

New Jersey Department of Environmental Protection
Division of Air Quality
Bureau of Evaluation and Planning - Air Quality Evaluation Section

TOXICITY VALUES FOR INHALATION EXPOSURE
April 2023

H A P	CAS No.	Air Toxic	Unit Risk Factor (URF)	Bench- mark Concen- tration	Cancer Class		URF Source	Refer- ence Concen- tration (RfC)	RfC Source	Short- Term RfC	Aver- aging Time	Short- Term RfC Source	Comment	
			[(ug/m ³)]	(ug/m ³)	USEPA	IARC		(ug/m ³)		(ug/m ³)	(Hr)			
1	**	208968	Acenaphthalene	1.1E-06	9.1E-01			N&L					PAH	
2	**	83329	Acenaphthene	1.1E-06	9.1E-01		3	N&L					PAH	
3	*	75070	Acetaldehyde	2.2E-06	4.5E-01	B2	2B	IRIS	9	IRIS	470	1	Cal 14	
4	*	60355	Acetamide	2.0E-05	5.0E-02		2B	Cal 11						
5		67641	Acetone						31000	ATSDR	62000	24	ATSDR	See Notes 1 & 2.
6		75865	Acetone cyanohydrin					2	USEPA 14					
7	*	75058	Acetonitrile					60	IRIS					
8	*	98862	Acetophenone					0.02	HEAST 92					
9	*	53963	Acetylaminofluorene (2-)	1.3E-03	7.7E-04			Cal 15b						
10	*	107028	Acrolein					0.02	IRIS	2.5	1	Cal 14		
11	*	79061	Acrylamide	1.0E-04	1.0E-02	B2	2A	IRIS	6	IRIS				
12	*	79107	Acrylic acid					1	IRIS	6000	1	Cal 14		
13	*	107131	Acrylonitrile	6.8E-05	1.5E-02	B1	2B	IRIS	2	IRIS				
14		309002	Aldrin	4.9E-03	2.0E-04	B2	3	IRIS						
15	*	107051	Allyl chloride	6.0E-06	1.7E-01	C	3	Cal 11	1	IRIS				
16		117793	Aminoanthraquinone (2-)	9.4E-06	1.1E-01		3	Cal 11						
17	*	92671	Aminobiphenyl (4-)	6.0E-03	1.7E-04		1	Cal 15b						
18		7664417	Ammonia					100	IRIS	3200	1	Cal 14		
19	*	62533	Aniline	1.6E-06	6.3E-01	B2	3	Cal 11	1	IRIS	3000	1	AEGL	See Note 3.
20	*	90040	Anisidine (o-)	4.0E-05	2.5E-02		2B	Cal 15b						
21	**	120127	Anthracene	1.1E-05	9.1E-02		3	N&L					PAH	
22	**	1309644	Antimony trioxide					0.2	IRIS					
23		140578	Aramite	7.1E-06	1.4E-01	B2	2B	IRIS						
24	*		Arsenic (inorganic)	4.3E-03	2.3E-04	A	1	IRIS	0.015	Cal 14	0.2	1	Cal 14	RfC does not apply to arsine.
25	**	7784421	Arsine					0.05	IRIS					
26	*	1332214	Asbestos	7.7E-03	1.3E-04	A	1	IRIS					See Note 4.	
27		103333	Azobenzene	3.1E-05	3.2E-02	B2	3	IRIS						
28			Barium							0.5	24	HEAST 97		
29	**	56553	Benz(a)anthracene	1.1E-04	9.1E-03	B2	2B	Cal 11					PAH	
30	*	71432	Benzene	7.8E-06	1.3E-01	A	1	IRIS	3	Cal 14	27	1	Cal 14	
31	*	92875	Benzidine	6.7E-02	1.5E-05	A	1	IRIS						
32	**	50328	Benzo(a)pyrene	6.0E-04	1.7E-03	A	1	IRIS	0.002	IRIS			See Note 5.	
33	**	205992	Benzo(b)fluoranthene	1.1E-04	9.1E-03	B2	2B	Cal 11					PAH	
34	**	191242	Benzo(g,h,i)perylene	1.1E-05	9.1E-02		3	N&L					PAH	
35	**	205823	Benzo(j)fluoranthene	1.1E-04	9.1E-03		2B	Cal 11					PAH	
