

Methodology for Predicting OEL from Rodent LD50 Values

for Metals and Metallic Compounds

Hidetaka Yanagida,^{†*} Akihiro Yamasaki,[‡] Yukio Yanagisawa[§]

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[†] Hidetaka Yanagida, Ph.D. candidate

**Department of Environmental System, Institute of Environmental Studies,
Graduate School of Frontier Science, The University of Tokyo**

M. S.

7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan, 113-8656

Phone number: +81-3-5841-7335, Fax number: +81-3-5841-8583

[‡] Akihiro Yamasaki, Senior Research Scientist

National Institute of Advanced Industrial Science and Technology (AIST)

Ph. D.

16-1 Onogawa, Tsukuba, Japan, 305-8569

Phone number: +81-29-861- 9409, Fax number: +81-29-861-8727

[§] Yukio Yanagisawa, Professor

**Department of Environmental System, Institute of Environmental Studies,
Graduate School of Frontier Science, The University of Tokyo,**

Ph. D.

7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan, 113-8656

Phone number: +81-3-5841-7324, Fax number: +81-3-5684-3298

*** Please address all the correspondence regarding this manuscript to: Hidetaka Yanagida, M.S.,
Department of Environmental System, Institute of Environmental Studies, Graduate School of Frontier
Sciences, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan, 113-8656 Phone
number: +81-3-5841-7335, Fax number: +81-3-5841-8583**

Email: hidetaka.yanagida@vy.t.u-tokyo.ac.jp

Appendix 1. Metal and metallic compounds for which both LD50_{rat} and OEL values were collected in "The Dictionary of Substances and their Effects (DOSE)"^a. Only the smallest OEL values were shown.

No.	Metal and metallic compounds	LD50_{rat}^b	OEL^c	Country^d	Metal^e
1	silver cyanide	123	0.01	UK, DE, JP	Ag
2	potassium silver cyanide	21	0.01	UK, FR, SE, JP	Ag
3	fosetyl aluminium	5800	1	SE	Al
4	aluminium nitrate nonahydrate	4280	1	SE	Al
5	aluminium sulfate	1930	1	SE	Al
6	gallium arsenide	10000	0.01	USA	As
7	arsenic trisulfide	185	0.01	USA	As
8	DSMA	821	0.1	UK	As
9	arsenic acid	48	0.01	USA	As
10	lead arsenate	100	0.03	SE	As
11	copper acetoarsenite	22	0.01	USA	As
12	arsenic trioxide	20	0.01	USA	As
13	potassium arsenite	14	0.01	USA	As
14	phenylarsonic acid	50	0.1	UK	As
15	barium carbonate	1480	0.5	UK, FR, DE	Ba
16	barium acetate	920	0.5	UK, FR, DE, SE, USA	Ba
17	barium nitrate	355	0.5	UK, FR, DE, SE, USA	Ba
18	barium chloride	76	0.5	UK, FR, DE, SE, USA	Ba
19	beryllium fluoride	98	0.002	UK, FR, SE, USA, JP	Be
20	beryllium chloride	86	0.002	UK, FR, SE, USA, JP	Be
21	beryllium sulfate	80	0.002	UK, FR, SE, USA, JP	Be
22	cadmium sulfide	7080	0.002	USA	Cd
23	cadmium stearate	1125	0.002	USA	Cd
24	cadmium iodide	166	0.002	USA	Cd
25	cadmium chloride	88	0.002	USA	Cd
26	cadmium oxide	72	0.002	USA	Cd
27	cadmium	225	0.002	USA	Cd
28	cobalt	6170	0.02	USA	Co
29	cobalt(II) sulfide	5000	0.02	USA	Co
30	cobalt(II) oxide	1700	0.02	USA	Co
31	cobalt carbonyl	754	0.05	JP	Co
32	cobalt(II) bromide	406	0.02	USA	Co
33	cobalt(II) chloride	150	0.02	USA	Co

