

Table 1. 2015 Update of the 1993 Schaper Satabase of RD₅₀ and their TLV

# ¹	# ²	Chemicals ^{A,B}	[CAS Number] (current TLV Documentation date)	Types of mice and (Reference #) for exposure details ^C	RD ₅₀ (ppm)	RD ₅₀ x 0.03 (ppm)	Average RD ₅₀ x 0.03 (ppm)	1991-1992 TLV-TWA or TLV Ceiling (C) (ppm) from Ref. 1	2015 TLV-TWA or TLV Ceiling (C) or STEL(S) (ppm) ^E	2015 TLV Basis ^D
1	1	Acetaldehyde	[75-07-0] (2013)	SW (1)	2845	85.35	107	100	C 25	Eye & URT irr
	2			B6C3F1 (1)	2932	87.96		100	C 25	
	3			SW (1)	4946	148.4		100	C 25	
2	4	Acetic acid	64-19-7 (2003)	OF1 (1)	163	4.89	9	10	10	URT & eye irr; pulm func
	5			SW (1)	577	17.31		10	10	
	6	New Entry		OF1 (2)	227	6.81		10	10	
	7	New Entry		C57B1/6J (2)	239	7.17		10	10	
	8	New Entry		Ssc:CF-1 (2)	308	9.24		10	10	
3	9	Acetone	[67-64-1] (1996)	OF1 (1)	23480	704	1515	750	250	URT & eye irr; CNS impair; hematologic effect
	10	New Entry		SW (1)	77516	2325		750	250	
4	11	Acrolein	[107-02-8] (1995)	SW (1)	1.03	0.031	0.056	0.1	C 0.1	Eye & URT irr; pulm edema; pulm emph
	12			B6C3F1 (1)	1.41	0.042		0.1	C 0.1	
	13			BALB/C (1)	1.66	0.050		0.1	C 0.1	
	14			SW (1)	1.68	0.050		0.1	C 0.1	
	15			SW (1)	2.70	0.081		0.1	C 0.1	
	16			CF1 (1)	2.90	0.087		0.1	C 0.1	
	17	New Entry		C57B1/6J (2)	1.59	0.048		0.1	C 0.1	
5	18	Allyl alcohol	[107-18-6] (1996)	OF1 (1)	1.6	0.048	0.08	2	0.5	Eye & URT irr
	19			ICR (1)	2.5	0.075		2	0.5	
	20			CF1 (1)	3.9	0.117		2	0.5	
6	21	Allyl chloride	[107-05-1] (2010)	CF1 (1)	1740	52.2	52.2	1	1	Eye & URT irr; liver & kidney dam
7	22	Allyl glycidyl ether	[106-92-3] (1995)	OF1 (1)	5.7	0.171	0.171	5	1	URT, eye & skin irr; dermatitis

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8	23	Ammonia (inorganic)	[7664-41-7] (1970)	SW (1)	303	9.09	16.4	25	25	Eye dam; URT irr
	24			BALB/C (1)	789	23.67		25	25	
9	25	p-Benzoquinone (Quinone)	[106-51-4] (1970)	SW (1)	5.0	0.15	0.15	0.1	0.1	Eye irr; skin dam
10	26	Benzylchloride	[100-44-7] (1990)	OF (1)	17.0	0.51	0.66	1	1	Eye, skin, URT irr
	27			SW (1)	27.0	0.81				
11	28	n-Butanol	[71-36-3] (1998)	OF1 (1)	1268	38.04	160.6	C 50	20	Eye & URT irr
	29			SW (1)	4784	143.5		C 50	20	
	30			SW (1)	7075	212.3		C 50	20	
	31			CF1 (1)	11696 extrapol	350.9		C 50	20	
	32	New Entry			BALB/C (2)	3010	90.3		C 50	20
	33	New Entry		BALB/C (2)	4300	129		C 50	20	
12	34	2-Butoxyethanol	[111-76-2] (1996)	SW (1)	2825	85	85	25	20	Eye & URT irr
13	35	n-Butyl acetate	[123-86-4] (1995)	OF1 (1)	730	22	32.2	150	150	Eye & URT irr
	36			SW (1)	735	22		150	150	
	37	New Entry		BALB/C (2)	1755	52.7		150	150	
14	38	tert-Butyl acetate	[540-88-5] (1965)	OF1 (1)	15962	479	479	200	200	Eye & URT irr
15	39	n-Butylamine	[109-73-9] (1985)	OF1 (1)	112	3.36	4.22	C 5	C 5	Headache; URT & eye irr
	40			CF1 (1)	121	3.63		C 5	C 5	
	41			NMRI (1)	246	7.38		C 5	C 5	
	42	New Entry		OF1 (2)	84	2.52		C 5	C 5	
16	43	p-tert-Butyltoluene	[98-51-1] (1990)	SW (1)	360	10.8	10.8	10	1	Eye & URT irr; nausea