36	**	207089	Benzo(k)fluoranthene	1.1E-04	9.1E-03	B2	2B	Cal 11					PAH	
37	*	98077	Benzotrifluoride	3.7E-03	2.7E-04	B2	2A	IRIS (oral)					URF is based on converted oral	
38	*	100447	Benzyl chloride	4.9E-05	2.0E-02	B2	2A	Cal 11			240	1	Cal 14	Chloromethylbenzene
39	*		Beryllium	2.4E-03	4.2E-04	B2	1	IRIS	0.02	IRIS				
40	*	92524	Biphenyl (1,1-)					0.4	USEPA 14					
41		108601	Bis(2-chloroisopropyl)ether	1.0E-05	1.0E-01	C	3	HEAST 97						
42	*	117817	Bis(2-ethylhexyl)phthalate	2.4E-06	4.2E-01	B2	2B	Cal 11					DEHP, diethylhexyl phthalate	
43	*	542881	Bis(chloromethyl)ether	6.2E-02	1.6E-05	A	1	IRIS						
44		7440428	Boron (elemental)					20	HEAST 97					
45		7637072	Boron trifluoride					0.7	HEAST 97					
46		74975	Bromochloromethane					40	USEPA 14				Chlorobromomethane	
47		75274	Bromodichloromethane	3.7E-05	2.7E-02		2B	Cal 15b						
48	*	75252	Bromoform	1.1E-06	9.1E-01	B2	3	IRIS						
49		106945	Bromopropane (1-)					101	ATSDR	5030	24	ATSDR	n-Propyl bromide	
50	*	106990	Butadiene (1,3-)	3.0E-05	3.3E-02	B2	1	IRIS	2	IRIS	660	1	Cal 14	
51	*		Cadmium	4.2E-03	2.4E-04	B1	1	Cal 11	0.02	Cal 14				
52		105602	Caprolactam					2.2	Cal 14	50	1	Cal 14		
53	*	133062	Captan	6.6E-07	1.5E+00	B2	3	Cal 15b						
54	*	75150	Carbon disulfide					700	IRIS	6200	1	Cal 14		
55		630080	Carbon monoxide							23000	1	Cal 14		
56	*	56235	Carbon tetrachloride	6.0E-06	1.7E-01	B2	2B	IRIS	40	Cal 14	1900	1	Cal 14	
57	*	463581	Carbonyl sulfide					10	Cal 18	660	1	Cal 18		
58	*	57749	Chlordane (technical)	1.0E-04	1.0E-02	B2	2B	IRIS	0.02	ATSDR			Also CAS 12789036	
59		108171262	Chlorinated paraffins	2.0E-05	5.0E-02		2B	Cal 11						
60	*	7782505	Chlorine					0.2	Cal 14	210	1	Cal 14		
61		10049044	Chlorine dioxide					0.2	IRIS	28	8	NJDEP 02a		
62		75683	Chloro-1,1-difluoroethane (1-)					50000	IRIS				HCFC-142b	
63	*	532274	Chloroacetophenone (2-)					0.03	IRIS					
64	*	108907	Chlorobenzene					1000	Cal 14					
65	*	510156	Chlorobenzilate	3.1E-05	3.2E-02	B2	3	Cal 15b					Ethyl-4,4'-dichlorobenzilate	
66		75456	Chlorodifluoromethane					50000	IRIS				HCFC-22	
67	*	67663	Chloroform	2.3E-05	4.3E-02	B2	2B	IRIS	300	Cal 14	150	1	Cal 14	
68	*	107302	Chloromethyl methyl ether	6.9E-04	1.4E-03	A	1	Cal 15b						
69		95830	Chloro-o-phenylenediamine (4-)	4.6E-06	2.2E-01		2B	Cal 11						
70		95692	Chloro-o-toluidine (p-)	7.7E-05	1.3E-02		2A	Cal 11						
71		76062	Chloropicrin					0.4	Cal 14	29	1	Cal 14		
72	*	126998	Chloroprene	5.0E-04	2.0E-03		2B	IRIS	20	IRIS			2-Chloro-1,3-butadiene	
73		75296	Chloropropane (2-)					100	HEAST 97					
74	**		Chromic acid mists (Cr VI)					0.008	IRIS					

