



Appendices

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Appendix A
Global Warming

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Table A.1: Lifetimes, radiative efficiencies, temperature factors, and characterization factor

Industrial Designation or Common Name	Chemical Formula	Radiative Efficiency (W/m ² .ppbv)	Lifetime (year)	Characterization Factor (100 years) [1]	TF ₁₀₀ (°C·yr·kton ⁻¹) [2]		
					Direct	Indirect	Total
Carbon dioxide	CO ₂	1.41E-05	150	1	4.17E-08	-	4.17E-08
Methane	CH ₄	3.70E-04	12	25	8.24E-07	3.90E-07	1.21E-06
Nitrous oxide	N ₂ O	3.03E-03	114	298	1.36E-05	-	1.36E-05
CFC-11	CCl ₃ F	0.25	45	4750	2.17E-04	-2.69E-04	-5.20E-05
CFC-12	CCl ₂ F ₂	0.32	100	10890	4.97E-04	-3.92E-04	1.05E-04
CFC-13	CClF ₃	0.25	640	14420	6.58E-04	0.00E+00	6.58E-04
CFC-113	CCl ₂ FCClF ₂	0.30	85	6130	2.80E-04	-1.41E-04	1.39E-04
CFC-114	CClF ₂ CClF ₂	0.31	300	10040	4.58E-04	-2.03E-05	4.38E-04
CFC-115	CClF ₂ CF ₃	0.18	1700	7370	3.36E-04	-6.91E-06	3.29E-04
HCFC-21	CHCl ₂ F	0.14	1.7	151	-	-	-
HCFC-22	CHClF ₂	0.20	12	1810	8.24E-05	-1.57E-05	6.67E-05
HCFC-123	CHCl ₂ CF ₃	0.14	1.3	77	3.54E-06	-6.59E-08	3.47E-06
HCFC-124	CHClF ₂ CF ₃	0.22	5.8	609	2.78E-05	0.00E+00	2.78E-05
HCFC-141b	CH ₃ CCl ₂ F	0.14	9.3	725	3.31E-05	-4.59E-06	2.85E-05
HCFC-142b	CH ₃ CClF ₂	0.20	17.9	2310	1.05E-04	-3.58E-06	1.01E-04
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	0.20	1.9	122	5.56E-06	0.00E+00	5.56E-06
HCFC-225cb	CHClF ₂ CF ₂ CF ₃	0.32	5.8	595	2.72E-05	0.00E+00	2.72E-05
HFC-23	CHF ₃	0.19	270	14760	6.74E-04	-	6.74E-04
HFC-32	CH ₂ F ₂	0.11	4.9	675	3.08E-05	-	3.08E-05
HFC-41	CH ₃ F	0.02	2.4	92	-	-	-
HFC-125	CHF ₂ CF ₃	0.23	29	3500	1.60E-04	-	1.60E-04
HFC-134	CHF ₂ CHF ₂	0.18	9.6	1100	-	-	0.00E+00
HFC-134a	CH ₂ FCF ₃	0.16	14	1430	6.52E-05	-	6.52E-05
HFC-143	CH ₂ FCHF ₂	0.13	3.5	353	-	-	-
HFC-143a	CH ₃ CF ₃	0.13	52	4470	2.04E-04	-	2.04E-04
HFC-152	CH ₂ FCH ₂ F	0.09	0.6	53	-	-	-
HFC-152a	CH ₃ CHF ₂	0.09	1.4	124	5.67E-06	-	5.67E-06
HFC-227ea	CF ₃ CH ₂ CF ₃	0.26	34.2	3220	1.47E-04	-	1.47E-04
HFC-236cb	CH ₂ FCF ₂ CF ₃	0.23	13.6	1340	-	-	-

Table A.1: Lifetimes, radiative efficiencies, temperature factors, and characterization factor (cont.)

Industrial Designation or Common Name	Chemical Formula	Radiative Efficiency (W/m ² .ppbv)	Lifetime (year)	Characterization Factor (100 years) [1]	TF ₁₀₀ (°C·yr·kton ⁻¹) [2]		
					Direct	Indirect	Total
HFC-236ea	CHF ₂ CHFCF ₃	0.30	10.7	1370	-	-	-
HFC-236fa	CF ₃ CH ₂ CF ₃	0.28	240	9810	4.47E-04	-	4.47E-04
HFC-245ca	CH ₂ FCF ₂ CHF ₂	0.23	6.2	693	-	-	-
HFC-245fa	CHF ₂ CH ₂ CF ₃	0.28	7.6	1030	4.72E-05	-	4.72E-05
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	0.21	8.6	794	3.62E-05	-	3.62E-05
HFC-43-10mee	CF ₃ CHFCHFCF ₂ CF ₃	0.40	15.9	1640	7.48E-05	-	7.48E-05
Methyl chloroform	CH ₃ CCl ₃	0.06	5	146	6.68E-06	-1.58E-05	-9.12E-06
Carbon tetrachloride	CCl ₄	0.13	26	1400	6.39E-05	-1.38E-04	-7.41E-05
Methyl chloride	CH ₃ Cl	0.01	1	13	5.88E-07	0.00E+00	5.88E-07
Dimethylether	CH ₃ OCH ₃	0.02	0.015	-	1.93E-08	-	1.93E-08
Methylene chloride	CH ₂ Cl ₂	0.03	0.38	-	3.99E-07	0.00E+00	3.99E-07
Methyl bromide	CH ₃ Br	0.01	0.7	5	2.19E-07	-6.68E-05	-6.66E-05
Halon-1201	CHBrF ₂	0.14	5.8	404	-	-	-
Halon-1211	CBrClF ₂	0.30	16	1890	8.61E-05	-8.74E-04	-7.88E-04
Halon-1301	CBrF ₃	0.32	65	7140	3.26E-04	-3.10E-03	-2.77E-03
Halon-2402	CBrF ₂ CBrF ₂	0.33	20	1640	7.50E-05	-1.38E-03	-1.31E-03
Sulfur hexafluoride	SF ₆	0.52	3200	22810	9.65E-03	9.65E-03	9.65E-03
Trifluoromethylsulfur-pentafluoride	SF ₅ CF ₃	0.57	650-950 800	17540- 17960	9.65E-03	9.65E-03	9.65E-03
Perfluoromethane (PFC-14)	CF ₄	0.10	50000	7390	9.65E-03	9.65E-03	9.65E-03
Perfluoroethane (PFC-116)	C ₂ F ₆	0.26	10000	12200	9.65E-03	9.65E-03	9.65E-03
Perfluoropropane (PFC-218)	C ₃ F ₈	0.26	2600	8830	9.65E-03	9.65E-03	9.65E-03
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	0.33	2600	8850	9.65E-03	9.65E-03	9.65E-03
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	0.32	3200	10250	9.65E-03	9.65E-03	9.65E-03
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	0.41	4100	9150	9.65E-03	9.65E-03	9.65E-03
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	0.49	3200	9290	9.65E-03	9.65E-03	9.65E-03
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	0.56	1000	7510	9.65E-03	9.65E-03	9.65E-03
HFE-125	CHF ₂ OCF ₃	0.44	136	14910	6.80E-04	-	6.80E-04

Table A.1: Lifetimes, radiative efficiencies, temperature factors, and characterization factor (cont.)

Industrial Designation or Common Name	Chemical Formula	Radiative Efficiency (W/m ² .ppbv)	Lifetime (year)	Characterization Factor (100 years) [1]	TF ₁₀₀ (°C·yr·kton ⁻¹) [2]		
					Direct	Indirect	Total
HFE-134	CHF ₂ OCHF ₂	0.45	26	6320	2.88E-04	-	2.88E-04
HFE-143a	CH ₃ OCF ₃	0.27	4.3	756	3.45E-05	-	3.45E-05
HCFE-235da2	CHF ₂ OCHClCF ₃	0.38	2.6	349	1.59E-05	-	1.59E-05
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	0.31	4.9	659	3.01E-05	-	3.01E-05
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	0.28	2.6	359	1.80E-05	-	1.80E-05
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	0.31	5.0	404	-	-	-
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	0.30	0.77	57	-	-	-
HFE-245cb2	CH ₃ OCF ₂ CF ₃	0.32	5.1	708	3.67E-05	-	3.67E-05
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	0.34	5.2	575	2.63E-05	-	2.63E-05
HFE-347pcf2	-	0.25	7.1	-	2.64E-05	-	2.64E-05
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	0.33	0.93	110	5.01E-06	-	5.01E-06
HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	0.25	5.0	557	-	-	-
	CH ₃ OCF(CF ₃) ₂	0.31	3.4	343	-	-	-
HFE-43-10pccc124	CHF ₂ OCF ₂ OC ₂ F ₄ OCHF ₂	1.37	6.3	1870	8.55E-05	-	8.55E-05
	(CF ₃) ₂ CHOH	0.28	2.0	217	-	-	-
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	0.66	12.1	2820	1.29E-04	-	1.29E-04
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCHF ₂	0.87	6.2	1500	6.85E-05	-	6.85E-05
PFPME		0.65	800.0	-	4.70E-04	-	4.70E-04
Nitrogen trifluoride	NF ₃	0.21	740	18000	9.65E-03	9.65E-03	9.65E-03
Perfluorocyclopropane	c-C ₃ F ₆	0.42	>1000	>17340	-	-	0.00E+00
HFE-227ea	CF ₃ CHFOCF ₃	0.40	11	1540	-	-	0.00E+00
HFE-236ea2	CHF ₂ OCHFCF ₃	0.44	5.8	989	-	-	0.00E+00
HFE-236fa	CF ₃ CH ₂ OCF ₃	0.34	3.7	487	-	-	0.00E+00
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	0.30	2.2	286	-	-	0.00E+00
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	0.49	6.8	919	-	-	0.00E+00
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	0.43	4.3	552	-	-	0.00E+00
HFE-347mcf2	CHF ₂ CH ₂ OCF ₂ CF ₃	0.41	2.8	374	-	-	0.00E+00
HFE-356mec3	CH ₃ OCF ₂ CHFCF ₃	0.30	0.94	101	-	-	0.00E+00
HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF ₂	0.37	2.0	265	-	-	0.00E+00

Table A.1: Lifetimes, radiative efficiencies, temperature factors, and characterization factor (cont.)

Industrial Designation or Common Name	Chemical Formula	Radiative Efficiency (W/m ² .ppbv)	Lifetime (year)	Characterization Factor (100 years) [1]	TF ₁₀₀ (°C.yr.kton ⁻¹) [2]		
					Direct	Indirect	Total
HFE-356pcf3	CHF ₂ OCH ₂ CF ₂ CHF ₂	0.39	3.6	502	-	-	0.00E+00
	CHF ₂ OCH(CF ₃) ₂	0.41	3.1	379	-	-	0.00E+00
	-(CF ₂) ₄ CH(OH)-	0.30	0.85	72	-	-	0.00E+00
HFE-449sl	-	0.31	3.8	-	1.40E-05	-	1.40E-05
HFE-569sf2	-	0.30	0.77	-	2.60E-06	-	2.60E-06

Table A.2: Damage function of global warming on human health

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function								
		Diarrhea			Malaria			Cardiovascular diseases		
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Carbon dioxide	CO ₂	2.30E-01	2.06E-01	2.65E-01	1.98E-01	1.77E-01	2.27E-01	1.70E-02	1.52E-02	1.90E-02
Methane	CH ₄	6.71E+00	6.00E+00	7.72E+00	5.77E+00	5.16E+00	6.61E+00	4.95E-01	4.43E-01	5.52E-01
Nitrous oxide	N ₂ O	7.51E+01	6.72E+01	8.64E+01	6.46E+01	5.78E+01	7.41E+01	5.54E+00	4.96E+00	6.18E+00
CFC-11	CCl ₃ F	-2.87E+02	-2.57E+02	-3.30E+02	-2.47E+02	-2.21E+02	-2.83E+02	-2.12E+01	-1.90E+01	-2.36E+01
CFC-12	CCl ₂ F ₂	5.80E+02	5.19E+02	6.67E+02	4.99E+02	4.46E+02	5.72E+02	4.28E+01	3.83E+01	4.77E+01
CFC-13	CClF ₃	3.64E+03	3.25E+03	4.18E+03	3.12E+03	2.80E+03	3.59E+03	2.68E+02	2.40E+02	2.99E+02
CFC-113	CCl ₂ FCClF ₂	7.68E+02	6.87E+02	8.83E+02	6.60E+02	5.91E+02	7.57E+02	5.67E+01	5.07E+01	6.32E+01
CFC-114	CClF ₂ CClF ₂	2.42E+03	2.16E+03	2.78E+03	2.08E+03	1.86E+03	2.38E+03	1.78E+02	1.60E+02	1.99E+02
CFC-115	CClF ₂ CF ₃	1.82E+03	1.63E+03	2.09E+03	1.56E+03	1.40E+03	1.79E+03	1.34E+02	1.20E+02	1.50E+02
HCFC-21	CHCl ₂ F	-	-	-	-	-	-	-	-	-
HCFC-22	CHClF ₂	3.69E+02	3.29E+02	4.24E+02	3.17E+02	2.83E+02	3.63E+02	2.72E+01	2.43E+01	3.03E+01
HCFC-123	CHCl ₂ CF ₃	1.92E+01	1.72E+01	2.21E+01	1.65E+01	1.48E+01	1.89E+01	1.42E+00	1.27E+00	1.58E+00
HCFC-124	CHClF ₂ CF ₃	1.54E+02	1.37E+02	1.77E+02	1.32E+02	1.18E+02	1.51E+02	1.13E+01	1.01E+01	1.26E+01
HCFC-141b	CH ₃ CCl ₂ F	1.58E+02	1.41E+02	1.81E+02	1.35E+02	1.21E+02	1.55E+02	1.16E+01	1.04E+01	1.30E+01
HCFC-142b	CH ₃ CClF ₂	5.60E+02	5.01E+02	6.45E+02	4.82E+02	4.31E+02	5.53E+02	4.13E+01	3.70E+01	4.61E+01
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	3.07E+01	2.75E+01	3.53E+01	2.64E+01	2.36E+01	3.03E+01	2.27E+00	2.03E+00	2.53E+00
HCFC-225cb	CHClF ₂ CClF ₂	1.50E+02	1.34E+02	1.73E+02	1.29E+02	1.16E+02	1.48E+02	1.11E+01	9.93E+00	1.24E+01

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function								
		Diarrhea			Malaria			Cardiovascular diseases		
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFC-23	CHF ₃	3.72E+03	3.33E+03	4.28E+03	3.20E+03	2.86E+03	3.67E+03	2.75E+02	2.46E+02	3.06E+02
HFC-32	CH ₂ F ₂	1.70E+02	1.52E+02	1.96E+02	1.46E+02	1.31E+02	1.68E+02	1.26E+01	1.12E+01	1.40E+01
HFC-41	CH ₃ F	-	-	-	-	-	-	-	-	-
HFC-125	CHF ₂ CF ₃	8.84E+02	7.90E+02	1.02E+03	7.60E+02	6.80E+02	8.72E+02	6.52E+01	5.84E+01	7.27E+01
HFC-134	CHF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
HFC-134a	CH ₂ FCF ₃	3.60E+02	3.22E+02	4.14E+02	3.10E+02	2.77E+02	3.55E+02	2.66E+01	2.38E+01	2.96E+01
HFC-143	CH ₂ FCHF ₂	-	-	-	-	-	-	-	-	-
HFC-143a	CH ₃ CF ₃	1.13E+03	1.01E+03	1.30E+03	9.69E+02	8.67E+02	1.11E+03	8.32E+01	7.45E+01	9.27E+01
HFC-152	CH ₂ FCH ₂ F	-	-	-	-	-	-	-	-	-
HFC-152a	CH ₃ CHF ₂	3.13E+01	2.80E+01	3.60E+01	2.69E+01	2.41E+01	3.09E+01	2.31E+00	2.07E+00	2.58E+00
HFC-227ea	CF ₃ CHFCF ₃	8.12E+02	7.26E+02	9.34E+02	6.98E+02	6.25E+02	8.01E+02	5.99E+01	5.37E+01	6.68E+01
HFC-236cb	CH ₂ FCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFC-236ea	CHF ₂ CHFCF ₃	-	-	-	-	-	-	-	-	-
HFC-236fa	CF ₃ CH ₂ CF ₃	2.47E+03	2.21E+03	2.84E+03	2.12E+03	1.90E+03	2.44E+03	1.82E+02	1.63E+02	2.03E+02
HFC-245ca	CH ₂ FCF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
HFC-245fa	CHF ₂ CH ₂ CF ₃	2.61E+02	2.33E+02	3.00E+02	2.24E+02	2.01E+02	2.57E+02	1.92E+01	1.72E+01	2.15E+01
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	2.00E+02	1.79E+02	2.30E+02	1.72E+02	1.54E+02	1.97E+02	1.48E+01	1.32E+01	1.65E+01
HFC-43-10mee	CF ₃ CHFCF ₂ CF ₃	4.13E+02	3.69E+02	4.75E+02	3.55E+02	3.18E+02	4.08E+02	3.05E+01	2.73E+01	3.40E+01
Methyl chloroform	CH ₃ CCl ₃	-5.04E+01	-4.50E+01	-5.80E+01	-4.33E+01	-3.88E+01	-4.97E+01	-3.72E+00	-3.33E+00	-4.15E+00
Carbon tetrachloride	CCl ₄	-4.09E+02	-3.66E+02	-4.71E+02	-3.52E+02	-3.15E+02	-4.04E+02	-3.02E+01	-2.71E+01	-3.37E+01
Methyl chloride	CH ₃ Cl	3.25E+00	2.90E+00	3.74E+00	2.79E+00	2.50E+00	3.20E+00	2.40E-01	2.15E-01	2.67E-01
Dimethylether	CH ₃ OCH ₃	1.07E-01	9.53E-02	1.23E-01	9.17E-02	8.20E-02	1.05E-01	7.87E-03	7.05E-03	8.77E-03
Methylene chloride	CH ₂ Cl ₂	2.20E+00	1.97E+00	2.54E+00	1.89E+00	1.70E+00	2.17E+00	1.63E-01	1.46E-01	1.81E-01
Methyl bromide	CH ₃ Br	-3.68E+02	-3.29E+02	-4.23E+02	-3.16E+02	-2.83E+02	-3.63E+02	-2.71E+01	-2.43E+01	-3.03E+01
Halon-1201	CHBrF ₂	-	-	-	-	-	-	-	-	-
Halon-1211	CBrClF ₂	-4.35E+03	-3.89E+03	-5.01E+03	-3.74E+03	-3.35E+03	-4.29E+03	-3.21E+02	-2.88E+02	-3.58E+02
Halon-1301	CBrF ₃	-1.53E+04	-1.37E+04	-1.76E+04	-1.32E+04	-1.18E+04	-1.51E+04	-1.13E+03	-1.01E+03	-1.26E+03

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function								
		Diarrhea			Malaria			Cardiovascular diseases		
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Halon-2402	CBrF ₂ CBrF ₂	-7.21E+03	-6.45E+03	-8.29E+03	-6.20E+03	-5.55E+03	-7.11E+03	-5.32E+02	-4.76E+02	-5.93E+02
Sulfur hexafluoride	SF ₆	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluoromethane (PFC-14)	CF ₄	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluoroethane (PFC-116)	C ₂ F ₆	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluoropropane (PFC-218)	C ₃ F ₈	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
HFE-125	CHF ₂ OCF ₃	3.76E+03	3.36E+03	4.32E+03	3.23E+03	2.89E+03	3.71E+03	2.77E+02	2.48E+02	3.09E+02
HFE-134	CHF ₂ OCHF ₂	1.59E+03	1.42E+03	1.83E+03	1.37E+03	1.22E+03	1.57E+03	1.17E+02	1.05E+02	1.31E+02
HFE-143a	CH ₃ OCF ₃	1.91E+02	1.70E+02	2.19E+02	1.64E+02	1.47E+02	1.88E+02	1.41E+01	1.26E+01	1.57E+01
HCFE-235da2	CHF ₂ OCHClCF ₃	8.79E+01	7.85E+01	1.01E+02	7.55E+01	6.76E+01	8.66E+01	6.48E+00	5.80E+00	7.23E+00
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	1.66E+02	1.49E+02	1.91E+02	1.43E+02	1.28E+02	1.64E+02	1.23E+01	1.10E+01	1.37E+01
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	9.95E+01	8.89E+01	1.14E+02	8.55E+01	7.65E+01	9.81E+01	7.34E+00	6.57E+00	8.18E+00
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	-	-	-	-	-	-	-	-	-
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	-	-	-	-	-	-	-	-	-
HFE-245cb2	CH ₃ OCF ₂ CF ₃	2.03E+02	1.81E+02	2.33E+02	1.74E+02	1.56E+02	2.00E+02	1.50E+01	1.34E+01	1.67E+01
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	1.45E+02	1.30E+02	1.67E+02	1.25E+02	1.12E+02	1.43E+02	1.07E+01	9.60E+00	1.20E+01
HFE-347pcf2	-	1.46E+02	1.30E+02	1.68E+02	1.25E+02	1.12E+02	1.44E+02	1.08E+01	9.64E+00	1.20E+01
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	2.77E+01	2.47E+01	3.18E+01	2.38E+01	2.13E+01	2.73E+01	2.04E+00	1.83E+00	2.28E+00

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function								
		Diarrhea			Malaria			Cardiovascular diseases		
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFE-43-10pccc124	CHF ₂ OCF ₂ OC ₂ F ₄ O	4.72E+02	4.22E+02	5.43E+02	4.06E+02	3.63E+02	4.66E+02	3.49E+01	3.12E+01	3.89E+01
	CHF ₂									
	(CF ₃) ₂ CHOH	-	-	-	-	-	-	-	-	-
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	7.13E+02	6.37E+02	8.20E+02	6.13E+02	5.48E+02	7.03E+02	5.26E+01	4.71E+01	5.87E+01
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCH	3.78E+02	3.38E+02	4.35E+02	3.25E+02	2.91E+02	3.73E+02	2.79E+01	2.50E+01	3.11E+01
	F ₂									
PFPME		2.60E+03	2.32E+03	2.99E+03	2.23E+03	2.00E+03	2.56E+03	1.92E+02	1.72E+02	2.14E+02
Nitrogen trifluoride	NF ₃	5.33E+04	4.77E+04	6.13E+04	4.58E+04	4.10E+04	5.26E+04	3.93E+03	3.52E+03	4.39E+03
Perfluorocyclopropane	c-C ₃ F ₆	-	-	-	-	-	-	-	-	-
HFE-227ea	CF ₃ CHFOCF ₃	-	-	-	-	-	-	-	-	-
HFE-236ea2	CHF ₂ OCHF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-236fa	CF ₃ CH ₂ OCF ₃	-	-	-	-	-	-	-	-	-
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	-	-	-	-	-	-	-	-	-
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-347mcf2	CHF ₂ CH ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-356mec3	CH ₃ OCF ₂ CHFCF ₃	-	-	-	-	-	-	-	-	-
HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF	-	-	-	-	-	-	-	-	-
HFE-356pcf3	2	-	-	-	-	-	-	-	-	-
	CHF ₂ OCH ₂ CF ₂ CHF	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	CHF ₂ OCH(CF ₃) ₂	-	-	-	-	-	-	-	-	-
	-(CF ₂) ₄ CH(OH)-	-	-	-	-	-	-	-	-	-
HFE-449sl	-	7.74E+01	6.91E+01	8.90E+01	6.65E+01	5.95E+01	7.63E+01	5.71E+00	5.11E+00	6.37E+00
HFE-569sf2	-	1.44E+01	1.28E+01	1.65E+01	1.23E+01	1.11E+01	1.42E+01	1.06E+00	9.49E-01	1.18E+00

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Malnutrition			Natural disasters					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Carbon dioxide	CO ₂	1.05E-01	9.38E-02	1.19E-01	2.92E-02	2.60E-02	3.29E-02	5.79E-01	5.18E-01	6.63E-01
Methane	CH ₄	3.05E+00	2.73E+00	3.47E+00	8.49E-01	7.58E-01	9.58E-01	1.69E+01	1.51E+01	1.93E+01
Nitrous oxide	N ₂ O	3.42E+01	3.06E+01	3.89E+01	9.52E+00	8.49E+00	1.07E+01	1.89E+02	1.69E+02	2.16E+02
CFC-11	CCl ₃ F	-1.31E+02	-1.17E+02	-1.49E+02	-3.64E+01	-3.25E+01	-4.10E+01	-7.23E+02	-6.46E+02	-8.27E+02
CFC-12	CCl ₂ F ₂	2.64E+02	2.36E+02	3.00E+02	7.35E+01	6.56E+01	8.28E+01	1.46E+03	1.30E+03	1.67E+03
CFC-13	CClF ₃	1.65E+03	1.48E+03	1.88E+03	4.60E+02	4.11E+02	5.19E+02	9.14E+03	8.18E+03	1.05E+04
CFC-113	CCl ₂ FCClF ₂	3.49E+02	3.13E+02	3.98E+02	9.73E+01	8.68E+01	1.10E+02	1.93E+03	1.73E+03	2.21E+03
CFC-114	CClF ₂ CClF ₂	1.10E+03	9.85E+02	1.25E+03	3.06E+02	2.73E+02	3.45E+02	6.08E+03	5.44E+03	6.96E+03
CFC-115	CClF ₂ CF ₃	8.27E+02	7.40E+02	9.41E+02	2.30E+02	2.05E+02	2.60E+02	4.57E+03	4.09E+03	5.24E+03
HCFC-21	CHCl ₂ F	-	-	-	-	-	-	-	-	-
HCFC-22	CHClF ₂	1.68E+02	1.50E+02	1.91E+02	4.67E+01	4.16E+01	5.26E+01	9.27E+02	8.29E+02	1.06E+03
HCFC-123	CHCl ₂ CF ₃	8.73E+00	7.82E+00	9.94E+00	2.43E+00	2.17E+00	2.74E+00	4.83E+01	4.32E+01	5.53E+01
HCFC-124	CHClFCF ₃	6.99E+01	6.25E+01	7.95E+01	1.95E+01	1.74E+01	2.19E+01	3.86E+02	3.46E+02	4.42E+02
HCFC-141b	CH ₃ CCl ₂ F	7.17E+01	6.41E+01	8.15E+01	1.99E+01	1.78E+01	2.25E+01	3.96E+02	3.54E+02	4.54E+02
HCFC-142b	CH ₃ CClF ₂	2.55E+02	2.28E+02	2.90E+02	7.10E+01	6.33E+01	8.00E+01	1.41E+03	1.26E+03	1.61E+03
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	1.40E+01	1.25E+01	1.59E+01	3.89E+00	3.47E+00	4.39E+00	7.73E+01	6.91E+01	8.85E+01
HCFC-225cb	CHClFCF ₂ CClF ₂	6.84E+01	6.12E+01	7.78E+01	1.90E+01	1.70E+01	2.15E+01	3.78E+02	3.38E+02	4.33E+02
HFC-23	CHF ₃	1.69E+03	1.52E+03	1.93E+03	4.72E+02	4.21E+02	5.32E+02	9.37E+03	8.38E+03	1.07E+04
HFC-32	CH ₂ F ₂	7.74E+01	6.93E+01	8.81E+01	2.16E+01	1.92E+01	2.43E+01	4.28E+02	3.83E+02	4.90E+02
HFC-41	CH ₃ F	-	-	-	-	-	-	-	-	-
HFC-125	CHF ₂ CF ₃	4.02E+02	3.60E+02	4.58E+02	1.12E+02	9.99E+01	1.26E+02	2.22E+03	1.99E+03	2.55E+03
HFC-134	CHF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
HFC-134a	CH ₂ FCF ₃	1.64E+02	1.47E+02	1.86E+02	4.56E+01	4.07E+01	5.14E+01	9.06E+02	8.10E+02	1.04E+03
HFC-143	CH ₂ FCHF ₂	-	-	-	-	-	-	-	-	-
HFC-143a	CH ₃ CF ₃	5.13E+02	4.59E+02	5.84E+02	1.43E+02	1.27E+02	1.61E+02	2.83E+03	2.54E+03	3.25E+03
HFC-152	CH ₂ FCH ₂ F	-	-	-	-	-	-	-	-	-
HFC-152a	CH ₃ CHF ₂	1.43E+01	1.28E+01	1.62E+01	3.97E+00	3.54E+00	4.47E+00	7.88E+01	7.05E+01	9.02E+01

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Malnutrition			Natural disasters					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFC-227ea	CF ₃ CHFCF ₃	3.70E+02	3.31E+02	4.20E+02	1.03E+02	9.18E+01	1.16E+02	2.04E+03	1.83E+03	2.34E+03
HFC-236ea	CHF ₂ CHFCF ₃	-	-	-	-	-	-	-	-	-
HFC-236fa	CF ₃ CH ₂ CF ₃	1.12E+03	1.01E+03	1.28E+03	3.13E+02	2.79E+02	3.53E+02	6.21E+03	5.56E+03	7.11E+03
HFC-245ca	CH ₂ FCF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
HFC-245fa	CHF ₂ CH ₂ CF ₃	1.19E+02	1.06E+02	1.35E+02	3.30E+01	2.95E+01	3.72E+01	6.56E+02	5.87E+02	7.51E+02
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	9.10E+01	8.14E+01	1.04E+02	2.53E+01	2.26E+01	2.86E+01	5.03E+02	4.50E+02	5.76E+02
HFC-43-10mee	CF ₃ CHFCHFCF ₂ C F ₃	1.88E+02	1.68E+02	2.14E+02	5.23E+01	4.67E+01	5.90E+01	1.04E+03	9.30E+02	1.19E+03
Methyl chloroform	CH ₃ CCl ₃	-2.29E+01	-2.05E+01	-2.61E+01	-6.38E+00	-5.69E+00	-7.19E+00	-1.27E+02	-1.13E+02	-1.45E+02
Carbon tetrachloride	CCl ₄	-1.86E+02	-1.67E+02	-2.12E+02	-5.18E+01	-4.63E+01	-5.84E+01	-1.03E+03	-9.21E+02	-1.18E+03
Methyl chloride	CH ₃ Cl	1.48E+00	1.32E+00	1.68E+00	4.11E-01	3.67E-01	4.64E-01	8.17E+00	7.31E+00	9.35E+00
Dimethylether	CH ₃ OCH ₃	4.85E-02	4.34E-02	5.52E-02	1.35E-02	1.21E-02	1.52E-02	2.68E-01	2.40E-01	3.07E-01
Methylene chloride	CH ₂ Cl ₂	1.00E+00	8.98E-01	1.14E+00	2.79E-01	2.49E-01	3.15E-01	5.54E+00	4.96E+00	6.35E+00
Methyl bromide	CH ₃ Br	-1.67E+02	-1.50E+02	-1.90E+02	-4.66E+01	-4.16E+01	-5.25E+01	-9.25E+02	-8.28E+02	-1.06E+03
Halon-1201	CHBrF ₂	-	-	-	-	-	-	-	-	-
Halon-1211	CBrClF ₂	-1.98E+03	-1.77E+03	-2.25E+03	-5.51E+02	-4.92E+02	-6.21E+02	-1.09E+04	-9.79E+03	-1.25E+04
Halon-1301	CBrF ₃	-6.97E+03	-6.24E+03	-7.93E+03	-1.94E+03	-1.73E+03	-2.19E+03	-3.85E+04	-3.45E+04	-4.41E+04
Halon-2402	CBrF ₂ CBrF ₂	-3.28E+03	-2.94E+03	-3.73E+03	-9.13E+02	-8.15E+02	-1.03E+03	-1.81E+04	-1.62E+04	-2.08E+04
Sulfur hexafluoride	SF ₆	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluoromethane (PFC-14)	CF ₄	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluoroethane (PFC-116)	C ₂ F ₆	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluoropropane (PFC-218)	C ₃ F ₈	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Malnutrition			Natural disasters					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
HFE-125	CHF ₂ OCF ₃	1.71E+03	1.53E+03	1.95E+03	4.76E+02	4.25E+02	5.36E+02	9.45E+03	8.45E+03	1.08E+04
HFE-134	CHF ₂ OCHF ₂	7.24E+02	6.48E+02	8.24E+02	2.02E+02	1.80E+02	2.27E+02	4.00E+03	3.58E+03	4.58E+03
HFE-143a	CH ₃ OCF ₃	8.67E+01	7.76E+01	9.87E+01	2.41E+01	2.15E+01	2.72E+01	4.79E+02	4.29E+02	5.49E+02
HCFE-235da2	CHF ₂ OCHClCF ₃	4.00E+01	3.58E+01	4.55E+01	1.11E+01	9.93E+00	1.25E+01	2.21E+02	1.98E+02	2.53E+02
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	7.57E+01	6.77E+01	8.61E+01	2.11E+01	1.88E+01	2.37E+01	4.18E+02	3.74E+02	4.79E+02
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	4.52E+01	4.05E+01	5.15E+01	1.26E+01	1.12E+01	1.42E+01	2.50E+02	2.24E+02	2.86E+02
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	-	-	-	-	-	-	-	-	-
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	-	-	-	-	-	-	-	-	-
HFE-245cb2	CH ₃ OCF ₂ CF ₃	9.23E+01	8.26E+01	1.05E+02	2.57E+01	2.29E+01	2.89E+01	5.10E+02	4.56E+02	5.84E+02
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	6.61E+01	5.92E+01	7.52E+01	1.84E+01	1.64E+01	2.07E+01	3.65E+02	3.27E+02	4.18E+02
HFE-347pcf2	-	6.64E+01	5.94E+01	7.55E+01	1.85E+01	1.65E+01	2.08E+01	3.67E+02	3.28E+02	4.20E+02
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	1.26E+01	1.13E+01	1.43E+01	3.51E+00	3.13E+00	3.95E+00	6.96E+01	6.23E+01	7.97E+01
HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
	CH ₃ OCF(CF ₃) ₂	-	-	-	-	-	-	-	-	-
HFE-43-10pccc124	CHF ₂ OCF ₂ OC ₂ F ₄ O	2.15E+02	1.92E+02	2.45E+02	5.98E+01	5.34E+01	6.74E+01	1.19E+03	1.06E+03	1.36E+03
	CHF ₂									
	(CF ₃) ₂ CHOH	-	-	-	-	-	-	-	-	-
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	3.24E+02	2.90E+02	3.69E+02	9.03E+01	8.05E+01	1.02E+02	1.79E+03	1.60E+03	2.05E+03
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCH F ₂	1.72E+02	1.54E+02	1.96E+02	4.79E+01	4.28E+01	5.40E+01	9.52E+02	8.51E+02	1.09E+03
PFPME		1.18E+03	1.06E+03	1.34E+03	3.29E+02	2.93E+02	3.71E+02	6.53E+03	5.84E+03	7.48E+03

Table A.2: Damage function of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Malnutrition			Natural disasters					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Nitrogen trifluoride	NF ₃	2.43E+04	2.17E+04	2.76E+04	6.75E+03	6.03E+03	7.61E+03	1.34E+05	1.20E+05	1.54E+05
Perfluorocyclopropane	c-C ₃ F ₆	-	-	-	-	-	-	-	-	-
HFE-227ea	CF ₃ CHFOCF ₃	-	-	-	-	-	-	-	-	-
HFE-236ea2	CHF ₂ OCHFCF ₃	-	-	-	-	-	-	-	-	-
HFE-236fa	CF ₃ CH ₂ OCF ₃	-	-	-	-	-	-	-	-	-
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	-	-	-	-	-	-	-	-	-
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-347mcf2	CHF ₂ CH ₂ OCF ₂ CF ₃	-	-	-	-	-	-	-	-	-
HFE-356mec3	CH ₃ OCF ₂ CHFCF ₃	-	-	-	-	-	-	-	-	-
HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
HFE-356pcf3	CHF ₂ OCH ₂ CF ₂ CHF ₂	-	-	-	-	-	-	-	-	-
	CHF ₂ OCH(CF ₃) ₂	-	-	-	-	-	-	-	-	-
	-(CF ₂) ₄ CH(OH)-	-	-	-	-	-	-	-	-	-
HFE-449sl	-	3.52E+01	3.15E+01	4.00E+01	9.80E+00	8.74E+00	1.10E+01	1.95E+02	1.74E+02	2.23E+02
HFE-569sf2	-	6.54E+00	5.85E+00	7.44E+00	1.82E+00	1.62E+00	2.05E+00	3.61E+01	3.23E+01	4.14E+01

Table A.3: Damage function of global warming on social asset

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Rice			Soybean					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
Carbon dioxide	CO ₂	2.11E-08	2.11E-08	5.62E-08	1.55E-08	1.55E-08	2.69E-08	3.66E-08	3.66E-08	8.31E-08
Methane	CH ₄	6.14E-07	6.14E-07	1.64E-06	4.52E-07	4.52E-07	7.84E-07	1.07E-06	1.07E-06	2.42E-06
Nitrous oxide	N ₂ O	6.88E-06	6.88E-06	1.83E-05	5.06E-06	5.06E-06	8.78E-06	1.19E-05	1.19E-05	2.71E-05
CFC-11	CCl ₃ F	-2.63E-05	-2.63E-05	-7.00E-05	-1.94E-05	-1.94E-05	-3.36E-05	-4.57E-05	-4.57E-05	-1.04E-04
CFC-12	CCl ₂ F ₂	5.31E-05	5.31E-05	1.41E-04	3.91E-05	3.91E-05	6.78E-05	9.22E-05	9.22E-05	2.09E-04

