cancer Potency Factor	$2.2 \times 10^{+2}$ $(mg/kg\text{-}day)^{-1}$

C-2. PCM Fiber to TEM Structure Conversion Factor

Two analytical methods have been used for the analysis of asbestos samples: phase contrast microscopy (PCM), the primary method used historically to analyze asbestos samples, and transmission electron microscopy (TEM), the current state-of-the-art method.

PCM analysis was developed earlier and has been preferred in the past over TEM because it could be done more quickly and was less expensive. However, one major limitation of PCM analysis, especially in outdoor environments, is that the analyst cannot distinguish asbestos from non-asbestos fibers, such as cellulose, talc, or gypsum. Also, PCM cannot detect fibers that have a diameter of about 0.3 microns or less, which could substantially underestimate the asbestos fiber concentrations. These limitations make PCM impractical for the analysis of ambient asbestos samples.

TEM is the preferred analytical method for outdoor asbestos samples because of its ability to detect small fibers (greater than or equal to 0.0002 microns in diameter) and to distinguish between asbestos fibers and non-asbestos fibers. The term “TEM structures” is often used to describe asbestos fibers detected by this method. TEM is the method recommended by the Office of Environmental Health Hazard Assessment (OEHHA). However, TEM measurements cannot be directly related to the cancer

potency factors because the studies upon which OEHHA's risk assessment was based used PCM analysis. Thus, the TEM measurements must be converted to PCM-equivalent units. The actual relationship between PCM and TEM measurements is quite variable: ARB (1990) found a range of 100 to 1000 for the ratio of TEM structures to PCM fibers for three occupational studies. For the purpose of the Air Toxics Hot Spots Program, asbestos should be converted using the geometric center of the range as defined by ARB (1990). To convert PCM fibers to TEM structures or vice versa use the following relationship:

1 PCM Fiber = 320 TEM structures

C-3. Mass to Fiber Conversion Factor

Asbestos is reported in units of pounds per year under the Air Toxics Hot Spots Program. To convert asbestos fibers to mass, the following relationship is used:

0.003 μg = 100 asbestos fibers PCM.

This conversion factor was derived from information published by the United States Environmental Protection Agency (U.S. EPA) (U.S. EPA, 1986). The number of asbestos PCM fibers associated with a given mass of asbestos can vary appreciably. In addition, U.S. EPA has stated that this conversion factor is the geometric mean of measured relationships between optical fiber counts and mass airborne chrysotile in several published studies, that the range of the conversion factor between the different studies is large (0.0005 - 0.015 μg asbestos/100 asbestos PCM fibers), and that the factor carries with it an appreciable uncertainty. Additionally, if the asbestos was analyzed using TEM, the TEM structures must be converted to PCM fibers first.

C-4. Asbestos Inhalation Cancer Potency Factor

The unit risk factor for asbestos fibers is 1.9×10^{-4} in units of $(100 \text{ PCM fibers/m}^3)^{-1}$. The unit risk factor is based on epidemiological studies in which PCM fiber measurements were used. This unit risk factor is listed in Chapter 7 and in the Asbestos Toxic Air Contaminant (TAC) identification document (CDHS, 1986) and in OEHHA, 2009. The asbestos cancer potency factor is for mesothelioma. Since the unit risk factor is in units of concentration or dose, complications arise when the emitted asbestos quantities are reported in mass units (pounds/year and maximum pounds/hour) for the Air Toxics Hot Spots Program.

For the purpose of an Air Toxics Hot Spots Risk Assessment, the cancer potency factor $(\text{mg/kg body weight})^{-1}$ may be calculated from the fiber cancer potency factor using the relationship of 0.003 μg = 100 fibers PCM, 70 kg body weight, 20 m^3 breathed per day, and a factor of 1000 to convert μg asbestos into mg:

$$1.9\times10^{-4}\left(100\,PCM\,fibers/m^3\right)^{-1}\times\frac{70kg}{20m^3}\times\frac{1000}{0.003\mu g/100fibers}=2.2\times10^{+2}\left(mg/kg\,bodyweight\right)^{-1}$$

In order to use this cancer potency factor under the Air Toxics Hot Spots Program, the measured asbestos concentration should be expressed as microgram per cubic meter. For example, if the measured asbestos concentrations are in units of TEM structures per cubic meter, the asbestos concentration should be first converted to PCM fibers per cubic meters and then into units of microgram per cubic meters using the conversion factors as shown in the sections above.