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				[(ug/m ³)]	(ug/m ³)	USEPA	IARC		(ug/m ³)		(ug/m ³)	(Hr)		
75	**		Chromium VI	1.2E-02	8.3E-05	A	1	IRIS						
76	**		Chromium VI dissolved aerosols						0.008	IRIS				
77	**		Chromium VI particulates						0.1	IRIS				
78	**	218019	Chrysene	1.1E-05	9.1E-02	B2	2B	Cal 11						PAH
79	**		Cobalt	7.7E-03	1.3E-04		2B	Cal 20	0.006	USEPA 14				
80	*	8007452	Coke oven emissions	6.2E-04	1.6E-03	A	1	IRIS						
81			Copper and compounds								100	1	Cal 14	
82		120718	Cresidine (p-)	4.3E-05	2.3E-02		2B	Cal 11						
83	*	1319773	Cresol mixtures						600	Cal 14				
84	*	98828	Cumene				2B		400	IRIS				
85		135206	Cupferron	6.3E-05	1.6E-02			Cal 11						
86		110827	Cyclohexane								6000	24	IRIS	
87	*	72559	DDE	9.7E-05	1.0E-02	B2		Cal 15b						
88		50293	DDT	9.7E-05	1.0E-02	B2	2B	IRIS						
89		615054	Diaminoanisole (2,4-)	6.6E-06	1.5E-01		2B	Cal 11						
90	**	226368	Dibenz(a,h)acridene	1.1E-04	9.1E-03		2B	Cal 11						PAH
91	**	53703	Dibenz(a,h)anthracene	1.2E-03	8.3E-04	B2	2A	Cal 11						PAH
92	**	224420	Dibenz(a,j)acridene	1.1E-04	9.1E-03		2A	Cal 11						PAH
93	**	192654	Dibenzo(a,e)pyrene	1.1E-03	9.1E-04		3	Cal 11						PAH
94	**	189640	Dibenzo(a,h)pyrene	1.1E-02	9.1E-05		2B	Cal 11						PAH
95	**	189559	Dibenzo(a,i)pyrene	1.1E-02	9.1E-05		2B	Cal 11						PAH
96	**	191300	Dibenzo(a,l)pyrene	1.1E-02	9.1E-05		2A	Cal 11						PAH
97	**	194592	Dibenzo(c,g)carbazole (7H-)	1.1E-03	9.1E-04		2B	Cal 11						PAH
98		124-48-1	Dibromochloromethane	2.7E-05	3.7E-02		3	USEPA 14						Chlorodibromomethane
99	*	96128	Dibromo-3-chloropropane (1,2-)	2.0E-03	5.0E-04	B2	2B	Cal 11	0.2	IRIS				
100		764410	Dichloro-2-butene (1,4-)	4.2E-03	2.4E-04	B2		USEPA 14						
101		95501	Dichlorobenzene (1,2-)						200	HEAST 97				o-Dichlorobenzene
102	*	106467	Dichlorobenzene (1,4-)	1.1E-05	9.1E-02	C	2B	Cal 11	800	IRIS				p-Dichlorobenzene
103	*	91941	Dichlorobenzidine (3,3'-)	3.4E-04	2.9E-03	B2	2B	Cal 11						
104		75718	Dichlorodifluoromethane						100	USEPA 14				
105	*	111444	Dichloroethyl ether	3.3E-04	3.0E-03	B2	3	IRIS						Bis(2-chloroethyl)ether
106	*	542756	Dichloropropene (1,3-)	4.0E-06	2.5E-01	B2	2B	IRIS	20	IRIS				
107	*	62737	Dichlorvos	8.3E-05	1.2E-02	B2	2B	Cal 15b	0.5	IRIS				
108		77736	Dicyclopentadiene						0.3	USEPA 14				
109		60571	Dieldrin	4.6E-03	2.2E-04	B2	3	IRIS						
110			Diesel engine emissions				1		5	IRIS				
111			Diesel exhaust particulate	3.0E-04	3.3E-03		1	Cal 11						
112	*	111422	Diethanolamine				2B		3	Cal 14				