Table A.3: Damage function of global warming on social asset

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Rice			Soybean					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
CFC-13	CCIF ₃	3.33E-04	3.33E-04	8.86E-04	2.45E-04	2.45E-04	4.25E-04	5.78E-04	5.78E-04	1.31E-03
CFC-113	CCl ₂ FCCIF ₂	7.03E-05	7.03E-05	1.87E-04	5.18E-05	5.18E-05	8.98E-05	1.22E-04	1.22E-04	2.77E-04
CFC-114	CCIF ₂ CCIF ₂	2.21E-04	2.21E-04	5.90E-04	1.63E-04	1.63E-04	2.83E-04	3.84E-04	3.84E-04	8.72E-04
CFC-115	CCIF ₂ CF ₃	1.67E-04	1.67E-04	4.43E-04	1.23E-04	1.23E-04	2.13E-04	2.89E-04	2.89E-04	6.56E-04
HCFC-21	CHCl ₂ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HCFC-22	CHClF ₂	3.37E-05	3.37E-05	8.98E-05	2.48E-05	2.48E-05	4.31E-05	5.86E-05	5.86E-05	1.33E-04
HCFC-123	CHCl ₂ CF ₃	1.76E-06	1.76E-06	4.68E-06	1.29E-06	1.29E-06	2.24E-06	3.05E-06	3.05E-06	6.92E-06
HCFC-124	CHClFCF ₃	1.41E-05	1.41E-05	3.74E-05	1.04E-05	1.04E-05	1.80E-05	2.44E-05	2.44E-05	5.54E-05
HCFC-141b	CH ₃ CCl ₂ F	1.44E-05	1.44E-05	3.84E-05	1.06E-05	1.06E-05	1.84E-05	2.50E-05	2.50E-05	5.68E-05
HCFC-142b	CH ₃ CClF ₂	5.13E-05	5.13E-05	1.37E-04	3.78E-05	3.78E-05	6.55E-05	8.91E-05	8.91E-05	2.02E-04
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	2.81E-06	2.81E-06	7.49E-06	2.07E-06	2.07E-06	3.59E-06	4.88E-06	4.88E-06	1.11E-05
HCFC-225cb	CHClFCF ₂ CClF ₂	1.38E-05	1.38E-05	3.66E-05	1.01E-05	1.01E-05	1.76E-05	2.39E-05	2.39E-05	5.42E-05
HFC-23	CHF ₃	3.41E-04	3.41E-04	9.08E-04	2.51E-04	2.51E-04	4.35E-04	5.92E-04	5.92E-04	1.34E-03
HFC-32	CH ₂ F ₂	1.56E-05	1.56E-05	4.15E-05	1.15E-05	1.15E-05	1.99E-05	2.71E-05	2.71E-05	6.14E-05
HFC-41	CH ₃ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-125	CHF ₂ CF ₃	8.10E-05	8.10E-05	2.16E-04	5.96E-05	5.96E-05	1.03E-04	1.41E-04	1.41E-04	3.19E-04
HFC-134	CHF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-134a	CH ₂ FCF ₃	3.30E-05	3.30E-05	8.78E-05	2.43E-05	2.43E-05	4.21E-05	5.73E-05	5.73E-05	1.30E-04
HFC-143	CH ₂ FCHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-143a	CH ₃ CF ₃	1.03E-04	1.03E-04	2.75E-04	7.60E-05	7.60E-05	1.32E-04	1.79E-04	1.79E-04	4.07E-04
HFC-152	CH ₂ FCH ₂ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-152a	CH ₃ CHF ₂	2.87E-06	2.87E-06	7.64E-06	2.11E-06	2.11E-06	3.66E-06	4.98E-06	4.98E-06	1.13E-05
HFC-227ea	CF ₃ CHFCF ₃	7.44E-05	7.44E-05	1.98E-04	5.47E-05	5.47E-05	9.49E-05	1.29E-04	1.29E-04	2.93E-04
HFC-236cb	CH ₂ FCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236ea	CHF ₂ CHFCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236fa	CF ₃ CH ₂ CF ₃	2.26E-04	2.26E-04	6.02E-04	1.66E-04	1.66E-04	2.89E-04	3.93E-04	3.93E-04	8.91E-04
HFC-245ca	CH ₂ FCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-245fa	CHF ₂ CH ₂ CF ₃	2.39E-05	2.39E-05	6.36E-05	1.76E-05	1.76E-05	3.05E-05	4.15E-05	4.15E-05	9.41E-05

Table A.3: Damage function of global warming on social asset (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Rice			Soybean					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	1.83E-05	1.83E-05	4.88E-05	1.35E-05	1.35E-05	2.34E-05	3.18E-05	3.18E-05	7.21E-05
HFC-43-10mee	CF ₃ CHFCHFCF ₂ C F ₃	3.78E-05	3.78E-05	1.01E-04	2.79E-05	2.79E-05	4.83E-05	6.57E-05	6.57E-05	1.49E-04
Methyl chloroform	CH ₃ CCl ₃	-4.61E-06	-4.61E-06	-1.23E-05	-3.40E-06	-3.40E-06	-5.89E-06	-8.01E-06	-8.01E-06	-1.82E-05
Carbon tetrachloride	CCl ₄	-3.75E-05	-3.75E-05	-9.98E-05	-2.76E-05	-2.76E-05	-4.79E-05	-6.51E-05	-6.51E-05	-1.48E-04
Methyl chloride	CH ₃ Cl	2.97E-07	2.97E-07	7.92E-07	2.19E-07	2.19E-07	3.80E-07	5.16E-07	5.16E-07	1.17E-06
Dimethylether	CH ₃ OCH ₃	9.76E-09	9.76E-09	2.60E-08	7.19E-09	7.19E-09	1.25E-08	1.70E-08	1.70E-08	3.85E-08
Methylene chloride	CH ₂ Cl ₂	2.02E-07	2.02E-07	5.37E-07	1.49E-07	1.49E-07	2.58E-07	3.50E-07	3.50E-07	7.95E-07
Methyl bromide	CH ₃ Br	-3.37E-05	-3.37E-05	-8.97E-05	-2.48E-05	-2.48E-05	-4.30E-05	-5.85E-05	-5.85E-05	-1.33E-04
Halon-1201	CHBrF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Halon-1211	CBrClF ₂	-3.99E-04	-3.99E-04	-1.06E-03	-2.93E-04	-2.93E-04	-5.09E-04	-6.92E-04	-6.92E-04	-1.57E-03
Halon-1301	CBrF ₃	-1.40E-03	-1.40E-03	-3.74E-03	-1.03E-03	-1.03E-03	-1.79E-03	-2.44E-03	-2.44E-03	-5.53E-03
Halon-2402	CBrF ₂ CBrF ₂	-6.60E-04	-6.60E-04	-1.76E-03	-4.86E-04	-4.86E-04	-8.43E-04	-1.15E-03	-1.15E-03	-2.60E-03
Sulfur hexafluoride	SF ₆	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluoromethane (PFC-14)	CF ₄	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluoroethane (PFC-116)	C ₂ F ₆	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluoropropane (PFC-218)	C ₃ F ₈	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02

Table A.3: Damage function of global warming on social asset (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Rice			Soybean					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFE-125	CHF ₂ OCF ₃	3.44E-04	3.44E-04	9.16E-04	2.53E-04	2.53E-04	4.39E-04	5.97E-04	5.97E-04	1.36E-03
HFE-134	CHF ₂ OCHF ₂	1.46E-04	1.46E-04	3.88E-04	1.07E-04	1.07E-04	1.86E-04	2.53E-04	2.53E-04	5.74E-04
HFE-143a	CH ₃ OCF ₃	1.75E-05	1.75E-05	4.65E-05	1.28E-05	1.28E-05	2.23E-05	3.03E-05	3.03E-05	6.88E-05
HCFE-235da2	CHF ₂ OCHClCF ₃	8.04E-06	8.04E-06	2.14E-05	5.92E-06	5.92E-06	1.03E-05	1.40E-05	1.40E-05	3.17E-05
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	1.52E-05	1.52E-05	4.05E-05	1.12E-05	1.12E-05	1.94E-05	2.64E-05	2.64E-05	6.00E-05
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	9.11E-06	9.11E-06	2.42E-05	6.70E-06	6.70E-06	1.16E-05	1.58E-05	1.58E-05	3.59E-05
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-245cb2	CH ₃ OCF ₂ CF ₃	1.86E-05	1.86E-05	4.94E-05	1.37E-05	1.37E-05	2.37E-05	3.22E-05	3.22E-05	7.31E-05
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	1.33E-05	1.33E-05	3.54E-05	9.79E-06	9.79E-06	1.70E-05	2.31E-05	2.31E-05	5.24E-05
HFE-347pcf2	-	1.34E-05	1.34E-05	3.56E-05	9.83E-06	9.83E-06	1.71E-05	2.32E-05	2.32E-05	5.26E-05
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	2.53E-06	2.53E-06	6.75E-06	1.87E-06	1.87E-06	3.24E-06	4.40E-06	4.40E-06	9.98E-06
HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CH ₃ OCF(CF ₃) ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-43-10pccc124	CHF ₂ OCF ₂ OC ₂ F ₄ O									
	CHF ₂	4.33E-05	4.33E-05	1.15E-04	3.18E-05	3.18E-05	5.52E-05	7.51E-05	7.51E-05	1.70E-04
	(CF ₃) ₂ CHOH	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	6.53E-05	6.53E-05	1.74E-04	4.80E-05	4.80E-05	8.33E-05	1.13E-04	1.13E-04	2.57E-04
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCH									
	F ₂	3.47E-05	3.47E-05	9.23E-05	2.55E-05	2.55E-05	4.42E-05	6.02E-05	6.02E-05	1.37E-04
PFPME		2.38E-04	2.38E-04	6.33E-04	1.75E-04	1.75E-04	3.04E-04	4.13E-04	4.13E-04	9.37E-04
Nitrogen trifluoride	NF ₃	4.88E-03	4.88E-03	1.30E-02	3.59E-03	3.59E-03	6.23E-03	8.48E-03	8.48E-03	1.92E-02
Perfluorocyclopropane	c-C ₃ F ₆	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-227ea	CF ₃ CHFOCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236ea2	CHF ₂ OCHFCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236fa	CF ₃ CH ₂ OCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A.3: Damage function of global warming on social asset (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (DALY/kton)								
		Damage function						Damage factor		
		Rice			Soybean					
		Value	Min	Max	Value	Min	Max	Value	Min	Max
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-347mcf2	CHF ₂ CH ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356mec3	CH ₃ OCF ₂ CHFCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356pcf3	CHF ₂ OCH ₂ CF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CHF ₂ OCH(CF ₃) ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	-(CF ₂) ₄ CH(OH)-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-449sl	-	7.08E-06	7.08E-06	1.89E-05	5.21E-06	5.21E-06	9.04E-06	1.23E-05	1.23E-05	2.79E-05
HFE-569sf2	-	1.32E-06	1.32E-06	3.50E-06	9.68E-07	9.68E-07	1.68E-06	2.28E-06	2.28E-06	5.18E-06

Table A.4: Damage function of global warming on primary production

Industrial Designation or Common Name	Chemical Formula	Primary production (kg/kton)					
		Damage function			Damage factor		
		Terrestrial ecosystem					
		Value	Min	Max	Value	Min	Max
Carbon dioxide	CO ₂	4.98E+01	4.45E-04	5.13E-04	4.98E+01	4.45E-04	5.13E-04
Methane	CH ₄	1.45E+03	1.29E-02	1.49E-02	1.45E+03	1.29E-02	1.49E-02
Nitrous oxide	N ₂ O	1.62E+04	1.45E-01	1.67E-01	1.62E+04	1.45E-01	1.67E-01
CFC-11	CCl ₃ F	-6.21E+04	-5.55E-01	-6.40E-01	-6.21E+04	-5.55E-01	-6.40E-01
CFC-12	CCl ₂ F ₂	1.25E+05	1.12E+00	1.29E+00	1.25E+05	1.12E+00	1.29E+00
CFC-13	CClF ₃	7.86E+05	7.02E+00	8.10E+00	7.86E+05	7.02E+00	8.10E+00
CFC-113	CCl ₂ FCClF ₂	1.66E+05	1.48E+00	1.71E+00	1.66E+05	1.48E+00	1.71E+00
CFC-114	CClF ₂ CClF ₂	5.23E+05	4.67E+00	5.39E+00	5.23E+05	4.67E+00	5.39E+00
CFC-115	CClF ₂ CF ₃	3.93E+05	3.51E+00	4.05E+00	3.93E+05	3.51E+00	4.05E+00
HCFC-21	CHCl ₂ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A.4: Damage function of global warming on primary production

Industrial Designation or Common Name	Chemical Formula	Primary production (kg/kton)					
		Damage function			Damage factor		
		Terrestrial ecosystem					
		Value	Min	Max	Value	Min	Max
HCFC-22	CHClF ₂	7.97E+04	7.11E-01	8.21E-01	7.97E+04	7.11E-01	8.21E-01
HCFC-123	CHCl ₂ CF ₃	4.15E+03	3.71E-02	4.28E-02	4.15E+03	3.71E-02	4.28E-02
HCFC-124	CHClFCF ₃	3.32E+04	2.96E-01	3.42E-01	3.32E+04	2.96E-01	3.42E-01
HCFC-141b	CH ₃ CCl ₂ F	3.41E+04	3.04E-01	3.51E-01	3.41E+04	3.04E-01	3.51E-01
HCFC-142b	CH ₃ CClF ₂	1.21E+05	1.08E+00	1.25E+00	1.21E+05	1.08E+00	1.25E+00
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	6.64E+03	5.93E-02	6.84E-02	6.64E+03	5.93E-02	6.84E-02
HCFC-225cb	CHClFCF ₂ CClF ₂	3.25E+04	2.90E-01	3.35E-01	3.25E+04	2.90E-01	3.35E-01
HFC-23	CHF ₃	8.05E+05	7.19E+00	8.30E+00	8.05E+05	7.19E+00	8.30E+00
HFC-32	CH ₂ F ₂	3.68E+04	3.28E-01	3.79E-01	3.68E+04	3.28E-01	3.79E-01
HFC-41	CH ₃ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-125	CHF ₂ CF ₃	1.91E+05	1.71E+00	1.97E+00	1.91E+05	1.71E+00	1.97E+00
HFC-134	CHF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-134a	CH ₂ FCF ₃	7.79E+04	6.95E-01	8.03E-01	7.79E+04	6.95E-01	8.03E-01
HFC-143	CH ₂ FCHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-143a	CH ₃ CF ₃	2.44E+05	2.18E+00	2.51E+00	2.44E+05	2.18E+00	2.51E+00
HFC-152	CH ₂ FCH ₂ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-152a	CH ₃ CHF ₂	6.77E+03	6.05E-02	6.98E-02	6.77E+03	6.05E-02	6.98E-02
HFC-227ea	CF ₃ CHFCF ₃	1.76E+05	1.57E+00	1.81E+00	1.76E+05	1.57E+00	1.81E+00
HFC-236cb	CH ₂ FCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236ea	CHF ₂ CHFCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236fa	CF ₃ CH ₂ CF ₃	5.34E+05	4.77E+00	5.50E+00	5.34E+05	4.77E+00	5.50E+00
HFC-245ca	CH ₂ FCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-245fa	CHF ₂ CH ₂ CF ₃	5.64E+04	5.03E-01	5.81E-01	5.64E+04	5.03E-01	5.81E-01
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	4.32E+04	3.86E-01	4.46E-01	4.32E+04	3.86E-01	4.46E-01
HFC-43-10mee	CF ₃ CHFCF ₂ CF ₃	8.93E+04	7.98E-01	9.21E-01	8.93E+04	7.98E-01	9.21E-01
Methyl chloroform	CH ₃ CCl ₃	-1.09E+04	-9.73E-02	-1.12E-01	-1.09E+04	-9.73E-02	-1.12E-01
Carbon tetrachloride	CCl ₄	-8.85E+04	-7.90E-01	-9.12E-01	-8.85E+04	-7.90E-01	-9.12E-01
Methyl chloride	CH ₃ Cl	7.02E+02	6.27E-03	7.24E-03	7.02E+02	6.27E-03	7.24E-03

Table A.4: Damage function of global warming on primary production (cont.)

Industrial Designation or Common Name	Chemical Formula	Primary production (kg/kton)					
		Damage function			Damage factor		
		Terrestrial ecosystem					
		Value	Min	Max	Value	Min	Max
Dimethylether	CH ₃ OCH ₃	2.31E+01	2.06E-04	2.38E-04	2.31E+01	2.06E-04	2.38E-04
Methylene chloride	CH ₂ Cl ₂	4.77E+02	4.26E-03	4.91E-03	4.77E+02	4.26E-03	4.91E-03
Methyl bromide	CH ₃ Br	-7.95E+04	-7.10E-01	-8.20E-01	-7.95E+04	-7.10E-01	-8.20E-01
Halon-1201	CHBrF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Halon-1211	CBrClF ₂	-9.41E+05	-8.40E+00	-9.70E+00	-9.41E+05	-8.40E+00	-9.70E+00
Halon-1301	CBrF ₃	-3.31E+06	-2.96E+01	-3.41E+01	-3.31E+06	-2.96E+01	-3.41E+01
Halon-2402	CBrF ₂ CBrF ₂	-1.56E+06	-1.39E+01	-1.61E+01	-1.56E+06	-1.39E+01	-1.61E+01
Sulfur hexafluoride	SF ₆	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluoromethane (PFC-14)	CF ₄	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluoroethane (PFC-116)	C ₂ F ₆	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluoropropane (PFC-218)	C ₃ F ₈	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
HFE-125	CHF ₂ OCF ₃	8.12E+05	7.25E+00	8.37E+00	8.12E+05	7.25E+00	8.37E+00
HFE-134	CHF ₂ OCHF ₂	3.44E+05	3.07E+00	3.54E+00	3.44E+05	3.07E+00	3.54E+00
HFE-143a	CH ₃ OCF ₃	4.12E+04	3.68E-01	4.25E-01	4.12E+04	3.68E-01	4.25E-01
HCFE-235da2	CHF ₂ OCHClCF ₃	1.90E+04	1.70E-01	1.96E-01	1.90E+04	1.70E-01	1.96E-01
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	3.60E+04	3.21E-01	3.70E-01	3.60E+04	3.21E-01	3.70E-01
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	2.15E+04	1.92E-01	2.22E-01	2.15E+04	1.92E-01	2.22E-01
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-245cb2	CH ₃ OCF ₂ CF ₃	4.38E+04	3.91E-01	4.52E-01	4.38E+04	3.91E-01	4.52E-01
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	3.14E+04	2.80E-01	3.24E-01	3.14E+04	2.80E-01	3.24E-01

Table A.4: Damage function of global warming on primary production (cont.)

Industrial Designation or Common Name	Chemical Formula	Primary production (kg/kton)					
		Damage function			Damage factor		
		Terrestrial ecosystem					
		Value	Min	Max	Value	Min	Max
HFE-347pcf2	-	3.15E+04	2.82E-01	3.25E-01	3.15E+04	2.82E-01	3.25E-01
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	5.98E+03	5.34E-02	6.17E-02	5.98E+03	5.34E-02	6.17E-02
HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CH ₃ OCF(CF ₃) ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-43-10pccc124	CHF ₂ OCF ₂ OC ₂ F ₄ OCH F ₂	1.02E+05	9.12E-01	1.05E+00	1.02E+05	9.12E-01	1.05E+00
	(CF ₃) ₂ CHOH	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	1.54E+05	1.38E+00	1.59E+00	1.54E+05	1.38E+00	1.59E+00
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCHF ₂	8.18E+04	7.31E-01	8.43E-01	8.18E+04	7.31E-01	8.43E-01
PFPME		5.61E+05	5.01E+00	5.79E+00	5.61E+05	5.01E+00	5.79E+00
Nitrogen trifluoride	NF ₃	1.15E+07	1.03E+02	1.19E+02	1.15E+07	1.03E+02	1.19E+02
Perfluorocyclopropane	c-C ₃ F ₆	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-227ea	CF ₃ CHFOCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236ea2	CHF ₂ OCHF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-236fa	CF ₃ CH ₂ OCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-347mcf2	CHF ₂ CH ₂ OCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356mec3	CH ₃ OCF ₂ CH ₂ FCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-356pcf3	CHF ₂ OCH ₂ CF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CHF ₂ OCH(CF ₃) ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	-(CF ₂) ₄ CH(OH)-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-449sl	-	1.67E+04	1.49E-01	1.72E-01	1.67E+04	1.49E-01	1.72E-01
HFE-569sf2	-	3.11E+03	2.77E-02	3.20E-02	3.11E+03	2.77E-02	3.20E-02

Table A.5: WHO Regions and 14 sub-regions [3]

WHO region	Mortality stratum	WHO Member States
AFRO	D	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome And Principe, Senegal, Seychelles, Sierra Leone, Togo
AFRO	E	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic Of The Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
AMRO	A	Canada, United States Of America, Cuba
AMRO	B	Antigua And Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts And Nevis, Saint Lucia, Saint Vincent And The Grenadines, Suriname, Trinidad And Tobago, Uruguay, Venezuela
AMRO	D	Bolivia, Ecuador, Guatemala, Haiti, Nicaragua, Peru
EMRO	B	Bahrain, Iran (Islamic Republic Of), Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates
EMRO	D	Afghanistan, Djibouti, Egypt, Iraq, Morocco, Pakistan, Somalia, Sudan, Yemen
EMRO	A	Andorra, Austria, Belgium, Croatia, Czech Republic, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom
EMRO	B	Albania, Armenia, Azerbaijan, Bosnia And Herzegovina, Bulgaria, Georgia, yrgyzstan, Poland, Romania, Slovakia, Tajikistan, The Former Yugoslav Republic Of Macedonia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia
EMRO	C	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine
SEARO	B	Indonesia, Sri Lanka, Thailand
SEARO	D	Bangladesh, Bhutan, Democratic People's Republic Of Korea, India, Maldives, Myanmar, Nepal
WPRO	A	Australia, Japan, Brunei Darussalam, New Zealand, Singapore
WPRO	B	Cambodia, China, Lao People's Democratic Republic, Malaysia, Mongolia, Philippines, Republic Of Korea, Viet Nam Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia (Federated States Of), Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

Reference

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Appendix B

Human toxicity

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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The IMPACT 2002 model can be found at <http://www.impactmodeling.org>

B.1 Model parameterization

The model parameters that can be adapted to regional or local conditions are presented in Table B.1.

Table B.1: Model parameters that can be adapted to regional or local conditions

Watershed zone modeling:	Coastal/ocean zone modeling:	Air zone modeling:
soil module: rainfall infiltration fraction (-) runoff rate (fraction of rainfall rate) (-) ppm of solids in runoff water (ppm) solid phase soil density (kg/m ³) fraction organic carbon in solid phase of soil (-) area soil (m ²) temp (K) air boundary layer thickness (m) rainfall rate (m/h) surface layer: depth (m) volumetric water fraction (-) volumetric air fraction (-) volumetric solids fraction (-) agricultural root zone: depth (m) volumetric water fraction (-) volumetric air fraction (-) volumetric solids fraction (-) vadose layer: depth (m) volumetric water fraction (-) volumetric air fraction (-) volumetric solids fraction (-) bulk vegetation module: dry plant mass (kg/m ² -soil) volume fraction leaf to aerial plant part (-) volume fraction root to aerial plant part (-) transpiration coefficient (l/kg) leaf area index (-) type of land cover (-) diffusion length stomata (m) diffusion length boundary layer (m) density root (bulk) (kg/l) correction plant lipid-n-octanol (barley) (-) root water content (g/g) root lipid content (g/g) density stem (bulk) (kg/l) correction plant lipid-n-octanol (barley) (-) stem water content (g/g) stem lipid content (g/g) density leaf (bulk) (g/g) correction plant lipid-n-octanol (barley) (-) leaves water content (g/g) leaves lipid content (g/g) temp (K) fraction of area soil covered by agri. vegetation (g) water module: mean depth (m) surface area (m ²) water pH (-) temperature (annual average) (K) mean wind speed 10m over surface (m/s) diffusion constant of oxygen in water at the temperature T (cm ² /s)	oceanic water module: depth of upper layer (m) suspended sediment phase fraction - top depth of lower layer (m) suspended sediment phase fraction-bottom (-) water pH (-) suspended sediment density (kg/m ³) fraction of organic carbon in suspended sediment (-) vertical mixing velocity (m/h) area oceanic water (m ²) temp (K) sediment deposition rate constant (m/h) sediment to water mass transfer coefficient (m/h) sediment module: depth of sediment (m) area sediment (m ²) solids fraction (-) solid phase sediment density (kg/m ³) fraction of organic carbon in solid phase of sediment (-) sediment to water mass transfer coefficient (m/h) sediment deposition rate constant (m/h) fraction of sediment deposition buried (-) fraction of sediment deposition re-suspended (-) exposure module (usable production in considered zone): sea fish (kg/yr)	air module: dry deposition velocity (m/h) wet deposition scavenging volume (m ³ air/m ³ rain) air boundary layer thickness (m) rainfall rate (m/h) average dry period (hours) lower to upper atmospheric loss rate const. (m/h) temp (K) aerosol solid density (kg/m ³) height of lower atmospheric boundary layer (m) aerosol phase fraction (m ³ /m ³ air) paved Area with drainage systems (m ²) area water (m ²) area soil (m ²) fraction of area soil covered by agri. vegetation (-) capture coefficient (klai) leaf area index (-) diffusion length stomata (m) diffusion length stomatal boundary layer (m) surface soil layer module: volumetric water fraction (-) volumetric air fraction (-) volumetric solids fraction (-) exposure module: population (number of persons) usable production in considered zone: sum unexposed produce (kg/yr) sum exposed produce (kg/yr) pigs (kg/yr) beef (kg/yr) broilers (kg/yr) goat and Sheep meat (kg/yr) eggs (kg/yr) dairy products (cow milk) (kg/yr) number of head: pigs (nb) beef+veal (nb) broilers (nb of utility chicks of table strains hatched) goat and sheep (nb) laying hens (nb) dairy cattle (nb) specific to emission modeling: fraction of burnable area (-) burnable area (km ²)

Table B.1: Model parameters that can be adapted to regional or local conditions (Cont.)

Watershed zone modeling:	Coastal/ocean zone modeling:	Air zone modeling:
diffusion constant of water in air at the temperature T (cm ² /s)		
sediment to water diffusion mass transfer coefficient (m/h)		
mass fraction of organic matter in suspended solids (-)		
concentration of colloidal organic matter per unit bulk volume (kg/m ³)		
solid-to-water phase ratio (-)		
mean sediment accumulation (kgsm ⁻² yr ⁻¹)		
sediment-land module:		
sediment to water mass transfer coefficient (m/h)		
fraction of sediment deposition buried (-)		
fraction of sediment deposition resuspended (-)		
solid phase sediment density (kg/m ³)		
fraction of organic carbon in solid phase of sediment (-)		
mean sediment accumulation		
sediment depth (m)		
area sediment (m ²)		
solids volume fraction (-)		
exposure module:		
population (number of persons)		
usable production in considered zone:		
sum unexposed produce (kg/yr)		
sum exposed produce (kg/yr)		
fresh water fish (kg/yr)		
pigs (kg/yr)		
beef+veal (kg/yr)		
broilers (kg/yr)		
goat and sheep (kg/yr)		
eggs (kg/yr)		
dairy products (cow milk) (kg/yr)		
fraction of surface drinking water (-)		
number of head:		
pigs (nb)		
beef+veal (nb)		
broilers (nb of utility chicks of table strains hatched)		
goat and sheep (nb)		
laying hens (nb)		
dairy cattle (nb)		
specific to emission modeling:		
fraction of burnable area (-)		
burnable area (km ²)		
Finally, "Air advection between air cells" and "Water advection between watersheds" can be parameterized to adapt to regional or local climatic conditions, but by being careful to always conserve mass balance.		

B.2 Result fate analysis

Table B.2: Fate analysis

CAS	Chemical name	Troposphere air concentration (kg/m ³)	Water concentration (kg/m ³)	Ocean surface water concentration (kg/m ³)	Soil concentration, overall (kg/m ³)	Plant stem concentration (kg/m ³)	Plant leaf concentration (kg/m ³)	Plant residue concentration (kg/m ³)	Sediment concentration (kg/m ³)
50-00-0	Formaldehyde	1.28E-20	7.46E-18	3.25E-20	1.76E-18	9.45E-18	6.48E-16	2.83E-15	2.29E-18
302-01-2	Hydrazine	1.30E-20	1.61E-17	3.04E-20	3.60E-18	3.43E-18	3.28E-16	9.33E-16	7.49E-18
151-56-4	Aziridine	1.87E-19	1.47E-15	6.89E-19	2.72E-17	1.03E-16	2.26E-15	9.97E-14	9.34E-16
75-07-0	Acetaldehyde	5.46E-20	4.76E-18	1.68E-20	2.67E-18	3.77E-19	1.26E-17	4.82E-17	1.45E-18
75-21-8	Ethylene oxide	1.26E-18	1.39E-16	3.85E-19	2.69E-17	1.76E-17	2.00E-16	7.67E-13	1.07E-16
107-13-1	Acrylonitrile	5.09E-19	4.97E-17	1.43E-19	1.33E-17	1.02E-17	8.89E-17	3.55E-15	2.67E-17
106-99-0	1,3-Butadiene	7.31E-19	3.05E-19	9.58E-23	2.90E-16	2.27E-18	2.17E-20	2.01E-20	3.63E-19
75-56-9	Propylene oxide	1.29E-18	1.57E-16	4.39E-19	6.44E-17	4.37E-17	2.87E-16	3.64E-13	1.09E-16
75-01-4	Vinyl chloride	3.97E-18	6.15E-17	3.14E-20	8.39E-16	6.74E-16	6.06E-18	1.40E-16	5.72E-17
78-79-5	Isoprene	2.31E-19	1.78E-18	6.25E-22	6.37E-17	1.62E-18	4.98E-19	1.20E-19	2.33E-18
79-06-1	2-Propenamide	5.64E-23	1.25E-18	3.99E-22	8.53E-19	2.79E-19	1.33E-17	4.56E-17	1.00E-18
62-56-6	Thiourea	1.98E-23	3.43E-17	8.04E-21	6.90E-18	1.64E-19	3.62E-18	1.22E-17	1.83E-17
71-43-2	Benzene	8.22E-19	1.05E-17	7.20E-21	1.26E-16	3.47E-17	1.45E-17	3.35E-17	1.48E-17
75-09-2	Dichloromethane	7.28E-18	5.41E-16	3.89E-19	2.57E-15	3.48E-15	7.57E-17	6.10E-14	4.99E-16
108-05-4	Acetic acid ethenyl ester	8.17E-19	1.13E-17	4.00E-20	1.95E-17	1.69E-17	3.45E-17	1.22E-15	6.21E-18
79-41-4	2-Propenoic acid, 2-methyl-	4.48E-20	7.80E-17	1.17E-19	8.32E-18	7.78E-17	2.50E-15	3.32E-14	4.97E-17
123-91-1	1,4-Dioxane	1.01E-19	1.27E-16	1.36E-19	3.76E-17	1.75E-17	3.82E-16	4.96E-15	8.78E-17
106-89-8	Epichlorohydrin	6.59E-19	1.60E-16	3.96E-19	3.08E-17	4.54E-17	4.31E-16	2.42E-13	1.04E-16
62-53-3	Benzenamine	2.20E-20	3.42E-17	3.56E-20	6.33E-18	4.85E-18	2.49E-16	8.05E-16	2.51E-17
156-59-2	cis-1,2-Dichloroethylene	4.62E-18	2.87E-16	2.03E-19	1.55E-15	1.93E-15	5.66E-17	2.51E-15	3.32E-16
156-60-5	trans-1,2-Dichloroethylene	4.68E-18	1.26E-16	8.94E-20	1.22E-15	1.25E-15	4.26E-17	1.08E-15	2.04E-16
75-35-4	1,1-Dichloroethylene	3.92E-18	1.53E-16	1.12E-19	3.21E-15	1.90E-15	1.68E-17	1.33E-16	2.36E-16
107-06-2	1,2-Dichloroethane	5.57E-18	6.86E-16	5.30E-19	2.12E-15	3.15E-15	1.71E-16	1.13E-13	6.85E-16
140-88-5	Ethyl acrylate	7.03E-20	2.91E-18	4.87E-21	6.43E-18	1.64E-18	6.52E-18	1.25E-17	1.17E-18
100-42-5	Styrene	1.08E-19	2.28E-18	1.72E-21	4.68E-17	4.17E-19	2.36E-17	2.82E-18	7.47E-18
100-41-4	Ethylbenzene	6.44E-19	1.00E-17	6.35E-21	3.04E-16	6.74E-18	5.73E-17	1.97E-17	6.71E-17
100-40-3	Cyclohexene, 4-ethenyl-	8.77E-20	1.39E-19	9.60E-23	1.63E-17	5.42E-21	7.87E-18	1.46E-19	3.46E-19
120-80-9	Catechol	5.90E-22	9.58E-18	4.09E-21	6.15E-18	1.12E-17	2.82E-16	1.23E-15	5.34E-18
542-75-6	1,3-Dichloropropene	9.10E-19	1.17E-17	1.41E-20	2.82E-17	2.32E-17	2.18E-17	2.27E-16	1.16E-17
108-90-7	Chlorobenzene	3.10E-18	8.52E-17	6.64E-20	1.52E-15	5.80E-16	2.46E-16	1.62E-15	4.42E-16
78-87-5	1,2-Dichloropropane	4.94E-18	2.80E-16	2.03E-19	2.01E-15	2.61E-15	1.56E-16	1.32E-14	4.78E-16
67-66-3	Chloroform	6.17E-18	2.95E-16	2.06E-19	2.27E-15	3.26E-15	1.10E-16	3.41E-14	4.39E-16
100-44-7	Benzyl chloride	3.68E-19	2.78E-18	1.99E-20	2.44E-18	5.25E-18	1.16E-16	1.48E-15	4.91E-19
106-47-8	Benzenamine, 4-chloro-	2.52E-20	1.45E-17	2.25E-20	5.16E-18	1.66E-18	1.31E-16	1.62E-16	1.05E-17
79-01-6	Trichloroethylene	3.33E-18	3.30E-17	2.21E-20	4.99E-16	3.31E-16	6.21E-17	7.64E-16	8.88E-17
79-00-5	1,1,2-Trichloroethane	3.77E-18	5.12E-16	4.62E-19	1.66E-15	2.30E-15	3.77E-16	5.81E-14	8.90E-16
120-71-8	p-Cresidine	7.38E-21	2.05E-17	1.34E-20	6.30E-18	8.67E-19	1.30E-16	1.04E-16	1.67E-17
106-46-7	p-Dichlorobenzene	1.87E-18	3.38E-17	3.61E-20	7.57E-16	1.26E-16	9.35E-16	2.42E-15	5.54E-16
75-87-6	Acetaldehyde, trichloro-	4.06E-21	6.19E-16	1.83E-19	6.20E-17	7.92E-16	1.50E-14	1.20E-13	5.00E-16
122-60-1	Oxirane, (phenoxymethyl)-	3.28E-20	3.89E-17	5.63E-20	6.51E-18	2.68E-17	1.48E-15	7.37E-15	2.97E-17
56-23-5	Carbon tetrachloride	8.81E-18	6.78E-17	5.12E-20	2.54E-15	2.50E-15	7.04E-17	8.85E-15	2.65E-16
533-74-4	Dazomet	1.83E-23	2.81E-17	6.76E-21	6.85E-18	5.80E-19	8.63E-19	3.10E-18	1.98E-17

Table B.2: Fate analysis (cont.)