See Chapter 8 for more information on calculating cancer risk and Appendix I for an example of how cancer risk is calculated for the inhalation pathway. Note, while the example in Appendix I uses non-asbestos substances, it is still applicable since it illustrates the steps that are used for asbestos, including use of Age Sensitivity Factors.

C-5. References

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Appendix D:

Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Engines

D-1. Introduction

The objective of this appendix is to discuss procedures for estimating the cancer and noncancer health risk from exposure to particulate matter (PM) emissions from diesel-fueled engines (diesel exhaust). It will also clarify the requirements and recommendations for acute noncancer and multipathway cancer and chronic risk assessment for diesel PM. In addition to the notification and risk reduction requirements under the Hot Spots Program, this appendix should facilitate the use of the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (ARB, 2000) (Diesel Guidelines). The Diesel Guidelines were developed by the Air Resources Board (ARB) with assistance from the Office of Environmental Health Hazard Assessment (OEHHA) in October 2000. The Diesel Guidelines are intended to assist local Air Pollution Control and Air Quality Management Districts (Districts) and sources of diesel PM emissions in making consistent risk management decisions.

In advance of performing a health risk assessment (HRA), it is recommended that the District and the stationary source of diesel emissions reach a consensus on the HRA approach for estimating health impacts from diesel exhaust. See Chapter 9 for an outline of a modeling protocol.

D-2. Calculations/Risk Assessment Procedures

In August 1998, the ARB identified diesel exhaust as a toxic air contaminant (TAC) (ARB, 1998). In the identification report, OEHHA provided an inhalation noncancer chronic reference exposure level (REL) of 5 micrograms per cubic meter ($\mu g/m^3$) and a range of inhalation cancer potency factors of 1.3×10^{-4} to 2.4×10^{-3} $(\mu g/m^3)^{-1}$. The Scientific Review Panel on Toxic Air Contaminants recommended a "reasonable estimate" inhalation unit risk factor of 3.0×10^{-4} $(\mu g/m^3)^{-1}$. From the unit risk factor an inhalation cancer potency factor of 1.1 $(mg/kg\text{-}day)^{-1}$ may be calculated. These noncancer and cancer health factors were developed based on whole (gas and particulate matter) diesel exhaust. The surrogate for whole diesel exhaust is diesel PM. PM_{10} (particulate matter, ten microns or less in size) is the basis for the risk calculations.

D-2.1 Cancer

An inhalation cancer risk is required for every HRA (The methods for calculating inhalation cancer risk can be found in Chapters 5, 7, and 8.). When comparing whole diesel exhaust to speciated components of diesel exhaust (e.g., PAHs, metals), the cancer risk from inhalation exposure to whole diesel exhaust will outweigh the

multipathway cancer risk from the speciated components. For this reason, there will be few situations where an analysis of multipathway risk is necessary.

The District may elect to require a multipathway analysis if reliable data are available and the District decides that it is necessary. If the District elects to require a multipathway analysis, the components of the diesel exhaust will need to be speciated since there is no oral cancer potency factor for diesel PM. It is recommended that the District be consulted on the procedures for conducting a multipathway analysis for diesel exhaust. The District may wish to use speciation data from the ARB. If so, a resource for speciation data is available on the ARB's website at www.arb.ca.gov/emisinv/speciate/speciate.htm.

If a multipathway analysis is required, the speciated data should be compared with the substances in Table 5.1. Any substances in the speciation profile that are listed in Table 5.1 and have an oral cancer potency factor in Table 7.1 should be included in the multipathway analysis. Multipathway cancer risks are estimated following the procedures in Chapters 5 and 8 of this document. These procedures require summing the cancer risk from each carcinogen to estimate the total facility cancer risk.

D-2.2 Noncancer Chronic

To determine noncancer chronic inhalation health impacts from exposure to diesel exhaust use the methods described in Chapters 6 and 8.