113	**	112345	Diethylene glycol monobutyl ether						0.1	USEPA 14				
114		75376	Difluoroethane (1,1-)						40000	IRIS				HCFC-152a
115	*	77781	Dimethyl sulfate	4.0E-03	2.5E-04	B2	2A	Cal 93						
116	*	60117	Dimethylaminoazobenzene (4-)	1.3E-03	7.7E-04		2B	Cal 11						
117	**	57976	Dimethylbenzanthracene (7,12-)	7.1E-02	1.4E-05			Cal 11						PAH
118	*	79447	Dimethylcarbamyl chloride	3.7E-03	2.7E-04		2A	Cal 15b						
119	*	68122	Dimethylformamide (N,N-)						30	IRIS				
120	*	57147	Dimethylhydrazine (1,1-)						0.002	USEPA 14				
121		540738	Dimethylhydrazine (1,2-)	1.6E-01	6.3E-06	B2	2A	Cal 15b						
122	**	42397648	Dinitropyrene (1,6-)	1.1E-02	9.1E-05		2B	Cal 11						PAH
123	**	42397659	Dinitropyrene (1,8-)	1.1E-03	9.1E-04		2B	Cal 11						PAH
124	*	121142	Dinitrotoluene (2,4-)	8.9E-05	1.1E-02	B2	2B	Cal 11						
125	*	123911	Dioxane (1,4-)	5.0E-06	2.0E-01	B2	2B	IRIS	30	IRIS	3000	1	Cal 14	
126	*	122667	Diphenylhydrazine (1,2-)	2.2E-04	4.5E-03	B2		IRIS						
127	*	106898	Epichlorohydrin	1.2E-06	8.3E-01	B2	2A	IRIS	1	IRIS	1300	1	Cal 14	
128	*	106887	Epoxybutane (1,2-)						20	IRIS				
129	*	140885	Ethyl acrylate			B2	2B		8	USEPA 14				
130	*	51796	Ethyl carbamate	2.9E-04	3.4E-03		2B	Cal 11						Urethane
131	*	75003	Ethyl chloride								10000	24	IRIS	Chloroethane
132	*	100414	Ethylbenzene	2.5E-06	4.0E-01		2B	Cal 11			1000	24	IRIS	
133	*	106934	Ethylene dibromide	6.0E-04	1.7E-03	B2	2A	IRIS	0.8	Cal 14				1,2-Dibromoethane
134	*	107062	Ethylene dichloride	2.6E-05	3.8E-02	B2	2B	IRIS	400	Cal 14				1,2-Dichloroethane
135	*	107211	Ethylene glycol						400	Cal 14				
136		111762	Ethylene glycol monobutyl ether						82	Cal 18	4700	1	Cal 18	EGBE; 2-Butoxyethanol
137	**	110805	Ethylene glycol monoethyl ether						200	IRIS	370	1	Cal 14	2-Ethoxyethanol
138	**	111159	Ethylene glycol monoethyl ether acetate						300	Cal 14	140	1	Cal 14	
139	**	109864	Ethylene glycol monomethyl ether						20	IRIS	93	1	Cal 14	2-Methoxyethanol
140	**	110496	Ethylene glycol monomethyl ether acetate						90	Cal 14				
141	*	75218	Ethylene oxide	5.0E-03	2.0E-04	A	1	IRIS	30	Cal 14	42	1	USEPA 92	
142	*	96457	Ethylene thiourea	1.3E-05	7.7E-02	B2	3	Cal 11						
143	*	151564	Ethyleneimine	1.9E-02	5.3E-05		2B	Cal 15b						Aziridine
144	*	75343	Ethylidene dichloride	1.6E-06	6.3E-01	C		Cal 11	500	HEAST 97				1,1-Dichloroethane
145	**	206440	Fluoranthene	1.1E-06	9.1E-01		3	N&L						PAH
146	**	86737	Fluorene	1.1E-06	9.1E-01		3	N&L						PAH
147		16984488	Fluoride						13	Cal 14				
148	*	50000	Formaldehyde	1.3E-05	7.7E-02	A	1	IRIS	9	Cal 14	55	1	Cal 14	