CAS	Chemical name	Troposphere air concentration (kg/m ³)	Water concentration (kg/m ³)	Ocean surface water concentration (kg/m ³)	Soil concentration, overall (kg/m ³)	Plant stem concentration (kg/m ³)	Plant leaf concentration (kg/m ³)	Plant residue concentration (kg/m ³)	Sediment concentration (kg/m ³)
127-18-4	Tetrachloroethylene	4.29E-18	2.66E-17	1.69E-20	5.31E-16	4.48E-16	5.61E-17	1.56E-15	8.11E-17
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	8.54E-20	1.80E-17	6.40E-20	5.05E-18	2.58E-17	1.72E-14	4.85E-15	4.29E-17
62-44-2	Phenacetin	4.32E-23	8.74E-17	2.26E-20	1.60E-17	1.19E-17	4.04E-17	1.24E-16	7.83E-17
121-14-2	2,4-Dinitrotoluene	2.14E-20	3.64E-17	7.20E-20	8.86E-17	9.33E-17	4.75E-15	3.45E-14	5.23E-17
606-20-2	2,6-Dinitrotoluene	1.82E-20	9.63E-18	3.50E-20	1.69E-16	1.80E-16	6.04E-15	4.67E-14	3.59E-18
2212-67-1	Molinate	2.83E-20	8.97E-18	2.73E-20	5.03E-18	3.70E-18	3.36E-15	1.21E-15	1.85E-17
122-34-9	1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-	2.08E-24	1.67E-16	4.40E-20	7.47E-17	4.71E-17	3.96E-17	1.64E-17	2.97E-16
12427-38-2	Maneb	6.03E-21	4.78E-17	2.08E-20	7.69E-18	1.46E-18	1.13E-16	2.70E-16	2.95E-17
1912-24-9	Atrazine	2.12E-22	3.06E-16	7.75E-20	5.11E-17	1.15E-18	2.68E-17	1.38E-16	7.77E-16
709-98-8	Propanil	1.21E-21	2.89E-17	1.27E-20	2.26E-17	3.25E-17	3.00E-15	1.18E-14	1.49E-16
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	2.32E-19	9.35E-20	1.50E-21	2.08E-19	3.71E-19	5.36E-18	8.73E-17	1.54E-21
1563-66-2	Carbofuran	1.85E-22	1.46E-17	4.17E-21	1.58E-17	1.14E-18	2.42E-17	1.16E-16	2.39E-17
330-54-1	Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-	1.67E-22	4.96E-17	1.37E-20	5.01E-17	3.45E-18	6.14E-17	3.71E-16	2.05E-16
137-26-8	Thioperoxydicarbonic diamide, tetramethyl-	2.11E-20	7.48E-17	1.08E-19	2.12E-17	5.14E-16	1.15E-14	4.27E-13	7.32E-17
330-55-2	Linuron	7.41E-23	3.04E-17	8.31E-21	4.58E-17	1.56E-18	1.55E-17	1.67E-16	1.72E-16
75-25-2	Bromoform	2.17E-18	3.63E-16	2.89E-19	9.19E-16	1.15E-15	6.82E-16	4.35E-14	8.87E-16
23950-58-5	Pronamide	1.95E-19	1.76E-16	2.05E-19	4.84E-17	1.66E-15	5.88E-14	3.81E-14	9.19E-17
52-68-6	Trichlorofon	1.79E-26	1.72E-16	4.27E-20	3.03E-17	2.44E-17	9.52E-17	1.66E-19	1.25E-16
28249-77-6	Thiobencarb	7.97E-21	3.76E-17	2.81E-20	2.21E-17	2.21E-18	2.31E-15	5.66E-15	2.65E-16
1897-45-6	1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-	6.11E-20	3.64E-17	9.75E-20	1.45E-17	6.16E-16	2.43E-14	1.86E-13	8.31E-17
87-86-5	Pentachlorophenol	2.96E-22	1.60E-18	1.65E-21	4.14E-17	9.42E-19	2.55E-15	3.20E-17	7.90E-17
101-14-4	4,4'-Methylenbis(2-chloroaniline)	2.89E-25	8.57E-18	2.33E-21	6.09E-17	2.25E-20	3.40E-21	1.76E-19	1.82E-16
15972-60-8	Alachlor	2.18E-22	8.92E-18	3.28E-21	2.20E-17	7.67E-20	3.61E-17	2.20E-16	6.87E-17
298-04-4	Disulfoton	1.09E-23	3.20E-19	1.26E-22	7.01E-18	9.65E-22	1.78E-19	3.93E-18	1.12E-18
12122-67-7	Zineb	1.05E-23	3.44E-16	9.31E-20	3.32E-17	1.13E-16	1.33E-15	7.89E-16	2.21E-16
122-14-5	Fenitrothion	3.23E-25	2.86E-18	7.14E-22	1.64E-17	5.27E-20	2.80E-21	2.70E-19	5.17E-18
55-38-9	Fenthion	2.63E-24	9.67E-19	2.60E-22	1.99E-17	3.41E-21	5.27E-20	1.45E-18	2.47E-18
40487-42-1	Pendimethalin	4.15E-21	1.41E-17	1.26E-20	2.19E-17	1.68E-20	1.08E-15	2.72E-16	3.24E-16
51218-45-2	Metolachlor	3.69E-18	1.17E-17	6.70E-21	5.48E-16	8.76E-17	3.00E-17	4.51E-17	7.87E-17
17804-35-2	Benomyl	2.94E-27	4.56E-17	1.06E-20	6.55E-17	4.70E-18	2.99E-19	2.13E-21	9.42E-17
1336-36-3	PCBS	1.38E-19	1.71E-17	2.31E-20	2.20E-17	9.03E-18	2.18E-13	2.77E-17	1.49E-15
33089-61-1	Amitraz	6.33E-21	6.53E-18	7.79E-21	2.18E-17	5.89E-22	3.34E-16	3.74E-17	2.26E-16
82-68-8	Pentachloronitrobenzene	4.59E-19	3.06E-17	5.38E-20	3.46E-16	6.48E-16	2.29E-14	1.42E-16	6.65E-16
333-41-5	Diazinon	1.08E-20	1.54E-16	7.80E-20	4.31E-17	1.77E-15	7.88E-14	8.80E-14	1.26E-15
137-30-4	Ziram	3.55E-23	3.29E-17	7.98E-21	6.75E-18	1.22E-18	2.64E-18	1.24E-17	2.21E-17
1746-01-6	2,3,7,8-TCDD (Dioxin)	4.04E-20	9.01E-17	1.16E-19	4.21E-16	5.40E-19	1.15E-13	4.58E-17	1.64E-13
1582-09-8	Trifluralin	7.97E-20	4.65E-17	5.50E-20	4.13E-17	1.80E-17	1.23E-13	1.65E-16	1.98E-15

Table B.2: Fate analysis (cont.)

CAS	Chemical name	Troposphere air concentration (kg/m ³)	Water concentration (kg/m ³)	Ocean surface water concentration (kg/m ³)	Soil concentration, overall (kg/m ³)	Plant stem concentration (kg/m ³)	Plant leaf concentration (kg/m ³)	Plant residue concentration (kg/m ³)	Sediment concentration (kg/m ³)
2312-35-8	Propargite	1.95E-22	1.69E-18	1.22E-21	2.19E-17	3.33E-22	2.18E-17	2.53E-17	3.20E-17
2921-88-2	Chlorpyrifos	4.20E-23	8.51E-20	1.93E-22	4.14E-18	4.57E-22	1.09E-17	7.18E-18	7.07E-19
470-90-6	Chlorfenvinphos	5.75E-26	2.20E-18	5.75E-22	2.10E-17	1.62E-20	1.99E-21	4.11E-20	5.53E-18
103-23-1	Bis(2-ethylhexyl)adipate	4.36E-22	7.89E-19	1.89E-21	5.07E-18	2.69E-22	1.11E-16	4.18E-18	1.35E-17
76578-14-8	Quizalofop-Ethyl	1.59E-22	2.49E-18	1.29E-21	2.19E-17	9.00E-21	3.68E-17	8.01E-17	2.81E-17
41198-08-7	Profenofos	1.73E-22	1.81E-18	1.16E-21	2.19E-17	1.28E-21	2.54E-17	3.84E-17	2.58E-17
55285-14-8	Carbamic acid, [(dibutylamino)thio]methyl-, 2,3-dihydro-2,2-dimethyl-	6.24E-22	9.47E-19	2.29E-21	5.07E-18	3.26E-22	8.57E-17	1.52E-17	8.36E-18
300-76-5	Naled	4.15E-19	3.16E-16	2.14E-19	7.09E-17	8.55E-17	2.11E-16	5.30E-15	2.85E-16
563-12-2	Ethion	2.78E-22	2.45E-19	5.89E-22	5.06E-18	4.51E-24	3.06E-18	4.71E-18	1.16E-18
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	3.42E-27	3.95E-17	1.08E-20	3.63E-17	2.01E-18	2.19E-19	1.32E-20	2.74E-16
117-81-7	Bis-(2-ethylhexyl) phthalate	1.07E-20	7.96E-18	2.38E-20	1.35E-17	5.65E-20	9.85E-15	2.69E-17	3.33E-16
52645-53-1	Permethrin	1.44E-24	4.05E-20	1.69E-23	1.15E-17	4.92E-25	2.01E-19	1.36E-20	3.91E-19
115-29-7	Endosulfan	4.42E-20	3.45E-18	1.91E-20	2.68E-18	1.84E-18	3.24E-15	3.15E-16	7.40E-18
1163-19-5	Decabromophenyl ether	1.02E-21	2.58E-17	8.26E-21	1.59E-16	1.54E-15	1.57E-13	1.39E-17	4.38E-15
7440-38-2	As	-3.25E-34	1.17E-13	5.84E-17	3.57E-12	0.00E+00	0.00E+00	0.00E+00	6.78E-10
7440-43-9	Cadmium	0.00E+00	6.64E-14	2.17E-17	3.55E-13	0.00E+00	0.00E+00	0.00E+00	3.50E-09
18540-29-9	CrVI	0.00E+00	5.76E-14	1.98E-17	1.99E-13	0.00E+00	0.00E+00	0.00E+00	4.89E-09
7439-92-1	Lead and compounds (inorganic)	-1.09E-33	6.81E-14	2.48E-17	2.49E-12	0.00E+00	0.00E+00	0.00E+00	7.96E-09
7782-49-2	Selenium and compounds	0.00E+00	8.03E-14	3.37E-16	3.73E-14	0.00E+00	0.00E+00	0.00E+00	2.84E-11
7439-97-6	Elemental mercury (excludes methyl mercury)	0.00E+00	6.33E-14	2.10E-17	3.04E-13	0.00E+00	0.00E+00	0.00E+00	4.00E-09
7440-36-0	Sb	0.00E+00	8.09E-14	7.17E-17	1.55E-13	0.00E+00	0.00E+00	0.00E+00	1.78E-10
7440-02-0	Ni	0.00E+00	8.50E-14	4.74E-17	6.16E-13	0.00E+00	0.00E+00	0.00E+00	3.94E-10
7440-62-2	V	0.00E+00	8.47E-14	5.81E-17	5.36E-13	0.00E+00	0.00E+00	0.00E+00	2.74E-10
7440-41-7	Beryllium and compounds	0.00E+00	7.95E-14	5.46E-17	7.02E-14	0.00E+00	0.00E+00	0.00E+00	2.58E-10

B.3 Result of exposure analysis

Table B.3: Exposure analysis (unit: kg/yr)

CAS	Chemical name	Inhalation		Ingestion							
		Direct	Indirect	Drink water	Unexposure production	Exposure product	Eggs	Milk	Meat	Freshwater fish	Sea fish
50-00-0	Formaldehyde	6.00E-09	1.23E-16	1.44E-10	2.34E-13	1.81E-13	4.68E-18	1.18E-16	2.17E-16	1.12E-12	2.55E-17
302-01-2	Hydrazine	6.09E-09	5.56E-19	3.12E-10	8.51E-14	9.14E-14	2.15E-20	3.46E-19	7.87E-19	2.43E-14	2.40E-19
151-56-4	Aziridine	8.76E-08	4.20E-16	2.85E-08	2.54E-12	6.31E-13	1.88E-17	3.35E-16	9.09E-16	6.42E-11	1.58E-16
75-07-0	Acetaldehyde	2.55E-08	1.07E-16	9.20E-11	9.34E-15	3.52E-15	4.02E-18	2.02E-17	8.50E-17	1.85E-13	3.42E-18
75-21-8	Ethylene oxide	5.88E-07	2.69E-15	2.69E-09	4.36E-13	5.58E-14	1.01E-16	5.11E-16	2.15E-15	5.83E-12	8.48E-17
107-13-1	Acrylonitrile	2.38E-07	3.87E-15	9.62E-10	2.54E-13	2.48E-14	1.46E-16	7.33E-16	3.09E-15	6.12E-12	9.21E-17
106-99-0	1,3-Butadiene	3.42E-07	3.05E-13	1.12E-11	5.64E-14	6.06E-18	1.15E-14	5.54E-14	2.38E-13	1.13E-12	1.86E-18
75-56-9	Propylene oxide	6.03E-07	5.90E-15	3.04E-09	1.08E-12	8.02E-14	2.23E-16	1.13E-15	4.74E-15	1.26E-11	1.84E-16
75-01-4	Vinyl chloride	1.86E-06	4.06E-13	1.55E-09	1.67E-11	1.69E-15	1.53E-14	7.42E-14	3.18E-13	6.92E-11	1.85E-16
78-79-5	Isoprene	1.08E-07	2.60E-13	3.44E-11	4.02E-14	1.39E-16	9.77E-15	4.73E-14	2.03E-13	1.53E-11	2.82E-17
79-06-1	2-Propenamide	2.64E-11	5.14E-20	2.43E-11	6.93E-15	3.72E-15	2.97E-21	2.53E-19	4.29E-19	2.55E-14	4.25E-20
62-56-6	Thiourea	9.28E-12	7.04E-21	6.64E-10	4.06E-15	1.01E-15	1.12E-20	7.03E-19	1.85E-18	3.13E-13	3.84E-19
71-43-2	Benzene	3.85E-07	5.16E-13	2.04E-10	8.60E-13	4.04E-15	1.94E-14	9.43E-14	4.04E-13	5.53E-11	1.98E-16
75-09-2	Dichloromethane	3.40E-06	5.53E-13	1.12E-08	8.62E-11	2.11E-14	2.08E-14	1.03E-13	4.38E-13	4.72E-10	1.78E-15
108-05-4	Acetic acid ethenyl ester	3.82E-07	1.87E-14	2.18E-10	4.20E-13	9.62E-15	7.05E-16	3.43E-15	1.47E-14	3.56E-12	6.61E-17
79-41-4	2-Propenoic acid, 2-methyl-	2.10E-08	1.63E-15	1.51E-09	1.93E-12	6.96E-13	6.38E-17	1.79E-15	3.32E-15	3.64E-11	2.85E-16
123-91-1	1,4-Dioxane	4.71E-08	2.31E-16	2.46E-09	4.34E-13	1.07E-13	8.95E-18	7.12E-17	2.40E-16	5.66E-12	3.17E-17
106-89-8	Epichlorohydrin	3.08E-07	7.93E-15	3.11E-09	1.13E-12	1.20E-13	3.00E-16	1.62E-15	6.57E-15	2.92E-11	3.78E-16
62-53-3	Benzenamine	1.03E-08	7.45E-16	6.62E-10	1.20E-13	6.95E-14	2.91E-17	3.25E-16	9.06E-16	1.50E-11	8.20E-17
156-59-2	cis-1,2-Dichloroethylene	2.16E-06	1.03E-12	5.63E-09	4.78E-11	1.58E-14	3.87E-14	1.90E-13	8.12E-13	6.24E-10	2.31E-15
156-60-5	trans-1,2-Dichloroethylene	2.19E-06	2.34E-12	2.48E-09	3.09E-11	1.19E-14	8.79E-14	4.28E-13	1.83E-12	5.47E-10	2.03E-15
75-35-4	1,1-Dichloroethylene	1.83E-06	2.25E-12	3.67E-09	4.72E-11	4.69E-15	8.49E-14	4.15E-13	1.78E-12	7.49E-10	2.87E-15
107-06-2	1,2-Dichloroethane	2.61E-06	6.62E-13	1.33E-08	7.82E-11	4.76E-14	2.50E-14	1.25E-13	5.29E-13	8.75E-10	3.54E-15
140-88-5	Ethyl acrylate	3.29E-08	6.27E-15	5.63E-11	4.08E-14	1.82E-15	2.36E-16	1.16E-15	4.95E-15	2.91E-12	2.55E-17
100-42-5	Styrene	5.07E-08	5.19E-13	4.40E-11	1.04E-14	6.57E-15	1.95E-14	9.66E-14	4.09E-13	6.73E-11	2.66E-16
100-41-4	Ethylbenzene	3.01E-07	3.71E-12	1.93E-10	1.67E-13	1.60E-14	1.39E-13	6.82E-13	2.91E-12	3.46E-10	1.15E-15
100-40-3	Cyclohexene, 4-ethenyl-	4.10E-08	3.19E-12	2.67E-12	1.34E-16	2.19E-15	1.20E-13	5.84E-13	2.50E-12	2.30E-11	8.32E-17
120-80-9	Catechol	2.76E-10	1.91E-17	1.85E-10	2.79E-13	7.87E-14	9.99E-19	1.56E-16	2.25E-16	4.05E-12	9.05E-18
542-75-6	1,3-Dichloropropene	4.26E-07	2.53E-13	2.27E-10	5.76E-13	6.10E-15	9.50E-15	4.61E-14	1.98E-13	3.08E-11	1.93E-16
108-90-7	Chlorobenzene	1.45E-06	8.35E-12	1.65E-09	1.44E-11	6.87E-14	3.14E-13	1.54E-12	6.57E-12	1.54E-09	6.30E-15
78-87-5	1,2-Dichloropropane	2.31E-06	2.60E-12	5.42E-09	6.48E-11	4.36E-14	9.78E-14	4.81E-13	2.05E-12	1.26E-09	4.80E-15
67-66-3	Chloroform	2.89E-06	2.46E-12	5.76E-09	8.09E-11	3.08E-14	9.26E-14	4.54E-13	1.94E-12	1.05E-09	3.86E-15
100-44-7	Benzyl chloride	1.72E-07	3.14E-13	5.38E-11	1.30E-13	3.25E-14	1.18E-14	5.86E-14	2.47E-13	1.89E-11	7.11E-16
106-47-8	Benzenamine, 4-chloro-	1.18E-08	7.29E-15	2.81E-10	4.10E-14	3.64E-14	2.78E-16	2.12E-15	6.99E-15	3.95E-11	3.20E-16
79-01-6	Trichloroethylene	1.56E-06	4.39E-12	6.38E-10	8.21E-12	1.73E-14	1.65E-13	8.01E-13	3.44E-12	3.26E-10	1.14E-15
79-00-5	1,1,2-Trichloroethane	1.76E-06	2.03E-12	9.90E-09	5.69E-11	1.05E-13	7.64E-14	3.87E-13	1.63E-12	2.36E-09	1.11E-14
120-71-8	p-Cresidine	3.45E-09	1.73E-15	3.97E-10	2.15E-14	3.61E-14	6.95E-17	1.03E-15	2.62E-15	4.68E-11	1.60E-16
106-46-7	p-Dichlorobenzene	8.73E-07	2.33E-11	6.53E-10	3.13E-12	2.61E-13	8.77E-13	4.43E-12	1.85E-11	2.26E-09	1.26E-14
75-87-6	Acetaldehyde, trichloro-	1.90E-09	1.69E-16	1.20E-08	1.96E-11	4.17E-12	2.97E-17	1.07E-14	1.51E-14	3.24E-10	5.03E-16
122-60-1	Oxirane, (phenoxymethyl)-	1.53E-08	5.71E-15	7.52E-10	6.65E-13	4.12E-13	2.21E-16	5.21E-15	1.01E-14	6.86E-11	5.21E-16
56-23-5	Carbon tetrachloride	4.12E-06	1.64E-11	1.36E-09	6.21E-11	1.96E-14	6.18E-13	2.99E-12	1.29E-11	8.98E-10	3.55E-15
533-74-4	Dazomet	8.54E-12	1.96E-18	5.44E-10	1.44E-14	2.41E-16	2.79E-18	1.71E-16	4.53E-16	3.29E-11	4.14E-17
127-18-4	Tetrachloroethylene	2.01E-06	6.90E-12	5.14E-10	1.11E-11	1.57E-14	2.60E-13	1.26E-12	5.40E-12	3.11E-10	1.03E-15

Table B.3: Exposure analysis (unit: kg/yr) (cont.)

CAS	Chemical name	Inhalation		Ingestion							
		Direct	Indirect	Drink water	Unexposure production	Exposure product	Eggs	Milk	Meat	Freshwater fish	Sea fish
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	4.00E-08	2.00E-12	3.46E-10	6.41E-13	4.81E-12	7.58E-14	6.35E-12	8.86E-12	2.05E-09	3.82E-14
62-44-2	Phenacetin	2.02E-11	7.01E-18	1.69E-09	2.95E-13	1.13E-14	1.30E-17	8.93E-16	2.24E-15	1.45E-10	1.97E-16
121-14-2	2,4-Dinitrotoluene	1.00E-08	9.04E-15	7.04E-10	2.31E-12	1.32E-12	3.54E-16	3.21E-14	4.53E-14	1.37E-10	1.42E-15
606-20-2	2,6-Dinitrotoluene	8.50E-09	6.37E-15	1.86E-10	4.48E-12	1.68E-12	2.43E-16	3.25E-14	4.34E-14	3.08E-11	5.86E-16
2212-67-1	Molinate	1.32E-08	1.96E-13	1.73E-10	9.18E-14	9.38E-13	7.42E-15	3.82E-13	5.79E-13	3.63E-10	5.78E-15
122-34-9	1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-	9.72E-13	1.34E-18	3.24E-09	1.17E-12	1.11E-14	9.76E-17	6.45E-15	1.66E-14	9.02E-10	1.24E-15
12427-38-2	Maneb	2.82E-09	1.07E-16	9.24E-10	3.62E-14	3.16E-14	4.80E-18	9.68E-17	2.47E-16	1.21E-11	2.77E-17
1912-24-9	Atrazine	9.92E-11	5.09E-16	5.91E-09	2.84E-14	7.49E-15	6.80E-16	4.22E-14	1.11E-13	5.02E-09	6.68E-15
709-98-8	Propanil	5.68E-10	6.09E-15	5.58E-10	8.05E-13	8.37E-13	3.60E-16	2.31E-13	2.96E-13	8.88E-10	2.05E-15
62-73-7	Phosphoric acid, 2,2-dichloroethyl dimethyl ester	1.09E-07	2.80E-14	1.81E-12	9.20E-15	1.50E-15	1.05E-15	5.09E-15	2.18E-14	1.21E-13	1.01E-17
1563-66-2	Carbofuran	8.64E-11	1.65E-16	2.82E-10	2.83E-14	6.75E-15	1.79E-17	1.08E-15	2.47E-15	1.03E-10	1.55E-16
330-54-1	Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-	7.81E-11	4.29E-16	9.58E-10	8.55E-14	1.71E-14	1.31E-16	9.58E-15	2.23E-14	8.64E-10	1.25E-15
137-26-8	Thioperoxydicarbonic diamide, tetramethyl-	9.88E-09	4.84E-15	1.45E-09	1.27E-11	3.21E-12	1.98E-16	4.08E-14	5.35E-14	1.67E-10	1.26E-15
330-55-2	Linuron	3.46E-11	3.16E-16	5.88E-10	3.87E-14	4.32E-15	1.29E-16	8.35E-15	2.10E-14	8.15E-10	1.17E-15
75-25-2	Bromoform	1.01E-06	2.08E-12	7.01E-09	2.85E-11	1.90E-13	7.86E-14	4.08E-13	1.69E-12	2.73E-09	1.14E-14
23950-58-5	Pronamide	9.14E-08	2.70E-12	3.39E-09	4.12E-11	1.64E-11	1.04E-13	1.26E-11	1.70E-11	1.28E-08	7.82E-14
52-68-6	Trichlorofon	8.39E-15	2.48E-22	3.32E-09	6.05E-13	2.66E-14	2.13E-18	1.52E-16	3.77E-16	3.52E-11	4.58E-17
28249-77-6	Thiobencarb	3.73E-09	8.55E-14	7.27E-10	5.47E-14	6.45E-13	3.58E-15	4.04E-13	5.71E-13	2.21E-09	8.62E-15
1897-45-6	1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-	2.86E-08	1.14E-13	7.05E-10	1.53E-11	6.78E-12	4.35E-15	6.93E-13	9.09E-13	4.83E-10	6.77E-15
87-86-5	Pentachlorophenol	1.38E-10	3.56E-13	2.57E-11	2.33E-14	7.11E-13	1.51E-14	4.54E-11	5.55E-11	5.19E-09	2.81E-14
101-14-4	4,4'-Methylenebis(2-chloroaniline)	1.35E-13	1.00E-17	1.65E-10	5.57E-16	9.48E-19	2.68E-16	1.72E-14	4.68E-14	1.36E-09	1.94E-15
15972-60-8	Alachlor	1.02E-10	3.08E-15	1.72E-10	1.90E-15	1.01E-14	2.29E-16	1.52E-14	3.07E-14	6.62E-10	1.27E-15
298-04-4	Disulfoton	5.10E-12	4.88E-16	6.15E-12	2.39E-17	4.95E-17	3.13E-17	1.09E-15	3.03E-15	6.32E-11	1.30E-16
12122-67-7	Zineb	4.89E-12	8.90E-19	6.66E-09	2.79E-12	3.72E-13	2.65E-17	3.32E-15	6.41E-15	3.31E-10	4.69E-16
122-14-5	Fenitrothion	1.51E-13	3.47E-18	5.52E-11	1.31E-15	7.80E-19	2.77E-17	1.76E-15	4.78E-15	1.68E-10	2.19E-16
55-38-9	Fenthion	1.23E-12	1.42E-16	1.85E-11	8.46E-17	1.47E-17	5.22E-17	3.24E-15	9.18E-15	2.23E-10	3.14E-16
40487-42-1	Pendimethalin	1.94E-09	2.68E-12	2.46E-10	4.17E-16	3.01E-13	1.09E-13	1.13E-11	1.59E-11	2.69E-08	1.26E-13
51218-45-2	Metolachlor	1.73E-06	2.12E-11	2.27E-10	2.17E-12	8.36E-15	7.99E-13	3.87E-12	1.66E-11	4.05E-10	1.21E-15
17804-35-2	Benomyl	1.37E-15	2.50E-21	8.82E-10	1.17E-13	8.35E-17	3.50E-17	2.19E-15	5.86E-15	3.11E-10	3.77E-16
1336-36-3	PCBS	6.48E-08	1.15E-09	1.35E-10	2.24E-13	6.08E-11	4.35E-11	2.70E-08	3.34E-08	2.58E-07	1.83E-12
33089-61-1	Amtraz	2.96E-09	8.55E-12	1.03E-10	1.46E-17	9.32E-14	3.29E-13	8.71E-12	1.61E-11	2.33E-08	1.46E-13
82-68-8	Pentachloronitrobenzene	2.15E-07	8.55E-11	5.75E-10	1.61E-11	6.38E-12	3.22E-12	7.87E-11	1.44E-10	2.03E-08	1.87E-13
333-41-5	Diazinon	5.07E-09	9.24E-14	2.97E-09	4.39E-11	2.20E-11	4.72E-15	1.00E-11	1.23E-11	7.41E-09	1.97E-14
137-30-4	Ziram	1.66E-11	2.58E-18	6.37E-10	3.02E-14	7.36E-16	2.25E-18	1.37E-16	3.62E-16	2.76E-11	3.51E-17
1746-01-6	2,3,7,8-TCDD (Dioxin)	1.89E-08	8.44E-10	2.45E-10	1.34E-14	3.20E-11	5.56E-11	5.91E-08	3.56E-08	1.57E-06	1.06E-11
1582-09-8	Trifluralin	3.73E-08	7.44E-11	7.76E-10	4.46E-13	3.44E-11	2.84E-12	1.71E-09	2.12E-09	1.21E-07	7.52E-13
2312-35-8	Propargite	9.13E-11	8.34E-14	3.06E-11	8.27E-18	6.07E-15	3.79E-15	1.95E-13	3.50E-13	2.28E-09	8.55E-15
2921-88-2	Chlorpyrifos	1.97E-11	1.49E-14	1.55E-12	1.13E-17	3.04E-15	5.89E-16	6.18E-14	8.71E-14	9.77E-11	1.16E-15

Table B.3: Exposure analysis (unit: kg/yr) (cont.)

CAS	Chemical name	Inhalation		Ingestion							
		Direct	Indirect	Drink water	Unexposure production	Exposure product	Eggs	Milk	Meat	Freshwater fish	Sea fish
470-90-6	Chlorfenvinphos	2.69E-14	1.62E-18	4.23E-11	4.02E-16	5.56E-19	5.59E-17	3.62E-15	9.94E-15	2.93E-10	4.02E-16
103-23-1	Bis(2-ethylhexyl)adipate	2.04E-10	2.40E-12	7.83E-12	6.68E-18	3.10E-14	9.41E-14	9.69E-12	1.35E-11	1.07E-08	1.35E-13
76578-14-8	Quizalofop-Ethyl	7.45E-11	1.30E-14	4.75E-11	2.23E-16	1.03E-14	6.69E-16	5.83E-14	9.59E-14	8.16E-10	2.22E-15
41198-08-7	Profenofos	8.08E-11	3.53E-14	3.38E-11	3.18E-17	7.09E-15	1.66E-15	1.05E-13	1.81E-13	1.30E-09	4.36E-15
55285-14-8	Carbamic acid, [(dibutylamino)thio]methyl-, 2,3-dihydro-2,2-dimethyl-	2.92E-10	9.90E-13	1.44E-11	8.09E-18	2.39E-14	3.86E-14	2.27E-12	3.44E-12	3.88E-09	4.91E-14
300-76-5	Naled	1.94E-07	4.25E-14	6.11E-09	2.12E-12	5.87E-14	1.63E-15	9.85E-15	3.84E-14	3.55E-10	1.26E-15
563-12-2	Ethion	1.30E-10	1.39E-13	4.36E-12	1.12E-19	8.54E-16	5.35E-15	5.55E-14	1.58E-13	3.77E-10	4.75E-15
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	1.60E-15	2.02E-20	7.64E-10	5.00E-14	6.11E-17	2.10E-16	1.31E-14	3.50E-14	1.39E-09	2.00E-15
117-81-7	Bis-(2-ethylhexyl) phthalate	5.02E-09	9.24E-11	6.18E-11	1.40E-15	2.75E-12	3.54E-12	1.27E-09	1.60E-09	1.21E-07	1.90E-12
52645-53-1	Permethrin	6.75E-13	7.76E-15	4.07E-13	1.22E-20	5.61E-17	4.94E-16	4.50E-14	1.32E-13	5.47E-10	1.19E-15
115-29-7	Endosulfan	2.07E-08	7.52E-13	6.66E-11	4.57E-14	9.05E-13	2.83E-14	9.53E-13	1.58E-12	2.99E-10	8.68E-15
1163-19-5	Decabromophenyl ether	4.77E-10	7.57E-13	4.44E-10	3.82E-11	4.37E-11	5.08E-14	1.72E-09	2.08E-09	5.55E-08	9.30E-14
7440-38-2	As	0.00E+00	0.00E+00	2.60E-06	4.42E-10	4.98E-12	1.71E-13	2.49E-10	7.66E-10	6.65E-06	1.74E-11
7440-43-9	Cadmium	0.00E+00	0.00E+00	1.56E-06	8.24E-11	9.27E-13	2.42E-12	3.11E-09	8.81E-09	9.55E-07	1.64E-12
18540-29-9	CrVI	0.00E+00	0.00E+00	1.24E-06	6.17E-13	6.94E-15	1.54E-12	1.94E-09	1.38E-08	8.73E-07	1.65E-12
7439-92-1	Lead and compounds (inorganic)	0.00E+00	0.00E+00	8.96E-07	3.85E-12	4.34E-14	4.15E-13	5.96E-10	2.23E-09	1.29E-05	2.46E-11
7782-49-2	Selenium and compounds	0.00E+00	0.00E+00	2.26E-06	5.78E-12	6.50E-14	7.55E-12	9.40E-09	2.70E-08	1.52E-05	3.34E-10
7439-97-6	Elemental mercury (excludes methyl mercury)	0.00E+00	0.00E+00	1.44E-06	7.05E-12	7.93E-14	7.06E-13	8.96E-10	2.58E-09	7.26E-05	1.26E-10
7440-36-0	Sb	0.00E+00	0.00E+00	2.24E-06	2.39E-11	2.68E-13	2.09E-13	2.63E-10	7.56E-10	2.45E-06	1.14E-11
7440-02-0	Ni	0.00E+00	0.00E+00	2.26E-06	6.68E-11	7.51E-13	2.00E-12	2.58E-09	4.57E-09	2.80E-06	8.18E-12
7440-62-2	V	0.00E+00	0.00E+00	2.27E-06	2.49E-10	2.80E-12	3.79E-13	4.98E-10	1.43E-09	6.41E-06	2.31E-11
7440-41-7	Beryllium and compounds	0.00E+00	0.00E+00	2.21E-06	8.08E-12	9.09E-14	3.65E-12	4.56E-09	1.13E-08	5.72E-07	2.06E-12

B.4 Intake fraction

Table B.4: Intake fraction

CAS	Chemical name	Inhalation [risk/($\mu\text{g}/\text{m}^3$)]	EF [DALY/mg intake]	iF into air	iF into water [mg intake/mg emitted]	iF into soil
79-06-1	2-Propenamide	1.300E-03	4.731E-05	4.200E-07	3.669E-13	2.636E-11
140-88-5	Ethyl acrylate	2.742E-05	9.978E-07	5.893E-07	1.400E-08	3.290E-08
107-13-1	2-Propenenitrile	6.800E-05	3.270E-06	4.003E-06	3.558E-07	2.382E-07
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid			9.532E-07	6.363E-10	2.039E-10
75-07-0	Acetaldehyde	2.200E-06	8.006E-08	6.773E-07	2.156E-08	2.554E-08
90-04-0	o-anisidine	2.742E-05	9.978E-07			
62-53-3	Benzenamine	7.400E-06	2.693E-07	6.448E-07	4.583E-09	1.028E-08
61-82-5	3-amino-1H-1,2,4-triazole; amitrole	2.742E-05	9.978E-07			
1309-64-4	Antimony trioxide	2.742E-05	9.978E-07	4.042E-06	0.000E+00	0.000E+00
7440-36-0	Antimony			4.042E-06	0.000E+00	0.000E+00
78-79-5	Isoprene	2.742E-05	9.978E-07	3.985E-07	4.692E-08	1.082E-07
96-45-7	2-imidazolidinethione	2.742E-05	9.978E-07			
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester			8.365E-07	8.981E-11	7.446E-11
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine			8.455E-07	7.037E-09	1.939E-09
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester			1.116E-06	1.502E-08	1.322E-08
100-41-4	Ethylbenzene	2.742E-05	9.978E-07	1.913E-06	4.055E-07	3.010E-07
151-56-4	Aziridine	2.742E-05	9.978E-07	3.568E-06	2.165E-07	8.763E-08
75-21-8	Ethylene oxide	1.000E-04	3.639E-06	7.814E-06	1.058E-06	5.877E-07
12122-67-7	[[[1,2-Ethanedithiolbis(carbamodithioato)](2-)]zinc			1.557E-06	6.250E-14	4.889E-12
12427-38-2	[[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato(2-)-kappaS,kappaS']manganese			2.411E-07	4.919E-10	2.821E-09
62-44-2	Phenacetin	2.742E-05	9.978E-07	6.355E-07	9.844E-13	2.020E-11
2593-15-9	5-ethoxy-3-trichloromethyl-1,2,4-thiadiazole; echlomezol					
106-89-8	(Chloromethyl)oxirane	1.200E-06	4.367E-08	7.298E-06	4.378E-07	3.082E-07
556-52-5	2,3-epoxy-1-propanol	2.742E-05	9.978E-07			
75-56-9	Propylene oxide	3.700E-06	1.346E-07	7.637E-06	6.301E-07	6.032E-07
122-60-1	1-Phenoxy-2,3-epoxypropane	1.710E-04	6.223E-06	1.301E-06	4.298E-09	1.535E-08
-	cadmium and its compounds	1.800E-03	6.550E-05	4.042E-06	0.000E+00	0.000E+00
10108-64-2	Cadmium chloride	6.600E-01	2.402E-02	4.042E-06	0.000E+00	0.000E+00
10124-36-4	Cadmium sulfate	3.600E-01	1.310E-02	4.042E-06	0.000E+00	0.000E+00
1306-19-0	Cadmium oxide	4.874E-01	1.774E-02	4.042E-06	0.000E+00	0.000E+00
7440-43-9	Cadmium	1.800E-03	8.655E-05	4.042E-06	0.000E+00	0.000E+00
7440-47-3	Chromium			4.042E-06	0.000E+00	0.000E+00
-	Chromium (VI) compounds	1.200E-02	4.367E-04	4.042E-06	0.000E+00	0.000E+00
-	Chromium (VI) compounds	1.200E-02	4.367E-04	4.042E-06	0.000E+00	0.000E+00
1333-82-0	Chromium oxide	1.200E-02	5.770E-04	4.042E-06	0.000E+00	0.000E+00
13530-65-9	Zinc Chromate	1.200E-02	5.770E-04	4.042E-06	0.000E+00	0.000E+00
13765-19-0	calcium chromate	2.742E-05	1.318E-06	4.042E-06	0.000E+00	0.000E+00
18540-29-9	CrVI			4.042E-06	0.000E+00	0.000E+00
7758-97-6	Lead chromate	1.200E-02	5.770E-04	4.042E-06	0.000E+00	0.000E+00
7789-06-2	strontium chromate	1.200E-02	5.770E-04	4.042E-06	0.000E+00	0.000E+00
106-47-8	4-Chloroaniline	2.742E-05	9.978E-07	6.654E-07	1.797E-08	1.181E-08
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine			4.111E-07	4.743E-11	9.924E-11

Table B.4: Intake fraction (cont.)

CAS	Chemical name	Inhalation [risk/($\mu\text{g}/\text{m}^3$)]	EF [DALY/mg intake]	iF into air [mg intake/mg emitted]	iF into water	iF into soil
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide			6.042E-06	1.843E-06	1.725E-06
75-01-4	Vinyl chloride	4.400E-06	4.804E-07	4.022E-06	9.601E-07	1.855E-06
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide			5.828E-07	5.542E-11	1.018E-10
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine			1.451E-06	4.284E-14	9.716E-13
108-90-7	Chlorobenzene			6.040E-06	2.188E-06	1.450E-06
67-66-3	Trichloromethane	2.300E-05	1.532E-06	7.879E-06	2.824E-06	2.886E-06
1314-62-1	vanadium pentoxide	2.742E-05	9.978E-07	4.042E-06	0.000E+00	0.000E+00
-	cobalt and its compounds	2.742E-05	9.978E-07			
108-05-4	Vinyl acetate	2.742E-05	9.978E-07	4.017E-06	1.316E-07	3.822E-07
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester			8.644E-07	2.646E-09	3.727E-09
56-23-5	Tetrachloromethane	1.500E-05	5.458E-07	9.956E-06	3.421E-06	4.123E-06
123-91-1	1,4-Dioxane	1.400E-06	5.094E-08	1.856E-06	3.035E-08	4.712E-08
107-06-2	1,2-Dichloroethane	2.600E-05	9.461E-07	7.822E-06	2.872E-06	2.607E-06
75-35-4	1,1-Dichloroethene			3.997E-06	2.111E-06	1.831E-06
156-59-2	cis-1,2-Dichloroethylene			5.925E-06	2.478E-06	2.163E-06
156-60-5	trans-1,2-Dichloroethylene			5.925E-06	2.483E-06	2.188E-06
101-14-4	4,4'-Methylenebis(2-chloroaniline)	2.742E-05	9.978E-07	5.231E-07	6.818E-14	1.354E-13
23950-58-5	Pronamide			6.954E-06	3.608E-07	9.143E-08
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea			7.153E-07	8.674E-12	7.805E-11
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea			8.392E-07	5.136E-12	3.465E-11
78-87-5	1,2-Dichloropropane			7.280E-06	2.631E-06	2.313E-06
709-98-8	N-(3,4-Dichlorophenyl)propanamide			9.369E-07	1.970E-10	5.679E-10
542-75-6	1,3-Dichloro-1-propene	4.000E-06	1.923E-07	3.510E-06	3.538E-07	4.257E-07
91-94-1	3,3'-dichlorobenzidine	2.742E-05	9.978E-07			
106-46-7	1,4-Dichlorobenzene	2.742E-05	9.978E-07	7.276E-06	2.501E-06	8.729E-07
75-09-2	Methylene chloride	4.700E-07	1.710E-08	7.863E-06	2.990E-06	3.404E-06
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester			3.363E-07	3.290E-12	5.105E-12
121-14-2	2,4-Dinitrotoluene	8.800E-05	3.202E-06	9.073E-07	1.454E-10	1.001E-08
606-20-2	2,6-Dinitrotoluene	8.800E-05	3.202E-06	8.522E-07	1.025E-11	8.505E-09
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranlyl ester			6.387E-07	7.653E-10	2.919E-10
87-62-7	2,6-dimethylaniline	2.742E-05	9.978E-07			
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester			1.496E-06	1.208E-16	8.393E-15
119-93-7	3,3'-dimethylbenzidine; o-tolidine	2.742E-05	9.978E-07			
2597-03-7	ethyl 2-[(dimethoxyphosphinothioyl)thio]-2-phenylacetate; phenthoate; PAP					
-	mercury and its compounds	2.742E-05	9.978E-07	7.341E-06	0.000E+00	0.000E+00
100-42-5	Ethenylbenzene	5.700E-07	2.074E-08	6.781E-07	6.024E-08	5.068E-08
7446-34-6	sulfur selenide	2.742E-05	9.978E-07	4.042E-06	0.000E+00	0.000E+00
7782-49-2	Selenium			4.042E-06	0.000E+00	0.000E+00
1746-01-6	2,3,7,8-TCDD (Dioxin)	1.400E+00	5.094E-02	1.688E-06	2.171E-08	1.891E-08
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione			1.600E-07	3.229E-13	8.538E-12
62-56-6	Thiourea			3.694E-07	2.067E-13	9.279E-12
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester			1.675E-06	3.108E-09	5.075E-09

Table B.4: Intake fraction (cont.)