The District may elect to require a multipathway analysis if reliable data are available and they feel it is necessary. If the District elects to require a multipathway analysis, the components of the diesel exhaust will need to be speciated since there is no oral reference exposure level for diesel PM. A resource for speciation data at the ARB is identified above. It is recommended that the District be consulted on the procedures for conducting a multipathway analysis. If a multipathway analysis is required, the speciated data should be compared with the substances in Table 5.1. Any substances in the speciation profile that are listed in Table 5.1 and have an oral chronic REL in Table 6.4 should be included in the multipathway analysis. Multipathway chronic risks are estimated following the procedures in Chapters 5 and 8 of this document.

Note that the effect estimate for cardiovascular mortality from exposure to ambient PM when applied to diesel PM results in many more cardiovascular deaths than lung cancer deaths.

D-2.3 Noncancer Acute

There may be certain unusual situations where an evaluation of the acute health effects may be warranted. One possible situation is when a nearby receptor is located above the emission release point (e.g. on a hillside or in a multistory apartment building). Since there is no acute REL for diesel exhaust, the components of the exhaust will need to be speciated to determine the potential acute health impacts. It is recommended that the District be consulted on the procedures for conducting an acute analysis. If an acute analysis is required, the speciated data should be compared with the substances in Table 6.1. Any substances in the speciation profile that are listed in Table 6.1 should be included in the acute analysis. A resource for speciation data at the ARB is identified above. Acute risks are estimated following the procedures in Chapters 6 and 8 of this document.

D-3. References

ARB 1998. Air Resources Board, “Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Appendix III, Part A, Exposure Assessment,” April 1998.

ARB 2000. Air Resources Board, “Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles,” October 2000.

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Appendix E:

Toxicity Equivalency Factors for Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans and Polychlorinated Biphenyls

Polychlorinated dibenzo-p-dioxins and dibenzofurans (dioxins and furans) and polychlorinated biphenyls (PCBs) vary considerably in their potency for causing both cancer and noncancer health impacts. A Toxics Equivalents Factors (TEF) scheme, based on both cancer and noncancer toxicity studies, has been developed to relate the potency of various dioxin and furan congeners and PCB congeners to the potency of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD). A detailed explanation of the World Health Organization's 2005 Toxicity Equivalents Factor (WHO_{05}-TEF) scheme (van den Berg et al., 2006), the latest scheme adopted by OEHHA, is available in OEHHA (2011). Where the dioxin and furan and PCB mixtures are not speciated, the cancer risk and noncancer hazard index are based on the most potent congeners. A facility may choose to speciate dioxin and furan and PCB emissions in order to obtain a more accurate picture of the risks.

There are two mathematically equivalent procedures for estimating the cancer risk or the non-cancer hazard quotient using the TEF scheme. In the first method, the concentration or dose of 2,3,7,8-TCDD equivalents is calculated based on the individual congener concentration or dose multiplied by the TEF for that congener. Cancer risk is estimated by multiplying the cancer slope for 2,3,7,8-TCDD by the "TCDD equivalents" concentration or dose. The noncancer hazard quotient would be calculated by dividing the "TCDD equivalents" concentration by the REL. In the second method, TEF-adjusted potency factors or RELs are used with individual congeners.

Using the first procedure, the concentration of each congener listed in Table E-1 is multiplied by the WHO_{05}-TEF for that congener to estimate the concentration of 2,3,7,8-TCDD "toxic equivalents" of the mixture. For example, for 1,2,3,4,7,8-hexachlorodibenzodioxin, the concentration ($\mu g/m^3$) may be multiplied by 0.1 to give the concentration equivalent to 2,3,7,8-TCDD. Congeners not listed in the table are assumed to have no dioxin-like toxicity. The 2,3,7,8-TCDD equivalent concentrations for each congener in the mixture are summed and treated as 2,3,7,8-TCDD for the purposes of calculating cancer and noncancer risks. Thus, to estimate cancer risk, the "toxic equivalents" concentration is multiplied by the breathing rate to give dose (see equation 5.4.1.1), and then multiplied by the cancer potency factor for 2,3,7,8-TCDD (Table 7.1) to give the cancer risk for the entire mixture.

To estimate the chronic non-cancer inhalation hazard index, the ground level concentration of the 2,3,7,8-TCDD equivalents of the mixture is divided by the chronic reference exposure level for 2,3,7,8-tetrachlorodibenzo-*p*-dioxin to give an inhalation hazard index for the entire mixture. Similarly, the oral chronic hazard index of the mixture is calculated by estimating the 2,3,7,8-TCDD equivalents dose and dividing by the oral chronic REL for 2,3,7,8-TCDD. The inhalation and oral hazard indices are then summed to get a total chronic Hazard Index.