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				[(ug/m³)]	(ug/m³)	USEPA	IARC		(ug/m³)		(ug/m³)	(Hr)		
149		98011	Furfural						50	HEAST 97				
150			Gasoline vapors/exhaust	1.0E-06	1.0E+00		1	NE 89	15	NE 89				
151		111308	Glutaraldehyde						0.08	Cal 14	4.1	24	ATSDR	
152		765344	Glycidaldehyde						1	HEAST 97				
153	*	76448	Heptachlor	1.3E-03	7.7E-04	B2	2B	IRIS						
154		1024573	Heptachlor epoxide	2.6E-03	3.8E-04	B2	2B	IRIS						
155	*	118741	Hexachlorobenzene	4.6E-04	2.2E-03	B2	2B	IRIS						
156	*	87683	Hexachlorobutadiene	2.2E-05	4.5E-02	C	3	IRIS						
157	**	319846	Hexachlorocyclohexane (alpha-)	1.8E-03	5.6E-04	B2	2B	IRIS						
158	**	319857	Hexachlorocyclohexane (beta-)	5.3E-04	1.9E-03	C	2B	IRIS						
159	*	58899	Hexachlorocyclohexane (gamma-)	3.1E-04	3.2E-03		2B	Cal 11						Lindane
160	**	608731	Hexachlorocyclohexanes	5.1E-04	2.0E-03	B2	2B	IRIS						Technical grade
161	*	77474	Hexachlorocyclopentadiene						0.2	IRIS				
162		19408743	Hexachlorodibenzo-p-dioxin, mixture	1.3E+00	7.7E-07	B2	3	IRIS						
163	*	67721	Hexachloroethane	1.1E-05	9.0E-02	C	2B	Cal 15b	30	IRIS				
164	*	822060	Hexamethylene diisocyanate						0.03	Cal 20	0.3	1	Cal 20	
165	*	110543	Hexane (n-)						700	IRIS				
166	*	302012	Hydrazine	4.9E-03	2.0E-04	B2	2B	IRIS	0.2	Cal 14	10	1	AEGL	See Note 3.
167		10034932	Hydrazine sulfate	4.9E-03	2.0E-04	B2		IRIS						
168	*	7647010	Hydrogen chloride						20	IRIS	2100	1	Cal 14	Hydrochloric acid
169	**	74908	Hydrogen cyanide						0.8	IRIS	340	1	Cal 14	
170	*	7664393	Hydrogen fluoride						14	Cal 14	240	1	Cal 14	
171	**	7783075	Hydrogen selenide								5	1	Cal 14	Selenium compound
172		7783064	Hydrogen sulfide						2	IRIS	98	24	ATSDR	
173	**	193395	Indeno(1,2,3-c,d)pyrene	1.1E-04	9.1E-03	B2	2B	Cal 11						PAH
174	*	78591	Isophorone						2000	Cal 09				
175		67630	Isopropanol								3200	1	Cal 14	
176	*		Lead	1.2E-05	8.3E-02	B2	2B	Cal 11			0.1	24	NJDEP 02b	
177	*	108316	Maleic anhydride						0.7	Cal 14				
178	*		Manganese and compounds						0.05	IRIS	0.17	8	Cal 14	
179	*		Mercury (elemental)						0.3	IRIS				
180	*	7439976	Mercury (inorganic)						0.03	Cal 14	0.6	1	Cal 14	
181		126987	Methacrylonitrile						0.7	HEAST 97				
182	*	67561	Methanol						4000	Cal 14	28000	1	Cal 14	
183	*	74839	Methyl bromide						5	IRIS	31000	1	NJDEP 22	Bromomethane
184	*	74873	Methyl chloride	1.8E-06	5.6E-01		3	HEAST 97	90	IRIS				Chloromethane
185	*	71556	Methyl chloroform						1000	Cal 14	9000	1	IRIS	1,1,1-Trichloroethane
186		78933	Methyl ethyl ketone						5000	IRIS	13000	1	Cal 14	MEK
187	*	108101	Methyl isobutyl ketone				2B				3000	24	IRIS	MIBK
188	*	624839	Methyl isocyanate						1	Cal 14				
189	*	80626	Methyl methacrylate						700	IRIS				
190		25013154	Methyl styrene (mixed isomers)						40	HEAST 97				
191	*	1634044	Methyl tert-butyl ether	2.6E-07	3.8E+00		3	Cal 11	3000	IRIS				MTBE
192	**	56495	Methylcholanthrene (3-)	6.3E-03	1.6E-04			Cal 11						PAH
193	**	3697243	Methylchrysene (5-)	1.1E-03	9.1E-04		2B	Cal 11						PAH
194		108872	Methylcyclohexane						3000	HEAST 97				
195	*	101144	Methylene bis(2-chloroaniline) (4,4-)	4.3E-04	2.3E-03	B2	1	Cal 11						
196	*	75092	Methylene chloride	1.3E-08	7.7E+01	B2	2A	IRIS	600	IRIS	14000	1	Cal 14	Dichloromethane
197	*	101779	Methylenedianiline (4,4'-)	4.6E-04	2.2E-03		2B	Cal 11	20	Cal 14				
198	*	101688	Methylenediphenyl diisocyanate (4,4'-)						1	ATSDR	12	1	Cal 18	See Note 1.
199	*	60344	Methylhydrazine	1.0E-03	1.0E-03			USEPA 14	0.02	USEPA 14				
200	**	91576	Methylnaphthalene (2-)	1.1E-06	9.1E-01			N&L						PAH
201		90948	Michler's ketone	2.5E-04	4.0E-03		2B	Cal 11						
202	*		Mineral fibers (<1% free silica)						24	Cal 05				See Note 6.
203	**	91203	Naphthalene	3.4E-05	2.9E-02	C	2B	Cal 11	3	IRIS				PAH
204	*		Nickel and compounds	4.8E-04	2.1E-03	A	1	IRIS	0.014	Cal 14	0.2	1	Cal 14	RfC does not apply to nickel oxide.
205	**	1313991	Nickel oxide						0.02	Cal 14				
206	**		Nickel refinery dust	2.4E-04	4.2E-03	A	1	IRIS						
207	**		Nickel soluble salts						0.2	TERA 99				See Note 7.
208	**	12035722	Nickel subsulfide	4.8E-04	2.1E-03	A	1	IRIS						
209		7697372	Nitric acid								86	1	Cal 14	
210	**	602879	Nitroacenaphthene (5-)	3.7E-05	2.7E-02		2B	Cal 11						PAH
211		88744	Nitroaniline (o-)						0.05	USEPA 14				2-Nitroaniline
212	*	98953	Nitrobenzene	4.0E-05	2.5E-02		2B	IRIS	9	IRIS				
213	**	7496028	Nitrochrysene (6-)	1.1E-02	9.1E-05		2A	Cal 11						PAH
214	**	607578	Nitrofluorene (2-)	1.1E-05	9.1E-02		2B	Cal 11						PAH
215		10102440	Nitrogen dioxide								470	1	Cal 14	
216	*	79469	Nitropropane (2-)	2.7E-03	3.7E-04	B2	2B	HEAST 97	20	IRIS				
217	**	5522430	Nitropyrene (1-)	1.1E-04	9.1E-03		2A	Cal 11						PAH
218	**	57835924	Nitropyrene (4-)	1.1E-04	9.1E-03		2B	Cal 11						PAH
219		55185	Nitrosodiethylamine (N-)	4.3E-02	2.3E-05	B2	2A	IRIS						
220	*	62759	Nitrosodimethylamine (N-)	1.4E-02	7.1E-05	B2	2A	IRIS						
221		924163	Nitrosodi-n-butylamine (N-)	1.6E-03	6.3E-04	B2	2B	IRIS						