CAS	Chemical name	Inhalation [risk/($\mu\text{g}/\text{m}^3$)]	EF [DALY/mg intake]	iF into air [mg intake/mg emitted]	iF into water	iF into soil
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester			1.004E-06	2.647E-11	1.967E-11
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester			6.085E-07	3.420E-14	1.512E-13
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid			5.275E-07	7.096E-13	1.232E-12
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester			6.854E-07	1.500E-10	8.080E-11
1163-19-5	Decabromophenyl ether			1.842E-06	1.383E-09	4.772E-10
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	2.742E-05	9.978E-07	3.428E-06	5.554E-09	2.858E-08
127-18-4	Tetrachloroethene	5.800E-07	2.111E-08	7.284E-06	1.400E-06	2.006E-06
116-14-3	tetrafluoroethylene	2.742E-05	9.978E-07			
137-26-8	Tetramethylthioperoxydicarbonic diamide			1.620E-06	3.763E-10	9.883E-09
75-87-6	Acetaldehyde, trichloro-			1.106E-06	4.527E-11	1.899E-09
79-00-5	1,1,2-Trichloroethane			7.641E-06	3.573E-06	1.761E-06
79-01-6	Trichloroethene	4.300E-06	1.565E-07	6.041E-06	1.223E-06	1.557E-06
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine			2.671E-06	4.052E-07	3.728E-08
75-25-2	Bromoform	1.100E-06	4.003E-08	7.782E-06	2.342E-06	1.013E-06
95-53-4	o-toluidine	2.742E-05	9.978E-07			
95-80-7	2,4-toluenediamine	2.742E-05	9.978E-07			
-	lead and its compounds	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7439-92-1	Lead			4.042E-06	6.282E-22	
95860-12-1	Lead methanesulfonate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1309-60-0	Lead dioxide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1317-36-8	Lead oxide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
25808-74-6	Lead hexafluorosilicate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1314-41-6	Lead(II,IV) oxide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
598-63-0	Lead(2+)salt carbamic acid (1:1)	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
13424-46-9	Lead azide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7783-46-2	Lead fluoride	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1314-87-0	Lead sulfide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7446-14-2	Lead(II) sulfate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7446-27-7	Lead phosphate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7758-95-4	Lead chloride	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
10099-76-0	Silicic acid	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1335-25-7	Lead oxide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
19783-14-3	Lead Hydroxide	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
12060-00-3	lead titanate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
3687-31-8	Lead arsenate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
10214-39-8	Lead borate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
592-87-0	lead thiocyanate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
1335-32-6	lead subacetate	2.742E-05	9.978E-07	4.042E-06	6.282E-22	
7440-02-0	Nickel	2.742E-05	9.978E-07	4.042E-06	0.000E+00	
12035-36-8	Nickel dioxide	3.394E-04	1.235E-05	4.042E-06	0.000E+00	
12035-72-2	Nickel subsulfide	4.800E-04	2.300E-05	4.042E-06	0.000E+00	
1313-99-1	Nickelous oxide	3.394E-04	1.235E-05	4.042E-06	0.000E+00	
1314-06-3	nickel oxide	3.394E-04	1.235E-05	4.042E-06	0.000E+00	
13463-39-3	Nickel Carbonyl	3.394E-04	1.235E-05	4.042E-06	0.000E+00	

Table B.4: Intake fraction (cont.)

CAS	Chemical name	Inhalation [risk/($\mu\text{g}/\text{m}^3$)]	EF [DALY/mg intake]	iF into air [mg intake/mg emitted]	iF into water	iF into soil
16812-54-7	Nickel(II)Sulfide	3.394E-04	1.235E-05	4.042E-06	0.000E+00	
139-13-9	nitrilotriacetic acid	2.742E-05	9.978E-07			
98-95-3	nitrobenzene	2.742E-05	9.978E-07			
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O',O',O'-tetraethyl ester			9.369E-08	2.402E-10	1.300E-10
137-30-4	Zinc dimethyldithiocarbamate			2.890E-07	5.862E-13	1.662E-11
-	arsenic and its inorganic compounds	4.300E-03	2.068E-04	4.042E-06	0.000E+00	0.000E+00
1303-28-2	Arsenic pentoxide	4.300E-03	1.565E-04	4.042E-06	0.000E+00	0.000E+00
1327-53-3	Arsenic oxide	4.300E-03	1.565E-04	4.042E-06	0.000E+00	0.000E+00
7440-38-2	Arsenic			4.042E-06	0.000E+00	0.000E+00
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	4.300E-03	1.565E-04	4.042E-06	0.000E+00	0.000E+00
10031-13-7	lead(II)-arsenite	5.185E-04	1.887E-05	4.042E-06	0.000E+00	0.000E+00
1303-00-0	Gallium arsenide	5.185E-04	1.887E-05	4.042E-06	0.000E+00	0.000E+00
302-01-2	Hydrazine	4.900E-03	1.783E-04	3.924E-07	7.823E-10	6.093E-09
100-40-3	Cyclohexene, 4-ethenyl-	2.742E-05	9.978E-07	5.918E-07	6.166E-08	4.103E-08
120-80-9	1,2-Benzenediol	2.742E-05	9.978E-07	6.381E-07	2.578E-12	2.759E-10
96-09-3	phenyloxirane	2.742E-05	9.978E-07			
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester			8.080E-07	2.823E-12	6.751E-13
106-99-0	1,3-Butadiene	3.000E-05	1.092E-06	6.786E-07	7.193E-08	3.420E-07
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	2.400E-07	8.733E-09	1.475E-06	9.144E-09	5.016E-09
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester			5.257E-07	2.774E-17	1.374E-15
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid			5.858E-07	2.367E-10	9.133E-11
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	2.742E-05	9.978E-07	1.432E-06	6.020E-16	1.601E-15
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide			1.441E-06	2.549E-08	2.069E-08
103779-64-2	beryllium and its compounds			4.042E-06	0.000E+00	0.000E+00
7440-41-7	Beryllium	2.400E-03	1.154E-04	4.042E-06	0.000E+00	0.000E+00
98-07-7	benzylidyne trichloride	5.185E-04	1.887E-05			
98-87-3	benzylidene dichloride	2.742E-05	9.978E-07			
100-44-7	(Chloromethyl)benzene	2.742E-05	9.978E-07	5.463E-06	1.887E-07	1.723E-07
71-43-2	Benzene	4.142E-06	3.131E-07	1.914E-06	1.840E-07	3.847E-07
82-68-8	Pentachloronitrobenzene			8.024E-06	3.273E-06	2.147E-07
87-86-5	Pentachlorophenol	2.742E-05	9.978E-07	1.666E-06	2.723E-10	1.383E-10
1336-36-3	1,1'-Biphenyl, Chloro derivs.	1.200E-03	4.367E-05	4.105E-06	4.038E-07	6.478E-08
50-00-0	Formalin	1.300E-05	7.161E-07	5.354E-07	3.359E-10	6.005E-09
79-41-4	2-Methyl-2-propenoic acid			1.575E-06	3.009E-09	2.097E-08
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate			4.083E-07	3.825E-12	8.641E-11
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide			3.471E-07	2.095E-08	2.962E-09
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	2.742E-05	9.978E-07	2.906E-06	8.622E-08	3.996E-08
101-77-9	4,4'-methylenedianiline	2.742E-05	9.978E-07			
298-81-7	9-methoxy-7H-furo[3,2-g][1]benzopyran-7-one; methoxsalen	5.185E-04	1.887E-05			
120-71-8	p-Cresidine	2.742E-05	9.978E-07	2.585E-07	1.945E-09	3.452E-09
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester			6.738E-07	1.258E-14	2.691E-14

Table B.4: Intake fraction (cont.)

CAS	Chemical name	Inhalation [risk/($\mu\text{g}/\text{m}^3$)]	EF [DALY/mg intake]	iF into air [mg intake/mg emitted]	iF into water [mg intake/mg emitted]	iF into soil
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester			4.196E-06	6.781E-07	1.940E-07
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	2.742E-05	9.978E-07	3.468E-06	1.772E-08	1.087E-07

B.5 Midpoint and damage factors**Table B.5:** Midpoint factors

CAS	Chemical name	Human toxicity [C_6H_6 air eq./kg emitted]		
		Air	Water	Soil
79-06-1	2-Propenamide	2.195E-01	1.917E-07	1.378E-05
140-88-5	Ethyl acrylate	3.080E-01	7.315E-03	1.719E-02
107-13-1	2-Propenenitrile	2.092E+00	1.859E-01	1.245E-01
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	4.981E-01	3.325E-04	1.065E-04
75-07-0	Acetaldehyde	3.539E-01	1.126E-02	1.335E-02
62-53-3	Benzenamine	3.369E-01	2.395E-03	5.372E-03
1309-64-4	Antimony trioxide	2.112E+00	0.000E+00	0.000E+00
7440-36-0	Antimony	2.112E+00	0.000E+00	0.000E+00
78-79-5	Isoprene	2.083E-01	2.452E-02	5.656E-02
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	4.371E-01	4.693E-05	3.891E-05
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	4.418E-01	3.677E-03	1.013E-03
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	5.831E-01	7.850E-03	6.908E-03
100-41-4	Ethylbenzene	9.998E-01	2.119E-01	1.573E-01
151-56-4	Aziridine	1.865E+00	1.132E-01	4.579E-02
75-21-8	Ethylene oxide	4.083E+00	5.531E-01	3.071E-01
12122-67-7	[[1,2-Ethanediy]bis(carbamodithioato)](2-)-zinc	8.136E-01	3.266E-08	2.555E-06
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato(2-)-kappaS,kappaS']manganese	1.260E-01	2.571E-04	1.474E-03
62-44-2	Phenacetin	3.321E-01	5.144E-07	1.056E-05

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C ₆ H ₆ air eq./kg emitted]		
		Air	Water	Soil
62-44-2	Phenacetin	3.321E-01	5.144E-07	1.056E-05
106-89-8	(Chloromethyl)oxirane	3.814E+00	2.288E-01	1.610E-01
75-56-9	Propylene oxide	3.991E+00	3.293E-01	3.152E-01
122-60-1	1-Phenoxy-2,3-epoxypropane	6.797E-01	2.246E-03	8.021E-03
-	cadmium and its compounds	2.112E+00	0.000E+00	0.000E+00
10108-64-2	Cadmium chloride	2.112E+00	0.000E+00	0.000E+00
10124-36-4	Cadmium sulfate	2.112E+00	0.000E+00	0.000E+00
1306-19-0	Cadmium oxide	2.112E+00	0.000E+00	0.000E+00
7440-43-9	Cadmium	2.112E+00	0.000E+00	0.000E+00
7440-47-3	Chromium	2.112E+00	0.000E+00	0.000E+00
-	Chromium (VI) compounds	2.112E+00	0.000E+00	0.000E+00
-	Chromium (VI) compounds	2.112E+00	0.000E+00	0.000E+00
1333-82-0	Chromium oxide	2.112E+00	0.000E+00	0.000E+00
13530-65-9	Zinc Chromate	2.112E+00	0.000E+00	0.000E+00
13765-19-0	calcium chromate	2.112E+00	0.000E+00	0.000E+00
18540-29-9	CrVI	2.112E+00	0.000E+00	0.000E+00
7758-97-6	Lead chromate	2.112E+00	0.000E+00	0.000E+00
7789-06-2	strontium chromate	2.112E+00	0.000E+00	0.000E+00
106-47-8	4-Chloroaniline	3.477E-01	9.391E-03	6.170E-03
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	2.148E-01	2.479E-05	5.186E-05
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	3.157E+00	9.633E-01	9.015E-01
75-01-4	Vinyl chloride	2.102E+00	5.017E-01	9.695E-01
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	3.045E-01	2.896E-05	5.322E-05
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	7.582E-01	2.239E-08	5.077E-07

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C ₆ H ₆ air eq./kg emitted]		
		Air	Water	Soil
108-90-7	Chlorobenzene	3.156E+00	1.143E+00	7.578E-01
108-90-7	Chlorobenzene	3.156E+00	1.143E+00	7.578E-01
67-66-3	Trichloromethane	4.117E+00	1.476E+00	1.508E+00
1314-62-1	vanadium pentoxide	2.112E+00	0.000E+00	0.000E+00
108-05-4	Vinyl acetate	2.099E+00	6.876E-02	1.997E-01
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	4.517E-01	1.383E-03	1.948E-03
56-23-5	Tetrachloromethane	5.203E+00	1.788E+00	2.154E+00
123-91-1	1,4-Dioxane	9.699E-01	1.586E-02	2.462E-02
107-06-2	1,2-Dichloroethane	4.088E+00	1.501E+00	1.362E+00
75-35-4	1,1-Dichloroethene	2.089E+00	1.103E+00	9.570E-01
156-59-2	cis-1,2-Dichloroethylene	3.096E+00	1.295E+00	1.130E+00
156-60-5	trans-1,2-Dichloroethylene	3.096E+00	1.298E+00	1.143E+00
101-14-4	4,4'-Methylenebis(2-chloroaniline)	2.734E-01	3.563E-08	7.073E-08
23950-58-5	Pronamide	3.634E+00	1.885E-01	4.778E-02
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	3.738E-01	4.533E-06	4.079E-05
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	4.385E-01	2.684E-06	1.810E-05
78-87-5	1,2-Dichloropropane	3.804E+00	1.375E+00	1.208E+00
709-98-8	N-(3,4-Dichlorophenyl)propanamide	4.896E-01	1.030E-04	2.967E-04
542-75-6	1,3-Dichloro-1-propene	1.834E+00	1.849E-01	2.224E-01
106-46-7	1,4-Dichlorobenzene	3.802E+00	1.307E+00	4.561E-01
75-09-2	Methylene chloride	4.109E+00	1.562E+00	1.779E+00
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	1.758E-01	1.719E-06	2.667E-06
121-14-2	2,4-Dinitrotoluene	4.741E-01	7.596E-05	5.230E-03
606-20-2	2,6-Dinitrotoluene	4.454E-01	5.356E-06	4.444E-03

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C ₆ H ₆ air eq./kg emitted]		
		Air	Water	Soil
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	3.337E-01	3.999E-04	1.525E-04
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	7.816E-01	6.313E-11	4.386E-09
-	mercury and its compounds	3.836E+00	0.000E+00	0.000E+00
100-42-5	Ethenylbenzene	3.544E-01	3.148E-02	2.648E-02
7446-34-6	sulfur selenide	2.112E+00	0.000E+00	0.000E+00
7782-49-2	Selenium	2.112E+00	0.000E+00	0.000E+00
1746-01-6	2,3,7,8-TCDD (Dioxin)	8.823E-01	1.134E-02	9.884E-03
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	8.363E-02	1.687E-07	4.462E-06
62-56-6	Thiourea	1.930E-01	1.080E-07	4.849E-06
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	8.752E-01	1.624E-03	2.652E-03
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	5.248E-01	1.383E-05	1.028E-05
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	3.180E-01	1.787E-08	7.902E-08
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	2.757E-01	3.708E-07	6.439E-07
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	3.582E-01	7.838E-05	4.222E-05
1163-19-5	Decabromophenyl ether	9.625E-01	7.225E-04	2.494E-04
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	1.791E+00	2.902E-03	1.493E-02
127-18-4	Tetrachloroethene	3.807E+00	7.315E-01	1.048E+00
137-26-8	Tetramethylthioperoxydicarbonic diamide	8.465E-01	1.967E-04	5.165E-03
75-87-6	Acetaldehyde, trichloro-	5.778E-01	2.365E-05	9.924E-04
79-00-5	1,1,2-Trichloroethane	3.993E+00	1.867E+00	9.205E-01
79-01-6	Trichloroethene	3.157E+00	6.390E-01	8.134E-01
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	1.396E+00	2.117E-01	1.948E-02
75-25-2	Bromoform	4.067E+00	1.224E+00	5.296E-01
-	lead and its compounds	2.112E+00	3.283E-16	0.000E+00

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C ₆ H ₆ air eq./kg emitted]		
		Air	Water	Soil
7439-92-1	Lead	2.112E+00	3.283E-16	0.000E+00
95860-12-1	Lead methanesulfonate	2.112E+00	3.283E-16	0.000E+00
1309-60-0	Lead dioxide	2.112E+00	3.283E-16	0.000E+00
1317-36-8	Lead oxide	2.112E+00	3.283E-16	0.000E+00
25808-74-6	Lead hexafluorosilicate	2.112E+00	3.283E-16	0.000E+00
1314-41-6	Lead(II,IV) oxide	2.112E+00	3.283E-16	0.000E+00
598-63-0	Lead(2+)salt carbamic acid (1:1)	2.112E+00	3.283E-16	0.000E+00
13424-46-9	Lead azide	2.112E+00	3.283E-16	0.000E+00
7783-46-2	Lead fluoride	2.112E+00	3.283E-16	0.000E+00
1314-87-0	Lead sulfide	2.112E+00	3.283E-16	0.000E+00
7446-14-2	Lead(II) sulfate	2.112E+00	3.283E-16	0.000E+00
7446-27-7	Lead phosphate	2.112E+00	3.283E-16	0.000E+00
7758-95-4	Lead chloride	2.112E+00	3.283E-16	0.000E+00
10099-76-0	Silicic acid	2.112E+00	3.283E-16	0.000E+00
1335-25-7	Lead oxide	2.112E+00	3.283E-16	0.000E+00
19783-14-3	Lead Hydroxide	2.112E+00	3.283E-16	0.000E+00
12060-00-3	lead titanate	2.112E+00	3.283E-16	0.000E+00
3687-31-8	Lead arsenate	2.112E+00	3.283E-16	0.000E+00
10214-39-8	Lead borate	2.112E+00	3.283E-16	0.000E+00
592-87-0	lead thiocyanate	2.112E+00	3.283E-16	0.000E+00
1335-32-6	lead subacetate	2.112E+00	3.283E-16	0.000E+00
7440-02-0	Nickel	2.112E+00	0.000E+00	0.000E+00
12035-36-8	Nickel dioxide	2.112E+00	0.000E+00	0.000E+00
12035-72-2	Nickel subsulfide	2.112E+00	0.000E+00	0.000E+00

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C6H6 air eq./kg emitted]		
		Air	Water	Soil
1313-99-1	Nickelous oxide	2.112E+00	0.000E+00	0.000E+00
1314-06-3	nickel oxide	2.112E+00	0.000E+00	0.000E+00
13463-39-3	Nickel Carbonyl	2.112E+00	0.000E+00	0.000E+00
16812-54-7	Nickel(II)Sulfide	2.112E+00	0.000E+00	0.000E+00
139-13-9	nitrilotriacetic acid	0.000E+00	0.000E+00	0.000E+00
98-95-3	nitrobenzene	0.000E+00	0.000E+00	0.000E+00
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	4.896E-02	1.255E-04	6.791E-05
137-30-4	Zinc dimethyldithiocarbamate	1.510E-01	3.063E-07	8.687E-06
-	arsenic and its inorganic compounds	2.112E+00	0.000E+00	0.000E+00
-	arsenic and its inorganic compounds	2.112E+00	0.000E+00	0.000E+00
1303-28-2	Arsenic pentoxide	2.112E+00	0.000E+00	0.000E+00
1327-53-3	Arsenic oxide	2.112E+00	0.000E+00	0.000E+00
7440-38-2	Arsenic	2.112E+00	0.000E+00	0.000E+00
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	2.112E+00	0.000E+00	0.000E+00
10031-13-7	lead(II)-arsenite	2.112E+00	0.000E+00	0.000E+00
1303-00-0	Gallium arsenide	2.112E+00	0.000E+00	0.000E+00
302-01-2	Hydrazine	2.051E-01	4.088E-04	3.184E-03
100-40-3	Cyclohexene, 4-ethenyl-	3.092E-01	3.222E-02	2.144E-02
120-80-9	1,2-Benzenediol	3.335E-01	1.347E-06	1.442E-04
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	4.222E-01	1.475E-06	3.528E-07
106-99-0	1,3-Butadiene	3.546E-01	3.759E-02	1.787E-01
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	7.710E-01	4.778E-03	2.621E-03
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	2.747E-01	1.450E-11	7.182E-10

Table B.5: Midpoint factors (cont.)

CAS	Chemical name	Human toxicity [C6H6 air eq./kg emitted]		
		Air	Water	Soil
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	3.061E-01	1.237E-04	4.772E-05
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	7.485E-01	3.146E-10	8.367E-10
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	7.528E-01	1.332E-02	1.081E-02
103779-64-2	beryllium and its compounds	2.112E+00	0.000E+00	0.000E+00
7440-41-7	Beryllium	2.112E+00	0.000E+00	0.000E+00
100-44-7	(Chloromethyl)benzene	2.855E+00	9.859E-02	9.003E-02
71-43-2	Benzene	1.000E+00	9.616E-02	2.010E-01
82-68-8	Pentachloronitrobenzene	4.193E+00	1.710E+00	1.122E-01
87-86-5	Pentachlorophenol	8.704E-01	1.423E-04	7.228E-05
1336-36-3	1,1'-Biphenyl, Chloro derivs.	2.145E+00	2.110E-01	3.385E-02
50-00-0	Formalin	2.798E-01	1.755E-04	3.138E-03
79-41-4	2-Methyl-2-propenoic acid	8.230E-01	1.572E-03	1.096E-02
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	2.133E-01	1.999E-06	4.516E-05
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methylmethanimidamide	1.814E-01	1.095E-02	1.548E-03
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	1.518E+00	4.506E-02	2.088E-02
120-71-8	p-Cresidine	1.351E-01	1.016E-03	1.804E-03
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	3.521E-01	6.573E-09	1.406E-08
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	2.193E+00	3.544E-01	1.014E-01
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	1.812E+00	9.259E-03	5.680E-02

Table B.6: Damage factors

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
50-00-0	Formalin	Air	7.56E-07	6.42E-07	7.71E-07
50-00-0	Formalin	Water	5.77E-05	5.72E-05	5.79E-05
50-00-0	Formalin	Soil	7.80E-08	1.00E-07	6.70E-08
302-01-2	Hydrazine	Air	7.05E-05	6.23E-05	7.39E-05
302-01-2	Hydrazine	Water	1.52E-04	1.50E-04	1.53E-04
302-01-2	Hydrazine	Soil	1.43E-06	1.36E-06	1.47E-06
151-56-4	Aziridine	Air	7.29E-05	4.88E-05	9.13E-05
151-56-4	Aziridine	Water	2.55E-03	2.03E-03	2.87E-03
151-56-4	Aziridine	Soil	2.55E-05	2.61E-05	2.49E-05
75-07-0	Acetaldehyde	Air	5.50E-08	4.55E-08	5.88E-08
75-07-0	Acetaldehyde	Water	9.88E-07	9.68E-07	9.97E-07
75-07-0	Acetaldehyde	Soil	3.28E-09	3.23E-09	3.30E-09
75-21-8	Ethylene oxide	Air	2.97E-05	8.75E-06	1.28E-04
75-21-8	Ethylene oxide	Water	2.25E-04	2.05E-04	2.44E-04
75-21-8	Ethylene oxide	Soil	3.46E-06	2.13E-06	1.10E-05
107-13-1	2-Propenenitrile	Air	1.33E-05	5.89E-06	2.19E-05
107-13-1	2-Propenenitrile	Water	5.99E-05	5.63E-05	6.19E-05
107-13-1	2-Propenenitrile	Soil	9.94E-07	5.94E-07	1.52E-06
106-99-0	1,3-Butadiene	Air	7.41E-07	6.10E-07	7.94E-07
106-99-0	1,3-Butadiene	Water	1.57E-04	1.49E-04	1.60E-04
106-99-0	1,3-Butadiene	Soil	3.90E-07	3.27E-07	4.16E-07
75-56-9	Propylene oxide	Air	1.14E-06	3.48E-07	4.53E-06
75-56-9	Propylene oxide	Water	1.58E-05	1.49E-05	1.64E-05
75-56-9	Propylene oxide	Soil	2.62E-07	2.41E-07	5.21E-07
75-01-4	Vinyl chloride	Air	1.95E-06	8.59E-07	3.22E-06
75-01-4	Vinyl chloride	Water	8.20E-04	7.32E-04	8.60E-04
75-01-4	Vinyl chloride	Soil	6.29E-06	6.55E-06	6.39E-06
75-01-4	Vinyl chloride	Air	1.95E-06	8.59E-07	3.22E-06
75-01-4	Vinyl chloride	Water	8.20E-04	7.32E-04	8.60E-04
75-01-4	Vinyl chloride	Soil	6.29E-06	6.55E-06	6.39E-06
78-79-5	Isoprene	Air	3.98E-07	3.53E-07	4.14E-07
78-79-5	Isoprene	Water	3.50E-06	3.31E-06	3.58E-06
78-79-5	Isoprene	Soil	1.09E-07	9.59E-08	1.15E-07
79-06-1	2-Propenamide	Air	2.17E-05	1.92E-05	2.29E-05
79-06-1	2-Propenamide	Water	1.89E-04	1.88E-04	1.89E-04
79-06-1	2-Propenamide	Soil	1.42E-07	1.87E-07	1.21E-07
62-56-6	Thiourea	Air	1.03E-08	1.20E-08	8.58E-09
62-56-6	Thiourea	Water	1.19E-06	1.16E-06	1.20E-06
62-56-6	Thiourea	Soil	4.75E-09	6.12E-09	4.05E-09
71-43-2	Benzene	Air	6.03E-07	3.76E-07	7.43E-07
71-43-2	Benzene	Water	1.10E-04	1.05E-04	1.12E-04
71-43-2	Benzene	Soil	2.87E-07	2.84E-07	2.93E-07

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
75-09-2	Methylene chloride	Air	1.43E-07	4.43E-08	5.79E-07
75-09-2	Methylene chloride	Water	4.17E-05	3.47E-05	4.54E-05
75-09-2	Methylene chloride	Soil	1.27E-06	1.35E-06	1.35E-06
108-05-4	Vinyl acetate	Air	4.01E-06	1.77E-06	6.64E-06
108-05-4	Vinyl acetate	Water	3.19E-07	2.59E-07	3.85E-07
108-05-4	Vinyl acetate	Soil	3.82E-07	1.64E-07	6.51E-07
79-41-4	2-Methyl-2-propenoic acid	Air	7.48E-07	7.98E-07	6.83E-07
79-41-4	2-Methyl-2-propenoic acid	Water	4.88E-05	4.74E-05	4.95E-05
79-41-4	2-Methyl-2-propenoic acid	Soil	1.95E-07	2.47E-07	1.68E-07
123-91-1	1,4-Dioxane	Air	9.81E-08	6.32E-08	1.19E-07
123-91-1	1,4-Dioxane	Water	5.15E-07	4.97E-07	5.24E-07
123-91-1	1,4-Dioxane	Soil	8.72E-09	9.34E-09	8.57E-09
106-89-8	(Chloromethyl)oxirane	Air	3.30E-07	1.01E-07	1.18E-06
106-89-8	(Chloromethyl)oxirane	Water	9.02E-07	8.41E-07	9.62E-07
106-89-8	(Chloromethyl)oxirane	Soil	2.14E-08	1.33E-08	5.89E-08
62-53-3	Benzenamine	Air	1.82E-07	1.57E-07	1.93E-07
62-53-3	Benzenamine	Water	2.85E-06	2.77E-06	2.89E-06
62-53-3	Benzenamine	Soil	1.19E-08	1.38E-08	1.09E-08
156-59-2	cis-1,2-Dichloroethylene	Air	2.30E-09	8.86E-10	5.13E-09
156-59-2	cis-1,2-Dichloroethylene	Water	2.17E-05	1.78E-05	2.39E-05
156-59-2	cis-1,2-Dichloroethylene	Soil	2.89E-07	3.14E-07	2.65E-07
156-60-5	trans-1,2-Dichloroethylene	Air	1.06E-09	4.09E-10	2.37E-09
156-60-5	trans-1,2-Dichloroethylene	Water	2.22E-05	1.81E-05	2.43E-05
156-60-5	trans-1,2-Dichloroethylene	Soil	1.31E-07	1.42E-07	1.20E-07
75-35-4	1,1-Dichloroethene	Air	5.96E-09	2.80E-09	9.29E-09
75-35-4	1,1-Dichloroethene	Water	4.49E-04	3.50E-04	5.05E-04
75-35-4	1,1-Dichloroethene	Soil	3.52E-06	3.65E-06	3.34E-06
107-06-2	1,2-Dichloroethane	Air	7.50E-06	2.28E-06	3.06E-05
107-06-2	1,2-Dichloroethane	Water	2.12E-04	1.75E-04	2.39E-04
107-06-2	1,2-Dichloroethane	Soil	9.09E-06	8.00E-06	1.64E-05
140-88-5	Ethyl acrylate	Air	5.88E-07	4.96E-07	6.24E-07
140-88-5	Ethyl acrylate	Water	2.71E-07	2.69E-07	2.72E-07
140-88-5	Ethyl acrylate	Soil	3.31E-08	2.74E-08	3.61E-08
100-42-5	Ethenylbenzene	Air	1.47E-08	1.23E-08	1.57E-08
100-42-5	Ethenylbenzene	Water	1.80E-05	1.71E-05	1.83E-05
100-42-5	Ethenylbenzene	Soil	6.69E-09	7.95E-09	5.98E-09
100-41-4	Ethylbenzene	Air	1.91E-06	1.19E-06	2.35E-06
100-41-4	Ethylbenzene	Water	1.99E-05	1.78E-05	2.09E-05
100-41-4	Ethylbenzene	Soil	3.14E-07	2.00E-07	3.90E-07
100-40-3	Cyclohexene, 4-ethenyl-	Air	5.90E-07	4.97E-07	6.27E-07
100-40-3	Cyclohexene, 4-ethenyl-	Water	3.38E-06	3.20E-06	3.46E-06
100-40-3	Cyclohexene, 4-ethenyl-	Soil	4.10E-08	3.39E-08	4.45E-08

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
120-80-9	1,2-Benzenediol	Air	6.42E-07	5.19E-07	7.20E-07
120-80-9	1,2-Benzenediol	Water	3.41E-07	3.38E-07	3.42E-07
120-80-9	1,2-Benzenediol	Soil	1.38E-09	1.65E-09	1.27E-09
542-75-6	1,3-Dichloro-1-propene	Air	6.90E-07	3.29E-07	1.05E-06
542-75-6	1,3-Dichloro-1-propene	Water	1.12E-04	1.06E-04	1.14E-04
542-75-6	1,3-Dichloro-1-propene	Soil	2.22E-07	2.13E-07	2.49E-07
108-90-7	Chlorobenzene	Air	3.39E-09	1.31E-09	7.71E-09
108-90-7	Chlorobenzene	Water	2.54E-05	2.12E-05	2.76E-05
108-90-7	Chlorobenzene	Soil	9.65E-08	1.07E-07	8.84E-08
78-87-5	1,2-Dichloropropane	Air	8.82E-08	3.07E-08	2.81E-07
78-87-5	1,2-Dichloropropane	Water	4.50E-04	3.76E-04	4.89E-04
78-87-5	1,2-Dichloropropane	Soil	5.82E-06	6.44E-06	5.32E-06
67-66-3	Trichloromethane	Air	1.21E-05	3.74E-06	4.90E-05
67-66-3	Trichloromethane	Water	1.88E-05	1.36E-05	3.30E-05
67-66-3	Trichloromethane	Soil	4.62E-06	1.57E-06	1.84E-05
100-44-7	(Chloromethyl)benzene	Air	5.46E-06	2.01E-06	1.18E-05
100-44-7	(Chloromethyl)benzene	Water	3.58E-06	3.41E-06	3.78E-06
100-44-7	(Chloromethyl)benzene	Soil	1.73E-07	6.31E-08	3.81E-07
106-47-8	4-Chloroaniline	Air	6.69E-07	5.55E-07	7.16E-07
106-47-8	4-Chloroaniline	Water	3.01E-06	2.89E-06	3.07E-06
106-47-8	4-Chloroaniline	Soil	1.56E-08	1.40E-08	1.63E-08
79-01-6	Trichloroethene	Air	9.61E-07	3.34E-07	2.37E-06
79-01-6	Trichloroethene	Water	2.76E-04	2.48E-04	2.89E-04
79-01-6	Trichloroethene	Soil	8.42E-07	7.96E-07	1.14E-06
79-00-5	1,1,2-Trichloroethane	Air	3.53E-07	1.15E-07	1.29E-06
79-00-5	1,1,2-Trichloroethane	Water	6.24E-04	4.91E-04	7.01E-04
79-00-5	1,1,2-Trichloroethane	Soil	1.10E-05	1.14E-05	1.05E-05
120-71-8	p-Cresidine	Air	2.60E-07	2.41E-07	2.67E-07
120-71-8	p-Cresidine	Water	1.51E-06	1.46E-06	1.54E-06
120-71-8	p-Cresidine	Soil	6.10E-09	6.36E-09	5.96E-09
106-46-7	1,4-Dichlorobenzene	Air	7.28E-06	2.27E-06	2.52E-05
106-46-7	1,4-Dichlorobenzene	Water	5.29E-05	4.29E-05	6.31E-05
106-46-7	1,4-Dichlorobenzene	Soil	9.30E-07	3.29E-07	3.14E-06
75-87-6	Acetaldehyde, trichloro-	Air	3.27E-06	2.87E-06	3.27E-06
75-87-6	Acetaldehyde, trichloro-	Water	9.84E-05	9.00E-05	1.03E-04
75-87-6	Acetaldehyde, trichloro-	Soil	1.54E-06	1.85E-06	1.37E-06
122-60-1	1-Phenoxy-2,3-epoxypropane	Air	8.12E-06	5.64E-06	9.52E-06
122-60-1	1-Phenoxy-2,3-epoxypropane	Water	3.69E-06	3.59E-06	3.74E-06
122-60-1	1-Phenoxy-2,3-epoxypropane	Soil	1.04E-07	7.16E-08	1.24E-07
56-23-5	Tetrachloromethane	Air	5.45E-06	2.32E-06	2.08E-05
56-23-5	Tetrachloromethane	Water	5.00E-04	4.18E-04	5.47E-04
56-23-5	Tetrachloromethane	Soil	3.90E-06	2.77E-06	1.02E-05

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Air	1.46E-07	1.76E-07	1.19E-07
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Water	3.94E-05	3.83E-05	4.00E-05
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Soil	1.07E-07	1.37E-07	9.12E-08
127-18-4	Tetrachloroethene	Air	1.66E-07	5.23E-08	5.69E-07
127-18-4	Tetrachloroethene	Water	2.86E-04	2.57E-04	2.99E-04
127-18-4	Tetrachloroethene	Soil	5.39E-07	6.05E-07	5.90E-07
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	Air	3.07E-06	1.64E-06	4.33E-06
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	Water	9.13E-06	8.67E-06	9.35E-06
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	Soil	4.24E-08	2.25E-08	6.08E-08
62-44-2	Phenacetin	Air	6.38E-07	5.12E-07	7.09E-07
62-44-2	Phenacetin	Water	2.16E-07	2.05E-07	2.21E-07
62-44-2	Phenacetin	Soil	9.74E-10	1.21E-09	8.49E-10
121-14-2	2,4-Dinitrotoluene	Air	4.31E-06	3.63E-06	4.68E-06
121-14-2	2,4-Dinitrotoluene	Water	7.62E-05	7.56E-05	7.65E-05
121-14-2	2,4-Dinitrotoluene	Soil	7.54E-07	9.57E-07	6.54E-07
606-20-2	2,6-Dinitrotoluene	Air	3.04E-06	2.37E-06	3.51E-06
606-20-2	2,6-Dinitrotoluene	Water	1.30E-05	1.29E-05	1.30E-05
606-20-2	2,6-Dinitrotoluene	Soil	2.34E-07	2.87E-07	2.11E-07
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Air	4.65E-07	6.17E-07	3.67E-07
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Water	6.86E-05	6.59E-05	6.98E-05
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Soil	1.18E-08	1.51E-08	9.82E-09
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Air	1.48E-05	1.10E-05	1.68E-05
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Water	3.57E-04	3.35E-04	3.69E-04
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Soil	2.39E-06	2.96E-06	2.09E-06
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamo dithioato(2-)-kappaS,kappaS']manganese	Air	3.20E-08	4.98E-08	2.41E-08
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamo dithioato(2-)-kappaS,kappaS']manganese	Water	1.95E-05	1.89E-05	1.98E-05
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamo dithioato(2-)-kappaS,kappaS']manganese	Soil	8.37E-08	1.07E-07	7.15E-08
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Air	3.50E-05	3.07E-05	3.49E-05
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Water	1.76E-03	1.38E-03	2.05E-03
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Soil	3.68E-06	3.79E-06	3.60E-06
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Air	2.54E-06	2.26E-06	2.48E-06
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Water	6.51E-05	5.96E-05	6.82E-05
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Soil	3.71E-08	4.43E-08	3.30E-08