In order to determine the inhalation chronic hazard index by the second procedure, the ground level concentration of each dioxin and furan congener is divided by the chronic REL for each congener in Table 6.3 and the hazard quotients summed to give the inhalation chronic hazard index. The oral chronic hazard quotient is calculated by determining the oral dose of each congener and dividing by the individual chronic oral REL (Table 6.4) for each congener. The oral hazard quotients are then summed to give the oral chronic hazard index for dioxins and furans and PCBs. The oral hazard index is then added to the inhalation hazard index to give the total chronic hazard index for dioxins and furans and PCBs.

In those cases where speciation of dioxins and furans has not been performed, then 2,3,7,8-TCDD serves as the surrogate for dioxin and furan emissions. Given that 2,3,7,8-TCDD is the most potent congener in the class, the resulting risk estimate for an unspeciated mixture may be deemed significant enough to trigger health concerns. In this case, it would then be advisable to speciate the mixture and run a screening estimate using the speciated data.

As noted above, the TEF scheme includes TEFs for individual coplanar PCB congeners (see Table E-1) (OEHHA, 2011). These are the congeners that have dioxin-like biological effects. Where data are available on individual PCB congeners emitted by a facility, then the congener-specific TEFs are used. 2,3,7,8-TCDD also serves as the surrogate for the coplanar PCB congeners. To calculate the noncancer inhalation and oral RELs for individual PCB congeners shown in Tables 6.3 and 6.4, respectively, the inhalation and oral RELs for 2,3,7,8-TCDD were divided by the PCB congener TEFs in Table E-1. If only total PCB data are available, then the PCB slope factors for high, low and lowest risk provided in Table 7.1 can be used for cancer risk determination. The high risk potency factor is the default for unspeciated PCB mixtures.

As of February, 2015, there is no approved method that can be used to assess the noncancer hazard of an unspeciated PCB mixture. Persons preparing HRAs for the Hot Spots Program should consult with OEHHA and the local Air Pollution Control or Air Quality Management District if an assessment of the noncancer hazard for unspeciated PCB mixtures is needed.

TABLE E-1. WHO/05 TOXIC EQUIVALENCY FACTORS (TEFS)

Congener		TEF_{WHO-05}
PCDDs		
2,3,7,8-TCDD		1
1,2,3,7,8-PeCDD		1
1,2,3,4,7,8-HxCDD		0.1
1,2,3,6,7,8-HxCDD		0.1
1,2,3,7,8,9-HxCDD		0.1
1,2,3,4,6,7,8-HpCDD		0.01
1,2,3,4,6,7,8,9-OCDD		0.0003
PCDFs		
2,3,7,8-TCDF		0.1
1,2,3,7,8-PeCDF		0.03
2,3,4,7,8-PeCDF		0.3
1,2,3,4,7,8-HxCDF		0.1
1,2,3,6,7,8-HxCDF		0.1
1,2,3,7,8,9-HxCDF		0.1
2,3,4,6,7,8-HxCDF		0.1
1,2,3,4,6,7,8-HpCDF		0.01
1,2,3,4,7,8,9-HpCDF		0.01
1,2,3,4,6,7,8,9-OCDF		0.0003
PCBs (IUPAC #, Structure)		
77	3,3',4,4'-TCB	0.0001
81	3,4,4',5-TCB	0.0003
105	2,3,3',4,4'-PeCB	0.00003
114	2,3,4,4',5-PeCB	0.00003
118	2,3',4,4',5-PeCB	0.00003
123	2',3,4,4',5-PeCB	0.00003
126	3,3',4,4',5-PeCB	0.1
156	2,3,3',4,4',5-HxCB	0.00003
157	2,3,3',4,4',5'-HxCB	0.00003
167	2,3',4,4',5,5'-HxCB	0.00003
169	3,3',4,4',5,5'-HxCB	0.03
170	2,2',3,3',4,4',5-HpCB	-
180	2,2',3,4,4',5,5'-HpCB	-
189	2,3,3',4,4',5,5'-HpCB	0.00003

References

OEHHA, 2011. Technical Support Document for Cancer Potency Factors, Appendix C: Use of the Toxicity Equivalency Factor (TEFWHO 05) Scheme for Estimating Toxicity of Mixtures of Dioxin-Like Chemicals. Office of Environmental Health Hazard Assessment, Sacramento, CA. January, 2011. Available at http://www.oehha.ca.gov/air/hot_spots/pdf/AppCdioxinTEFs013111.pdf.