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	H A P	CAS No.	Air Toxic	Unit Risk Factor (URF)	Bench- mark Concen- tration	Cancer Class		URF Source	Refer- ence Concen- tration (RfC)	RfC Source	Short- Term RfC	Aver- aging Time	Short- Term RfC Source	Comment
				[(ug/m ³)]	(ug/m ³)	USEPA	IARC		(ug/m ³)		(ug/m ³)	(Hr)		
222		621647	Nitrosodi-n-propylamine (N-)	2.0E-03	5.0E-04	B2	2B	Cal 11						
223		86306	Nitrosodiphenylamine (N-)	2.6E-06	3.8E-01	B2	3	Cal 11						
224		156105	Nitrosodiphenylamine (p-)	6.3E-06	1.6E-01		3	Cal 11						
225		10595956	Nitrosomethylethylamine (N-)	6.3E-03	1.6E-04	B2	2B	Cal 11						
226	*	59892	Nitrosomorpholine (N-)	1.9E-03	5.3E-04		2B	Cal 11						
227		759739	Nitroso-n-ethylurea (N-)	7.7E-03	1.3E-04		2A	Cal 15b						
228	*	684935	Nitroso-n-methylurea (N-)	3.4E-02	2.9E-05		2A	Cal 15b						
229		100754	Nitrosopiperidine (N-)	2.7E-03	3.7E-04		2B	Cal 11						
230		930552	Nitrosopyrrolidine (N-)	6.1E-04	1.6E-03	B2	2B	IRIS						
231		10028156	Ozone								180	1	Cal 14	
232	*	87865	Pentachlorophenol	5.1E-06	2.0E-01	B2	2B	Cal 11						
233	**	85018	Phenanthrene	1.1E-06	9.1E-01		3	N&L						PAH
234	*	108952	Phenol						200	Cal 14	5800	1	Cal 14	
235	*	75445	Phosgene						0.3	IRIS	4	1	Cal 14	
236	*	7803512	Phosphine						0.3	IRIS	70	24	Cal 14p	
237	*	7664382	Phosphoric acid						10	IRIS				
238	*		Phosphorus (white)						0.07	Cal 05				
239	*	85449	Phthalic anhydride						20	Cal 14				
240	*	1336363	Polychlorinated biphenyls	1.0E-04	1.0E-02	B2	2A	IRIS						
241		7758012	Potassium bromate	1.4E-04	7.1E-03		2B	Cal 11						
242	*	1120714	Propane sultone (1,3-)	6.9E-04	1.4E-03		2B	Cal 11						
243	*	57578	Propiolactone (beta-)	4.0E-03	2.5E-04		2B	Cal 15b						
244	*	123386	Propionaldehyde						8	IRIS				
245		115071	Propylene						3000	Cal 14				
246	*	78875	Propylene dichloride	1.0E-05	1.0E-01	B2	3	Cal 15b	4	IRIS				1,2-Dichloropropane
247	*	107982	Propylene glycol monomethyl ether						2000	IRIS				
248	*	75569	Propylene oxide	3.7E-06	2.7E-01	B2	2B	IRIS	30	IRIS	3100	1	Cal 14	
249	**	129000	Pyrene	1.1E-06	9.1E-01		3	N&L						PAH
250	*		Selenium and compounds						20	Cal 14				RfC is not for hydrogen selenide.
251		7631869	Silica (crystalline, respirable)						3	Cal 14				
252		1310732	Sodium hydroxide								8	1	Cal 14	
253	*	100425	Styrene	5.7E-07	1.8E+00	B2	2B	HEAST 91	1000	IRIS	21000	1	Cal 14	
254	*	96093	Styrene oxide	4.6E-05	2.2E-02		2A	Cal 15b						
255			Sulfates								120	1	Cal 14	
256		7446095	Sulfur dioxide								660	1	Cal 14	
257		7664939	Sulfuric acid						1	Cal 14	120	1	Cal 14	
258		2699798	Sulfuryl fluoride						150	CalEPA	4170	24	USEPA	see Note 9
259	*	1746016	Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	3.8E+01	2.6E-08	B2	1	Cal 11	4.E-05	Cal 15a				Dioxin; see Note 8.
260		630206	Tetrachloroethane (1,1,1,2-)	7.4E-06	1.4E-01	C	2B	IRIS						
261	*	79345	Tetrachloroethane (1,1,2,2-)	5.8E-05	1.7E-02	C	2B	Cal 11						
262	*	127184	Tetrachloroethylene	6.1E-06	1.6E-01	B2	2A	Cal 18	40	ATSDR	40	24	ATSDR	Perchloroethylene; Notes 1 & 2.
263		811972	Tetrafluoroethane (1,1,1,2-)						80000	IRIS				
264		109999	Tetrahydrofuran						2000	IRIS				
265		62555	Thioacetamide	1.7E-03	5.9E-04		2B	Cal 11						
266	*	7550450	Titanium tetrachloride						0.1	ATSDR				See Note 1.
267	*	108883	Toluene						420	Cal 20	5000	1	Cal 20	
268	*	584849	Toluene diisocyanate (2,4-)	1.1E-05	9.1E-02		2B	Cal 11	0.02	ATSDR	0.07	24	ATSDR	See Notes 1 & 2.
269	*	26471625	Toluene diisocyanate (2,4-/2,6-)	1.1E-05	9.1E-02		2B	Cal 15a	0.02	ATSDR	0.07	24	ATSDR	Mixture; see Notes 1 & 2.
270		91087	Toluene diisocyanate (2,6-)	1.1E-05	9.1E-02		2B	Cal 11	0.02	ATSDR	0.07	24	ATSDR	See Notes 1 & 2.
271	*	95807	Toluene-2,4-diamine	1.1E-03	9.1E-04	B2	2B	Cal 11						2,4-Diaminotoluene
272	*	95534	Toluidine (o-)	5.1E-05	2.0E-02		1	Cal 15b						
273	*	8001352	Toxaphene	3.2E-04	3.1E-03	B2	2B	IRIS						
274		76131	Trichloro-1,2,2-trifluoroethane (1,1,2-)						30000	HEAST 97				Freon 113
275	*	120821	Trichlorobenzene (1,2,4-)						2	USEPA 14				
276	*	79005	Trichloroethane (1,1,2-)	1.6E-05	6.3E-02	C	3	IRIS			200	24	ATSDR	See Note 2.
277	*	79016	Trichloroethylene	4.8E-06	2.0E-01	A	1	IRIS	2	ATSDR	2	24	IRIS	See Note 1.
278		75694	Trichlorofluoromethane						700	HEAST 97				Freon 11
279	*	88062	Trichlorophenol (2,4,6-)	3.1E-06	3.2E-01	B2	2B	IRIS						
280	*	121448	Triethylamine						7	IRIS	2800	1	Cal 14	
281	*	1582098	Trifluralin	2.2E-06	4.5E-01	C	3	IRIS (oral)						URF is based on converted oral
282		526738	Trimethylbenzene (1,2,3-)						60	IRIS				
283		95636	Trimethylbenzene (1,2,4-)						60	IRIS				
284		108678	Trimethylbenzene (1,3,5-)						60	IRIS				
285		25551137	Trimethylbenzene (1,2,3-/1,2,4-/1,3,5-)						60	IRIS				
286		7440622	Vanadium						0.1	ATSDR	0.8	24	ATSDR	See Notes 1 & 2.
287		1314621	Vanadium pentoxide								30	1	Cal 14	
288	*	108054	Vinyl acetate						200	IRIS				
289	*	593602	Vinyl bromide	3.2E-05	3.1E-02	B2	2A	HEAST 97	3	IRIS				Bromoethene
290	*	75014	Vinyl chloride	8.8E-06	1.1E-01	A	1	IRIS	100	IRIS	180000	1	Cal 14	
291	*	75354	Vinylidene chloride						200	IRIS				1,1-Dichloroethylene
292	*		Xylene (m-, o-, p-, or mixed)						100	IRIS	22000	1	Cal 14	