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Air	3.46E-06	1.65E-06	5.26E-06
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Water	5.22E-06	5.20E-06	5.23E-06
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Soil	1.09E-07	5.15E-08	1.68E-07
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Air	5.58E-07	6.13E-07	4.80E-07
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Water	5.22E-05	5.10E-05	5.28E-05
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Soil	8.72E-08	1.12E-07	7.43E-08
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Air	1.04E-06	9.93E-07	9.89E-07
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Water	4.24E-05	3.98E-05	4.38E-05
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Soil	8.30E-08	1.03E-07	7.22E-08
137-26-8	Tetramethylthioperoxydicarbonic diamide	Air	1.34E-06	1.06E-06	1.47E-06
137-26-8	Tetramethylthioperoxydicarbonic diamide	Water	3.45E-05	3.37E-05	3.49E-05
137-26-8	Tetramethylthioperoxydicarbonic diamide	Soil	1.70E-07	2.14E-07	1.47E-07
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Air	1.22E-06	1.11E-06	1.22E-06
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Water	3.76E-05	3.54E-05	3.88E-05
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Soil	4.54E-08	5.63E-08	3.95E-08
75-25-2	Bromoform	Air	3.25E-07	9.81E-08	1.32E-06
75-25-2	Bromoform	Water	1.20E-05	9.95E-06	1.33E-05
75-25-2	Bromoform	Soil	1.89E-07	1.75E-07	3.12E-07
23950-58-5	Pronamide	Air	8.13E-06	4.01E-06	1.97E-05
23950-58-5	Pronamide	Water	1.81E-04	1.58E-04	1.94E-04
23950-58-5	Pronamide	Soil	1.85E-07	1.40E-07	3.36E-07
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Air	5.04E-07	3.78E-07	5.69E-07
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Water	1.37E-05	1.32E-05	1.40E-05
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Soil	1.59E-07	2.01E-07	1.37E-07
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Air	1.47E-06	1.62E-06	1.30E-06
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Water	6.63E-05	6.05E-05	6.95E-05
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Soil	2.35E-08	2.74E-08	2.11E-08
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Air	3.56E-06	1.68E-06	5.81E-06
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Water	4.67E-06	4.56E-06	4.73E-06
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Soil	3.37E-08	1.82E-08	5.41E-08
87-86-5	Pentachlorophenol	Air	8.58E-03	6.01E-03	1.02E-02
87-86-5	Pentachlorophenol	Water	5.65E-02	5.32E-02	5.82E-02
87-86-5	Pentachlorophenol	Soil	1.24E-06	1.13E-06	1.35E-06
101-14-4	4,4'-Methylenebis(2-chloroaniline)	Air	2.95E-06	2.68E-06	2.95E-06
101-14-4	4,4'-Methylenebis(2-chloroaniline)	Water	6.76E-05	6.20E-05	7.08E-05
101-14-4	4,4'-Methylenebis(2-chloroaniline)	Soil	1.56E-08	1.89E-08	1.37E-08

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Air	6.54E-05	6.33E-05	6.17E-05
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Water	2.05E-03	1.88E-03	2.15E-03
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Soil	4.20E-07	5.05E-07	3.72E-07
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Air	6.08E-06	6.52E-06	5.64E-06
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Water	2.70E-04	2.61E-04	2.75E-04
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Soil	5.72E-09	7.26E-09	4.91E-09
12122-67-7	[[1,2-Ethanediylbis(carbamodithioato)](2-)]zinc	Air	2.78E-06	2.03E-06	3.21E-06
12122-67-7	[[1,2-Ethanediylbis(carbamodithioato)](2-)]zinc	Water	6.41E-05	5.87E-05	6.71E-05
12122-67-7	[[1,2-Ethanediylbis(carbamodithioato)](2-)]zinc	Soil	6.09E-07	7.33E-07	5.38E-07
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Air	5.40E-06	5.06E-06	5.28E-06
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Water	1.85E-04	1.78E-04	1.89E-04
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Soil	3.60E-08	4.58E-08	3.09E-08
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Air	4.58E-05	4.39E-05	4.44E-05
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Water	1.23E-03	1.18E-03	1.26E-03
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Soil	6.12E-08	7.70E-08	5.28E-08
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Air	3.82E-05	3.84E-05	3.58E-05
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Water	1.04E-03	9.43E-04	1.09E-03
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Soil	9.47E-08	9.29E-08	9.26E-08
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Air	1.38E-09	5.32E-10	3.09E-09
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Water	1.35E-04	1.14E-04	1.47E-04
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Soil	6.56E-08	7.34E-08	5.95E-08
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Air	1.38E-07	1.36E-07	1.31E-07
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Water	9.63E-06	9.41E-06	9.75E-06
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Soil	5.13E-08	6.60E-08	4.38E-08
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Air	6.95E-03	3.52E-03	1.05E-02
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Water	6.33E-01	5.66E-01	6.68E-01
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Soil	1.12E-04	5.73E-05	1.69E-04

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Air	4.90E-05	5.85E-05	4.17E-05
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Water	9.74E-03	8.52E-03	1.04E-02
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Soil	4.63E-07	5.39E-07	4.06E-07
82-68-8	Pentachloronitrobenzene	Air	1.42E-05	4.55E-06	5.85E-05
82-68-8	Pentachloronitrobenzene	Water	3.80E-03	2.96E-03	4.32E-03
82-68-8	Pentachloronitrobenzene	Soil	1.17E-06	9.32E-07	2.34E-06
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Air	3.16E-05	2.27E-05	3.52E-05
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Water	3.72E-04	3.26E-04	3.99E-04
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Soil	3.24E-07	3.29E-07	3.20E-07
137-30-4	Zinc dimethyldithiocarbamate	Air	1.27E-07	1.44E-07	1.06E-07
137-30-4	Zinc dimethyldithiocarbamate	Water	1.96E-05	1.91E-05	1.99E-05
137-30-4	Zinc dimethyldithiocarbamate	Soil	6.23E-08	7.99E-08	5.32E-08
1746-01-6	2,3,7,8-TCDD (Dioxin)	Air	1.07E+02	8.01E+01	1.17E+02
1746-01-6	2,3,7,8-TCDD (Dioxin)	Water	1.30E+03	1.22E+03	1.34E+03
1746-01-6	2,3,7,8-TCDD (Dioxin)	Soil	1.26E+00	9.62E-01	1.40E+00
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Air	3.01E-05	1.96E-05	3.60E-05
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Water	1.71E-03	1.40E-03	1.89E-03
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Soil	4.38E-07	2.89E-07	5.26E-07
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Air	3.13E-05	2.96E-05	3.07E-05
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Water	6.05E-04	5.55E-04	6.33E-04
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Soil	1.04E-08	1.11E-08	9.95E-09
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Air	8.82E-06	7.59E-06	9.13E-06
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Water	1.07E-04	1.05E-04	1.08E-04
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Soil	3.84E-10	4.15E-10	3.70E-10
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Air	1.41E-05	1.27E-05	1.40E-05
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Water	3.33E-04	3.15E-04	3.42E-04
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Soil	3.24E-08	4.05E-08	2.81E-08
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Air	4.04E-05	3.60E-05	4.11E-05
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Water	5.28E-04	5.14E-04	5.35E-04
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Soil	9.02E-09	7.83E-09	9.65E-09

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Air	1.07E-05	9.38E-06	1.09E-05
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Water	1.64E-04	1.51E-04	1.72E-04
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Soil	7.03E-09	8.15E-09	6.38E-09
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Air	8.29E-04	7.60E-04	8.24E-04
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Water	1.42E-02	1.30E-02	1.49E-02
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Soil	3.29E-07	3.66E-07	3.07E-07
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Air	1.83E-05	1.87E-05	1.72E-05
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Water	4.33E-04	4.21E-04	4.39E-04
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Soil	8.78E-09	8.72E-09	8.68E-09
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Air	3.88E-07	2.12E-07	5.59E-07
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Water	1.37E-04	1.19E-04	1.47E-04
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Soil	1.53E-06	1.74E-06	1.39E-06
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Air	1.10E-06	1.51E-06	8.92E-07
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Water	3.37E-04	3.28E-04	3.42E-04
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Soil	2.16E-09	2.83E-09	1.85E-09
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	Air	2.89E-06	1.93E-06	3.53E-06
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	Water	2.20E-05	1.95E-05	2.35E-05
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	Soil	1.65E-08	1.93E-08	1.48E-08
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Air	9.42E-04	8.00E-04	9.67E-04
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Water	1.54E-02	1.50E-02	1.56E-02
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Soil	3.23E-06	2.67E-06	3.45E-06
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Air	3.08E-04	2.67E-04	3.13E-04
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Water	4.33E-03	4.11E-03	4.44E-03
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Soil	7.34E-09	9.09E-09	6.41E-09

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Air	9.70E-08	1.09E-07	8.31E-08
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Water	1.79E-05	1.74E-05	1.82E-05
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Soil	1.76E-09	2.00E-09	1.52E-09
1163-19-5	Decabromophenyl ether	Air	2.63E-04	1.61E-04	3.41E-04
1163-19-5	Decabromophenyl ether	Water	1.22E-03	9.97E-04	1.38E-03
1163-19-5	Decabromophenyl ether	Soil	1.25E-07	1.00E-07	1.48E-07
1303-28-2	Arsenic pentoxide	Air	3.37E-03	1.33E-03	6.43E-03
1303-28-2	Arsenic pentoxide	Water	1.60E-03	1.21E-03	1.89E-03
1303-28-2	Arsenic pentoxide	Soil	1.39E-03	1.06E-03	1.65E-03
1327-53-3	Arsenic oxide	Air	3.37E-03	1.33E-03	6.43E-03
1327-53-3	Arsenic oxide	Water	1.60E-03	1.21E-03	1.89E-03
1327-53-3	Arsenic oxide	Soil	1.39E-03	1.06E-03	1.65E-03
7440-38-2	Arsenic	Air	7.78E-04	3.02E-04	1.49E-03
7440-38-2	Arsenic	Water	4.53E-04	3.44E-04	5.37E-04
7440-38-2	Arsenic	Soil	3.96E-04	3.00E-04	4.69E-04
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Air	3.37E-03	1.33E-03	6.43E-03
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Water	1.60E-03	1.21E-03	1.89E-03
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Soil	1.39E-03	1.06E-03	1.65E-03
10031-13-7	lead(II)-arsenite	Air	1.45E-02	5.65E-03	2.79E-02
10031-13-7	lead(II)-arsenite	Water	8.42E-03	6.39E-03	9.98E-03
10031-13-7	lead(II)-arsenite	Soil	7.36E-03	5.58E-03	8.72E-03
1303-00-0	Gallium arsenide	Air	1.45E-02	5.65E-03	2.79E-02
1303-00-0	Gallium arsenide	Water	8.42E-03	6.39E-03	9.98E-03
1303-00-0	Gallium arsenide	Soil	7.36E-03	5.58E-03	8.72E-03
7440-43-9	Cadmium	Air	3.38E-03	1.36E-03	6.32E-03
7440-43-9	Cadmium	Water	2.78E-03	2.14E-03	3.26E-03
7440-43-9	Cadmium	Soil	3.08E-03	2.35E-03	3.64E-03
10108-64-2	Cadmium chloride	Air	9.71E-02	4.07E-02	1.80E-01
10108-64-2	Cadmium chloride	Water	3.33E-05	2.57E-05	3.90E-05
10108-64-2	Cadmium chloride	Soil	3.69E-05	2.82E-05	4.36E-05
10124-36-4	Cadmium sulfate	Air	5.30E-02	2.22E-02	9.80E-02
10124-36-4	Cadmium sulfate	Water	3.33E-05	2.57E-05	3.90E-05
10124-36-4	Cadmium sulfate	Soil	3.69E-05	2.82E-05	4.36E-05
1306-19-0	Cadmium oxide	Air	7.17E-02	3.01E-02	1.33E-01
1306-19-0	Cadmium oxide	Water	3.33E-05	2.57E-05	3.90E-05
1306-19-0	Cadmium oxide	Soil	3.69E-05	2.82E-05	4.36E-05

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
1333-82-0	Chromium oxide	Air	4.02E-03	1.67E-03	7.45E-03
1333-82-0	Chromium oxide	Water	1.43E-03	1.11E-03	1.66E-03
1333-82-0	Chromium oxide	Soil	1.88E-03	1.44E-03	2.21E-03
13530-65-9	Zinc Chromate	Air	4.02E-03	1.67E-03	7.45E-03
13530-65-9	Zinc Chromate	Water	1.43E-03	1.11E-03	1.66E-03
13530-65-9	Zinc Chromate	Soil	1.88E-03	1.44E-03	2.21E-03
13765-19-0	calcium chromate	Air	3.53E-05	1.44E-05	6.54E-05
13765-19-0	calcium chromate	Water	2.52E-05	1.97E-05	2.93E-05
13765-19-0	calcium chromate	Soil	3.32E-05	2.54E-05	3.91E-05
18540-29-9	CrVI	Air	4.04E-05	1.64E-05	7.49E-05
18540-29-9	CrVI	Water	3.40E-05	2.65E-05	3.95E-05
18540-29-9	CrVI	Soil	4.48E-05	3.43E-05	5.28E-05
7758-97-6	Lead chromate	Air	4.02E-03	1.67E-03	7.45E-03
7758-97-6	Lead chromate	Water	1.43E-03	1.11E-03	1.66E-03
7758-97-6	Lead chromate	Soil	1.88E-03	1.44E-03	2.21E-03
7789-06-2	strontium chromate	Air	4.02E-03	1.67E-03	7.45E-03
7789-06-2	strontium chromate	Water	1.43E-03	1.11E-03	1.66E-03
7789-06-2	strontium chromate	Soil	1.88E-03	1.44E-03	2.21E-03
7439-92-1	Lead	Air	1.09E-03	4.61E-04	1.98E-03
7439-92-1	Lead	Water	5.76E-04	4.55E-04	6.64E-04
7439-92-1	Lead	Soil	4.59E-04	3.59E-04	5.33E-04
95860-12-1	Lead methanesulfonate	Air	3.63E-04	1.53E-04	6.58E-04
95860-12-1	Lead methanesulfonate	Water	1.90E-04	1.50E-04	2.19E-04
95860-12-1	Lead methanesulfonate	Soil	1.51E-04	1.18E-04	1.75E-04
1309-60-0	Lead dioxide	Air	3.63E-04	1.53E-04	6.58E-04
1309-60-0	Lead dioxide	Water	1.90E-04	1.50E-04	2.19E-04
1309-60-0	Lead dioxide	Soil	1.51E-04	1.18E-04	1.75E-04
1317-36-8	Lead oxide	Air	3.63E-04	1.53E-04	6.58E-04
1317-36-8	Lead oxide	Water	1.90E-04	1.50E-04	2.19E-04
1317-36-8	Lead oxide	Soil	1.51E-04	1.18E-04	1.75E-04
25808-74-6	Lead hexafluorosilicate	Air	3.63E-04	1.53E-04	6.58E-04
25808-74-6	Lead hexafluorosilicate	Water	1.90E-04	1.50E-04	2.19E-04
25808-74-6	Lead hexafluorosilicate	Soil	1.51E-04	1.18E-04	1.75E-04
1314-41-6	Lead(II,IV) oxide	Air	3.63E-04	1.53E-04	6.58E-04
1314-41-6	Lead(II,IV) oxide	Water	1.90E-04	1.50E-04	2.19E-04
1314-41-6	Lead(II,IV) oxide	Soil	1.51E-04	1.18E-04	1.75E-04
598-63-0	Lead(2+)salt carbamic acid (1:1)	Air	3.63E-04	1.53E-04	6.58E-04
598-63-0	Lead(2+)salt carbamic acid (1:1)	Water	1.90E-04	1.50E-04	2.19E-04
598-63-0	Lead(2+)salt carbamic acid (1:1)	Soil	1.51E-04	1.18E-04	1.75E-04
13424-46-9	Lead azide	Air	3.63E-04	1.53E-04	6.58E-04
13424-46-9	Lead azide	Water	1.90E-04	1.50E-04	2.19E-04
13424-46-9	Lead azide	Soil	1.51E-04	1.18E-04	1.75E-04

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
7783-46-2	Lead fluoride	Air	3.63E-04	1.53E-04	6.58E-04
7783-46-2	Lead fluoride	Water	1.90E-04	1.50E-04	2.19E-04
7783-46-2	Lead fluoride	Soil	1.51E-04	1.18E-04	1.75E-04
1314-87-0	Lead sulfide	Air	3.63E-04	1.53E-04	6.58E-04
1314-87-0	Lead sulfide	Water	1.90E-04	1.50E-04	2.19E-04
1314-87-0	Lead sulfide	Soil	1.51E-04	1.18E-04	1.75E-04
7446-14-2	Lead(II) sulfate	Air	3.63E-04	1.53E-04	6.58E-04
7446-14-2	Lead(II) sulfate	Water	1.90E-04	1.50E-04	2.19E-04
7446-14-2	Lead(II) sulfate	Soil	1.51E-04	1.18E-04	1.75E-04
7446-27-7	Lead phosphate	Air	3.63E-04	1.53E-04	6.58E-04
7446-27-7	Lead phosphate	Water	1.90E-04	1.50E-04	2.19E-04
7446-27-7	Lead phosphate	Soil	1.51E-04	1.18E-04	1.75E-04
7758-95-4	Lead chloride	Air	3.63E-04	1.53E-04	6.58E-04
7758-95-4	Lead chloride	Water	1.90E-04	1.50E-04	2.19E-04
7758-95-4	Lead chloride	Soil	1.51E-04	1.18E-04	1.75E-04
10099-76-0	Silicic acid	Air	3.63E-04	1.53E-04	6.58E-04
10099-76-0	Silicic acid	Water	1.90E-04	1.50E-04	2.19E-04
10099-76-0	Silicic acid	Soil	1.51E-04	1.18E-04	1.75E-04
1335-25-7	Lead oxide	Air	3.63E-04	1.53E-04	6.58E-04
1335-25-7	Lead oxide	Water	1.90E-04	1.50E-04	2.19E-04
1335-25-7	Lead oxide	Soil	1.51E-04	1.18E-04	1.75E-04
19783-14-3	Lead Hydroxide	Air	3.63E-04	1.53E-04	6.58E-04
19783-14-3	Lead Hydroxide	Water	1.90E-04	1.50E-04	2.19E-04
19783-14-3	Lead Hydroxide	Soil	1.51E-04	1.18E-04	1.75E-04
12060-00-3	lead titanate	Air	3.63E-04	1.53E-04	6.58E-04
12060-00-3	lead titanate	Water	1.90E-04	1.50E-04	2.19E-04
12060-00-3	lead titanate	Soil	1.51E-04	1.18E-04	1.75E-04
3687-31-8	Lead arsenate	Air	3.63E-04	1.53E-04	6.58E-04
3687-31-8	Lead arsenate	Water	1.90E-04	1.50E-04	2.19E-04
3687-31-8	Lead arsenate	Soil	1.51E-04	1.18E-04	1.75E-04
10214-39-8	Lead borate	Air	3.63E-04	1.53E-04	6.58E-04
10214-39-8	Lead borate	Water	1.90E-04	1.50E-04	2.19E-04
10214-39-8	Lead borate	Soil	1.51E-04	1.18E-04	1.75E-04
592-87-0	lead thiocyanate	Air	3.63E-04	1.53E-04	6.58E-04
592-87-0	lead thiocyanate	Water	1.90E-04	1.50E-04	2.19E-04
592-87-0	lead thiocyanate	Soil	1.51E-04	1.18E-04	1.75E-04
1335-32-6	lead subacetate	Air	3.63E-04	1.53E-04	6.58E-04
1335-32-6	lead subacetate	Water	1.90E-04	1.50E-04	2.19E-04
1335-32-6	lead subacetate	Soil	1.51E-04	1.18E-04	1.75E-04
7446-34-6	sulfur selenide	Air	1.10E-03	4.24E-04	2.11E-03
7446-34-6	sulfur selenide	Water	6.59E-04	4.99E-04	7.82E-04
7446-34-6	sulfur selenide	Soil	4.08E-04	3.09E-04	4.84E-04

Table B.6: Damage factors (cont.)

CAS No.	Substance Name	Damage factors on human toxicity (DALY/kg emitted)			
		Compartment	Value	Min	Max
7782-49-2	Selenium	Air	1.50E-03	5.80E-04	2.89E-03
7782-49-2	Selenium	Water	9.05E-04	6.86E-04	1.07E-03
7782-49-2	Selenium	Soil	5.61E-04	4.25E-04	6.65E-04
7439-97-6	Mercury	Air	2.01E-02	6.16E-03	7.39E-02
7439-97-6	Mercury	Water	7.00E-02	5.44E-02	8.15E-02
7439-97-6	Mercury	Soil	3.60E-02	2.80E-02	4.20E-02
1309-64-4	Antimony trioxide	Air	7.00E-05	2.72E-05	1.34E-04
1309-64-4	Antimony trioxide	Water	5.57E-05	4.22E-05	6.62E-05
1309-64-4	Antimony trioxide	Soil	4.74E-05	3.59E-05	5.63E-05
7440-36-0	Antimony	Air	1.07E-03	4.13E-04	2.05E-03
7440-36-0	Antimony	Water	9.02E-04	6.84E-04	1.07E-03
7440-36-0	Antimony	Soil	7.67E-04	5.81E-04	9.11E-04
7440-02-0	Nickel	Air	3.57E-04	1.39E-04	6.85E-04
7440-02-0	Nickel	Water	2.84E-04	2.16E-04	3.37E-04
7440-02-0	Nickel	Soil	2.43E-04	1.84E-04	2.88E-04
12035-36-8	Nickel dioxide	Air	4.00E-03	1.56E-03	7.68E-03
12035-36-8	Nickel dioxide	Water	3.18E-03	2.42E-03	3.78E-03
12035-36-8	Nickel dioxide	Soil	2.72E-03	2.06E-03	3.23E-03
12035-72-2	Nickel subsulfide	Air	4.05E-03	1.57E-03	7.76E-03
12035-72-2	Nickel subsulfide	Water	3.18E-03	2.42E-03	3.78E-03
12035-72-2	Nickel subsulfide	Soil	2.72E-03	2.06E-03	3.23E-03
1313-99-1	Nickelous oxide	Air	4.00E-03	1.56E-03	7.68E-03
1313-99-1	Nickelous oxide	Water	3.18E-03	2.42E-03	3.78E-03
1313-99-1	Nickelous oxide	Soil	2.72E-03	2.06E-03	3.23E-03
1314-06-3	nickel oxide	Air	4.00E-03	1.56E-03	7.68E-03
1314-06-3	nickel oxide	Water	3.18E-03	2.42E-03	3.78E-03
1314-06-3	nickel oxide	Soil	2.72E-03	2.06E-03	3.23E-03
13463-39-3	Nickel Carbonyl	Air	1.20E-04	4.81E-05	2.27E-04
13463-39-3	Nickel Carbonyl	Water	5.63E-05	4.27E-05	6.68E-05
13463-39-3	Nickel Carbonyl	Soil	4.82E-05	3.65E-05	5.72E-05
16812-54-7	Nickel(II)Sulfide	Air	4.00E-03	1.56E-03	7.68E-03
16812-54-7	Nickel(II)Sulfide	Water	3.18E-03	2.42E-03	3.78E-03
16812-54-7	Nickel(II)Sulfide	Soil	2.72E-03	2.06E-03	3.23E-03
1314-62-1	vanadium pentoxide	Air	2.56E-04	9.93E-05	4.91E-04
1314-62-1	vanadium pentoxide	Water	1.71E-04	1.30E-04	2.03E-04
1314-62-1	vanadium pentoxide	Soil	1.29E-04	9.80E-05	1.53E-04
7440-41-7	Beryllium	Air	3.40E-03	1.33E-03	6.50E-03
7440-41-7	Beryllium	Water	3.05E-03	2.31E-03	3.61E-03
7440-41-7	Beryllium	Soil	2.88E-03	2.18E-03	3.42E-03

B.6 List of lakes and lake parameters

Table B.7: Water areas

Area	Northern		Northeastern		Central		Southern		Total	
	Amount	Area (m ²)	Amount	Area (m ²)	Amount	Area (m ²)	Amount	Area (m ²)	Amount	Area (m ²)
Marine & coast					387	6.71E+08	869	1.95E+10	1,256	2.02E+10
River	5,461	1.12E+09	8,053	1.09E+09	8,380	1.64E+08	3,114	3.93E+08	25,008	2.76E+09
Lagoon & lake	4,573	1.68E+09	6,168	8.36E+08	2,228	2.35E+09	1,159	3.64E+09	14,128	8.51E+09
Swamp	539	2.61E+07	368	4.98E+07	750	1.42E+08	336	4.92E+09	1,993	5.13E+09
Other			161	2.18E+07	7		100	1.00E+09	268	1.02E+09
Total	10,573	2.82E+09	14,750	2.00E+09	11,752	3.33E+09	5,578	2.95E+10	42,653	3.76E+10

B.7 Result of model Parameters

Table B.8: Default parameter in the air module

<i>Parameter</i>	<i>Value</i>
dry deposition velocity (m/h)	1.00E+01
wet deposition scavenging volume (m ³ air/m ³ rain)	2.00E+05
air boundary layer thickness (m)	0.005
rainfall rate (m/h)	1.71E-04
t - dry (hours)	54
Lower to upper atmospheric loss rate const. (m/h)	1.00E-04
temp (K)	300.26
Aerosol solid density (kg/m ³)	2000
Height of lower atmospheric boundary layer (m)	1000
Aerosol phase fraction (m ³ /m ³ air)	3.85E-11
Paved Area with drainage systems (m ²)	5.93E+09
area surface water (m ²)	1.13E+10
area soil (m ²)	5.02E+11
Fraction of area soil covered by vegetation	0.8
Surface soil Layer	
volumetric water fraction	0.3
volumetric air fraction	0.2
volumetric solids fraction	0.5

Table B.9: Default parameters of soil module

<i>Parameter</i>	<i>Value</i>
ppm of solids in runoff water	200
solid phase soil density (kg/m ³)	2400
fraction of organic carbon in solid phase of soil	0.02
area soil (m ²)	1.88E+11
temp (K)	300.26
air boundary layer thickness (m)	0.005
rainfall rate (m/h)	1.71E-04
Soil Inputs	
Surface Layer	
Depth (m)	0.01
volumetric water fraction	0.3
volumetric air fraction	0.2
volumetric solids fraction	0.5
Root Zone	
Depth (m)	0.8
volumetric water fraction	0.3
volumetric air fraction	0.2
volumetric solids fraction	0.5
Soil Layer calculations	
Surface Layer	
advection water rate (m/hr)	1.38E-05
air-bulk soil partitioning coefficient	0
water-bulk soil partitioning coefficient	6.54E-03
Bulk diffusivity in soil (m ² /hr) - on a bulk soil basis	6.74E-09
Modified Damkohler No. (m)	1.30E+11
layer volume (m ³)	1.87E+09

Table B.9: Default parameters of soil module (cont.)

<i>Parameter</i>	<i>Value</i>
<i>Root Zone</i>	
advection water rate (m/hr)	1.38E-05
air-bulk soil partitioning coefficient	0
water-bulk soil partitioning coefficient	6.54E-03
Bulk diffusivity in soil (m ² /hr) - on a bulk soil basis	6.74E-09
Modified Damkohler No. (m)	1.30E+92
layer volume (m ³)	1.50E+11
<i>Vadose Layer</i>	
advection water rate (m/hr)	1.38E-05
air-bulk soil partitioning coefficient	0
water-bulk soil partitioning coefficient	6.54E-03
Bulk diffusivity in soil (m ² /hr) - on a bulk soil basis	6.74E-09
Modified Damkohler No. (m)	1.30E+92
layer volume (m ³)	2.81E+11

Table B.10: Default parameters of the vegetation module

<i>Parameter</i>	<i>Unit</i>	<i>Value</i>
<i>Mass</i>		
Dry Plant mass	kg/m ² -soil	1.80E+00
<i>Volume</i>		
Fraction leaf to aerial plant part	kg/kg	5.00E-01
Fraction root to aerial plant part	kg/kg	1.00E+00
<i>Fluxes</i>		
Transpiration coefficient	l /kg	5.00E+02
<i>LAI</i>		
Leaf area index	m ²	4.00E+00
<i>Stomata</i>		
Diffusion length stomata	m	2.50E-05
Diffusion length stomata boundary layer	m	1.00E-03
<i>Root</i>		
Density root (bulk)	kg/l	8.00E-01
Correction plant lipid - n-octanol (barley)	-	7.70E-01
Root water content	g/g	9.40E-01
Root lipid content	g/g	1.00E-02
<i>Stem</i>		
Density stem (bulk)	kg/l	8.00E-01
Correction plant lipid - n-octanol (barley)	-	9.50E-01
Stem water content	g/g	7.56E-01
Stem lipid content	g/g	3.00E-02
<i>Leaf</i>		
Density leaf (bulk)	kg/l	8.00E-01
Correction plant lipid - n-octanol (barley)	-	9.50E-01
Leaves water content	g/g	7.27E-01
Leaves lipid content	g/g	3.00E-02
<i>General</i>		
Temp	K	3.00E+02
Fraction of area soil covered by vegetation		8.00E-01

Table B.11: Default parameters of the water module

<i>Parameter</i>	<i>Unit</i>	<i>Value</i>
mean depth	[m]	2.81E+01
surface area	[m ²]	2.76E+09
water pH		7.25E+00
Temperature (annual average)	[K]	3.00E+02
mean wind speed 10m over surface	[m/s]	1.32E+00
diffusion constant of oxygen in water at the temperature T	[cm ² /s]	2.10E-05
diffusion constant of water in air at the temperature T	[cm ² /s]	2.60E-01
sediment to water diffusion mass transfer coefficient	[m/h]	1.00E-04
mass fraction of organic matter in suspended solids	[kg _{org} /kg _{particles}]	4.00E-01
Concentration of colloidal organic matter per unit bulk volume	[kg/m ³]	3.20E-03
solid-to-water phase ratio	[kg/m ³]	4.00E-04
mean sediment accumulation	[kg _s m ⁻² yr ⁻¹]	1.00E-01

Table B.12: Default parameters of the sedimentation module

<i>Parameter</i>	<i>Value</i>
sediment to water mass transfer coefficient (m/h)	1.00E-04
fraction of sediment deposition buried	4.00E-01
fraction of sediment deposition resuspended	4.00E-01
solid phase sediment density (kg/m ³)	2.40E+03
fraction of organic carbon in solid phase of sediment	4.00E-02
mean sediment accumulation	1.00E-01
Sediment depth (m)	5.00E-02
area sediment (m ²)	2.76E+09
solids volume fraction	2.00E-01

Table B.13: Default parameters of the sea module

<i>Parameter</i>	<i>Value</i>
depth of sediment (m)	0.05
area sediment (m ²)	4.3E+11
solids fraction	0.2
solid phase sediment density (kg/m ³)	2400
fraction of organic carbon in solid phase of sediment	0.04
sediment to water mass transfer coefficient (m/h)	0.0001
sediment deposition rate constant (m/h)	0.0000005
fraction of sediment deposition buried	0.4
fraction of sediment deposition resuspended	0.4



Appendix C

Ecotoxicity

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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C.1 Result of chemical concentration and midpoint factor

Table C.1: Result of chemical concentration and midpoint factor

CAS	Chemical name	Emission concentration to water (kg/m ³)			Ecotoxicity potential (kg C ₆ H ₆ water eq./kg)		
		Air	Water	Soil	Air	Water	Soil
50-00-0	Formaldehyde	3.58E-16	2.86E-15	7.46E-18	5.53E-02	4.42E-01	1.15E-03
302-01-2	Hydrazine	3.29E-16	4.91E-15	1.61E-17	5.09E-02	7.59E-01	2.49E-03
75-05-8	Acetonitrile	4.76E-15	1.58E-14	4.61E-16	7.37E-01	2.44E+00	7.13E-02
151-56-4	Aziridine	3.17E-14	7.60E-14	1.47E-15	4.90E+00	1.18E+01	2.27E-01
75-07-0	Acetaldehyde	4.12E-17	2.61E-15	4.75E-18	6.38E-03	4.04E-01	7.35E-04
75-21-8	Ethylene oxide	1.20E-15	9.01E-15	1.39E-16	1.85E-01	1.39E+00	2.15E-02
60-34-4	Methylhydrazine	5.44E-17	1.75E-14	1.76E-16	8.41E-03	2.70E+00	2.72E-02
74-87-3	Methyl chloride	2.62E-17	1.07E-14	4.39E-17	4.05E-03	1.65E+00	6.79E-03
107-13-1	Acrylonitrile	4.49E-16	6.64E-15	4.97E-17	6.95E-02	1.03E+00	7.68E-03
107-02-8	Acrolein	8.59E-17	2.71E-15	5.45E-18	1.33E-02	4.19E-01	8.43E-04
107-18-6	Allyl alcohol	8.41E-16	2.81E-15	1.80E-17	1.30E-01	4.34E-01	2.78E-03
75-56-9	Propylene oxide	1.06E-15	6.81E-15	1.57E-16	1.64E-01	1.05E+00	2.43E-02
60-35-5	Acetamide	2.42E-15	8.56E-15	3.93E-17	3.74E-01	1.32E+00	6.07E-03
57-14-7	1,1-Dimethyl hydrazine	1.32E-15	1.72E-14	1.45E-16	2.05E-01	2.66E+00	2.24E-02
107-21-1	Ethylene glycol	1.58E-15	2.86E-15	1.02E-17	2.44E-01	4.43E-01	1.57E-03
78-79-5	Isoprene	8.16E-20	7.35E-15	1.78E-18	1.26E-05	1.14E+00	2.75E-04
79-06-1	2-Propenamide	2.97E-16	1.65E-15	1.25E-18	4.59E-02	2.56E-01	1.94E-04
79-10-7	Acrylic acid	1.13E-15	2.86E-15	2.13E-17	1.74E-01	4.43E-01	3.30E-03
62-56-6	Thiourea	1.39E-15	8.56E-15	3.43E-17	2.15E-01	1.32E+00	5.31E-03
75-15-0	Carbon disulfide	1.15E-17	1.12E-14	4.25E-17	1.79E-03	1.72E+00	6.58E-03
107-05-1	3-Chloropropene	1.19E-18	8.59E-15	8.41E-18	1.84E-04	1.33E+00	1.30E-03
71-43-2	Benzene	4.34E-18	6.47E-15	1.05E-17	6.71E-04	1.00E+00	1.63E-03
110-86-1	Pyridine	8.89E-15	2.07E-14	1.00E-15	1.37E+00	3.20E+00	1.55E-01
75-09-2	Dichloromethane	1.05E-16	1.87E-14	5.41E-16	1.62E-02	2.89E+00	8.37E-02
108-05-4	Acetic acid ethenyl ester	3.89E-17	2.60E-15	1.13E-17	6.01E-03	4.03E-01	1.74E-03
79-41-4	2-Propenoic acid, 2-methyl-	2.92E-15	1.03E-14	7.80E-17	4.52E-01	1.59E+00	1.21E-02
123-91-1	1,4-Dioxane	1.11E-15	8.17E-15	1.27E-16	1.72E-01	1.26E+00	1.96E-02
110-80-5	2-Ethoxyethanol	6.77E-15	1.31E-14	2.15E-16	1.05E+00	2.03E+00	3.32E-02
108-88-3	Toluene	5.44E-18	1.31E-14	2.06E-17	8.41E-04	2.03E+00	3.19E-03
106-89-8	Epichlorohydrin	2.14E-15	8.36E-15	1.60E-16	3.31E-01	1.29E+00	2.48E-02
62-53-3	Benzenamine	4.93E-16	8.38E-15	3.42E-17	7.62E-02	1.30E+00	5.29E-03
108-95-2	Phenol	6.68E-16	2.86E-15	1.32E-17	1.03E-01	4.42E-01	2.04E-03
74-83-9	Methyl bromide	3.14E-17	1.16E-14	4.83E-17	4.85E-03	1.79E+00	7.47E-03
156-60-5	trans-1,2-Dichloroethylene	2.49E-17	2.05E-14	1.26E-16	3.85E-03	3.16E+00	1.96E-02
75-35-4	1,1-Dichloroethylene	8.09E-18	2.32E-14	1.53E-16	1.25E-03	3.59E+00	2.37E-02
108-31-6	2,5-Furandione	1.57E-19	2.30E-19	1.01E-26	2.43E-05	3.56E-05	1.56E-12
107-06-2	1,2-Dichloroethane	2.49E-16	1.95E-14	6.86E-16	3.85E-02	3.01E+00	1.06E-01

Table C.1: Result of chemical concentration and midpoint factor (cont.)