34	cobalt(II) sulfate	150	0.02	USA	Co
35	calcium chromate	327	0.02	SE	Cr
36	chromium(III) nitrate	3250	0.5	UK, SE, USA	Cr
37	chromium(II) chloride	1870	0.5	UK, SE	Cr
38	chromium(III) chloride	1870	0.5	UK, SE, USA	Cr
39	sodium dichromate	50	0.02	SE	Cr
40	chromium(VI) oxide	80	0.05	UK, SE, USA	Cr
41	Bordeaux mixture	4000	0.2	SE	Cu
42	oxine copper	4700	1	DE	Cu
43	copper nitrate	940	0.2	SE	Cu
44	copper(I) oxide	470	0.2	SE	Cu
45	copper sulfate	300	0.2	SE	Cu
46	copper acetate	710	1	DE	Cu
47	copper(I) chloride	140	0.2	SE	Cu
48	copper naphthenate	110	1	DE	Cu
49	iron	30000	4	UK	Fe
50	iron (II) fumarate	3850	1	UK, USA	Fe
51	iron (II) ammonium sulfate	3250	1	UK, USA	Fe
52	iron (II) sulfate	319	1	UK, USA	Fe
53	ferbam	1130	10	UK, FR, USA	Fe
54	ferrocene	1320	10	UK, FR, USA	Fe
55	calomel	250	0.024	USA	Hg
56	mercury (I) nitrate	170	0.025	USA	Hg
57	methylmercury(II) dicyandiamide	68	0.01	UK, FR, DE, USA	Hg
58	mercury(I) chloride	166	0.025	USA	Hg
59	phenylmercuric chloride	60	0.01	DE	Hg
60	diethylmercury	51	0.01	UK, FR, SE, USA	Hg
61	ethylmercury(II) phosphate	48	0.01	UK, DE, USA	Hg
62	2-methoxyethylmercury acetate	25	0.01	FR, DE, USA	Hg
63	mercury(II) acetate	41	0.01	DE	Hg
64	ethylmercury(II) chloride	40	0.01	UK, USA	Hg
65	mercury (II) sulfate	67	0.025	UK, DE, USA	Hg
66	phenylmercuric acetate	22	0.01	DE	Hg
67	mercury (II) thiocyanate	46	0.025	UK, USA	Hg
68	mercury (II) bromide	35	0.025	UK, USA	Hg
69	mercury (II) cyanide	26	0.025	USA	Hg
70	mercury(II) nitrate	25	0.025	UK, USA	Hg
71	mercury(I) sulfate	20.5	0.025	USA	Hg
72	mercury(II) iodide	17	0.025	UK, USA	Hg

73	mercury(II) oxide	16	0.025	UK, USA	Hg
74	mercury(II) chloride	1.5	0.025	UK, USA	Hg
75	potassium permanganate	1100	0.2	USA	Mn
76	manganese cyclopentadienyl tricarbonyl	80	0.1	UK, FR, USA	Mn
77	maneb	2600	5	UK	Mn
78	manganese 2-methyl cyclopentadienyl tricarbonyl	50	0.2	UK, FR, USA	Mn
79	mancozeb	5000	5	UK	Mn
80	molybdenum trioxide	125	5	UK, FR, DE, SE, USA	Mo
81	nickel ammonium sulfate	400	0.1	UK, SE, USA	Ni
82	nickel chloride	105	0.1	UK, SE, USA	Ni
83	lead hexafluorosilicate	250	0.05	SE, USA	Pb
84	tetramethyllead	105	0.05	DE, SE	Pb
85	lead fluoborate	50	0.05	SE, USA	Pb
86	tetraethyllead	12.3	0.05	DE, SE	Pb
87	platinum tetrachloride	240	0.002	UK, USA	Pt
88	cisplatin	26	0.002	UK	Pt
89	ammonium chloroplatinate (IV)	1	0.002	UK, USA	Pt
90	rhodium trichloride	1300	1	USA	Rh
91	antimony pentachloride	1120	0.1	JP	Sb
92	antimony trichloride	530	0.1	JP	Sb
93	antimonyl potassium tartrate hemihydrate	115	0.1	JP	Sb
94	selenium	6700	0.1	UK, DE, SE, JP	Se
95	selenium disulfide	138	0.1	UK, DE, SE, JP	Se
96	selenium sulfide	38	0.1	UK, DE, SE, JP	Se
97	sodium selenite	7	0.1	UK, SE, JP	Se
98	sodium selenate	1.6	0.1	UK, SE, JP	Se
99	fenbutatin oxide	2630	0.1	UK, SE, USA	Sn
100	dioctyltin bis (isooctyl thioglycolate)	1280	0.1	UK, DE, SE, USA	Sn
101	cyhexatin	540	0.1	SE	Sn
102	dibutyltin dilaurate	175	0.1	UK, DE, SE, USA	Sn
103	triphenyltin chloride	135	0.1	UK, DE, SE, USA	Sn
104	fentin acetate	125	0.1	UK, FR, DE, SE, USA	Sn
105	dibutyltin dichloride	70	0.1	UK, DE, SE, USA	Sn
106	fentin hydroxide	46	0.1	UK, FR, DE, SE, USA	Sn
107	tin(II) chloride	700	2	UK, DE, USA	Sn
108	tetraethyltin	15	0.1	UK, DE, SE, USA	Sn