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HAP – Asterisk (*) indicates that this chemical is on the 1990 Clean Air Act Amendments list of hazardous air pollutants (HAPs).
Double asterisk (**) indicates that this chemical is part of a group listed in the 1990 Clean Air Act Amendments list of hazardous air pollutants (HAPs).

CAS No. - Chemical Abstract Service identification number.

Unit Risk Factor - The unit risk factor (URF) is the estimated excess probability of contracting cancer as the result of continuous exposure over a 70-year lifetime to an ambient concentration of one microgram of a chemical per cubic meter of air ($\mu\text{g}/\text{m}^3$).

Benchmark Concentration - Air concentration equivalent to a one in a million cancer risk level (to calculate: $1\text{E-}6/\text{URF}$).

Cancer Class - Two sources of carcinogenicity classifications are given here (USEPA and IARC):

USEPA classification of carcinogenicity:

Group A	Human carcinogen; sufficient evidence of carcinogenicity in humans.
Group B1	Probable human carcinogen; limited evidence of carcinogenicity in humans.
Group B2	Probable human carcinogen; sufficient evidence of carcinogenicity in animals with inadequate evidence in humans.
Group C	Possible human carcinogen; limited evidence of carcinogenicity in animals and inadequate human data.
Group D	Not classifiable as to human carcinogenicity; inadequate or no evidence.

IARC (International Agency for Research on Cancer) classification of carcinogenicity (www.iarc.fr)

Group 1	Carcinogenic to humans.
Group 2A	Probably carcinogenic to humans.
Group 2B	Possibly carcinogenic to humans.
Group 3	Not classifiable as to carcinogenicity in humans.
Group 4	Probably not carcinogenic to humans.

Reference Concentration – An estimate (with uncertainty spanning about an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of adverse health effects during a lifetime. Reference concentrations listed here are to be compared with long-term (maximum annual average) ambient air concentrations.

Short-Term Reference Concentration – An exposure that is not likely to cause adverse health effects in a human population, including sensitive subgroups, exposed to that concentration for the period specified, on an intermittent basis. Short-term reference concentrations are to be compared with maximum average ambient air concentrations averaged over the period given in the "RfC Averaging Time" column. 24-hour RfCs from IRIS are based on reproductive and/or developmental effects.