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17	44	Chlorine (inorganic)	[7782-50-5] (1986)	SW (1)	9.3	0.279	0.203	0.5	0.5	URT & eye irr
	45			BALB/C (1)	11.97	0.279		0.5	0.5	
	46	New Entry		OF1 (2)	3.5	0.105		0.5	0.5	
	47	New Entry		C57B1/6J ^F (2)	2.3	0.069		0.5	0.5	
18	48	Chloracetophenone	[532-27-4] (1990)	SW (1)	0.96	0.023	0.023	0.05	0.05	Eye, URT, & skin irr
19	49	2-Chlorobenzalmonitrile (aerosol)	[2698-41-1] (1990)	SW (1)	0.42	0.013	0.024	C 0.05	C 0.05	URT irr; skin sens
	50			SW (1)	1.19	0.036		C 0.05	C 0.05	
20	51	Chlorobenzene (No URT irr in 2015)	[108-90-7] (1988)	OF1 (1)	1054	31.6	31.6	10	10	Liver Damage
21	52	Chloropicrin	[76-06-2] (1990)	SW (1)	7.98	0.24	0.24	0.1	0.1	Eye irr; pulm edema
22	53	o-Chlorotoluene	[95-49-8] (1971)	OF1 (1)	570	17	17	50	50	URT, eye, & skin irr
23	54	Crotonaldehyde	[4170-30-3] (1995)	SW (1)	3.53	0.106	0.126	2	C 0.3	Eye & URT irr
	55			B6C3F1 (1)	4.88	0.146		2	C 0.3	
24	56	Cyclohexanone	[108-94-1] (1990)	OF1 (1)	756	22.6	22.6	25	20	Eye & URT irr
25	57	Cyclohexylamine	[108-91-8] (1990)	CF1 (1)	27	0.81	1.24	10	10	URT & eye irr
	58			OF1 (2)	51	1.53		10	10	
26	59	o-Dichlorobenzene	[95-50-01] (1990)	OF1 (1)	181	5.43	5.44	C 50	25	URT & eye irr
	60			OF1 (1)	182	5.46		C 50	25	
27	61	p-Dichlorobenzene Chemical addition	[106-46-7] (1990)	SW (8)	270	8.1	8.1	75	10	Eye irr; kidney damage
28	62	Diethylamine	[109-89-7] (2012)	CF1 (1)	184	5.6	5.85	10	5	URT, eye & skin irr
	63			OF1 (1)	202	6.1		10	5	