109	trimethyltin chloride	12.6	0.1	UK, DE, SE, USA	Sn
110	tantalum	8000	1.5	DE	Ta
111	sodium tellurite	83	0.1	UK, SE, USA	Te
112	tellurium	20	0.1	UK, FR, DE, SE, USA	Te
113	thallium(I) sulfate	25	0.1	UK, FR, DE, USA	Tl
114	thallium(I) carbonate	23	0.1	UK, DE, USA	Tl
115	thallium(I) malonate	18	0.1	UK, USA	Tl
116	thallium hydrogen sulfate	16	0.1	UK, DE, USA	Tl
117	vanadium pentoxide	10	0.04	UK	V
118	zinc chloride	350	1	UK, FR, SE, USA	Zn
119	zirconium nitrate	2300	1	DE	Zr
120	zirconium tetrachloride	1700	1	DE	Zr
121	zirconium(IV) sulfate	3500	5	UK, DE, USA	Zr

^a: Data source; literature(8), ^b: Lethal Dose 50 for rat [mg/kg], ^c: Time Weighted Average OEL [mg/m³] (the smallest value), ^d: UK: United Kingdom FR: France DE: Germany SE: Sweden USA: United States of America JP: Japan, ^e: metal and metallic compounds

Appendix 2. Metal and metallic compounds having both LD50 for mouse and OEL values were collected in “The Dictionary of Substances and their Effects (DOSE^a)”. Only the smallest OEL values were shown.

No.	Metal and metallic compounds	LD50_{mouse}^b	OEL^c	Country^d	Metal^e
1	silver nitrate	50	0.01	UK,FR,DE,SE,USA,JP	Ag
2	aluminium sulfate	6207	1	SE,	Al
3	fosetyl aluminium	3700	1	SE,	Al
4	gallium arsenide	10000	0.01	USA,	As
5	arsenic trisulfide	185	0.01	USA,	As
6	magnesium arsenate	315	0.01	USA,	As
7	barium carbonate	200	0.5	UK,FR,DE	Ba
8	beryllium fluoride	100	0.002	UK,FR, SE,USA,JP	Be
9	beryllium sulfate	80	0.002	UK,FR, SE,USA,JP	Be
10	cadmium sulfide	1166	0.002	USA,	Cd
11	cadmium stearate	590	0.002	USA,	Cd
12	cadmium iodide	166	0.002	USA,	Cd
13	cadmium oxide	72	0.002	USA,	Cd
14	cadmium chloride	60	0.002	USA,	Cd
15	cadmium sulfate	46	0.002	USA,	Cd
16	cobalt carbonyl	378	0.05	JP	Co
17	oxine copper	9000	1	DE,	Cu
18	copper naphthenate	6400	1	DE,	Cu
19	lead chromate	12000	0.012	USA,	Cr
20	potassium dichromate	190	0.02	SE,	Cr
21	potassium chromate	180	0.02	SE,	Cr
22	chromium(III) nitrate	2976	0.5	UK,SE,USA,	Cr
23	iron(II) fumarate	1570	1	UK,USA,	Fe
24	iron(III) chloride	1280	1	UK,USA,	Fe
25	iron(II) sulfate	680	1	UK,USA,	Fe
26	ferbam	3400	10	UK,FR,USA,	Fe
27	ferrocene	832	10	UK,FR,USA,	Fe
28	diethylmercury	44	0.01	UK,FR,DE,SE,U	Hg
29	ethylmercury(II) phosphate	48	0.01	UK,DE,USA,	Hg
30	mercury(II) thiocyanate	24.5	0.025	UK,USA,	Hg
31	2-methoxyethylmercury acetate	45	0.01	FR,DE,USA,	Hg