CAS	Chemical name	Emission concentration to water (kg/m ³)			Ecotoxicity potential (kg C ₆ H ₆ water eq./kg)		
		Air	Water	Soil	Air	Water	Soil
108-91-8	Cyclohexanamine	1.35E-16	2.82E-15	3.70E-18	2.08E-02	4.37E-01	5.73E-04
140-88-5	Ethyl acrylate	6.38E-18	2.05E-15	2.91E-18	9.86E-04	3.17E-01	4.50E-04
80-62-6	Methyl methacrylate	2.64E-17	2.62E-15	7.11E-18	4.08E-03	4.05E-01	1.10E-03
100-42-5	Styrene	3.03E-18	6.60E-15	2.28E-18	4.68E-04	1.02E+00	3.52E-04
100-52-7	Benzaldehyde	6.73E-17	2.73E-15	3.13E-18	1.04E-02	4.22E-01	4.84E-04
1330-20-7	Xylenes	7.73E-18	1.17E-14	2.70E-18	1.20E-03	1.81E+00	4.17E-04
100-41-4	Ethylbenzene	5.99E-18	1.34E-14	1.00E-17	9.27E-04	2.07E+00	1.55E-03
120-80-9	Catechol	7.79E-16	2.86E-15	9.57E-18	1.20E-01	4.43E-01	1.48E-03
123-31-9	Hydroquinone	7.21E-17	5.20E-16	1.05E-18	1.11E-02	8.04E-02	1.63E-04
542-75-6	1,3-Dichloropropene	2.04E-17	7.51E-15	1.17E-17	3.16E-03	1.16E+00	1.81E-03
108-90-7	Chlorobenzene	4.91E-17	1.97E-14	8.52E-17	7.59E-03	3.04E+00	1.32E-02
78-87-5	1,2-Dichloropropane	9.38E-17	1.98E-14	2.80E-16	1.45E-02	3.06E+00	4.32E-02
105-60-2	2H-Azepin-2-one, hexahydro-	3.69E-15	1.04E-14	6.32E-17	5.70E-01	1.60E+00	9.77E-03
106-92-3	Oxirane, (2-propenyloxy)methyl -	2.03E-15	1.03E-14	7.00E-17	3.14E-01	1.60E+00	1.08E-02
100-37-8	Ethanol, 2-(diethylamino)-	1.54E-15	1.04E-14	4.97E-17	2.39E-01	1.60E+00	7.69E-03
67-66-3	Chloroform	7.02E-17	1.99E-14	2.94E-16	1.09E-02	3.08E+00	4.55E-02
108-67-8	1,3,5-Trimethylbenzene	5.38E-18	1.36E-14	5.82E-18	8.31E-04	2.10E+00	9.01E-04
105-67-9	2,4-Dimethylphenol	3.78E-16	2.85E-15	6.00E-18	5.85E-02	4.40E-01	9.28E-04
100-44-7	Benzyl chloride	6.85E-17	3.09E-15	2.78E-18	1.06E-02	4.79E-01	4.30E-04
106-47-8	Benzenamine, 4-chloro-	2.69E-16	7.90E-15	1.45E-17	4.16E-02	1.22E+00	2.25E-03
108-42-9	Benzenamine, 3-chloro-	8.66E-16	1.88E-14	1.85E-16	1.34E-01	2.91E+00	2.87E-02
106-48-9	CHLOROPHENOL, 4-	2.16E-15	1.03E-14	2.39E-17	3.33E-01	1.59E+00	3.70E-03
79-01-6	Trichloroethylene	1.46E-17	1.38E-14	3.30E-17	2.25E-03	2.13E+00	5.10E-03
111-15-9	Ethanol, 2-ethoxy-, acetate	1.92E-15	1.00E-14	7.56E-17	2.97E-01	1.55E+00	1.17E-02
71-55-6	1,1,1-Trichloroethane	2.26E-17	2.37E-14	9.97E-17	3.49E-03	3.66E+00	1.54E-02
79-00-5	1,1,2-Trichloroethane	3.58E-16	2.48E-14	5.12E-16	5.53E-02	3.84E+00	7.92E-02
100-02-7	4-Nitrophenol	4.49E-20	2.62E-15	7.92E-19	6.94E-06	4.06E-01	1.22E-04
106-46-7	p-Dichlorobenzene	8.77E-17	2.07E-14	3.38E-17	1.36E-02	3.21E+00	5.23E-03
534-52-1	4,6-Dinitro-o-cresol	4.57E-15	8.53E-15	1.25E-16	7.07E-01	1.32E+00	1.93E-02
85-44-9	Phthalic anhydride	8.49E-18	1.22E-17	1.78E-22	1.31E-03	1.88E-03	2.75E-08
122-60-1	Oxirane, (phenoxy)methyl)-	1.47E-15	1.03E-14	3.89E-17	2.28E-01	1.59E+00	6.01E-03
56-23-5	Carbon tetrachloride	1.11E-17	2.08E-14	6.78E-17	1.71E-03	3.22E+00	1.05E-02
100-00-5	Benzene, 1-chloro-4-nitro-	8.16E-15	4.01E-14	9.78E-16	1.26E+00	6.21E+00	1.51E-01
533-74-4	Dazomet	6.87E-16	1.04E-14	2.81E-17	1.06E-01	1.60E+00	4.34E-03
127-18-4	Tetrachloroethylene	1.00E-17	1.42E-14	2.66E-17	1.55E-03	2.19E+00	4.11E-03
79-34-5	1,1,2,2-Tetrachloroethane	1.07E-15	2.28E-14	3.84E-16	1.65E-01	3.53E+00	5.94E-02
122-39-4	Diphenylamine	5.84E-16	8.51E-15	4.41E-18	9.03E-02	1.32E+00	6.82E-04
85-01-8	Phenanthrene	1.46E-15	1.84E-14	2.69E-17	2.26E-01	2.84E+00	4.16E-03
51-28-5	2,4-Dinitrophenol	4.85E-15	8.54E-15	2.10E-16	7.50E-01	1.32E+00	3.24E-02

Table C.1: Result of chemical concentration and midpoint factor (cont.)

CAS	Chemical name	Emission concentration to water (kg/m ³)			Ecotoxicity potential (kg C ₆ H ₆ water eq./kg)		
		Air	Water	Soil	Air	Water	Soil
2212-67-1	Molinate	6.80E-16	9.94E-15	8.96E-18	1.05E-01	1.54E+00	1.39E-03
86-30-6	N-Nitrosodiphenylamine	2.91E-17	8.92E-16	1.19E-18	4.50E-03	1.38E-01	1.85E-04
63-25-2	Carbaryl	4.24E-17	6.89E-15	1.27E-17	6.56E-03	1.07E+00	1.96E-03
122-34-9	1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-	1.54E-14	2.50E-14	1.67E-16	2.39E+00	3.86E+00	2.59E-02
114-26-1	Propoxur	4.12E-15	2.50E-14	1.59E-16	6.37E-01	3.86E+00	2.46E-02
12427-38-2	Maneb	3.17E-16	1.03E-14	4.77E-17	4.90E-02	1.59E+00	7.38E-03
1912-24-9	Atrazine	2.42E-14	1.44E-13	3.06E-16	3.74E+00	2.22E+01	4.73E-02
709-98-8	Propanil	1.40E-14	3.73E-14	2.89E-17	2.17E+00	5.76E+00	4.46E-03
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	1.82E-18	5.38E-16	9.35E-20	2.81E-04	8.32E-02	1.45E-05
1563-66-2	Carbofuran	1.42E-15	8.56E-15	1.46E-17	2.19E-01	1.32E+00	2.26E-03
121-82-4	1,3,5-Triazine, hexahydro-1,3,5-trinitro-	5.74E-16	1.04E-14	4.36E-17	8.87E-02	1.60E+00	6.75E-03
55-63-0	Nitroglycerin	5.08E-16	3.86E-15	5.19E-18	7.86E-02	5.98E-01	8.02E-04
118-96-7	2,4,6-Trinitrotoluene	1.73E-16	8.96E-16	1.54E-17	2.68E-02	1.39E-01	2.38E-03
834-12-8	Ametryne	8.34E-15	3.73E-14	2.72E-17	1.29E+00	5.77E+00	4.21E-03
80-05-7	4,4'-Isopropylidenediphenol	1.83E-16	2.49E-15	1.87E-18	2.83E-02	3.85E-01	2.90E-04
60-51-5	Dimethoate	3.15E-15	2.67E-14	2.96E-16	4.88E-01	4.13E+00	4.58E-02
330-54-1	Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-	7.29E-15	2.49E-14	4.95E-17	1.13E+00	3.86E+00	7.66E-03
137-26-8	Thioperoxydicarbonic diamide, tetramethyl-	5.69E-15	8.56E-15	7.48E-17	8.80E-01	1.32E+00	1.16E-02
21725-46-2	Cyanazine	2.17E-15	1.61E-14	2.01E-17	3.36E-01	2.49E+00	3.11E-03
330-55-2	Linuron	8.54E-15	2.49E-14	3.04E-17	1.32E+00	3.85E+00	4.70E-03
57-41-0	Hydantoin, 5,5-Diphenyl-	1.82E-14	3.74E-14	7.52E-17	2.81E+00	5.79E+00	1.16E-02
75-25-2	Bromoform	5.59E-16	2.37E-14	3.62E-16	8.64E-02	3.66E+00	5.61E-02
52-68-6	Trichlorofon	9.72E-15	1.48E-14	1.71E-16	1.50E+00	2.29E+00	2.65E-02
28249-77-6	Thiobencarb	6.51E-15	3.69E-14	3.76E-17	1.01E+00	5.70E+00	5.82E-03
1897-45-6	1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-	3.50E-15	8.52E-15	3.64E-17	5.41E-01	1.32E+00	5.63E-03
87-86-5	Pentachlorophenol	1.65E-14	2.44E-14	1.60E-18	2.56E+00	3.78E+00	2.47E-04
15972-60-8	Alachlor	8.71E-15	3.72E-14	8.92E-18	1.35E+00	5.75E+00	1.38E-03
298-04-4	Disulfoton	1.91E-15	1.40E-14	3.20E-19	2.95E-01	2.16E+00	4.95E-05
12122-67-7	Zineb	2.45E-14	3.63E-14	3.44E-16	3.78E+00	5.61E+00	5.32E-02
122-14-5	Fenitrothion	3.64E-15	1.47E-14	2.86E-18	5.63E-01	2.27E+00	4.42E-04
55-38-9	Fenthion	4.15E-15	1.93E-14	9.66E-19	6.42E-01	2.99E+00	1.49E-04
84-74-2	Di-n-butyl phthalate	2.01E-15	8.51E-15	4.03E-18	3.11E-01	1.32E+00	6.24E-04
40487-42-1	Pendimethalin	6.03E-15	3.57E-14	1.41E-17	9.32E-01	5.52E+00	2.18E-03
51218-45-2	Metolachlor	2.30E-18	2.32E-14	1.17E-17	3.56E-04	3.58E+00	1.81E-03
115-96-8	Ethanol, 2-chloro-, phosphate (3:1)	1.30E-14	3.74E-14	4.67E-16	2.02E+00	5.79E+00	7.22E-02
17804-35-2	Benomyl	1.90E-15	8.56E-15	4.56E-17	2.94E-01	1.32E+00	7.05E-03
1336-36-3	PCBS	1.08E-15	2.57E-14	1.71E-17	1.67E-01	3.97E+00	2.64E-03
33089-61-1	Amitraz	7.49E-16	3.00E-14	6.53E-18	1.16E-01	4.64E+00	1.01E-03
82-68-8	Pentachloronitrobenzene	9.03E-16	3.16E-14	3.06E-17	1.40E-01	4.88E+00	4.74E-03

Table C.1: Result of chemical concentration and midpoint factor (cont.)

CAS	Chemical name	Emission concentration to water (kg/m ³)			Ecotoxicity potential (kg C ₆ H ₆ water eq./kg)		
		Air	Water	Soil	Air	Water	Soil
333-41-5	Diazinon	3.88E-14	5.87E-14	1.54E-16	6.00E+00	9.08E+00	2.37E-02
137-30-4	Ziram	1.21E-15	1.04E-14	3.29E-17	1.87E-01	1.60E+00	5.09E-03
85-68-7	Butyl benzyl phthalate	1.25E-15	8.44E-15	5.66E-18	1.93E-01	1.30E+00	8.76E-04
121-75-5	Malathion	8.13E-16	2.86E-15	2.20E-19	1.26E-01	4.43E-01	3.40E-05
1582-09-8	Trifluralin	3.30E-15	3.58E-14	4.65E-17	5.11E-01	5.54E+00	7.19E-03
25311-71-1	Isofenphos	5.19E-16	1.03E-14	1.66E-19	8.02E-02	1.60E+00	2.56E-05
25155-30-0	DODECYLBENZENESULFONIC ACID, NA SALT	4.34E-15	1.04E-14	1.29E-17	6.71E-01	1.60E+00	1.99E-03
2312-35-8	Propargite	8.71E-15	3.67E-14	1.69E-18	1.35E+00	5.68E+00	2.62E-04
2921-88-2	Chlorpyrifos	3.48E-15	8.53E-15	8.51E-20	5.38E-01	1.32E+00	1.32E-05
470-90-6	Chlorfenvinphos	6.19E-15	2.25E-14	2.20E-18	9.57E-01	3.49E+00	3.40E-04
115-32-2	Dicofol	2.29E-14	3.67E-14	5.86E-19	3.54E+00	5.68E+00	9.07E-05
103-23-1	Bis(2-ethylhexyl)adipate	3.65E-15	1.01E-14	7.88E-19	5.65E-01	1.57E+00	1.22E-04
76578-14-8	Quizalofop-Ethyl	1.25E-14	3.70E-14	2.49E-18	1.94E+00	5.73E+00	3.84E-04
41198-08-7	Profenofos	1.02E-14	3.69E-14	1.81E-18	1.58E+00	5.71E+00	2.80E-04
55285-14-8	Carbamic acid	2.05E-15	1.02E-14	9.47E-19	3.17E-01	1.58E+00	1.46E-04
300-76-5	Naled	1.39E-15	2.31E-14	3.16E-16	2.15E-01	3.57E+00	4.88E-02
563-12-2	Ethion	1.62E-16	1.02E-14	2.44E-19	2.51E-02	1.58E+00	3.78E-05
117-81-7	Bis-(2-ethylhexyl) phthalate	2.34E-15	8.24E-15	7.96E-18	3.61E-01	1.27E+00	1.23E-03
117-84-0	Di(n-octyl) phthalate	7.63E-15	1.52E-14	5.83E-19	1.18E+00	2.35E+00	9.02E-05
52645-53-1	Permethrin	6.98E-15	2.12E-14	4.05E-20	1.08E+00	3.28E+00	6.27E-06
115-29-7	Endosulfan	2.33E-16	5.40E-15	3.45E-18	3.60E-02	8.36E-01	5.34E-04
52315-07-8	Cypermethrin	2.04E-15	6.02E-15	2.32E-20	3.15E-01	9.31E-01	3.59E-06
51630-58-1	Fenvalerate	1.47E-14	3.45E-14	5.70E-19	2.28E+00	5.33E+00	8.81E-05
82657-04-3	Bifenthrin	1.10E-15	3.10E-15	6.18E-20	1.71E-01	4.80E-01	9.55E-06
78-42-2	Phosphoric acid, tris(2-ethylhexyl) ester	3.17E-17	8.72E-15	6.42E-19	4.90E-03	1.35E+00	9.93E-05
1937-37-7	C.I. Direct Black 38	3.88E-15	5.31E-14	3.92E-16	6.00E-01	8.22E+00	6.06E-02
7440-38-2	As	1.56E-12	1.71E-13	1.17E-13	2.41E+02	2.64E+01	1.81E+01
7440-43-9	Cadmium	9.51E-13	1.39E-13	6.64E-14	1.47E+02	2.15E+01	1.03E+01
18540-29-9	CrVI	8.29E-13	1.23E-13	5.76E-14	1.28E+02	1.91E+01	8.91E+00
7439-92-1	Lead and compounds (inorganic)	9.25E-13	1.11E-13	6.81E-14	1.43E+02	1.71E+01	1.05E+01
7782-49-2	Selenium and compounds	1.16E-12	1.76E-13	8.03E-14	1.80E+02	2.72E+01	1.24E+01
7439-97-6	Elemental mercury (excludes methyl mercury)	1.49E-13	1.33E-13	6.33E-14	2.30E+01	2.06E+01	9.79E+00
7440-50-8	Cu	1.07E-12	1.56E-13	7.48E-14	1.66E+02	2.41E+01	1.16E+01
7440-66-6	Zinc and compounds	9.95E-13	1.42E-13	6.99E-14	1.54E+02	2.20E+01	1.08E+01
7440-36-0	Sb	1.17E-12	1.74E-13	8.09E-14	1.80E+02	2.69E+01	1.25E+01
7440-31-5	Sn	1.13E-12	1.19E-13	8.56E-14	1.75E+02	1.84E+01	1.32E+01
7440-02-0	Ni	1.21E-12	1.72E-13	8.50E-14	1.87E+02	2.66E+01	1.31E+01
7440-41-7	Beryllium and compounds	1.15E-12	1.73E-13	7.95E-14	1.78E+02	2.68E+01	1.23E+01
1746-01-6	2,3,7,8-TCDD (Dioxin)	7.94E-15	2.22E-14	9.00E-17	1.23E+00	3.44E+00	1.39E-02

C.2 Chemical data damage

Table C.2: Chemical data damage (Source: Payet, 2005)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
557-34-6	Zinc acetate	1.96E+03	2.43E+03	3.51E+03	1.69E+03	2.43E+03	2.43E+03
1314-13-2	Zinc oxide	1.20E+04	1.55E+03	9.25E+04	1.20E+04	1.20E+04	1.20E+04
1314-98-3	Zinc sulfide	4.21E+04	9.70E+02	1.83E+06	4.21E+04	4.21E+04	4.21E+04
1332-07-6	Boric acid, Zinc salt	4.75E+04	7.50E+04	3.01E+04	4.75E+04	4.75E+04	4.75E+04
1405-89-6	Zinc bacitracin	4.11E+04	4.11E+04	4.11E+04	4.11E+04	4.11E+04	4.11E+04
3486-35-9	Carbonic acid, Zinc salt (1:1)	9.49E+06	3.00E+07	3.00E+06	9.49E+06	9.49E+06	9.49E+06
7440-66-6	Zinc	1.11E+03	5.74E+02	4.67E+03	1.66E+03	2.65E+03	1.00E+04
7446-20-0	Sulfuric acid, Zinc salt (1:1), Heptahydrate	1.02E+05	9.65E+02	9.65E+02	9.65E+02	9.65E+02	9.65E+02
7646-85-7	Zinc chloride	5.30E+01	8.18E+02	2.14E+03	1.22E+03	3.83E+03	1.54E+02
7699-45-8	Zinc bromide	7.81E+02	7.81E+02	7.80E+02	7.81E+02	7.81E+02	7.81E+02
7733-02-0	Sulfuric acid, Zinc salt (1:1)	6.87E+02	1.69E+03	4.82E+03	4.82E+03	4.82E+03	1.38E+04
79-06-1	2-Propenamide	1.27E+03	8.84E+04	1.84E+05	5.13E+04	3.10E-03	1.27E+03
79-10-7	2-Propenoic acid	1.18E+05	2.70E+05	3.15E+05	3.38E+05	2.79E+04	5.49E+06
140-88-5	Ethyl acrylate	3.54E+03	3.54E+03	3.54E+03	3.54E+03	3.54E+03	3.54E+03
107-13-1	2-Propenenitrile	2.37E+04	8.70E+03	2.64E+04	2.68E+04	9.53E+04	1.28E+04
107-02-8	2-Propenal	8.24E+01	2.18E+02	7.33E+01	2.36E+02	7.16E+01	7.00E+00
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	7.80E+02	6.60E+02	7.80E+02	7.17E+02	7.17E+02	7.17E+02
75-07-0	Acetaldehyde	1.21E+02	3.75E+04	3.13E+04	3.43E+04	3.43E+04	3.43E+04
75-05-8	Acetonitrile	1.00E+06	1.31E+04	1.38E+06	1.00E+05	3.94E+02	2.90E+04
62-53-3	Benzenamine	1.79E+04	6.64E+02	2.34E+04	5.50E+05	4.06E+05	6.05E+05
107-18-6	2-Propen-1-ol	3.52E+03	1.22E+03	4.25E+02	8.96E+03	3.30E+04	3.52E+03
106-92-3	2-Propenyloxy-2,3-epoxypropane	4.84E+04	4.84E+04	4.84E+04	4.84E+04	4.84E+04	4.84E+04
26248-24-8	Tridecylbenzenesulfonic acid, Sodium salt	3.24E+03	3.24E+03	3.24E+03	3.24E+03	3.24E+03	3.24E+03
25155-30-0	Dodecylbenzenesulfonic acid, Sodium salt	2.03E+04	1.49E+04	7.82E+03	3.98E+03	5.38E+02	3.98E+03
1309-64-4	Antimony trioxide	7.88E+02	5.30E+05	8.81E+05	6.83E+05	6.83E+05	6.83E+05
7440-36-0	Antimony	4.15E+03	2.08E+03	7.90E+02	7.90E+02	7.90E+02	3.00E+02
10025-91-9	Antimony trichloride	4.04E+03	1.47E+04	1.50E+04	4.04E+03	4.04E+03	3.00E+02
28300-74-5	Bis[μ-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-Antimonate(2-) dipotassium trihydrate stereoisomer	1.29E+04	4.97E+03	3.32E+04	1.29E+04	1.29E+04	1.29E+04

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
126506-93-2	2-Hydroxy-1,3,2-dioxastilbolane-4,5-dicarboxylic acid 2-oxide	5.50E+04	5.50E+04	5.50E+04	5.50E+04	5.50E+04	5.50E+04
78-79-5	Isoprene	8.56E+04	8.56E+04	8.56E+04	8.56E+04	8.56E+04	8.56E+04
80-05-7	4,4'-(1-Methylethylidene)bisphenol	1.97E+03	1.96E+03	4.30E+03	4.19E+03	8.69E+03	4.19E+03
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	5.10E+02	1.94E+02	1.76E+03	1.87E+02	4.00E+02	4.00E+02
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	2.41E+02	2.60E+03	9.07E+02	3.07E+02	8.99E+02	8.99E+02
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	5.09E+03	4.75E+03	9.34E+03	3.58E+05	2.65E+04	3.11E+04
100-41-4	Ethylbenzene	2.23E+04	1.10E+04	5.60E+04	2.48E+04	2.48E+04	2.48E+04
151-56-4	Aziridine	5.80E+03	1.40E+04	2.40E+03	5.80E+03	5.80E+03	5.80E+03
75-21-8	Ethylene oxide	1.95E+05	3.57E+05	1.06E+05	1.95E+05	1.95E+05	1.95E+05
107-21-1	1,2-Ethanediol	1.31E+06	1.97E+07	2.23E+05	1.31E+06	2.06E+06	3.26E+05
110-80-5	2-Ethoxyethanol	4.08E+05	2.10E+04	7.94E+06	4.08E+05	4.08E+05	4.08E+05
12122-67-7	[[1,2-Ethanediylbis(carbamodithioato)](2-)]zinc	7.85E+02	5.60E+03	5.75E+04	1.00E+05	4.33E+04	1.09E+05
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato(2-)-kappaS,kappaS']manganese	5.23E+02	6.52E+02	1.94E+03	8.00E+02	2.56E+03	4.23E+04
106-89-8	(Chloromethyl)oxirane	2.25E+04	2.63E+04	1.92E+04	2.25E+04	2.25E+04	2.25E+04
75-56-9	Propylene oxide	1.46E+05	1.46E+05	1.46E+05	1.46E+05	1.46E+05	1.46E+05
122-60-1	1-Phenoxy-2,3-epoxypropane	5.45E+04	5.45E+04	5.45E+04	5.45E+04	5.45E+04	5.45E+04
513-78-0	Carbonic acid, Cadmium salt (1:1)	7.29E+06	2.00E+07	2.66E+06	7.29E+06	7.29E+06	7.29E+06
543-90-8	Cadmium acetate	3.59E+03	9.80E+02	1.88E+04	2.50E+03	3.59E+03	3.59E+03
1306-19-0	Cadmium oxide	1.32E+02	4.21E+00	4.13E+03	1.32E+02	1.32E+02	1.32E+02
1306-23-6	Cadmium sulfide	9.46E+01	4.21E+01	2.13E+02	9.46E+01	9.46E+01	9.46E+01
2223-93-0	Octadecanoic acid, Cadmium salt	6.16E+00	6.16E+00	6.16E+00	6.16E+00	6.16E+00	6.16E+00
7440-43-9	Cadmium	1.68E+02	9.00E+01	2.18E+03	1.97E+03	2.50E+03	4.00E+01
7790-80-9	Cadmium iodide	4.33E+02	6.70E+01	4.33E+02	2.80E+03	4.33E+02	4.33E+02
10108-64-2	Cadmium chloride	1.84E+02	2.83E+02	1.16E+03	1.04E+02	1.29E+03	3.03E+03
105-60-2	Hexahydro-2H-azepin-2-one	4.55E+06	4.21E+06	1.45E+06	2.47E+06	2.47E+06	2.47E+06
1330-20-7	Xylene	1.73E+04	1.64E+01	2.33E+04	7.18E+00	1.71E+05	7.79E+04
1066-30-4	Acetic acid, Chromium(3+) salt	4.25E+05	4.25E+05	4.25E+05	4.25E+05	4.25E+05	4.25E+05
7440-47-3	Chromium	6.80E+02	1.61E+03	5.99E+04	9.55E+02	2.46E+03	1.24E+03

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
10025-73-7	Chromium chloride	5.29E+02	1.79E+03	2.54E+04	1.03E+04	7.76E+03	7.76E+03
10101-53-8	Sulfuric acid, Chromium(3+)salt(3:2)	3.67E+05	5.48E+01	2.47E+09	3.67E+05	3.67E+05	3.67E+05
10141-00-1	Sulfuric acid, Chromium (3+)potassium salt (2:1:1)	2.80E+04	2.80E+04	2.80E+04	2.80E+04	2.80E+04	2.80E+04
13548-38-4	Nitric acid, Chromium(3+) salt	1.06E+02	1.96E+04	1.78E+04	3.70E+03	1.45E+02	3.70E+03
1333-82-0	Chromium oxide	4.58E+03	2.70E+03	1.69E+04	6.85E+03	1.11E+04	4.94E+04
7775-11-3	Chromic acid, Disodium salt	2.54E+03	1.29E+00	3.62E+04	6.14E+04	1.45E+04	2.54E+03
7778-50-9	Chromic acid dipotassium salt	5.88E+02	4.44E+03	6.04E+04	2.54E+04	1.34E+04	1.04E+05
7788-98-9	Chromic acid, Diammonium salt	3.46E+02	6.03E+02	6.03E+02	6.03E+02	6.03E+02	6.03E+02
7789-00-6	Chromic acid, Dipotassium salt	1.38E+03	7.37E+03	8.53E+04	5.90E+04	5.57E+04	3.44E+05
10588-01-9	Sodium dichromate	1.01E+04	3.25E+02	3.30E+04	1.60E+03	1.01E+04	6.16E+05
13530-68-2	Chromic acid	1.22E+04	1.22E+04	1.22E+04	1.22E+04	1.22E+04	1.22E+04
106-47-8	4-Chloroaniline	9.96E+02	7.91E+02	8.00E+03	1.51E+04	1.00E+05	9.89E+03
108-42-9	m-Chloroaniline	3.07E+04	8.66E+02	2.37E+03	5.90E+03	1.00E+05	5.90E+03
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	8.36E+01	7.41E+03	1.69E+04	5.62E+04	7.84E+03	3.82E+04
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	3.19E+02	1.37E+04	2.07E+03	1.60E+03	5.32E+03	1.76E+04
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	7.61E+01	1.94E+04	3.32E+03	8.32E+03	7.49E+03	5.85E+03
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	1.90E+02	5.40E+04	7.04E+04	6.54E+05	1.50E+02	1.94E+06
107-05-1	3-Chloro-1-propene	1.38E+04	2.50E+05	3.10E+04	1.38E+04	1.38E+04	3.40E+02
108-90-7	Chlorobenzene	2.77E+04	1.58E+04	4.72E+03	8.62E+03	8.62E+03	8.62E+03
67-66-3	Trichloromethane	1.53E+05	8.28E+04	3.74E+04	2.32E+05	5.01E+03	6.50E+03
74-87-3	Chloromethane	3.85E+05	3.85E+05	3.85E+05	3.85E+05	3.85E+05	3.85E+05
111-15-9	2-Ethoxyethanol, Acetate	1.30E+05	5.60E+05	6.08E+04	6.52E+04	1.30E+05	1.30E+05
108-05-4	Vinyl acetate	9.21E+04	3.30E+05	2.57E+04	9.21E+04	9.21E+04	9.21E+04
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester	6.00E+03	2.07E-01	3.27E+00	1.16E+03	1.00E+05	1.91E+02
52315-07-8	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl)methyl ester	1.10E+05	4.11E-01	1.27E+01	4.04E+02	8.64E-02	3.74E+02
100-37-8	N,N-Diethylethanolamine	1.78E+06	1.78E+06	1.78E+06	1.78E+06	1.78E+06	1.78E+06

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	2.76E+02	5.38E+02	6.43E+02	1.43E+04	6.50E+03	2.70E+03
56-23-5	Tetrachloromethane	2.21E+04	2.82E+04	5.90E+04	2.21E+04	3.77E+04	3.80E+03
123-91-1	1,4-Dioxane	3.20E+06	3.27E+06	9.57E+06	5.59E+06	5.59E+06	5.59E+06
108-91-8	Cyclohexanamine	3.13E+04	8.00E+04	1.16E+05	9.64E+04	9.64E+04	9.64E+04
107-06-2	1,2-Dichloroethane	3.55E+05	9.61E+03	2.73E+05	5.13E+04	5.13E+04	5.13E+04
75-35-4	1,1-Dichloroethene	5.54E+05	4.72E+04	9.04E+04	6.53E+04	6.53E+04	6.53E+04
156-60-5	trans-1,2-Dichloroethylene	2.25E+05	2.25E+05	2.25E+05	2.25E+05	2.25E+05	2.25E+05
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	1.37E+01	2.01E+03	6.96E+03	1.86E+04	8.49E+03	2.00E+04
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	3.64E+01	3.63E+03	6.92E+03	7.00E+04	1.21E+04	1.21E+04
78-87-5	1,2-Dichloropropane	1.00E+05	7.23E+04	1.80E+05	1.14E+05	1.14E+05	1.14E+05
709-98-8	N-(3,4-Dichlorophenyl)propanamide	5.99E+01	5.79E+03	7.20E+03	6.15E+04	1.26E+04	9.85E+03
542-75-6	1,3-Dichloro-1-propene	4.15E+03	3.48E+03	3.63E+03	8.10E+03	4.67E+03	4.67E+03
106-46-7	1,4-Dichlorobenzene	1.11E+04	8.27E+03	3.42E+03	7.76E+03	1.65E+04	7.76E+03
75-09-2	Methylene chloride	3.15E+05	3.55E+03	4.00E+05	3.14E+04	2.38E+04	2.88E+04
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	1.10E+04	5.26E+01	2.08E+03	2.26E+03	6.28E+02	6.28E+02
121-75-5	[(Dimethoxyphosphinothioyl)thio]butanedioic acid, Diethyl ester	2.14E+04	6.56E+01	7.88E+02	3.98E+04	2.28E+04	3.08E+02
60-51-5	Phosphorodithioic acid, O,O-Dimethyl S-[2-(methylamino)-2-oxoethyl] ester	8.77E+03	6.82E+02	8.27E+03	6.97E+02	2.44E+05	2.02E+01
51-28-5	2,4-Dinitrophenol	1.86E+04	2.50E+04	5.30E+03	6.49E+03	2.11E+04	1.16E+04
122-39-4	Diphenylamine	2.17E+03	8.41E+02	3.22E+03	1.65E+03	1.65E+03	1.65E+03
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	2.36E+02	2.36E+02	2.36E+02	2.36E+02	2.36E+02	2.36E+02
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	1.00E+04	1.29E+02	4.13E+03	2.48E+03	6.66E+04	1.80E+04
54-64-8	Ethyl(2-mercaptobenzoato-s)mercury sodium salt	2.75E+04	2.75E+04	2.75E+04	2.75E+04	2.75E+04	2.75E+04
62-38-4	(Acetato-o)phenylmercury	8.83E+00	4.93E+02	5.81E+02	7.30E+02	5.94E+02	5.94E+02
102-99-8	(Acetato)-3-pyridyl mercury	6.98E+03	6.98E+03	6.98E+03	6.98E+03	6.98E+03	6.98E+03
107-27-7	Chloroethylmercury	1.59E+02	1.59E+02	8.38E+02	3.00E+01	1.59E+02	1.59E+02
115-09-3	Chloromethylmercury	3.74E+00	8.15E+01	7.09E+01	1.83E+02	9.13E+01	6.56E+01
123-88-6	Chloro(2-methoxyethyl)mercury	1.57E+03	1.57E+03	1.30E+03	1.88E+03	1.57E+03	1.57E+03

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
502-39-6	(Cyanoguanidinato-N')methylmercury	8.35E+01	8.30E+01	8.39E+01	8.35E+01	8.35E+01	8.35E+01
1184-57-2	Methylmercury hydroxide	6.28E+01	6.28E+01	6.28E+01	6.28E+01	6.28E+01	6.28E+01
1192-89-8	Bromophenylmercury	2.87E+03	8.81E+02	9.34E+03	2.87E+03	2.87E+03	2.87E+03
1600-27-7	Mercuric acetate	2.50E+01	3.90E+01	1.85E+02	5.58E+01	7.39E+01	7.39E+01
2235-25-8	Lignasan	2.08E+03	2.08E+03	2.08E+03	2.08E+03	2.08E+03	2.08E+03
7439-97-6	Mercury	4.01E+01	3.14E+01	2.75E+02	3.69E+02	1.08E+02	1.00E+00
7487-94-7	Mercuric chloride	5.36E+01	8.33E+01	2.64E+02	2.76E+02	3.15E+01	2.83E+02
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	8.63E+01	1.42E+02	2.63E+02	7.73E+01	1.42E+02	1.42E+02
7783-36-0	Sulfuric acid, Dimercury (1+) salt	1.99E+04	1.99E+04	1.99E+04	1.99E+04	1.99E+04	1.99E+04
10045-94-0	Mercuric nitrate	1.28E+01	3.85E+00	1.72E+02	3.20E+00	1.28E+01	1.28E+01
10112-91-1	Mercury chloride	6.60E+01	2.98E+01	1.24E+03	6.60E+01	7.80E+00	6.60E+01
14235-86-0	[mu-[[[3,3'-Methylenebis[2-naphthalenesulfonato]](2-)]diphenyldimercury	1.36E+03	1.36E+03	1.36E+03	1.36E+03	1.36E+03	1.36E+03
22967-92-6	Methyl mercury(1+), Ion	7.07E-01	1.00E-01	5.00E+00	7.07E-01	7.07E-01	7.07E-01
51312-24-4	Mercury chloride	9.70E+01	9.70E+01	9.70E+01	9.70E+01	9.70E+01	9.70E+01
56-35-9	Hexabutylidistannoxane	6.86E+00	1.22E+01	1.31E+01	2.02E+02	2.25E+01	7.93E+00
56-36-0	(Acetyloxy)tributylstannane	7.01E+00	3.30E+00	7.69E+00	7.72E+01	6.00E-01	5.85E+00
76-87-9	Hydroxytriphenylstannane	7.12E-02	3.02E+02	3.97E+01	4.40E+02	1.74E+02	1.74E+02
77-58-7	Dibutylbis[(1-oxododecyl)oxy]stannane	4.10E+01	6.60E+02	2.54E+00	4.10E+01	4.10E+01	4.10E+01
78-04-6	2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	3.78E-02	3.78E-02	3.78E-02	3.78E-02	3.78E-02	3.78E-02
379-52-2	Triphenyltin fluoride	2.46E+01	8.00E+00	1.86E+02	1.00E+01	2.46E+01	2.46E+01
594-27-4	Tetramethylstannane	5.00E+02	4.00E+04	3.60E-02	3.79E+01	3.79E+01	3.79E+01
595-90-4	Tetraphenylstannane	9.37E-04	9.37E-04	9.37E-04	9.37E-04	9.37E-04	9.37E-04
639-58-7	Chlorotriphenylstannane	2.10E+00	2.01E+01	2.14E+01	8.09E+00	1.52E+01	1.52E+01
683-18-1	Dibutylchlorostannane	5.58E+00	1.56E+03	1.91E-02	5.46E+00	5.46E+00	5.46E+00
753-73-1	Dichlorodimethylstannane	2.98E+01	9.23E+04	2.73E-02	5.02E+01	5.02E+01	5.02E+01
818-08-6	Dibutylloxostannane	6.68E+02	9.40E+02	3.37E-03	1.78E+00	1.78E+00	1.78E+00
900-95-8	(Acetyloxy)triphenylstannane	1.09E+00	1.08E+03	1.32E+01	2.28E+02	1.48E+02	1.48E+02
993-16-8	Trichloromethyl stannane	1.35E+01	9.00E+04	9.00E+04	9.00E+04	9.00E+04	9.00E+04
1118-46-3	Butyltrichlorostannane	3.91E-02	4.90E+04	1.35E-01	3.80E+04	6.31E+02	6.31E+02

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
1461-22-9	Tributylchlorostannane	6.37E+00	7.05E+00	7.19E+00	6.76E-01	1.83E+00	2.81E+00
1461-25-2	Tetrabutylstannane	4.68E+01	5.57E+01	1.57E+01	2.96E+01	2.96E+01	2.96E+01
1983-10-4	Tributylfluorostannane	2.48E+00	2.01E+01	1.95E+00	1.65E-01	3.73E+00	3.00E+01
2155-70-6	Tributyl[(2-methyl-1-oxo-2-propenyl)oxy]stannane	1.73E+01	9.49E+01	3.22E+01	1.70E+00	1.73E+01	1.73E+01
2279-76-7	Chlorotripropylstannane	1.71E-03	3.70E+01	3.70E+01	3.70E+01	3.70E+01	3.70E+01
100-42-5	Ethenylbenzene	5.08E+03	1.12E+01	1.89E+04	3.31E-02	1.91E+01	1.91E+01
7446-08-4	Selenium dioxide	9.69E+02	1.37E+04	1.93E+04	9.90E+02	6.40E+03	6.40E+03
7782-49-2	Selenium	6.56E+04	6.04E+02	2.32E+04	2.13E+03	1.64E+04	9.00E+01
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	2.58E+02	6.66E+02	2.10E+03	3.06E+02	7.54E+02	7.54E+02
62-56-6	Thiourea	6.45E+03	9.00E+03	9.00E+03	9.00E+03	9.00E+03	9.00E+03
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	7.87E+03	4.75E+00	8.74E+02	3.79E+03	3.40E+04	9.82E+01
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	3.12E+02	1.89E+00	1.98E+01	2.61E+03	1.17E+04	2.40E+03
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	3.46E+03	7.48E+00	1.73E+03	1.04E+03	6.24E+03	2.87E+03
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	7.34E+02	6.68E+00	2.15E+03	4.75E+01	6.38E+03	1.10E+00
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	6.13E+00	3.50E+00	5.72E+01	1.15E+00	6.13E+00	6.13E+00
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	1.73E+02	5.17E+01	4.64E+01	1.55E+04	2.50E+01	2.45E+02
127-18-4	Tetrachloroethene	2.67E+04	6.78E+02	1.09E+04	9.34E+04	9.46E+02	5.06E+03
137-26-8	Tetramethylthioperoxydicarbonic diamide	9.37E+02	1.14E+03	4.21E+01	4.70E+00	4.33E+02	1.77E+01
142-71-2	Acetic acid, Copper(2+) Salt	1.15E+03	1.29E+04	1.03E+02	1.15E+03	1.15E+03	1.15E+03
1317-39-1	Copper oxide	4.01E+02	1.70E+02	1.14E+02	1.79E+02	1.51E+02	1.51E+02
1330-38-7	(29H,31H-Phthalocyaninedisulfonate (2-)-N29,N20,N31,N32)copper, Disodium salt	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05
1332-14-5	Sulfuric acid, Copper salt, Basic	2.59E+04	2.59E+04	2.59E+04	2.59E+04	2.59E+04	2.59E+04
1332-40-7	Copper chloride mixt. with copper oxide (CuO), Hydrate	7.69E+00	1.15E-01	5.12E+02	7.69E+00	7.69E+00	7.69E+00
1332-65-6	Copper chloride hydroxide	3.17E+04	3.17E+04	3.17E+04	3.17E+04	3.17E+04	3.17E+04
1333-22-8	Copper sulfate, Tribasic	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
1338-02-9	Naphthenic acid, Copper salt	1.61E+02	1.61E+02	1.61E+02	1.61E+02	1.61E+02	1.61E+02
1344-67-8	Copper chloride	7.03E+01	3.34E+01	1.84E+02	1.54E+01	4.55E+01	4.55E+01