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29	64	Diisobutyl ketone	[108-83-8] (1979)	OF1 (1)	320	9.6	9.6	25	25	URT & eye irr
30	65	Diisopropylamine	[108-18-9] (1979)	OF1 (1)	161	4.8	4.8	5	5	URT irr, eye dam
31	66	Dimethylamine	[124-40-3] (2013)	OF1 (1)	70	2.1	8.7	10	5	URT & GI irr
	67			SW (1)	511	15.3		10	5	
32	68	Divinyl benzene	[1321-74-0] (1990)	OF1 (1)	78	2.3	2.3	10	10	URT irr
33	69	Epichlorohydrin	[106-89-8] (1994)	SW (1)	687	20.6	20.6	2	0.5	URT irr; male repro
34	70	2-Ethoxyethyl acetate (Not URT irr in 2015)	[111-15-9] (1981)	OF1 (1)	720	21.6	21.6	5	5	Male repro dam (remove??)
35	71	Ethyl acetate	[141-78-6] (1979)	OF1 (1)	580	17.4	17.9	400	400	URT & eye irr
	72			SW (1)	614	18.4		400	400	
36	73	Ethyl acrylate	[140-88-5] (1986)	OF1 (1)	315	9.45	9.45	5	5	URT, eye & GI irr; CNS impair, skin sens
37	74	Ethyl alcohol (Ethanol)	[64-17-5] (2008)	OF1 (1)	13633	409	614	1000	C 1000	URT irr
	75			SW (1)	27314	819		1000	C 1000	
38	76	Ethylamine	[75-04-7] (2012)	OF1 (1)	151	4.5	4.5	10	5	URT, eye & GI irr; CNS impair; skin sens
39	77	Ethylbenzene	[100-41-4] (2010)	OF1 (1)	1432	43	82.4	100	20	URT irr; kidney dam (nephrotathy); cochlear impair
	78			SW (1)	4060	122		100	20	
40	79	Ethyl-2-cyanoacrylate Chemical addition	[7085-85-0] (1995)	OF1 (2)	0.7	0.021	0.021	no entry use 0.2	0.2	URT & skin irr
41	80	Ethylidene norbornene	[16219-75-3] (2013)	SW (1)	2500	75	75	C5	2	URT & eye irr

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42	81	Formaldehyde	[50-00-0] (1987)	SW (1)	3.2	0.09	0.13	1	C 0.3	URT & eye irr
	82			B6C3F1 (1)	4.9	0.15		1	C 0.3	
	83			OF1 (1)	5.3	0.16		1	C 0.3	
	84			BALB/cA (2)	4.0	0.12		1	C 0.3	
43	85	Formic acid Chemical addition	[64-18-06] (1965)	Ssc:CF1 (2)	438	13		5	5	URT, eye & skin irr:
44	86	Furfural	[98-01-1] (1978)	B6C3F1 (1)	234	7.0	7.8	2	2	URT & eye irr
	87			SW (1)	287	8.6		2	2	
45	88	Glutaraldehyde Chemical addition	[111-30-8] (1998)	Swiss OF1 (2)	2.6	0.078	0.25	no entry use 0.05	C 0.05	URT, skin, & eye irr; CNS impair
	89			ND4 SW (2)	13.9	0.417		0.05	C 0.05	
46	90	Heptane	142-82-5 (1979)	CF1 (1)	15600	468		400	400	CNS impair; URT irr
47	91	Heptan-2-one (Methyl n-amyl ketone)	[110-43-0] (1978)	OF1 (1)	893	26.7		50	50	Eye & skin irr
48	92	Heptan-4-one (Dipropyl ketone)	[123-19-3] (1978)	OF1 (1)	1098	32.9		50	50	URT irr
49	93	Hexachlorobutadiene (No URT irr in 2015)	[87-68-3] (1979)	OF1 (1)	211	6.33		0.02	0.02	Kidney damage is correct.
50	94	1,6 Hexamethylene diisocyanate	[822-06-0] (1985)	SW (1)	0.17	0.005		0.005	0.005	URT Irr; resp sens
51	95	Hydrogen chloride (inorganic)	[7647-01-0] (200)	SW (1)	309	9.27		C 5	C 2	URT irr
52	96	Hydrogen peroxide (inorganic)	[7722-84-1] (1990)	OF1 (2)	113	3.39		1	1	Eye, URT, & skin irr
53	97	Isoamyl alcohol	[123-51-3] (1990)	OF1 (1)	729	21.9	78	100	100	Eye & URT irr
	98			SW (1)	4452	133.6				
54	99	Isobutanol	[78-83-1] (1973)	OF1 (1)	1818	54.5		50	50	Skin & eye irr
55	100	Isobutyl acetate	[110-19-0]	OF1 (1)	819	24.6		150	150	Eye & URT irr

