

New Jersey Department of Environmental Protection  
Division of Air Quality  
Bureau of Technical Services  
Air Quality Evaluation Section

**REFERENCE CONCENTRATIONS FOR SHORT-TERM INHALATION EXPOSURE**  
August 2009

	HAP	CAS No.	Chemical Name	Short-Term Reference Concentration (ug/m <sup>3</sup> )	RfC Averaging Time (hrs)	Reference	Comment
1	*	75070	Acetaldehyde	470	1	Cal 08	
2		67641	Acetone	62000	24	ATSDR 06	
3	*	107028	Acrolein	2.5	1	Cal 08	
4	*	79107	Acrylic acid	6000	1	Cal 08	
5		7664417	Ammonia	3200	1	Cal 08	
6	*	62533	Aniline	3000	1	AEGL	See comment 1.
7	*		Arsenic and inorganic arsenic compounds	0.2	1	Cal 08	Includes arsine
8			Barium	0.5	24	HEAST 97	
9	*	71432	Benzene	1300	1	Cal 08	
10	*	100447	Benzyl chloride	240	1	Cal 08	
11	*	75150	Carbon disulfide	6200	1	Cal 08	
12		630080	Carbon monoxide	23000	1	Cal 08	
13	*	56235	Carbon tetrachloride	1900	1	Cal 08	
14	*	7782505	Chlorine	210	1	Cal 08	
15		10049044	Chlorine dioxide	28	8	NJDEP 02	
16	*	67663	Chloroform	150	1	Cal 08	
17		76062	Chloropicrin	29	1	Cal 08	
18			Copper and compounds	100	1	Cal 08	
19		110827	Cyclohexane	6000	24	IRIS	
20	*	123911	1,4-Dioxane	3000	1	Cal 08	
21	*	106898	Epichlorohydrin	1300	1	Cal 08	
22	*	100414	Ethylbenzene	1000	24	IRIS	
23	*	75003	Ethyl chloride	10000	24	IRIS	Chloroethane
24		111762	Ethylene glycol monobutyl ether	14000	1	Cal 08	
25	**	110805	Ethylene glycol monoethyl ether	370	1	Cal 08	2-Ethoxyethanol
26	**	111159	Ethylene glycol monoethyl ether acetate	140	1	Cal 08	
27	**	109864	Ethylene glycol monomethyl ether	93	1	Cal 08	2-Methoxyethanol
28	*	75218	Ethylene oxide	42	1	USEPA 92	
29	*	50000	Formaldehyde	55	1	Cal 08	
30	*	302012	Hydrazine	10	8	AEGL	See comment 1.
31	*	7647010	Hydrogen chloride	2100	1	Cal 08	Hydrochloric acid
32	**	74908	Hydrogen cyanide	340	1	Cal 08	
33	*	7664393	Hydrogen fluoride	240	1	Cal 08	
34	**	7783075	Hydrogen selenide	5	1	Cal 08	Selenium compound
35		7783064	Hydrogen sulfide	42	1	Cal 08	
36		67630	Isopropanol	3200	1	Cal 08	
37	*		Lead	0.1	24	NJDEP 91	
38	*		Manganese and manganese compounds	0.17	8	Cal 08	
39	*	7439976	Mercury (inorganic)	0.6	1	Cal 08	
40	*	67561	Methanol	28000	1	Cal 08	
41	*	74839	Methyl bromide	3900	1	Cal 08	Bromomethane
42	*	71556	Methyl chloroform	9000	1	IRIS	1,1,1-Trichloroethane
43	*	75092	Methylene chloride	14000	1	Cal 08	Dichloromethane
44	*	78933	Methyl ethyl ketone	13000	1	Cal 08	MEK
45	*	108101	Methyl isobutyl ketone	3000	24	IRIS	MIBK
46	*		Nickel and nickel compounds	6	1	Cal 08	

	HAP	CAS No.	Chemical Name	Short-Term Reference Concentration (ug/m <sup>3</sup> )	RfC Averaging Time (hrs)	Reference	Comment
47		7697372	Nitric acid	86	1	Cal 08	
48		10102440	Nitrogen dioxide	470	1	Cal 08	
49		10028156	Ozone	180	1	Cal 08	
50	*	108952	Phenol	5800	1	Cal 08	
51	*	75445	Phosgene	4	1	Cal 08	
52	*	75569	Propylene oxide	3100	1	Cal 08	
53		1310732	Sodium hydroxide	8	1	Cal 08	
54	*	100425	Styrene	21000	1	Cal 08	
55			Sulfates	120	1	Cal 08	
56		7446095	Sulfur dioxide	660	1	Cal 08	
57			Sulfuric acid and oleum	120	1	Cal 08	
58	*	127184	Tetrachloroethylene	20000	1	Cal 08	Perchloroethylene
59	*	108883	Toluene	37000	1	Cal 08	
60	*	584849	Toluene diisocyanate (2,4-)	14	1	AEGL	See comment 1.
61	*	121448	Triethylamine	2800	1	Cal 08	
62		1314621	Vanadium pentoxide	30	1	Cal 08	
63	*	75014	Vinyl chloride	180000	1	Cal 08	
64	*		Xylenes (m,o,p-isomers)	22000	1	Cal 08	

**Note:**

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.

**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 HAPs.

**CAS No.** - Chemical Abstract Service identification number.

**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.

**References**

AEGL Acute Exposure Guideline Levels (AEGLs) Program Chemicals, USEPA, as of May 4, 2009 ([www.epa.gov/oppt/aegl/pubs/chemlist.htm](http://www.epa.gov/oppt/aegl/pubs/chemlist.htm)).

ATSDR 08 Agency for Toxic Substances and Disease Registry, "Minimal Risk Levels (MRLs) for Hazardous Substances," December 2008 ([www.atsdr.cdc.gov/mrls/index.html](http://www.atsdr.cdc.gov/mrls/index.html)) (acute MRLs).

Cal 08 California Office of Environmental Health Hazard Assessment (OEHHA), "All OEHHA Acute, 8-hour and Chronic Reference Exposure Levels as of December 18, 2008" ([www.oehha.ca.gov/air/allrels.html](http://www.oehha.ca.gov/air/allrels.html)).

HEAST 97 U.S. Environmental Protection Agency (USEPA) Health Effects Assessment Summary Tables, FY-1997 Update, July 1997.

IRIS USEPA Integrated Risk Information System, as of April 2009 ([www.epa.gov/iris](http://www.epa.gov/iris)).

NJDEP 91 Derived by NJDEP Bureau of Air Quality Evaluation, based on USEPA's LEAD5 Model (Lead Uptake/Biokinetic Model) Version 5.

NJDEP 02 NJDEP Bureau of Air Quality Evaluation; "Derivation of Reference Concentrations for Use in the Hamilton Post Office Risk Assessment," 2/19/2002.

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.

**Comments**

1. All values referenced "AEGL" are AEGL-1 for 1 hour, converted to ug/m<sup>3</sup> and divided by 10.
2. ATSDR values 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.