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
3251-23-8	Nitric acid, Copper(2+) salt	2.50E+01	9.29E+01	2.28E+02	7.27E+01	1.15E+02	1.15E+02
3251-29-4	Nitric acid, Copper(1+) salt	3.01E+01	1.80E+01	3.01E+01	5.03E+01	3.01E+01	3.01E+01
4180-12-5	Acetic acid, Copper salt	4.55E+02	4.55E+02	4.55E+02	4.55E+02	4.55E+02	4.55E+02
7440-50-8	Copper	5.18E+01	4.16E+01	4.13E+02	4.18E+02	5.51E+01	1.44E+02
7447-39-4	Cupric chloride	8.38E+01	7.78E+01	1.20E+02	1.34E+02	7.77E+01	3.15E+02
7758-89-6	Cuprous chloride	5.31E+02	1.01E+02	2.58E+02	1.61E+02	1.60E+02	1.61E+02
7758-98-7	Sulfuric acid, Copper(2+) salt(1:1)	1.17E+02	1.31E+02	3.97E+02	2.76E+02	1.34E+02	4.19E+02
7758-99-8	Sulfuric acid copper (2+) salt (1:1), Pentahydrate	3.59E+01	3.30E+02	3.11E+02	2.49E+02	2.49E+02	1.50E+02
8066-21-5	[[1,2-Ethanediy]bis[carbomodithioato]](2-)]zinc mixt. with Copper chloride (CuCl ₂) and Copper oxide (CuO) hydrate	1.44E+04	1.44E+04	1.44E+04	1.44E+04	1.44E+04	1.44E+04
10380-28-6	Bis(8-quinolinolato-N1,O8)copper	1.82E+03	1.82E+03	2.51E+02	1.32E+04	1.82E+03	1.82E+03
12002-03-8	Bis(acetato)hexametaarsenitetetracopper	2.33E+04	2.33E+04	2.33E+04	2.33E+04	2.33E+04	2.33E+04
14025-15-1	[[N,N'-1,2-Ethanediy]bis[N-(carboxymethyl)glycinato]](4-)-N,N',O,O',O'',O'''-cuprate (2-), Disodium	1.94E+06	1.94E+06	1.94E+06	1.94E+06	1.94E+06	1.94E+06
14729-82-9	Hydrazine compd. with copper sulfate	5.45E+02	5.45E+02	8.30E+02	3.58E+02	5.45E+02	5.45E+02
15773-35-0	Pentachlorophenol copper salt	1.25E+02	5.43E+02	2.88E+01	1.25E+02	1.25E+02	1.25E+02
16071-86-6	Copper, (5-((4'-((2,5-Dihydroxy-4-((2-hydroxy-5-sulphophenyl)azo)phenyl)azo)(1,1'-biphenyl)-4-yl)azo)-2-hydroxybenzoate(2-	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05
20427-59-2	Copper hydroxide (Cu(OH) ₂)	3.79E+04	2.92E+06	3.79E+04	4.92E+02	3.79E+04	3.79E+04
28275-80-1	Copper-bis(ethylenediamine)dodecylbenzenesulfonate)	1.81E+03	1.81E+03	1.81E+03	1.81E+03	1.81E+03	1.81E+03
28407-37-6	C.I. Direct Blue 218	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05
29204-93-1	Copper-2-hydroxy-1,4-naphthoquinone	7.64E+03	7.64E+03	7.64E+03	7.64E+03	7.64E+03	7.64E+03
31089-39-1	2,2',2''-Nitrilotrisethanol copper salt	4.65E-03	4.65E-03	4.65E-03	4.65E-03	4.65E-03	4.65E-03
37337-13-6	Arsenic acid (H ₃ AsO ₄), Chromated copper salt (2:3)	4.24E+02	5.00E+01	3.59E+03	4.24E+02	4.24E+02	4.24E+02
51913-71-4	Copper(II)bis-N,N-dihydroxyethylglycine	1.97E+02	1.97E+02	1.97E+02	1.97E+02	1.97E+02	1.97E+02
52769-67-2	Komeen (copper-ethylenediamine complex(elemental copper 8%))	1.64E+02	1.64E+02	1.18E+02	2.29E+02	1.64E+02	1.64E+02
61912-87-6	Copper Count-N	1.97E+02	1.97E+02	1.97E+02	1.97E+02	1.97E+02	1.97E+02
66845-29-2	Copper-2-oxy-3-chloro-1,4-naphthoquinone	4.93E+03	4.93E+03	4.93E+03	4.93E+03	4.93E+03	4.93E+03
1111-67-7	Thiocyanic acid, Copper(1+)salt	2.06E+03	1.67E+05	2.54E+01	2.06E+03	2.06E+03	2.06E+03

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
71-55-6	1,1,1-Trichloroethane	1.30E+05	2.10E+03	1.36E+05	2.39E+04	4.81E+04	2.39E+04
79-00-5	1,1,2-Trichloroethane	1.66E+05	4.97E+04	4.81E+04	1.26E+05	6.71E+04	6.71E+04
79-01-6	Trichloroethene	2.98E+05	4.07E+04	6.56E+04	5.60E+04	7.50E+04	4.58E+04
115-32-2	4-Chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)benzenemethanol	7.23E+02	2.97E+02	5.14E+02	2.48E+03	7.23E+02	7.23E+02
118-96-7	2-Methyl-1,3,5-trinitrobenzene	2.50E+00	7.31E+03	2.50E+03	5.20E+03	7.72E+03	5.20E+03
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	1.54E+04	8.06E+02	1.12E+02	2.24E+04	7.37E+02	1.46E+02
75-25-2	Bromoform	3.65E+04	3.51E+04	2.16E+04	2.75E+04	2.75E+04	2.75E+04
108-67-8	Mesitylene	3.64E+04	1.88E+03	1.54E+04	5.38E+03	5.38E+03	5.38E+03
108-88-3	Methylbenzene	9.86E+04	3.25E+04	4.30E+04	2.41E+05	1.68E+05	1.86E+05
75-74-1	Tetramethyl lead	1.28E+03	1.46E+02	1.45E+03	2.10E+02	3.54E+02	3.54E+02
78-00-2	Tetraethyl lead	1.22E+02	4.12E+01	4.52E+02	1.00E+02	1.23E+02	1.23E+02
301-04-2	Acetic acid, Lead(2+) salt	1.32E+04	2.23E+03	2.97E+04	9.64E+04	4.82E+02	7.45E+03
598-63-0	Lead(2+)salt carbamic acid (1:1)	7.07E+06	1.00E+07	5.00E+06	7.07E+06	7.07E+06	7.07E+06
1067-14-7	Triethyl lead chloride	6.30E+01	3.60E+03	1.10E+03	6.90E+02	1.40E+03	1.40E+03
1162-06-7	(Acetyloxy)triphenylplumbane	1.10E+02	1.10E+02	1.10E+02	1.10E+02	1.10E+02	1.10E+02
1314-87-0	Lead sulfide	1.08E+05	3.71E+04	3.14E+05	1.08E+05	1.08E+05	1.08E+05
1317-36-8	Lead oxide	6.34E+04	7.16E+03	5.63E+05	6.34E+04	6.34E+04	6.34E+04
1520-77-0	Dichlorodimethylplumbane	3.00E+05	3.00E+05	3.00E+05	3.00E+05	3.00E+05	3.00E+05
1520-78-1	Trimethyl lead chloride	5.80E+02	6.30E+03	1.77E+04	3.60E+02	3.42E+03	3.42E+03
7439-92-1	Lead	1.51E+03	1.23E+03	1.11E+04	3.27E+03	4.00E+03	4.00E+01
7446-14-2	Lead(II) sulfate	4.36E+04	4.08E+04	4.64E+04	4.36E+04	4.36E+04	4.36E+04
7758-95-4	Lead chloride	2.38E+03	1.95E+03	8.59E+03	4.28E+03	1.86E+03	2.42E+02
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
10099-74-8	Nitric acid, Lead (2+) salt	4.90E+01	9.85E+02	3.54E+04	2.67E+04	4.61E+03	5.32E+05
13231-90-8	Dichlorodiethylplumbane	7.50E+04	7.50E+04	7.50E+04	7.50E+04	7.50E+04	7.50E+04
13826-65-8	Nitrous acid, Lead (2+) salt	2.26E+04	2.26E+04	2.26E+04	2.26E+04	2.26E+04	2.26E+04
15245-44-0	Lead styphnate	2.00E+04	2.99E+06	1.33E+02	2.00E+04	2.00E+04	2.00E+04
7440-02-0	Nickel	3.74E+01	2.48E+03	4.60E+03	3.30E+05	6.84E+03	5.00E+01
373-02-4	Acetic acid, Nickel(2+)salt	1.09E+03	2.58E+03	2.58E+03	2.58E+03	2.58E+03	2.58E+03

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
7718-54-9	Nickelous chloride	1.33E+03	9.09E+03	2.61E+04	4.92E+04	3.88E-02	1.91E+03
7786-81-4	Sulfuric acid, Nickel(2+)salt (1:1)	1.63E+03	2.91E+03	2.32E+04	1.68E+03	7.51E+02	4.10E+04
13138-45-9	Nickelous nitrate	1.22E+04	3.51E+03	4.26E+04	1.22E+04	1.22E+04	1.22E+04
13927-77-0	(SP-4-1)-Bis(dibutylcarbomodithioato- .kappa.S,.kappa.S')-nickel	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05
14220-17-8	(SP-4-1)-Tetrakis(cyano-c)nickelate, Dipotassium	8.02E+04	8.02E+04	8.02E+04	8.02E+04	8.02E+04	8.02E+04
55-63-0	1,2,3-Propanetriol, Trinitrate	5.17E+03	4.80E+04	3.70E+03	1.33E+04	1.33E+04	1.33E+04
100-00-5	1-Chloro-4-nitrobenzene	7.08E+03	4.92E+03	1.06E+04	1.57E+04	7.44E+04	1.57E+04
86-30-6	N-Nitroso-N-phenylbenzenamine	1.74E+04	1.89E+04	1.60E+04	1.74E+04	1.74E+04	1.74E+04
100-02-7	4-Nitrophenol	5.83E+02	1.53E+04	2.38E+04	1.97E+04	6.30E+03	1.46E+04
75-15-0	Carbon disulfide	3.99E+04	2.10E+03	1.61E+04	5.82E+03	5.82E+03	5.82E+03
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'- tetraethyl ester	3.69E+02	7.55E+00	4.90E+02	1.36E+04	3.69E+02	3.69E+02
137-30-4	Zinc dimethyldithiocarbamate	4.59E+02	3.92E+01	3.57E+02	1.03E+03	2.44E+02	2.44E+02
1303-28-2	Arsenic pentoxide	1.84E+03	2.32E+02	2.69E+04	9.89E+02	1.84E+03	1.84E+03
1303-33-9	Arsenic trisulfide (As2S3)	6.66E+04	2.47E+04	1.80E+05	6.66E+04	6.66E+04	6.66E+04
1327-53-3	Arsenic oxide	7.82E+02	7.06E+01	1.94E+04	9.28E+03	8.06E+01	2.86E+02
7440-38-2	Arsenic	3.66E+01	1.14E+03	2.20E+03	4.00E+03	7.97E+02	4.00E+01
7631-89-2	Arsenic acid (H3AsO4) sodium salt (1:?)	6.48E-02	1.57E+03	3.17E+04	1.50E+05	1.95E+04	1.95E+04
7778-39-4	Arsenic acid (H3AsO4)	1.49E+02	3.63E+03	8.04E+04	1.54E+04	1.25E+04	1.54E+04
7778-43-0	Arsenic acid, Disodium salt	1.80E+03	1.31E+04	5.64E+04	2.81E+04	3.00E+04	2.81E+04
7784-41-0	Arsenic acid, Monopotassium salt	1.81E+01	1.81E+01	1.81E+01	1.81E+01	1.81E+01	1.81E+01
10048-95-0	Arsenic acid, Disodium salt, Heptahydrate (Na2AsH3O4.7H2O)	4.45E+05	7.76E+04	7.76E+04	7.76E+04	7.76E+04	7.76E+04
13464-38-5	Arsenic acid, Trisodium salt	5.23E+02	2.70E+03	2.70E+03	2.70E+03	2.70E+03	2.70E+03
302-01-2	Hydrazine	7.72E+00	3.31E+02	3.71E+03	1.84E+03	1.84E+03	5.08E+03
123-31-9	1,4-Benzenediol	2.28E+04	3.71E+02	2.40E+02	2.78E+02	2.40E+02	2.78E+02
110-86-1	Pyridine	1.10E+05	6.99E+05	2.05E+04	3.50E+05	6.40E+03	1.83E+06
120-80-9	1,2-Benzenediol	1.76E+04	4.40E+04	7.00E+03	1.76E+04	1.76E+04	1.76E+04
108-95-2	Phenol	6.82E+04	3.01E+04	1.64E+04	2.17E+05	2.72E+05	5.11E+04

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	8.29E+02	6.03E+00	2.29E+01	4.57E+03	1.87E+02	1.94E+03
117-84-0	1,2-Benzenedicarboxylic acid, Dioctyl ester	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05
84-74-2	1,2-Benzenedicarboxylic acid, Dibutyl ester	3.49E+02	3.82E+03	1.95E+03	1.10E+03	2.90E+03	2.21E+03
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	1.29E+03	1.09E+04	6.32E+03	6.58E+03	6.58E+03	4.15E+03
85-68-7	1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	1.07E+03	1.34E+04	5.27E+03	2.30E+04	1.17E+04	1.17E+04
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	1.01E+03	7.09E+03	3.59E+02	6.13E+02	2.94E+03	4.77E+04
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	3.42E+02	7.11E+03	5.50E+02	8.00E+01	6.79E+02	6.79E+02
74-83-9	Methyl bromide	3.28E+03	2.20E+03	1.16E+03	1.60E+03	1.60E+03	1.60E+03
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	9.04E+01	1.42E+01	4.09E+00	1.01E+03	1.85E+03	5.57E+01
7440-41-7	Beryllium	1.27E+02	1.27E+02	1.27E+02	1.27E+02	1.27E+02	1.27E+02
7787-47-5	Beryllium chloride	3.56E+03	9.22E+02	4.90E+03	1.00E+04	3.56E+03	3.56E+03
7787-55-5	Beryllium nitrate	1.80E+04	1.80E+04	1.80E+04	1.80E+04	1.80E+04	1.80E+04
13327-32-7	Beryllium hydroxide	3.95E+05	3.95E+05	3.95E+05	3.95E+05	3.95E+05	3.95E+05
13510-49-1	Beryllium sulfate	2.97E+06	1.12E+03	8.74E+03	3.13E+03	3.13E+03	3.13E+03
100-44-7	(Chloromethyl)benzene	6.23E+03	5.66E+03	6.85E+03	6.23E+03	6.23E+03	6.23E+03
100-52-7	Benzaldehyde	3.40E+05	2.81E+04	7.89E+03	1.58E+04	1.32E+05	2.61E+04
71-43-2	Benzene	7.06E+04	1.38E+03	3.87E+04	3.87E+01	3.24E+04	2.48E+05
82-68-8	Pentachloronitrobenzene	6.61E+01	1.66E+01	6.46E+02	2.69E+01	6.61E+01	6.61E+01
87-86-5	Pentachlorophenol	2.65E+02	6.31E+02	1.45E+02	3.43E+02	1.29E+02	1.79E+02
1336-36-3	1,1'-Biphenyl, Chloro derivs.	1.56E+02	3.80E+02	3.80E+02	3.80E+02	3.80E+02	3.80E+02
50-00-0	Formalin	6.70E+04	4.66E+05	1.22E+05	2.12E+05	2.29E+05	2.29E+05
85-44-9	Phthalic anhydride	7.82E+03	1.57E+05	1.57E+05	1.57E+05	1.57E+05	1.57E+05
108-31-6	2,5-Furandione	1.90E+05	6.90E+05	1.34E+05	3.04E+05	3.04E+05	3.04E+05
79-41-4	2-Methyl-2-propenoic acid	7.52E+04	7.52E+04	7.52E+04	7.52E+04	7.52E+04	7.52E+04
80-62-6	2-Methyl-2-propenoic acid, Methyl ester	7.95E+05	1.76E+06	3.59E+05	7.95E+05	7.95E+05	7.95E+05
114-26-1	2-(1-Methylethoxy)phenol, Methylcarbamate	4.25E+03	3.80E+02	6.55E+03	4.25E+03	3.09E+04	4.25E+03
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	2.41E+03	2.72E+02	6.60E+02	3.43E+03	2.41E+03	5.49E+04

Table C.2: Chemical data damage (Source: Payet, 2005) (cont.)

CAS	Substance Name	EC50 (ug/L)	LC50 (ug/L)				
		Algae	Crustacea	Fish	Mollusca	Annelida	Amphibia
63-25-2	1-Naphthalenol methylcarbamate	3.46E+03	9.88E+01	4.41E+03	1.75E+04	1.51E+04	9.58E+03
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	5.51E+03	2.06E+04	3.26E+03	9.82E+02	5.51E+03	1.40E+04
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	1.60E+04	1.59E+02	1.77E+01	1.04E+04	4.75E+04	1.09E+03
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	3.90E+01	6.03E+01	3.87E+02	5.58E+02	3.12E+04	7.98E+02
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	3.09E+03	7.55E+01	1.74E+03	7.21E+04	3.09E+03	9.70E+03
115-96-8	Tris(beta-chloroethylphosphate)	1.49E+05	1.49E+05	1.49E+05	1.49E+05	1.49E+05	1.49E+05
60-35-5	Acetamide	1.00E+06	1.00E+07	1.00E+07	1.00E+07	1.00E+07	1.00E+07
834-12-8	N-Ethyl-N'-((1-methylethyl)-6-methylthio)-1,3,5-triazine-2,4-diamine	2.27E+01	2.30E+03	6.99E+03	6.24E+03	4.65E+03	4.65E+03
25311-71-1	2-[[Ethoxy[(1-methylethyl)amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester	7.98E+01	1.70E+00	1.97E+03	1.52E+02	7.98E+01	7.98E+01
105-67-9	2,4-Dimethylphenol	2.91E+04	6.57E+03	1.26E+04	4.16E+04	2.08E+05	2.91E+04
21725-46-2	2-[(4-Chloro-6-(ethylamino)-S-triazin-2-yl)amino]-2-methylpropionitrile	2.43E+01	8.56E+03	2.61E+03	2.00E+04	7.65E+03	7.65E+03
106-48-9	4-Chlorophenol	3.97E+03	5.48E+03	1.87E+03	7.30E+03	3.79E+04	7.30E+03
1937-37-7	4-Amino-3-((4'-((2,4-diamophenyl)azo)(1,1'-biphenyl)-4-yl)azo)-5-hydroxy-6-(phenylazo)-2,7-naphthalenedisulfonic acid	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05
534-52-1	2-Methyl-4,6-dinitrophenol	2.26E+04	3.03E+03	7.47E+02	2.28E+03	5.23E+03	2.28E+03
57-41-0	5,5-Diphenyl-2,4-imidazolidinedione	9.73E+02	1.13E+03	9.73E+02	9.73E+02	8.37E+02	9.73E+02
57-14-7	1,1-Dimethylhydrazine	2.87E+03	7.63E+03	2.62E+04	2.46E+04	2.46E+04	7.44E+04
79-34-5	1,1,2,2-Tetrachloroethane	5.32E+04	1.24E+02	1.85E+04	1.52E+03	1.52E+03	1.52E+03
85-01-8	Phenanthrene	2.06E+02	1.01E+02	3.30E+01	1.50E+02	7.95E+01	7.95E+01
121-82-4	Hexahydro-1,3,5-trinitro-1,2,3-triazine	1.14E+04	1.50E+04	8.68E+03	1.14E+04	1.14E+04	1.14E+04
60-34-4	Monomethylhydrazine	6.50E+02	9.92E+02	3.59E+03	1.89E+03	1.89E+03	1.89E+03
82657-04-3	(1R,3R)-rel-3-[(1Z)-2-Chloro-3,3,3-trifluoro-1-propenyl]-2,2-dimethylcyclopropanecarboxylic acid (2-methyl[1,1'-biphenyl]-3-yl)methyl ester	9.90E-01	7.49E-02	5.23E-01	2.48E+01	9.90E-01	9.90E-01
78-42-2	Tris(2-ethylhexyl)ester phosphoric acid	1.00E+04	1.00E+04	1.00E+04	1.00E+04	1.00E+04	1.00E+04
1746-01-6	2,3,7,8-TCDD (Dioxin)	2.197446	30	0.160959	2.197446	2.197446	2.197446

C.3 Damage factor of ecotoxicity on biodiversity

Table C.3: Damage factor of ecotoxicity on biodiversity

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
50-00-0	Formalin	Air	6.64E-13	5.71E-13	1.02E-12
50-00-0	Formalin	Water	5.30E-12	5.27E-12	5.32E-12
50-00-0	Formalin	Soil	1.33E-14	1.83E-14	1.20E-14
302-01-2	Hydrazine	Air	4.65E-09	7.45E-09	3.43E-09
302-01-2	Hydrazine	Water	6.93E-08	6.83E-08	6.98E-08
302-01-2	Hydrazine	Soil	2.27E-10	3.12E-10	1.86E-10
75-05-8	Acetonitrile	Air	9.22E-11	3.51E-11	3.04E-10
75-05-8	Acetonitrile	Water	3.05E-10	2.41E-10	3.65E-10
75-05-8	Acetonitrile	Soil	8.92E-12	5.58E-12	2.23E-11
151-56-4	Aziridine	Air	9.44E-10	6.33E-10	1.18E-09
151-56-4	Aziridine	Water	2.26E-09	1.72E-09	2.59E-09
151-56-4	Aziridine	Soil	4.38E-11	3.50E-11	5.00E-11
75-07-0	Acetaldehyde	Air	3.71E-11	4.36E-11	3.20E-11
75-07-0	Acetaldehyde	Water	2.35E-09	2.26E-09	2.39E-09
75-07-0	Acetaldehyde	Soil	4.28E-12	5.25E-12	3.70E-12
75-21-8	Ethylene oxide	Air	9.89E-13	3.64E-13	3.65E-12
75-21-8	Ethylene oxide	Water	7.45E-12	6.47E-12	8.18E-12
75-21-8	Ethylene oxide	Soil	1.14E-13	7.39E-14	3.20E-13
60-34-4	Monomethylhydrazine	Air	1.00E-11	1.74E-11	7.04E-12
60-34-4	Monomethylhydrazine	Water	3.22E-09	2.89E-09	3.36E-09
60-34-4	Monomethylhydrazine	Soil	3.24E-11	3.84E-11	2.84E-11
74-87-3	Chloromethane	Air	9.66E-15	4.14E-15	3.72E-14
74-87-3	Chloromethane	Water	4.04E-12	3.50E-12	4.27E-12
74-87-3	Chloromethane	Soil	1.64E-14	1.72E-14	2.40E-14
107-13-1	2-Propenenitrile	Air	2.78E-12	1.62E-12	3.85E-12
107-13-1	2-Propenenitrile	Water	4.11E-11	3.73E-11	4.29E-11
107-13-1	2-Propenenitrile	Soil	3.07E-13	2.64E-13	3.62E-13
107-02-8	2-Propenal	Air	1.51E-10	1.99E-10	1.20E-10
107-02-8	2-Propenal	Water	4.76E-09	4.58E-09	4.83E-09
107-02-8	2-Propenal	Soil	9.57E-12	1.22E-11	8.04E-12
107-18-6	2-Propen-1-ol	Air	7.23E-11	6.06E-11	8.02E-11
107-18-6	2-Propen-1-ol	Water	2.41E-10	2.36E-10	2.43E-10
107-18-6	2-Propen-1-ol	Soil	1.55E-12	1.38E-12	1.68E-12
75-56-9	Propylene oxide	Air	1.05E-12	4.16E-13	3.52E-12
75-56-9	Propylene oxide	Water	6.78E-12	6.12E-12	7.22E-12
75-56-9	Propylene oxide	Soil	1.56E-13	1.19E-13	3.54E-13
60-35-5	Acetamide	Air	2.72E-13	2.94E-13	2.38E-13
60-35-5	Acetamide	Water	9.63E-13	9.48E-13	9.70E-13
60-35-5	Acetamide	Soil	3.87E-15	5.41E-15	4.94E-15

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
57-14-7	1,1-Dimethylhydrazine	Air	5.28E-11	6.57E-11	4.25E-11
57-14-7	1,1-Dimethylhydrazine	Water	6.86E-10	6.65E-10	6.97E-10
57-14-7	1,1-Dimethylhydrazine	Soil	5.78E-12	7.37E-12	4.96E-12
107-21-1	1,2-Ethanediol	Air	2.91E-13	2.66E-13	2.91E-13
107-21-1	1,2-Ethanediol	Water	5.28E-13	5.26E-13	5.31E-13
107-21-1	1,2-Ethanediol	Soil	1.70E-15	1.73E-15	1.70E-15
78-79-5	Isoprene	Air	0.00E+00	0.00E+00	0.00E+00
78-79-5	Isoprene	Water	1.25E-11	1.14E-11	1.29E-11
78-79-5	Isoprene	Soil	3.80E-15	3.84E-15	2.72E-15
79-06-1	2-Propenamide	Air	7.09E-07	8.24E-07	5.91E-07
79-06-1	2-Propenamide	Water	3.95E-06	3.94E-06	3.95E-06
79-06-1	2-Propenamide	Soil	2.99E-09	3.93E-09	2.53E-09
79-10-7	2-Propenoic acid	Air	1.45E-12	1.46E-12	1.32E-12
79-10-7	2-Propenoic acid	Water	3.67E-12	3.65E-12	3.68E-12
79-10-7	2-Propenoic acid	Soil	2.73E-14	3.22E-14	2.47E-14
62-56-6	Thiourea	Air	2.92E-11	3.40E-11	2.42E-11
62-56-6	Thiourea	Water	1.79E-10	1.77E-10	1.81E-10
62-56-6	Thiourea	Soil	7.19E-13	9.32E-13	6.11E-13
75-15-0	Carbon disulfide	Air	9.72E-14	3.88E-14	2.32E-13
75-15-0	Carbon disulfide	Water	9.32E-11	8.14E-11	9.81E-11
75-15-0	Carbon disulfide	Soil	3.55E-13	3.90E-13	3.64E-13
107-05-1	3-Chloro-1-propene	Air	1.09E-14	1.10E-14	1.09E-14
107-05-1	3-Chloro-1-propene	Water	8.11E-11	7.29E-11	8.43E-11
107-05-1	3-Chloro-1-propene	Soil	7.88E-14	9.50E-14	6.87E-14
71-43-2	Benzene	Air	3.33E-13	2.60E-13	3.62E-13
71-43-2	Benzene	Water	4.98E-10	4.59E-10	5.13E-10
71-43-2	Benzene	Soil	8.10E-13	9.66E-13	7.12E-13
110-86-1	Pyridine	Air	2.85E-11	1.37E-11	6.83E-11
110-86-1	Pyridine	Water	6.62E-11	5.53E-11	7.30E-11
110-86-1	Pyridine	Soil	3.21E-12	2.72E-12	4.92E-12
75-09-2	Methylene chloride	Air	2.42E-13	8.13E-14	9.12E-13
75-09-2	Methylene chloride	Water	4.33E-11	3.50E-11	4.74E-11
75-09-2	Methylene chloride	Soil	1.25E-12	1.27E-12	1.44E-12
108-05-4	Vinyl acetate	Air	8.22E-14	4.87E-14	1.17E-13
108-05-4	Vinyl acetate	Water	5.57E-12	5.38E-12	5.64E-12
108-05-4	Vinyl acetate	Soil	2.52E-14	2.49E-14	2.60E-14
79-41-4	2-Methyl-2-propenoic acid	Air	5.66E-12	6.04E-12	5.17E-12
79-41-4	2-Methyl-2-propenoic acid	Water	2.00E-11	1.95E-11	2.02E-11
79-41-4	2-Methyl-2-propenoic acid	Soil	1.51E-13	1.71E-13	1.36E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
123-91-1	1,4-Dioxane	Air	4.34E-14	4.93E-14	3.66E-14
123-91-1	1,4-Dioxane	Water	3.24E-13	3.09E-13	3.32E-13
123-91-1	1,4-Dioxane	Soil	4.49E-15	5.14E-15	5.80E-15
110-80-5	2-Ethoxyethanol	Air	3.73E-12	3.47E-12	3.65E-12
110-80-5	2-Ethoxyethanol	Water	7.23E-12	7.05E-12	7.33E-12
110-80-5	2-Ethoxyethanol	Soil	1.18E-13	1.31E-13	1.11E-13
108-88-3	Methylbenzene	Air	9.80E-15	6.72E-15	1.03E-14
108-88-3	Methylbenzene	Water	2.39E-11	2.05E-11	2.53E-11
108-88-3	Methylbenzene	Soil	3.71E-14	4.10E-14	3.28E-14
106-89-8	(Chloromethyl)oxirane	Air	1.42E-11	6.30E-12	3.95E-11
106-89-8	(Chloromethyl)oxirane	Water	5.52E-11	4.97E-11	5.87E-11
106-89-8	(Chloromethyl)oxirane	Soil	1.06E-12	7.99E-13	2.16E-12
62-53-3	Benzenamine	Air	7.45E-12	1.14E-11	5.52E-12
62-53-3	Benzenamine	Water	1.27E-10	1.22E-10	1.29E-10
62-53-3	Benzenamine	Soil	5.17E-13	6.76E-13	4.33E-13
108-95-2	Phenol	Air	2.08E-12	2.38E-12	1.82E-12
108-95-2	Phenol	Water	8.92E-12	8.86E-12	8.94E-12
108-95-2	Phenol	Soil	4.06E-14	4.73E-14	3.65E-14
74-83-9	Methyl bromide	Air	1.89E-12	7.74E-13	7.08E-12
74-83-9	Methyl bromide	Water	6.98E-10	6.10E-10	7.34E-10
74-83-9	Methyl bromide	Soil	2.91E-12	3.01E-12	4.05E-12
156-60-5	trans-1,2-Dichloroethylene	Air	1.55E-14	4.88E-15	3.73E-14
156-60-5	trans-1,2-Dichloroethylene	Water	1.33E-11	1.06E-11	1.45E-11
156-60-5	trans-1,2-Dichloroethylene	Soil	8.21E-14	8.40E-14	8.16E-14
75-35-4	1,1-Dichloroethene	Air	6.52E-15	2.26E-15	8.37E-15
75-35-4	1,1-Dichloroethene	Water	1.63E-11	1.27E-11	1.80E-11
75-35-4	1,1-Dichloroethene	Soil	1.08E-13	1.11E-13	9.95E-14
108-31-6	2,5-Furandione	Air	0.00E+00	0.00E+00	7.29E-17
108-31-6	2,5-Furandione	Water	2.84E-16	2.84E-16	2.84E-16
108-31-6	2,5-Furandione	Soil	0.00E+00	0.00E+00	0.00E+00
107-06-2	1,2-Dichloroethane	Air	2.85E-13	9.54E-14	1.08E-12
107-06-2	1,2-Dichloroethane	Water	2.23E-11	1.79E-11	2.46E-11
107-06-2	1,2-Dichloroethane	Soil	7.84E-13	7.69E-13	9.94E-13
108-91-8	Cyclohexanamine	Air	5.16E-13	8.04E-13	3.75E-13
108-91-8	Cyclohexanamine	Water	1.08E-11	1.06E-11	1.09E-11
108-91-8	Cyclohexanamine	Soil	1.43E-14	1.96E-14	1.09E-14
140-88-5	Ethyl acrylate	Air	2.62E-13	3.01E-13	2.36E-13
140-88-5	Ethyl acrylate	Water	8.44E-11	8.23E-11	8.52E-11
140-88-5	Ethyl acrylate	Soil	1.20E-13	1.52E-13	1.03E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
80-62-6	2-Methyl-2-propenoic acid, Methyl ester	Air	7.03E-15	4.69E-15	7.39E-15
80-62-6	2-Methyl-2-propenoic acid, Methyl ester	Water	5.56E-13	5.38E-13	5.62E-13
80-62-6	2-Methyl-2-propenoic acid, Methyl ester	Soil	1.96E-15	1.96E-15	1.36E-15
100-42-5	Ethenylbenzene	Air	2.53E-10	2.63E-10	2.38E-10
100-42-5	Ethenylbenzene	Water	5.52E-07	5.11E-07	5.67E-07
100-42-5	Ethenylbenzene	Soil	1.90E-10	2.30E-10	1.66E-10
100-52-7	Benzaldehyde	Air	2.33E-13	3.05E-13	1.85E-13
100-52-7	Benzaldehyde	Water	9.39E-12	9.09E-12	9.52E-12
100-52-7	Benzaldehyde	Soil	1.09E-14	1.44E-14	8.76E-15
1330-20-7	Xylene	Air	5.54E-12	3.75E-12	6.52E-12
1330-20-7	Xylene	Water	8.39E-09	7.36E-09	8.82E-09
1330-20-7	Xylene	Soil	1.93E-12	2.01E-12	1.85E-12
100-41-4	Ethylbenzene	Air	3.62E-14	2.70E-14	4.06E-14
100-41-4	Ethylbenzene	Water	8.23E-11	7.09E-11	8.71E-11
100-41-4	Ethylbenzene	Soil	6.23E-14	6.75E-14	5.68E-14
120-80-9	1,2-Benzenediol	Air	7.75E-12	8.25E-12	6.77E-12
120-80-9	1,2-Benzenediol	Water	2.85E-11	2.83E-11	2.86E-11
120-80-9	1,2-Benzenediol	Soil	9.46E-14	1.24E-13	8.06E-14
123-31-9	1,4-Benzenediol	Air	1.07E-11	1.25E-11	9.06E-12
123-31-9	1,4-Benzenediol	Water	7.74E-11	7.73E-11	7.74E-11
123-31-9	1,4-Benzenediol	Soil	1.56E-13	2.06E-13	1.31E-13
542-75-6	1,3-Dichloro-1-propene	Air	7.27E-13	4.31E-13	9.77E-13
542-75-6	1,3-Dichloro-1-propene	Water	2.67E-10	2.45E-10	2.76E-10
542-75-6	1,3-Dichloro-1-propene	Soil	4.17E-13	4.52E-13	4.05E-13
108-90-7	Chlorobenzene	Air	4.89E-13	1.87E-13	1.12E-12
108-90-7	Chlorobenzene	Water	1.96E-10	1.59E-10	2.13E-10
108-90-7	Chlorobenzene	Soil	8.48E-13	8.33E-13	9.35E-13
78-87-5	1,2-Dichloropropane	Air	1.28E-13	4.47E-14	4.11E-13
78-87-5	1,2-Dichloropropane	Water	2.71E-11	2.19E-11	2.95E-11
78-87-5	1,2-Dichloropropane	Soil	3.83E-13	3.83E-13	4.42E-13
105-60-2	Hexahydro-2H-azepin-2-one	Air	1.62E-13	1.61E-13	1.50E-13
105-60-2	Hexahydro-2H-azepin-2-one	Water	4.56E-13	4.47E-13	4.60E-13
105-60-2	Hexahydro-2H-azepin-2-one	Soil	3.32E-15	3.69E-15	3.24E-15
106-92-3	2-Propenyloxy-2,3-epoxypropane	Air	6.12E-12	7.31E-12	5.23E-12
106-92-3	2-Propenyloxy-2,3-epoxypropane	Water	3.11E-11	3.04E-11	3.14E-11
106-92-3	2-Propenyloxy-2,3-epoxypropane	Soil	2.10E-13	2.58E-13	1.83E-13
100-37-8	N,N-Diethylethanamine	Air	1.26E-13	1.44E-13	1.07E-13
100-37-8	N,N-Diethylethanamine	Water	8.47E-13	8.32E-13	8.55E-13
100-37-8	N,N-Diethylethanamine	Soil	4.14E-15	6.75E-15	3.06E-15