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56	101	Isopentyl acetate (Pentyl acetate)	[123-92-2] (1997)	OF1 (1)	1056	31.7		100	50	URT irr
57	102	Isophorone	[78-59-1] (1992)	OF1 (1)	27.8	0.83		C 5	C 5	Eye & URT irr; CNS impair, malaise; fatigue
58	103	Isopropyl acetate	[108-21-4] (2001)	OF1 (1)	4259	127.8		250	100	Eye & URT irr, CNS impair
59	104	Isopropyl alcohol (2-propanol)	[67-63-0] (2001)	OF1 (1)	5000	150	340	400	200	Eye & URT irr, CNS impair
	105			SW (1)	17693	530		400	200	
60	106	Isopropylamine	[75-31-0] (1962)	OF1 (1)	157	4.71		5	5	URT irr, eye dam
61	107	Isopropylbenzene (Cumene)	[92-82-8] (1997)	CF1 (1)	1934	58.0	66	50	50	Eye, skin, & URT irr; CNS impair
	108			SW (1)	2490	74.7		50	50	
62	109	Mesityl oxide	[141-79-7] (1992)	OF1 (1)	61.1	1.83		15	15	Eye & URT irr, CNS impair
63	110	2-Methoxyethyl acetate (No URT irr in 2015)	[110-49-6] (2005)	OF1 (1)	570	17.1		5	0.1	Hematolog. & repro eff
64	111	Methyl acetate (No URT irr in 2015)	[79-20-9] (2012)	OF1 (1)	829	24.8		200	200	Headache; dizziness; nausea; eye dam
65	112	Methyl alcohol (Methanol) (No URT irr in 2015)	[67-56-1] (2008)	OF1 (1)	25222	757	1001	200	200	Headache; eye dam; dizziness;nausea
	113			SW (1)	41514	1245		200	200	
66	114	Methylamine	[74-89-5] (2012)	OF1 (1)	141	4.23	4.23	10	5	Eye, skin, & URT irr
67	115	Methyl n-butyl acetone (Methyl n-butyl ketone) (No URT irr in 2015)	[591-78-6] (1995)	OF1 (1)	2555	76.7	76.7	5	5	Periph. neuropa; testi. dam

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68	116	Methyl 2-cyanoacrylate Chemical addition	[137-05-3] (1995)	OF1 (2)	1.4	0.042	0.042	2	0.2	URT & eye irr
69	117	Methyl ethyl ketone	78-93-3 (1992)	SW (1)	9000	270	512	200	200	URT irr; CNS & PNS impair
	118			OF1 (1)	10745	322		200	200	
	119			CF (1)	31426	943		200	200	
70	120	Methyl 5-heptan-3-one (Ethyl amyl ketone) (No URT irr in 2015)	[541-85-5] (2006)	OF1 (1)	759	23	23	25	10	Neurotoxicity
71	121	Methyl-5-hexan-2-one (Methyl isoamyl tone)	[110-12-3] (2012)	OF1 (1)	1232	37	37	50	20	CNS impair; URT irr
72	122	Methyl isobutylketone	[108-10-1] (2009)	OF1 (1)	3195	96	96	50	20	URT irr; dizziness; headache
73	123	Methyl isocyanate	624-83-9 (2013)	SW (1)	1.3	0.039	0.063	0.02	0.02	URT & eye irr
	124			ICR (1)	2.9	0.087				
74	125	1-Methylnaphtalene Chemical addition (No URT irr in 2015)	[90-12-0] (2006)	BALB/c (2)	22	0.66	0.66	no entry use 0.5	0.5	LTR irr, lung dam
75	126	2-Methylnaphtalene Chemical addition (No URT irr in 2015)	91-57-6 (2006)	BALB/c (2)	11.5	0.35	0.35	no entry use 0.5	0.5	LTR irr, lung dam
76	127	α-Methyl styrene	[98-83-9] (2009)	OF1 (1)	273	8.2	8.2	50	10	URT irr; kidney and female repro dam
77	128	Nicotine (aerosol) (No URT irr in 2015)	[54-11-5] (1992)	SW (1)	5.28	0.158	0.205	0.075 (0.5 mg/m ³)	0.075 (0.5 mg/m ³)	GI dam; CNS impair; card impair
	129			DD (1)	5.71	0.171		0.075	0.075	
	130			SW (1)	9.50 (extrap)	0.285		0.075	0.075	
78	131	Nitrogen dioxide	[10102-44-0]	SW (1)	349	10.5	10.5	3	0.2	LRT irr