Van den Berg M, Birnbaum L, Denison M, De Vito M, Farland W, Feeley M, Fiedler H, Hakansson H, Hanberg A, Haws L, Rose M, Safe S, Schrenk D, Tohyama C, Tritscher A, Tuomisto J, Tysklind M, Walker N, Peterson RE. 2006. The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds. Toxicol Sci 93:223-241.

Appendix F:

Overview of the Lead Risk Assessment Procedures

F.1 Introduction

The objective of this appendix is to provide a method for estimating potential cancer and noncancer health effects due to airborne lead exposure. This appendix should facilitate the use of the *Risk Management Guidelines for New, Modified, and Existing Sources of Lead* (Lead RM Guidelines) (ARB, 2001) for analysis of lead exposure. The Lead RM Guidelines were developed by the Air Resources Board (ARB) with assistance from Office of Environmental Health Hazard Assessment (OEHHA) and Department of Health Services (DHS) in March 2001 to assist local air districts and sources of lead in making consistent risk management decisions for new, modified, and existing sources of lead.

In April 1997, the ARB identified inorganic lead as a toxic air contaminant (TAC) (ARB, 1997). Lead is unique among other TACs identified by ARB in several ways. First, infants and children are particularly susceptible to the health effects of lead, and the risk assessment is based on health effects in children. Second, the chronic noncancer effects are related to blood lead levels (BLLs) as opposed to ambient air concentrations. These BLLs reflect current and past exposure from a number of sources; air emissions may only be a small part of the total exposure. Third, based on recommendations of the OEHHA and the Scientific Review Panel on Toxic Air Contaminants (SRP), the ARB did not identify a threshold level for chronic noncancer health effects due to lead exposure. Threshold levels are levels below which no adverse health effects are expected to occur. Since acute, 8-hour or chronic Reference Exposure Levels (RELs) are based on threshold levels, none were developed for lead. Thus, a hazard index approach is not used for lead. Instead, air concentrations are compared to defined air lead levels associated with specified percentages of children with BLL $\geq$ 10 µg/dL. Acceptable risk is based on minimizing the number of children at or above a BLL of 10 µg/dL.

F.2 Methods for Estimation of Health Risk Effects

Methods for estimating site-specific noncancer and cancer potential health impacts from exposure to lead emissions are given in the Lead RM Guidelines. The noncancer health effects pose greater public health significance than the cancer health effects. Minimizing noncancer health effects of lead will therefore also minimize cancer health effects.

Chronic noncancer health risks are estimated based on neurodevelopmental health risks to children and would also be protective of adults. These health effects can be evaluated using a tiered approach based on blood lead level distribution in the population.

Potential multipathway cancer risks are estimated following the procedures in Chapters 5 and 8 of this document. These procedures require summing individual cancer risk from each carcinogen to estimate the total facility cancer risk.

In advance of performing a health risk assessment (HRA), it is recommended that the Air Pollution Control or Air Quality Management District (District) and the stationary source of lead air emissions reach a consensus on the HRA approach for estimating chronic noncancer and cancer health risks. See Chapter 9 for an outline of a modeling protocol.

F.2.1 Tiered Approach for Estimating Noncancer Risks due to Lead Exposure

The Lead Risk Management Guidelines provide three tiers of analysis to determine baseline BLL distributions for estimating risk. Although there is a simple risk management option provided in the Lead RM Guidelines, in a risk assessment for the Air Toxics Hot Spots program one of the following tiers must be used to report estimates of the percent of children estimated to be above 10 μg/dL blood lead. The tiered approach is based on an assessment of neurodevelopmental risk, with the BLL distribution in the population as the most significant factor. The BLL distribution consists of two components: 1) the baseline BLL distribution due to all sources of exposure; and 2) the exposure due to emissions from a facility.