32	mercury(I) iodide	110	0.025	USA,	Hg
33	mercury(I) chloride	180	0.025	USA,	Hg
34	methylmercury	53	0.01	UK,FR,DE,SE,U	Hg
35	mercury(II) sulfate	25	0.025	UK,USA,	Hg
36	mercury(II) iodide	17	0.025	UK,USA,	Hg
37	mercury(I) sulfate	152	0.025	USA,	Hg
38	manganese cyclopentadienyl tricarbonyl	150	0.1	UK,FR,USA,	Mn
39	manganese 2-methylcyclopentadienyl tricarbonyl	230	0.2	UK,FR,USA,	Mn
40	maneb	2600	5	UK,	Mn
41	molybdenum	300	4	DE,	Mo
42	osmium tetroxide	162	0.0016	USA,	Os
43	selenium sulfide	370	0.05	DE,	Se
44	sodium selenite	7	0.05	DE,	Se
45	fenbutatin oxide	1500	0.1	UK,SE,USA,	Sn
46	azocyclotin	870	0.1	UK,SE,USA,	Sn
47	fentin hydroxide	171	0.1	UK,FR,DE,SE,U	Sn
48	dibutyltin dichloride	100	0.1	UK,DE,SE,USA,	Sn
49	fentin acetate	81	0.1	UK,FR,DE,SE,U	Sn
50	tin(II) chloride	1200	2	UK,DE,USA,	Sn
51	tetraethyltin	40	0.1	UK,DE,SE,USA,	Sn
52	triphenyltin chloride	18	0.1	UK,DE,SE,USA,	Sn
53	sodium tellurite	20	0.1	UK,SE,USA,	Te
54	tellurium	20	0.1	UK,FR,DE,SE,U	Te
55	thallium(I) acetate	35	0.1	DE,USA,	Tl
56	thallium(I) nitrate	33	0.1	UK,FR,DE,USA,	Tl
57	thallium(I) sulfate	29	0.1	UK,FR,DE,USA,	Tl
58	thallium(I) chloride	24	0.1	UK,DE,USA,	Tl
59	thallium(I) carbonate	21	0.1	UK,DE,USA,	Tl
60	thallium hydrogen sulfate	15	0.1	UK,DE,USA,	Tl
61	vanadium pentoxide	23	0.04	UK,	V
62	zinc oxide	8000	1	FR,	Zn
63	zinc chloride	350	1	UK,FR,SE,USA,	Zn
64	zirconium tetrachloride	490	1	DE,	Zr
65	potassium fluorozeonate(IV)	98	5	UK,DE,USA,	Zr

^a: Data source; literature(8), ^b: Lethal Dose 50 for mouse [mg/kg], ^c: Time Weighted Average [mg/m³] (the smallest value), ^d: UK: United Kingdom FR: France DE: Germany SE: Sweden USA: United

States of America JP: Japan, ^e: metal and metallic compounds