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		(inorganic)	(2011)							
79	132	Nonane	[111-84-2] (2011)	CF1 (1)	62210 (extrap)	1866	1866	200	200	CNS impair
80	133	Octane	[111-65-9] (1979)	CF1 (1)	18150 (extrap)	545	545	300	300	URT irr
81	134	Pentan-2-one (Methyl propyl ketone)	[107-87-9] (2006)	OF1 (1)	5933	178	178	200	C 150	Pulm func; eye irr
82	135	n-Pentyl acetate	[628-63-7] (1997)	SW (1)	1438	43.2	45.1	100	50	URT irr
	136			SW (1)	1531	45.9		100	50	
	137			OF1 (1)	1562	46.9		100	50	
83	138	Peracetic acid Chemical addition	[79-21-0] (2013)	OF1 (2)	5.4	0.16	0.16	no entry use 0.4	C 0.4	URT, eye & skin irr
84	139	Phenol	[108-95-2] (1992)	OF1 (1)	166	4.98	4.98	5	5	URT irr; lung dam; CNS impair
85	140	Propionic acid	[79-09-4] (1977)	SW (1)	384	11.5	11.5	10	10	Eye, skin, & URT irr
	141			Ssc: CF1 (2)	386	11.6		10		
86	142	Propyl acetate (n-Propyl acetate)	[109-60-4] (1962)	OF1 (1)	793	23.8	23.8	200	200	Eye & URT irr
87	143	n-Propyl alcohol (n-Propanol)	[71-23-8] (2006)	OF1 (1)	4780	143	311	200	100	Eye & URT irr
	144			SW (1)	12704	381		200	100	
	145			CF1 (1)	13660	409		200	100	
88	146	Sodium metabisulfite (as aerosol)	[7681-57-4] (1992)	SW (1)	99.6	2.98	1.5	0.64	0.64	URT irr
89	147	Styrene	[100-42-5] (1996)	SW (1)	156.3	4.7	17.1	50	20	CNS impair; URT irr, peripheral neuropathy
	148			OF1 (1)	586	17.6		50	20	
	149			SW (1)	980	29.4		50	20	