Tier I is a default approach that requires minimal site-specific information on concentrations of lead in environmental media other than air. Tier I uses two default BLL distributions, one for a high exposure scenario and one for an average exposure scenario. The exposure scenario is determined using the median age of the homes in the census tract and the ratio of area income to the poverty level. The default baseline BLL distribution for each of the exposure scenarios is based on a review of neighborhood and community blood lead studies. The assessor determines the 30-day average lead concentration due to the facility averaged over the 1 square kilometer area centered on the Maximum Offsite Concentration (MOC). The percentage of children with BLLs greater than or equal to 10 micrograms per deciliter ($\geq$ 10 μg/dL) is determined using Table F-1 (also found on page 17 in the Lead RM Guidelines), the air lead concentration, and the determined exposure scenario. The 10 μg/dL threshold level has been identified by the Centers for Disease Control and Prevention (CDC) as a level where potential health effects may occur. The public health goal of management practices should be to implement procedures/practices to prevent BLLs at or above this level. The estimated percentage of children with BLLs $\geq$ 10 μg/dL is then used with risk management levels given in Chapter III, Section D of the Lead RM Guidelines to assist in making risk management decisions.

TABLE F-1 PERCENTAGE OF CHILDREN WITH BLOOD LEAD LEVELS ≥ 10 μG/DL FOR VARIOUS AIR LEAD CONCENTRATIONS AT TWO EXPOSURE SCENARIOS

Air Lead Concentration in the Maximum Exposure Area (30-day average) [μg/m^3]	Percent ≥ 10 μg/dL	
	High Exposure Scenario	Average Exposure Scenario
Baseline*	5.1	1.2
0.02	5.4	1.4
0.06	6.1	1.7
0.10	6.8	2.2
0.20	8.9	3.4
0.25	9.8	4.1
0.50	15.9	8.9
0.75	22.4	15.4
1.0	29.1	23.0
1.5	42.5	39.0

* The baseline represents BLLs due to lead in soil, dust, water, food, and background air lead concentrations.

Tier II requires the development of site-specific baseline BLL distributions within the impacted population using site-specific estimates of lead levels in environmental media, including soil, dust, water, and/or food, using the U.S. EPA Integrated Exposure Uptake Biokinetic (IEUBK) model. The IEUBK model calculates the probability of an individual exceeding a specific BLL based on site-specific information. The aggregate of the individual BLLs is used to estimate the neurodevelopmental risk in the maximum exposure area. A detailed discussion of this tier is beyond the scope of this overview; see Appendix D in the Lead RM Guidelines for a discussion of the IEUBK model and its use.

Tier III involves actual blood lead sampling of the population impacted by the facility to define the baseline BLLs. In Tier III, the facility is responsible for conducting BLL testing to establish a site-specific BLL distribution. The Lead RM Guidelines recommend the neurodevelopmental risk be calculated as the probability of children in an affected exposure area having a BLL ≥ 10 μg/dL using the results of the blood lead sampling. It is highly unlikely that this option would be used due to the cost incurred and the fact that the sampled population must consent to the sampling and an appropriate sampling strategy must be developed to adequately characterize the blood lead levels of the impacted population.

For further information on the tiered approach using the Tier I, Tier II, or Tier III, please see Chapter II of the *ARB Risk Management Guidelines for New, Modified, and Existing Sources of Lead* (ARB, 2001). This document can be downloaded from the ARB web site at http://www.arb.ca.gov/toxics/lead/lead.htm or can be requested by calling (916) 323-4327.

F.2.2 Methods for Estimating Potential Cancer Risks due to Lead

While lead has a unique noncancer assessment methodology, the determination of potential multipathway cancer risk is the same as other carcinogens. Chapters 5, 7, and 8, and Appendices I and L provide all the needed information for calculating potential cancer risk. The health risk assessment should report the multipathway cancer risks from lead emissions.

Chapter III in the Lead RM Guidelines provides methods for determining risk management of lead exposure, using the results from the cancer risk calculation, and the local District's defined significance levels.

F.3 References

ARB, 1997. Proposed Identification Inorganic Lead as a Toxic Air Contaminant, Parts A, B, C. California Air Resources Board. April, 1997.

ARB, 2001. ARB Risk Management Guidelines for New, Modified, and Existing Sources of Lead. California Air Resources Board. March 2001