Sources of Toxicity Data

AEGL	Acute Exposure Guideline Levels (AEGLs) Program Chemicals, USEPA, as of May 30, 2015.
ATSDR	Agency for Toxic Substances and Disease Registry, "Minimal Risk Levels (MRLs) for Hazardous Substances", August 2022 (https://www.cdc.gov/tsp/MRLs/mrlsListing.aspx).
Cal 05	California Air Resources Board (ARB), Consolidated Table of OEHH/ARB Approved Risk Assessment Health Values, 4/25/05 version.
Cal 11	California Environmental Protection Agency (CalEPA), Air Toxics Hot Spots Program Technical Support Document for Cancer Potency Factors, Appendix A (updated 2011)
Cal 14	California Office of Environmental Health Hazard Assessment (OEHH), "All OEHH Acute, 8-hour and Chronic Reference Exposure Levels as of June 2014"
Cal 14p	CalEPA - Department of Pesticide Regulation - Phosphine Risk Characterization Document, June 13, 2014.
Cal 15a	CalEPA Consolidated Table of OEHH/ARB Approved Risk Assessment Health Values, 5/13/2015.
Cal 15b	CalEPA Toxicity Criteria Database (oehha.ca.gov/tcdb/index.asp), as of 3/27/2015.
Cal 18	CalEPA Consolidated Table of OEHH/ARB Approved Risk Assessment Health Values, 8/20/2018.
Cal 20	CalEPA Consolidated Table of OEHH/ARB Approved Risk Assessment Health Values, 10/02/2020 (https://www2.arb.ca.gov/resources/documents/consolidated-table-oehha-carb-approved-risk-assessment-health-values).
Cal 93	California Air Pollution Control Officers Association, Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, October 1993.
CalEPA	California Department of Pesticide Regulation (CalDPR), "Sulfuryl Fluoride, Final Addendum to the 2006 Risk Characterization Document Update of the Toxicology and Reference Concentrations", May 2020 (https://www.cdpr.ca.gov/docs/risk/rcd/sulfuryl-fluoride_addendum.pdf).
HEAST 91	U.S. Environmental Protection Agency (USEPA), Health Effects Assessment Summary Tables, Annual FY-1991, Jan. 1991.
HEAST 92	USEPA, Health Effects Assessment Summary Tables, Annual Update 1992, March 1992.
HEAST 97	USEPA, Health Effects Assessment Summary Tables, FY-1997 Update, July 1997.
IRIS	USEPA Integrated Risk Information System, as of May 25, 2011 (www.epa.gov/iris).
IRIS (oral)	Converted oral cancer slope factor from IRIS using the equation $\text{ug}/\text{m}^3 = [(\text{mg}/\text{kg}/\text{day})]^*(20 \text{ m}^3/\text{day})*(1/70 \text{ kg})*(1 \text{ mg}/1000 \text{ ug})$, where $20 \text{ m}^3/\text{day}$ is the inhalation rate, and 70 kg is the average adult body weight.
N&L	Nisbet, I.C.T., and P.K. LaGoy, 1992, Toxic equivalency factors for polycyclic aromatic hydrocarbons, Reg. Toxicol. Pharmacol. 16:290-300. See Table 4, page 296.
NE 89	NESCAUM Air Toxics Committee, Evaluation of the Health Effects from Exposure to Gasoline and Gasoline Vapors, August 1989.
NJDEP 02a	NJDEP Bureau of Air Quality Evaluation; "Derivation of Reference Concentrations for Use in the Hamilton Post Office Risk Assessment," 2/19/2002.
NJDEP 02b	Derived by NJDEP Bureau of Air Quality Evaluation, based on USEPA's LEAD5 Model (Lead Uptake/Biokinetic Model) Version 5.
NJDEP 22	Derived by NJDEP's Division of Science and Research, based on USEPA's (2018) Office of Chemical Safety and Pollution Prevention Draft Human Health Risk Assessment for Registration of Methyl Bromide, December 2018 (https://www.regulations.gov/document/EPA-HQ-OPP-2017-0447-0013).
TERA 99	Toxicology Excellence for Risk Assessment, Toxicological Review of Soluble Nickel Salts, March 1999.
USEPA 14	USEPA Regional Screening Level (RSL) Resident Ambient Air Table, November 2014
USEPA 85	USEPA, The Air Toxics Problem in the United States: An Analysis of Cancer Risks for Selected Pollutants, Office of Air and Radiation, Washington, D.C., 1985, EPA-450/1-85-001. See Attachment A, Summary Table.
USEPA 92	USEPA, Technical Background Document to Support Rulemaking Pursuant to the Clean Air Act Section 112(g) (draft); Office of Air Quality Planning and Standards, Research Triangle Park, NC; EPA-450/3-92-010; 10/28/92.

Notes

- 1 ATSDR values used as RfCs are "chronic" MRLs, based on an exposure duration of 365 days or longer.
- 2 ATSDR values used as short-term RfCs are "acute" MRLs, based on an exposure duration of 1 to 14 days. Here they are to be used with a 24-hour averaging time.
- 3 All values referenced "AEGL" are AEGL-1 for 1 hour, converted to ug/m^3 and divided by 10.
- 4 The unit risk factor for asbestos is given in IRIS as $2.3\text{E-}1$ (fibers/ ml)⁻¹. It has been converted based on a conversion factor of $30 \text{ ug}/\text{m}^3 = 1 \text{ fiber}/\text{cm}^3$ (Table 7-6, Asbestiform Fibers: Nonoccupational Health Risks, National Research Council, National Academy Press, Washington, D.C., 1984).
- 5 Benzo(a)pyrene may be used to evaluate total PAHs (polycyclic aromatic hydrocarbons) or POM (polycyclic organic matter), or specific PAH/POM compounds may be evaluated individually. Contact NJDEP Air Quality Evaluation (609-292-6722) for more information.
- 6 "Mineral fibers" refers to man-made fibers of glasswool, rockwool, slagwool, ceramic, & fine mineral.
- 7 The following compounds are among those considered to be "soluble nickel salts" (CAS numbers are in parentheses): Ni acetate (373-02-4); Ni acetate tetrahydrate (6018-89-9); Ni ammonium sulfate (7785-20-8); Ni carbonate (333-67-3); Ni chloride (7718-54-9); Ni chloride hexahydrate (7791-20-0); Ni fluoride (10028-18-9); Ni fluoroborate (14708-14-6); Ni formate (3349-06-2); Ni hydroxide (12054-48-7); Ni nitrate (13138-45-9); Ni sulfamate (13770-89-3); Ni sulfate (7786-81-4); Ni sulfate hexahydrate (10101-97-0); Ni sulfide (16812-54-7).
- 8 Also see separate listing for hexachlorodibenzo-p-dioxin mixture. Total dioxins and furans may all be evaluated as 2,3,7,8-TCDD, or may be separated into congeners. Toxic equivalency factors for dioxins and furans can be found in Technical Manual 1003. Contact NJDEP Air Quality Evaluation (609-292-6722) for more information.
- 9 The Department has determined to utilize the USEPA label clearance level as the presumptive acute reference concentration for sulfuryl fluoride.