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90	150	Sulfur dioxide (inorganic)	[7446-09-5] (2008)	A/HEJ ^F (9)	41	1.23	4.80	2	0.25	Pulm. func; LRT irr
	151	(No URT irr in 2015)		A/HEJ (9)	69	2.07		2	0.25	
	152			BALB/C ^F (9)	75	2.25		2	0.25	
	153	Replication in same lab		BALB/C ^F (9)	78	2.34		2	0.25	
	154			C57/BL6 ^F (9)	80	2.40		2	0.25	
	155			SJL/J ^F (9)	104	3.12		2	0.25	
	156			SJL/J (9)	320	9.60		2	0.25	
	157			DD (1)	120	3.60		2	0.25	
	158			C3H/HEJ ^F (9)	125	3.75		2	0.25	
	159			C57L/J (9)	200	6.00		2	0.25	
	160			DBA2/J (9)	321	9.63		2	0.25	
	161			DBA2/J ^F (9)	445	13.35		2	0.25	
	162			SW (1)	117	3.51		2	0.25	
	163	Replication in same lab		SW (9)	117	3.51		2	0.25	
	164			SW ^F (9)	133	3.99		2	0.25	
91	165	Toluene (No URT irr in 2015)	[100-88-3] (2006)	OF1 (1)	3373	101	136	100	20	Visual impair; female repro; pregnancy loss
	166			SW (1)	5300	159		100	20	
	167	New Entry		SW (2)	4900	147		100	20	
92	168	2,4 Toluene diisocyanate (No URT irr in 2015)	[584-84-9] (1992)	SW (1)	0.20	0.006	0.010	0.005	0.005	Resp sens
	169			SW (1)	0.20	0.006		0.005	0.005	
	170			OF1 (1)	0.24	0.007		0.005	0.005	
	171			SW (1)	0.39	0.012		0.005	0.005	
	172			SW (1)	0.67	0.020		0.005	0.005	
93	173	Triethylamine	[121-44-8] (1991)	OF1 (1)	156	4.68	5.1	10	0.5	Visual impair, URT irr
	174			CF1 (1)	186	5.58			0.5	

# ¹	# ²	Chemicals ^{A,B}	[CAS Number] (current TLV Documentation date)	Types of mice and (Reference #) for exposure details ^C	RD ₅₀ (ppm)	RD ₅₀ x 0.03 (ppm)	Average RD ₅₀ x 0.03 (ppm)	1991-1992 TLV-TWA or TLV Ceiling (C) (ppm) from Ref. 1	2015 TLV-TWA or TLV Ceiling (C) or STEL(S) (ppm) ^E	2015 TLV Basis ^D
94	175	Trimethylamine	[75-50-3] (2012)	OF1 (1)	61	1.83	1.83	10	5	URT, eye, & skin irr
95	176	1,2,3-Trimethylbenzene Chemical addition (No URT irr in 2015)	[562-73-8] (1970)	BALB/c (2)	541	16.2	16.2	25	25	CNS impai; asthma hemat. effe
96	177	1,2,4-Trimethylbenzene Chemical addition (No URT irr in 2015)	[95-63-6] (1970)	BALB/c (2)	578	17.3	17.3	25	25	CNS impai; asthma hemat. effe
97	178	1,3,5-Trimethylbenzene Chemical addition (No URT irr in 2015)	[108-67-8] (1970)	BALB/c (2)	519	15.6	15.6	25	25	CNS impai; asthma hemat.effe
98	179	Valeraldehyde	[110-62-3] (1984)	SW (1)	1121	33.6	34.7	50	50	Eye, skin & URT irr
	180			B6C3F1 (1)	1190	35.7		50	50	
99	181	Vinyl toluene	[25013-15-4] (1992)	OF1 (1)	16.4	0.46	0.46	50	50	URT & eye irr
100	182	m-Xylene Chemical addition	108-38-3 (1992)	BALB/C (2)	1360	40.8	40.8	100	100	URT & eye irr; CNS impair
101	183	o-Xylene	[95-47-6] (1992)	OF1 (1)	1467	44.0	44.0	100	100	URT & eye irr; CNS impair
102	184	p-Xylene	[106-42-3] (1992)	OF1 (1)	1325	39.8	39.8	100	100	URT & eye irr; CNS impair

NOTES : Prepared by Yves Alarie, Ph.D. University of Pittsburgh, 2015

¹ : Chemical number

² : Entry number

^A :Chemicals with RD₅₀ values obtained in male mice of various strains (except for acrolein, acetic acid and sulfur dioxide obtained in both male and female mice) and for which a TLV value has been established to primarily prevent sensory irritation in exposed workers. Update includes all chemicals from Schaper, 1993, with additions from Nielsen et al., 2007, Dudek et al., 1992 and Alarie et al., 1980, References 1, 2, 8 and 9 respectively and given for each chemical in the Table above.

The 2015 TLV value and basis for each chemical listed were obtained from the American Conference of Governmental Industrial Hygienists (ACGIH) as given in Reference 3.

The 1991-992 TLV values listed in the 1993 Schaper database are also listed here for comparison with the 2015 values.

RD₅₀ was originally defined from a dose-response from linear regression analysis to be the dose required to elicit a 50% decrease in respiratory rate in mice as given in reference 4. It should have been defined "exposure concentration-response" instead of "dose-response" as given in Reference 10 when it became a standard method with ASTM. RD₅₀ is not applicable to *any other type* of decrease such as a decrease in tidal volume, minute volume, decrease in expiratory airflow, etc. It is only applicable when a definite lengthening of the expiratory phase is observed due to a pause after inspiration and not due to airflow limitation during expiration or pauses between breaths observed during pulmonary irritation, see references 4, 6 , 7 and for details. Also note that in some of the figures in reference 4 the polarity of the signal is not always consistent; one example is the correct polarity (upward deflection during inspiration) for mouse 1 in Figure 23 while it is inverted for mouse 2 in this same Figure.

RD₅₀ has been appropriately measured in a variety of mice strains of different sensitivities as shown in Table 1 and References 1 and 9 by different investigators.

Nothing is known about quantitative extrapolations to humans when using other animal species were used as discussed at <http://rd50.com/> or <http://www.yvesalarie.com/> or <http://www.pitt.edu/~rd50/>

Discussions regarding the influence of exposure durations and other factors possibly affecting RD₅₀ values can also be found in references 1, 5, 9 and 11. Reference 5 also presents relationships between lowest observed adverse effect levels (LOAELs) and acute reference exposure levels (RELS) of human responses to sensory irritants and RD₅₀s.

The computerized method described in References 7 and 11 has now been widely used to evaluate a variety of single airborne chemicals as well as diverse mixtures of airborne chemicals. It has also been used for mouse and rat asthma models (reference 15) . It provides a better evaluation when complex effects are elicited at different levels of the respiratory tract, particularly when evaluating mixtures, as described in Reference 12. and more recently for nanoparticles (Reference 16) The software for the computerized method is commercially available and runs on Windows.

^B :Chemical names as listed in Reference 1, name in parenthesis as now listed in Reference 3.

Note: A total of 12 **new chemicals** with RD₅₀ values were added to the 1993 Schaper database

Note: A total of 12 **new entries** of RD₅₀ values were added to chemicals already listed in the 1993 Schaper database

Note: For sulfur dioxide the RD₅₀ values are listed for 9 different types of mice, male and female, some measured in the same laboratory for a total of 15 values, see Reference 9, as well as for one other type of mouse from Schaper database which is also included with the other listed values. The entries for sulfur dioxide illustrate the different sensitivities with different types of mice. There is a factor of 10 between the most and least sensitive and the SW type (the type originally used) is in the middle.

Note: Inorganic chemicals are also listed and noted as well as a few evaluated as airborne aerosols.

^C :For each chemical, the published RD₅₀ value can be found in References 1, 2, 8 or 9 thus details of exposures, exposure durations, how the RD₅₀ value was calculated, etc. can be obtained.

^D :Abbreviations as listed by ACGIH in reference 3: Eye & URT irr = Eye and upper respiratory tract irritation; CNS = central nervous system; PNS peripheral nervous system; dam = damage; repro = reproductive; LRT irr = lower respiratory tract irritation; Resp sens = respiratory sensitization; GI = gastrointestinal; irr = irritation

^E :Although letter C (for Ceiling value) may be added in this table, it is not used in the statistical evaluation database

^F :Female

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