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
67-66-3	Trichloromethane	Air	1.99E-13	6.78E-14	7.51E-13
67-66-3	Trichloromethane	Water	5.67E-11	4.59E-11	6.18E-11
67-66-3	Trichloromethane	Soil	8.37E-13	8.52E-13	9.69E-13
108-67-8	Mesitylene	Air	4.80E-14	3.47E-14	5.46E-14
108-67-8	Mesitylene	Water	1.24E-10	1.07E-10	1.31E-10
108-67-8	Mesitylene	Soil	5.35E-14	5.82E-14	4.80E-14
105-67-9	2,4-Dimethylphenol	Air	2.40E-12	2.99E-12	1.98E-12
105-67-9	2,4-Dimethylphenol	Water	1.81E-11	1.79E-11	1.82E-11
105-67-9	2,4-Dimethylphenol	Soil	3.84E-14	4.58E-14	3.24E-14
100-44-7	(Chloromethyl)benzene	Air	1.59E-12	7.81E-13	2.92E-12
100-44-7	(Chloromethyl)benzene	Water	7.17E-11	6.91E-11	7.27E-11
100-44-7	(Chloromethyl)benzene	Soil	6.53E-14	4.16E-14	1.06E-13
106-47-8	4-Chloroaniline	Air	3.20E-11	4.46E-11	2.45E-11
106-47-8	4-Chloroaniline	Water	9.40E-10	8.77E-10	9.67E-10
106-47-8	4-Chloroaniline	Soil	1.73E-12	2.18E-12	1.46E-12
108-42-9	m-Chloroaniline	Air	1.67E-11	2.54E-11	1.25E-11
108-42-9	m-Chloroaniline	Water	3.63E-10	3.41E-10	3.73E-10
108-42-9	m-Chloroaniline	Soil	3.57E-12	4.46E-12	3.07E-12
106-48-9	4-Chlorophenol	Air	8.70E-11	9.64E-11	7.78E-11
106-48-9	4-Chlorophenol	Water	4.15E-10	4.05E-10	4.20E-10
106-48-9	4-Chlorophenol	Soil	9.65E-13	1.07E-12	8.80E-13
79-01-6	Trichloroethene	Air	1.41E-14	5.80E-15	3.05E-14
79-01-6	Trichloroethene	Water	1.33E-11	1.15E-11	1.41E-11
79-01-6	Trichloroethene	Soil	3.14E-14	3.46E-14	3.28E-14
111-15-9	2-Ethoxyethanol, Acetate	Air	2.49E-12	2.45E-12	2.36E-12
111-15-9	2-Ethoxyethanol, Acetate	Water	1.29E-11	1.23E-11	1.32E-11
111-15-9	2-Ethoxyethanol, Acetate	Soil	9.72E-14	1.07E-13	9.02E-14
71-55-6	1,1,1-Trichloroethane	Air	8.64E-14	4.20E-14	2.98E-13
71-55-6	1,1,1-Trichloroethane	Water	9.07E-11	7.15E-11	1.00E-10
71-55-6	1,1,1-Trichloroethane	Soil	3.81E-13	3.84E-13	4.36E-13
79-00-5	1,1,2-Trichloroethane	Air	4.80E-13	1.55E-13	1.75E-12
79-00-5	1,1,2-Trichloroethane	Water	3.32E-11	2.58E-11	3.75E-11
79-00-5	1,1,2-Trichloroethane	Soil	6.85E-13	6.29E-13	9.46E-13
100-02-7	4-Nitrophenol	Air	8.91E-15	3.94E-15	1.17E-14
100-02-7	4-Nitrophenol	Water	4.96E-10	4.82E-10	5.01E-10
100-02-7	4-Nitrophenol	Soil	1.49E-13	1.97E-13	1.23E-13
106-46-7	1,4-Dichlorobenzene	Air	1.53E-12	5.28E-13	4.91E-12
106-46-7	1,4-Dichlorobenzene	Water	3.63E-10	2.94E-10	3.95E-10
106-46-7	1,4-Dichlorobenzene	Soil	5.91E-13	5.00E-13	9.74E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
534-52-1	2-Methyl-4,6-dinitrophenol	Air	1.73E-10	1.31E-10	2.12E-10
534-52-1	2-Methyl-4,6-dinitrophenol	Water	3.22E-10	3.16E-10	3.25E-10
534-52-1	2-Methyl-4,6-dinitrophenol	Soil	4.72E-12	4.62E-12	5.12E-12
85-44-9	Phthalic anhydride	Air	1.20E-13	9.51E-14	1.32E-13
85-44-9	Phthalic anhydride	Water	1.72E-13	1.72E-13	1.72E-13
85-44-9	Phthalic anhydride	Soil	0.00E+00	0.00E+00	0.00E+00
122-60-1	1-Phenoxy-2,3-epoxypropane	Air	3.94E-12	4.80E-12	3.31E-12
122-60-1	1-Phenoxy-2,3-epoxypropane	Water	2.74E-11	2.67E-11	2.78E-11
122-60-1	1-Phenoxy-2,3-epoxypropane	Soil	1.03E-13	1.26E-13	8.97E-14
56-23-5	Tetrachloromethane	Air	6.38E-14	2.98E-14	2.27E-13
56-23-5	Tetrachloromethane	Water	1.21E-10	9.83E-11	1.31E-10
56-23-5	Tetrachloromethane	Soil	3.93E-13	4.13E-13	4.24E-13
100-00-5	1-Chloro-4-nitrobenzene	Air	1.53E-10	4.97E-11	6.03E-10
100-00-5	1-Chloro-4-nitrobenzene	Water	7.53E-10	5.10E-10	1.04E-09
100-00-5	1-Chloro-4-nitrobenzene	Soil	1.83E-11	1.21E-11	4.31E-11
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Air	3.15E-10	3.80E-10	2.59E-10
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Water	4.75E-09	4.66E-09	4.79E-09
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	Soil	1.29E-11	1.67E-11	1.10E-11
127-18-4	Tetrachloroethene	Air	2.18E-13	7.91E-14	6.82E-13
127-18-4	Tetrachloroethene	Water	3.09E-10	2.68E-10	3.26E-10
127-18-4	Tetrachloroethene	Soil	5.80E-13	6.23E-13	6.47E-13
79-34-5	1,1,2,2-Tetrachloroethane	Air	5.69E-11	1.87E-11	2.33E-10
79-34-5	1,1,2,2-Tetrachloroethane	Water	1.22E-09	9.64E-10	1.40E-09
79-34-5	1,1,2,2-Tetrachloroethane	Soil	2.05E-11	1.71E-11	3.96E-11
122-39-4	Diphenylamine	Air	4.05E-11	5.76E-11	3.17E-11
122-39-4	Diphenylamine	Water	5.90E-10	5.78E-10	5.95E-10
122-39-4	Diphenylamine	Soil	3.05E-13	4.11E-13	2.52E-13
85-01-8	Phenanthrene	Air	1.96E-09	1.53E-09	2.08E-09
85-01-8	Phenanthrene	Water	2.46E-08	2.07E-08	2.66E-08
85-01-8	Phenanthrene	Soil	3.60E-11	2.85E-11	3.84E-11
51-28-5	2,4-Dinitrophenol	Air	5.27E-11	3.84E-11	6.78E-11
51-28-5	2,4-Dinitrophenol	Water	9.27E-11	9.09E-11	9.36E-11
51-28-5	2,4-Dinitrophenol	Soil	2.28E-12	2.37E-12	2.40E-12
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Air	1.70E-11	2.26E-11	1.35E-11
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Water	2.49E-10	2.37E-10	2.54E-10
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	Soil	2.25E-13	2.87E-13	1.83E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
86-30-6	N-Nitroso-N-phenylbenzenamine	Air	2.46E-13	3.91E-13	1.79E-13
86-30-6	N-Nitroso-N-phenylbenzenamine	Water	7.54E-12	7.51E-12	7.56E-12
86-30-6	N-Nitroso-N-phenylbenzenamine	Soil	9.85E-15	1.30E-14	7.86E-15
63-25-2	1-Naphthalenol methylcarbamate	Air	3.88E-12	2.19E-12	5.60E-12
63-25-2	1-Naphthalenol methylcarbamate	Water	6.31E-10	5.89E-10	6.48E-10
63-25-2	1-Naphthalenol methylcarbamate	Soil	1.16E-12	1.23E-12	1.19E-12
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Air	9.58E-09	7.05E-09	1.09E-08
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Water	1.55E-08	1.48E-08	1.59E-08
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	Soil	1.04E-10	1.31E-10	8.97E-11
114-26-1	2-(1-Methylethoxy)phenol, Methylcarbamate	Air	1.81E-10	1.95E-10	1.57E-10
114-26-1	2-(1-Methylethoxy)phenol, Methylcarbamate	Water	1.10E-09	1.05E-09	1.12E-09
114-26-1	2-(1-Methylethoxy)phenol, Methylcarbamate	Soil	6.97E-12	8.77E-12	6.02E-12
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato (2-)-kappaS,kappaS']manganese	Air	7.39E-11	1.15E-10	5.57E-11
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato (2-)-kappaS,kappaS']manganese	Water	2.40E-09	2.34E-09	2.43E-09
12427-38-2	[[2-[(Dithiocarboxy)amino]ethyl]carbamodithioato (2-)-kappaS,kappaS']manganese	Soil	1.11E-11	1.44E-11	9.45E-12
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Air	3.15E-08	2.76E-08	3.15E-08
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Water	1.88E-07	1.49E-07	2.16E-07
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine	Soil	3.99E-10	4.15E-10	3.87E-10
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Air	2.55E-08	2.27E-08	2.50E-08
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Water	6.79E-08	6.35E-08	7.02E-08
709-98-8	N-(3,4-Dichlorophenyl)propanamide	Soil	5.26E-11	5.86E-11	4.86E-11
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Air	2.21E-13	1.43E-13	2.85E-13
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Water	6.52E-11	6.49E-11	6.54E-11
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	Soil	1.21E-14	1.04E-14	1.39E-14

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Air	1.43E-10	1.57E-10	1.23E-10
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Water	8.64E-10	8.51E-10	8.71E-10
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	Soil	1.47E-12	1.91E-12	1.25E-12
121-82-4	Hexahydro-1,3,5-trinitro-1,2,3-triazine	Air	7.59E-12	9.20E-12	6.12E-12
121-82-4	Hexahydro-1,3,5-trinitro-1,2,3-triazine	Water	1.37E-10	1.34E-10	1.38E-10
121-82-4	Hexahydro-1,3,5-trinitro-1,2,3-triazine	Soil	5.78E-13	7.39E-13	4.91E-13
55-63-0	1,2,3-Propanetriol, Trinitrate	Air	1.41E-11	1.61E-11	1.17E-11
55-63-0	1,2,3-Propanetriol, Trinitrate	Water	1.07E-10	1.06E-10	1.07E-10
55-63-0	1,2,3-Propanetriol, Trinitrate	Soil	1.43E-13	1.81E-13	1.23E-13
118-96-7	2-Methyl-1,3,5-trinitrobenzene	Air	7.54E-09	8.51E-09	6.33E-09
118-96-7	2-Methyl-1,3,5-trinitrobenzene	Water	3.90E-08	3.89E-08	3.90E-08
118-96-7	2-Methyl-1,3,5-trinitrobenzene	Soil	6.70E-10	8.72E-10	5.68E-10
834-12-8	N-Ethyl-N'-((1-methylethyl)-6-methylthio)-1,3,5-triazine-2,4-diamine	Air	3.99E-08	3.94E-08	3.67E-08
834-12-8	N-Ethyl-N'-((1-methylethyl)-6-methylthio)-1,3,5-triazine-2,4-diamine	Water	1.79E-07	1.67E-07	1.85E-07
834-12-8	N-Ethyl-N'-((1-methylethyl)-6-methylthio)-1,3,5-triazine-2,4-diamine	Soil	1.30E-10	1.58E-10	1.15E-10
80-05-7	4,4'-(1-Methylethylidene)bisphenol	Air	1.18E-11	1.31E-11	1.07E-11
80-05-7	4,4'-(1-Methylethylidene)bisphenol	Water	1.60E-10	1.60E-10	1.61E-10
80-05-7	4,4'-(1-Methylethylidene)bisphenol	Soil	1.20E-13	1.58E-13	1.03E-13
60-51-5	Phosphorodithioic acid, O,O-Dimethyl S-[2-(methylamino)-2-oxoethyl] ester	Air	9.12E-11	1.02E-10	7.81E-11
60-51-5	Phosphorodithioic acid, O,O-Dimethyl S-[2-(methylamino)-2-oxoethyl] ester	Water	7.72E-10	7.36E-10	7.91E-10
60-51-5	Phosphorodithioic acid, O,O-Dimethyl S-[2-(methylamino)-2-oxoethyl] ester	Soil	8.57E-12	1.07E-11	7.41E-12
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Air	5.79E-08	5.50E-08	5.52E-08
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Water	1.98E-07	1.89E-07	2.03E-07
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	Soil	3.93E-10	4.94E-10	3.40E-10
137-26-8	Tetramethylthioperoxydicarbonic diamide	Air	6.99E-09	5.55E-09	7.61E-09
137-26-8	Tetramethylthioperoxydicarbonic diamide	Water	1.05E-08	1.03E-08	1.06E-08
137-26-8	Tetramethylthioperoxydicarbonic diamide	Soil	9.19E-11	9.47E-11	9.14E-11

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
21725-46-2	2-[(4-Chloro-6-(ethylamino)-S-triazin-2-yl)amino]-2-methylpropionitrile	Air	9.73E-09	1.05E-08	8.91E-09
21725-46-2	2-[(4-Chloro-6-(ethylamino)-S-triazin-2-yl)amino]-2-methylpropionitrile	Water	7.22E-08	7.01E-08	7.33E-08
21725-46-2	2-[(4-Chloro-6-(ethylamino)-S-triazin-2-yl)amino]-2-methylpropionitrile	Soil	9.00E-11	1.15E-10	7.69E-11
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Air	2.56E-08	2.30E-08	2.55E-08
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Water	7.46E-08	7.14E-08	7.63E-08
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	Soil	9.10E-11	1.14E-10	7.86E-11
57-41-0	5,5-Diphenyl-2,4-imidazolidinedione	Air	2.73E-09	2.10E-09	3.01E-09
57-41-0	5,5-Diphenyl-2,4-imidazolidinedione	Water	5.62E-09	5.26E-09	5.81E-09
57-41-0	5,5-Diphenyl-2,4-imidazolidinedione	Soil	1.13E-11	1.39E-11	9.84E-12
75-25-2	Bromoform	Air	2.51E-12	8.43E-13	9.42E-12
75-25-2	Bromoform	Water	1.06E-10	8.58E-11	1.18E-10
75-25-2	Bromoform	Soil	1.63E-12	1.50E-12	2.46E-12
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Air	5.73E-10	4.27E-10	6.51E-10
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Water	8.72E-10	8.49E-10	8.84E-10
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	Soil	1.01E-11	1.29E-11	8.65E-12
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Air	2.86E-09	3.15E-09	2.54E-09
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Water	1.62E-08	1.50E-08	1.68E-08
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	Soil	1.65E-11	1.80E-11	1.52E-11
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Air	5.22E-09	4.03E-09	6.29E-09
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Water	1.27E-08	1.24E-08	1.28E-08
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	Soil	5.43E-11	4.53E-11	6.41E-11
87-86-5	Pentachlorophenol	Air	1.05E-08	7.28E-09	1.25E-08
87-86-5	Pentachlorophenol	Water	1.54E-08	1.48E-08	1.58E-08
87-86-5	Pentachlorophenol	Soil	1.01E-12	7.56E-13	1.22E-12
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Air	1.25E-08	1.21E-08	1.18E-08
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Water	5.35E-08	5.01E-08	5.53E-08
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)acetamide	Soil	1.28E-11	1.51E-11	1.15E-11

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Air	2.59E-10	2.77E-10	2.41E-10
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Water	1.90E-09	1.85E-09	1.92E-09
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	Soil	4.41E-14	5.63E-14	3.77E-14
12122-67-7	[[1,2-Ethanediylbis[carbamodithioato]](2-)]zinc	Air	3.43E-09	2.48E-09	3.98E-09
12122-67-7	[[1,2-Ethanediylbis[carbamodithioato]](2-)]zinc	Water	5.08E-09	4.76E-09	5.25E-09
12122-67-7	[[1,2-Ethanediylbis[carbamodithioato]](2-)]zinc	Soil	4.82E-11	5.94E-11	4.21E-11
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Air	2.80E-09	2.61E-09	2.74E-09
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Water	1.13E-08	1.10E-08	1.14E-08
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	Soil	2.20E-12	2.82E-12	1.87E-12
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Air	4.41E-09	4.21E-09	4.28E-09
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Water	2.05E-08	1.98E-08	2.09E-08
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	Soil	1.03E-12	1.31E-12	8.81E-13
84-74-2	1,2-Benzenedicarboxylic acid, Dibutyl ester	Air	6.63E-10	6.71E-10	6.21E-10
84-74-2	1,2-Benzenedicarboxylic acid, Dibutyl ester	Water	2.80E-09	2.75E-09	2.83E-09
84-74-2	1,2-Benzenedicarboxylic acid, Dibutyl ester	Soil	1.33E-12	1.30E-12	1.31E-12
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Air	2.97E-09	2.98E-09	2.79E-09
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Water	1.76E-08	1.61E-08	1.83E-08
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	Soil	6.94E-12	6.70E-12	6.84E-12
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Air	8.16E-13	3.14E-13	1.86E-12
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Water	8.21E-09	6.73E-09	8.89E-09
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	Soil	4.16E-12	4.39E-12	4.06E-12
115-96-8	Tris(beta-chloroethylphosphate)	Air	1.28E-11	1.19E-11	1.20E-11
115-96-8	Tris(beta-chloroethylphosphate)	Water	3.67E-11	3.43E-11	3.80E-11
115-96-8	Tris(beta-chloroethylphosphate)	Soil	4.58E-13	5.40E-13	4.08E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Air	3.32E-10	3.25E-10	3.17E-10
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Water	1.50E-09	1.47E-09	1.51E-09
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	Soil	7.96E-12	1.03E-11	6.76E-12
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Air	8.55E-10	4.40E-10	1.30E-09
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Water	2.04E-08	1.80E-08	2.15E-08
1336-36-3	1,1'-Biphenyl, Chloro derivs.	Soil	1.36E-11	6.96E-12	2.07E-11
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Air	2.30E-11	2.73E-11	1.96E-11
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Water	9.21E-10	7.76E-10	9.94E-10
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	Soil	2.01E-13	2.33E-13	1.77E-13
82-68-8	Pentachloronitrobenzene	Air	2.00E-09	6.38E-10	8.25E-09
82-68-8	Pentachloronitrobenzene	Water	7.00E-08	5.36E-08	8.12E-08
82-68-8	Pentachloronitrobenzene	Soil	6.79E-11	3.14E-11	2.38E-10
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Air	4.55E-08	3.25E-08	5.09E-08
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Water	6.89E-08	6.19E-08	7.29E-08
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	Soil	1.80E-10	1.42E-10	2.02E-10
137-30-4	Zinc dimethyldithiocarbamate	Air	5.66E-10	6.42E-10	4.74E-10
137-30-4	Zinc dimethyldithiocarbamate	Water	4.84E-09	4.75E-09	4.89E-09
137-30-4	Zinc dimethyldithiocarbamate	Soil	1.54E-11	1.99E-11	1.31E-11
85-68-7	1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	Air	1.33E-10	1.43E-10	1.20E-10
85-68-7	1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	Water	9.02E-10	8.78E-10	9.12E-10
85-68-7	1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	Soil	6.05E-13	6.30E-13	5.68E-13
121-75-5	[(Dimethoxyphosphinothioyl)thio]butanedioic acid, Diethyl ester	Air	9.34E-11	9.24E-11	8.59E-11
121-75-5	[(Dimethoxyphosphinothioyl)thio]butanedioic acid, Diethyl ester	Water	3.29E-10	3.27E-10	3.30E-10
121-75-5	[(Dimethoxyphosphinothioyl)thio]butanedioic acid, Diethyl ester	Soil	2.55E-14	3.20E-14	2.23E-14
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Air	7.11E-10	4.63E-10	8.51E-10
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Water	7.71E-09	5.98E-09	8.73E-09
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	Soil	1.00E-11	6.44E-12	1.21E-11

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
25311-71-1	2-[[Ethoxy(1-methylethyl)amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester	Air	2.41E-09	2.83E-09	2.11E-09
25311-71-1	2-[[Ethoxy(1-methylethyl)amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester	Water	4.81E-08	4.72E-08	4.86E-08
25311-71-1	2-[[Ethoxy(1-methylethyl)amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester	Soil	7.71E-13	9.66E-13	6.71E-13
26248-24-8	Tridecylbenzenesulfonic acid, Sodium salt	Air	1.95E-10	1.63E-10	2.04E-10
26248-24-8	Tridecylbenzenesulfonic acid, Sodium salt	Water	4.66E-10	4.57E-10	4.70E-10
26248-24-8	Tridecylbenzenesulfonic acid, Sodium salt	Soil	5.80E-13	7.50E-13	4.92E-13
25155-30-0	Dodecylbenzenesulfonic acid, Sodium salt	Air	9.93E-11	8.28E-11	1.04E-10
25155-30-0	Dodecylbenzenesulfonic acid, Sodium salt	Water	2.37E-10	2.33E-10	2.39E-10
25155-30-0	Dodecylbenzenesulfonic acid, Sodium salt	Soil	2.95E-13	3.83E-13	2.51E-13
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Air	3.51E-09	3.31E-09	3.44E-09
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Water	1.48E-08	1.38E-08	1.53E-08
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	Soil	6.81E-13	6.57E-13	6.88E-13
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Air	1.49E-08	1.28E-08	1.54E-08
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Water	3.65E-08	3.60E-08	3.68E-08
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	Soil	3.64E-13	3.33E-13	3.83E-13
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Air	7.69E-09	6.93E-09	7.67E-09
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Water	2.80E-08	2.69E-08	2.86E-08
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	Soil	2.73E-12	3.46E-12	2.34E-12
115-32-2	4-Chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)benzenemethanol	Air	5.07E-09	3.52E-09	5.99E-09
115-32-2	4-Chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)benzenemethanol	Water	8.13E-09	7.62E-09	8.41E-09
115-32-2	4-Chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)benzenemethanol	Soil	1.30E-13	1.53E-13	1.18E-13
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Air	6.91E-10	6.15E-10	7.04E-10
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Water	1.92E-09	1.88E-09	1.93E-09
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	Soil	1.50E-13	1.27E-13	1.61E-13

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Air	3.59E-09	3.14E-09	3.66E-09
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Water	1.06E-08	9.94E-09	1.10E-08
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	Soil	7.11E-13	7.49E-13	6.87E-13
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Air	2.38E-07	2.18E-07	2.37E-07
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Water	8.59E-07	8.04E-07	8.88E-07
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	Soil	4.21E-11	4.17E-11	4.19E-11
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Air	1.26E-09	1.29E-09	1.19E-09
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Water	6.30E-09	6.16E-09	6.37E-09
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	Soil	5.83E-13	5.73E-13	5.81E-13
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Air	4.09E-09	2.19E-09	5.96E-09
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Water	6.79E-08	5.56E-08	7.47E-08
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	Soil	9.29E-10	8.96E-10	9.73E-10
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Air	1.74E-10	2.41E-10	1.42E-10
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Water	1.10E-08	1.07E-08	1.11E-08
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	Soil	2.63E-13	3.47E-13	2.25E-13
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Air	2.10E-10	1.79E-10	2.16E-10
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Water	7.42E-10	7.21E-10	7.51E-10
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	Soil	7.17E-13	5.90E-13	7.66E-13
117-84-0	1,2-Benzenedicarboxylic acid, Dioctyl ester	Air	4.56E-12	3.55E-12	4.99E-12
117-84-0	1,2-Benzenedicarboxylic acid, Dioctyl ester	Water	9.07E-12	8.82E-12	9.20E-12
117-84-0	1,2-Benzenedicarboxylic acid, Dioctyl ester	Soil	2.98E-16	2.98E-16	2.98E-16

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Air	1.39E-08	1.21E-08	1.42E-08
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Water	4.24E-08	4.08E-08	4.32E-08
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	Soil	8.10E-14	9.74E-14	7.09E-14
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Air	1.58E-09	1.78E-09	1.35E-09
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Water	3.67E-08	3.52E-08	3.74E-08
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	Soil	2.34E-11	2.61E-11	2.04E-11
52315-07-8	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl)methyl ester	Air	2.05E-07	1.81E-07	2.07E-07
52315-07-8	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl)methyl ester	Water	6.05E-07	5.98E-07	6.08E-07
52315-07-8	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl)methyl ester	Soil	2.33E-12	3.03E-12	1.98E-12
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester	Air	4.81E-07	3.81E-07	5.17E-07
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester	Water	1.12E-06	1.06E-06	1.16E-06
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester	Soil	1.86E-11	1.57E-11	2.03E-11

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
82657-04-3	(1R,3R)-rel-3-[(1Z)-2-Chloro-3,3,3-trifluoro-1-propenyl]-2,2-dimethylcyclopropanecarboxylic acid (2-methyl[1,1'-biphenyl]-3-yl)methyl ester	Air	2.54E-07	2.23E-07	2.58E-07
82657-04-3	(1R,3R)-rel-3-[(1Z)-2-Chloro-3,3,3-trifluoro-1-propenyl]-2,2-dimethylcyclopropanecarboxylic acid (2-methyl[1,1'-biphenyl]-3-yl)methyl ester	Water	7.15E-07	7.10E-07	7.17E-07
82657-04-3	(1R,3R)-rel-3-[(1Z)-2-Chloro-3,3,3-trifluoro-1-propenyl]-2,2-dimethylcyclopropanecarboxylic acid (2-methyl[1,1'-biphenyl]-3-yl)methyl ester	Soil	1.42E-11	1.84E-11	1.22E-11
78-42-2	Tris(2-ethylhexyl)ester phosphoric acid	Air	4.62E-13	5.67E-13	3.93E-13
78-42-2	Tris(2-ethylhexyl)ester phosphoric acid	Water	1.27E-10	1.18E-10	1.31E-10
78-42-2	Tris(2-ethylhexyl)ester phosphoric acid	Soil	8.43E-15	1.29E-14	7.94E-15
1937-37-7	4-Amino-3-((4'-((2,4-diamophenyl)azo)(1,1'-biphenyl)-4-yl)azo)-5-hydroxy-6-(phenylazo)-2,7-naphthalenedisulfonic acid	Air	3.14E-12	3.24E-12	2.95E-12
1937-37-7	4-Amino-3-((4'-((2,4-diamophenyl)azo)(1,1'-biphenyl)-4-yl)azo)-5-hydroxy-6-(phenylazo)-2,7-naphthalenedisulfonic acid	Water	4.30E-11	3.92E-11	4.52E-11
1937-37-7	4-Amino-3-((4'-((2,4-diamophenyl)azo)(1,1'-biphenyl)-4-yl)azo)-5-hydroxy-6-(phenylazo)-2,7-naphthalenedisulfonic acid	Soil	3.17E-13	3.82E-13	2.81E-13
1303-28-2	Arsenic pentoxide	Air	1.40E-07	5.46E-08	2.69E-07
1303-28-2	Arsenic pentoxide	Water	1.54E-08	1.17E-08	1.82E-08
1303-28-2	Arsenic pentoxide	Soil	1.05E-08	8.04E-09	1.25E-08
1303-33-9	Arsenic trisulfide (As ₂ S ₃)	Air	3.30E-09	1.29E-09	6.34E-09
1303-33-9	Arsenic trisulfide (As ₂ S ₃)	Water	3.63E-10	2.77E-10	4.29E-10
1303-33-9	Arsenic trisulfide (As ₂ S ₃)	Soil	2.48E-10	1.89E-10	2.93E-10
1327-53-3	Arsenic oxide	Air	4.81E-07	1.87E-07	9.22E-07
1327-53-3	Arsenic oxide	Water	5.28E-08	4.03E-08	6.24E-08
1327-53-3	Arsenic oxide	Soil	3.61E-08	2.76E-08	4.27E-08
7440-38-2	Arsenic	Air	4.67E-06	1.82E-06	8.95E-06
7440-38-2	Arsenic	Water	5.13E-07	3.91E-07	6.06E-07
7440-38-2	Arsenic	Soil	3.51E-07	2.68E-07	4.15E-07
7631-89-2	Arsenic acid (H ₃ AsO ₄) sodium salt (1:?)	Air	2.61E-03	1.02E-03	5.01E-03
7631-89-2	Arsenic acid (H ₃ AsO ₄) sodium salt (1:?)	Water	2.87E-04	2.19E-04	3.39E-04
7631-89-2	Arsenic acid (H ₃ AsO ₄) sodium salt (1:?)	Soil	1.96E-04	1.50E-04	2.32E-04
7778-39-4	Arsenic acid (H ₃ AsO ₄)	Air	1.14E-06	4.45E-07	2.19E-06
7778-39-4	Arsenic acid (H ₃ AsO ₄)	Water	1.26E-07	9.58E-08	1.48E-07
7778-39-4	Arsenic acid (H ₃ AsO ₄)	Soil	8.60E-08	6.55E-08	1.02E-07

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
7778-43-0	Arsenic acid, Disodium salt	Air	9.59E-08	3.73E-08	1.84E-07
7778-43-0	Arsenic acid, Disodium salt	Water	1.05E-08	8.03E-09	1.24E-08
7778-43-0	Arsenic acid, Disodium salt	Soil	7.21E-09	5.50E-09	8.52E-09
7784-41-0	Arsenic acid, Monopotassium salt	Air	1.25E-05	4.87E-06	2.40E-05
7784-41-0	Arsenic acid, Monopotassium salt	Water	1.38E-06	1.05E-06	1.63E-06
7784-41-0	Arsenic acid, Monopotassium salt	Soil	9.41E-07	7.18E-07	1.11E-06
10048-95-0	Arsenic acid, Disodium salt, Heptahydrate (Na ₂ AsH ₃ O ₄ ·7H ₂ O)	Air	1.12E-09	4.36E-10	2.15E-09
10048-95-0	Arsenic acid, Disodium salt, Heptahydrate (Na ₂ AsH ₃ O ₄ ·7H ₂ O)	Water	1.23E-10	9.38E-11	1.45E-10
10048-95-0	Arsenic acid, Disodium salt, Heptahydrate (Na ₂ AsH ₃ O ₄ ·7H ₂ O)	Soil	8.42E-11	6.42E-11	9.95E-11
13464-38-5	Arsenic acid, Trisodium salt	Air	3.45E-07	1.34E-07	6.62E-07
13464-38-5	Arsenic acid, Trisodium salt	Water	3.79E-08	2.89E-08	4.48E-08
13464-38-5	Arsenic acid, Trisodium salt	Soil	2.59E-08	1.98E-08	3.07E-08
513-78-0	Carbonic acid, Cadmium salt (1:1)	Air	2.34E-11	9.52E-12	4.34E-11
513-78-0	Carbonic acid, Cadmium salt (1:1)	Water	3.42E-12	2.73E-12	3.91E-12
513-78-0	Carbonic acid, Cadmium salt (1:1)	Soil	1.63E-12	1.30E-12	1.86E-12
543-90-8	Cadmium acetate	Air	3.82E-08	1.55E-08	7.07E-08
543-90-8	Cadmium acetate	Water	5.58E-09	4.45E-09	6.38E-09
543-90-8	Cadmium acetate	Soil	2.66E-09	2.13E-09	3.04E-09
1306-19-0	Cadmium oxide	Air	2.08E-06	8.47E-07	3.86E-06
1306-19-0	Cadmium oxide	Water	3.04E-07	2.43E-07	3.48E-07
1306-19-0	Cadmium oxide	Soil	1.45E-07	1.16E-07	1.66E-07
1306-23-6	Cadmium sulfide	Air	1.41E-06	5.75E-07	2.62E-06
1306-23-6	Cadmium sulfide	Water	2.07E-07	1.65E-07	2.36E-07
1306-23-6	Cadmium sulfide	Soil	9.86E-08	7.86E-08	1.13E-07
2223-93-0	Octadecanoic acid, Cadmium salt	Air	2.25E-05	9.15E-06	4.17E-05
2223-93-0	Octadecanoic acid, Cadmium salt	Water	3.29E-06	2.62E-06	3.76E-06
2223-93-0	Octadecanoic acid, Cadmium salt	Soil	1.57E-06	1.25E-06	1.79E-06
7440-43-9	Cadmium	Air	6.88E-07	2.80E-07	1.28E-06
7440-43-9	Cadmium	Water	1.01E-07	8.03E-08	1.15E-07
7440-43-9	Cadmium	Soil	4.81E-08	3.83E-08	5.49E-08
7790-80-9	Cadmium iodide	Air	3.79E-07	1.54E-07	7.03E-07
7790-80-9	Cadmium iodide	Water	5.55E-08	4.43E-08	6.34E-08
7790-80-9	Cadmium iodide	Soil	2.65E-08	2.11E-08	3.03E-08
10108-64-2	Cadmium chloride	Air	6.28E-07	2.56E-07	1.16E-06
10108-64-2	Cadmium chloride	Water	9.19E-08	7.33E-08	1.05E-07
10108-64-2	Cadmium chloride	Soil	4.39E-08	3.50E-08	5.01E-08
1066-30-4	Acetic acid, Chromium(3+) salt	Air	2.84E-10	1.18E-10	5.19E-10
1066-30-4	Acetic acid, Chromium(3+) salt	Water	4.23E-11	3.45E-11	4.75E-11
1066-30-4	Acetic acid, Chromium(3+) salt	Soil	1.98E-11	1.61E-11	2.22E-11
7440-47-3	Chromium	Air	1.41E-07	5.86E-08	2.57E-07
7440-47-3	Chromium	Water	2.09E-08	1.71E-08	2.35E-08
7440-47-3	Chromium	Soil	9.78E-09	7.98E-09	1.10E-08
10025-73-7	Chromium chloride	Air	1.75E-07	7.28E-08	3.19E-07
10025-73-7	Chromium chloride	Water	2.60E-08	2.12E-08	2.92E-08
10025-73-7	Chromium chloride	Soil	1.21E-08	9.91E-09	1.36E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
10101-53-8	Sulfuric acid, Chromium(3+)salt(3:2)	Air	8.19E-08	3.41E-08	1.49E-07
10101-53-8	Sulfuric acid, Chromium(3+)salt(3:2)	Water	1.22E-08	9.94E-09	1.37E-08
10101-53-8	Sulfuric acid, Chromium(3+)salt(3:2)	Soil	5.69E-09	4.65E-09	6.40E-09
10141-00-1	Sulfuric acid, Chromium (3+)potassium salt (2:1:1)	Air	4.32E-09	1.80E-09	7.88E-09
10141-00-1	Sulfuric acid, Chromium (3+)potassium salt (2:1:1)	Water	6.42E-10	5.24E-10	7.22E-10
10141-00-1	Sulfuric acid, Chromium (3+)potassium salt (2:1:1)	Soil	3.00E-10	2.45E-10	3.37E-10
13548-38-4	Nitric acid, Chromium(3+) salt	Air	8.97E-07	3.74E-07	1.64E-06
13548-38-4	Nitric acid, Chromium(3+) salt	Water	1.33E-07	1.09E-07	1.50E-07
13548-38-4	Nitric acid, Chromium(3+) salt	Soil	6.23E-08	5.09E-08	7.01E-08
1333-82-0	Chromium oxide	Air	2.33E-08	9.69E-09	4.25E-08
1333-82-0	Chromium oxide	Water	3.46E-09	2.83E-09	3.89E-09
1333-82-0	Chromium oxide	Soil	1.62E-09	1.32E-09	1.82E-09
7778-50-9	Chromic acid dipotassium salt	Air	1.55E-07	6.47E-08	2.84E-07
7778-50-9	Chromic acid dipotassium salt	Water	2.31E-08	1.89E-08	2.60E-08
7778-50-9	Chromic acid dipotassium salt	Soil	1.08E-08	8.81E-09	1.21E-08
7788-98-9	Chromic acid, Diammonium salt	Air	3.11E-07	1.30E-07	5.68E-07
7788-98-9	Chromic acid, Diammonium salt	Water	4.63E-08	3.78E-08	5.21E-08
7788-98-9	Chromic acid, Diammonium salt	Soil	2.16E-08	1.77E-08	2.43E-08
7789-00-6	Chromic acid, Dipotassium salt	Air	6.66E-08	2.77E-08	1.22E-07
7789-00-6	Chromic acid, Dipotassium salt	Water	9.90E-09	8.08E-09	1.11E-08
7789-00-6	Chromic acid, Dipotassium salt	Soil	4.63E-09	3.78E-09	5.20E-09
10588-01-9	Sodium dichromate	Air	2.52E-08	1.05E-08	4.60E-08
10588-01-9	Sodium dichromate	Water	3.75E-09	3.06E-09	4.22E-09
10588-01-9	Sodium dichromate	Soil	1.75E-09	1.43E-09	1.97E-09
13530-68-2	Chromic acid	Air	9.89E-09	4.12E-09	1.81E-08
13530-68-2	Chromic acid	Water	1.47E-09	1.20E-09	1.65E-09
13530-68-2	Chromic acid	Soil	6.87E-10	5.61E-10	7.73E-10
75-74-1	Tetramethyl lead	Air	1.58E-07	6.69E-08	2.84E-07
75-74-1	Tetramethyl lead	Water	1.89E-08	1.57E-08	2.10E-08
75-74-1	Tetramethyl lead	Soil	1.16E-08	9.66E-09	1.29E-08
78-00-2	Tetraethyl lead	Air	1.07E-06	4.53E-07	1.92E-06
78-00-2	Tetraethyl lead	Water	1.28E-07	1.06E-07	1.42E-07
78-00-2	Tetraethyl lead	Soil	7.86E-08	6.54E-08	8.73E-08
301-04-2	Acetic acid, Lead(2+) salt	Air	2.48E-08	1.05E-08	4.46E-08
301-04-2	Acetic acid, Lead(2+) salt	Water	2.97E-09	2.47E-09	3.30E-09
301-04-2	Acetic acid, Lead(2+) salt	Soil	1.82E-09	1.52E-09	2.03E-09
598-63-0	Lead(2+)salt carbamic acid (1:1)	Air	2.00E-11	8.49E-12	3.60E-11
598-63-0	Lead(2+)salt carbamic acid (1:1)	Water	2.40E-12	1.99E-12	2.66E-12
598-63-0	Lead(2+)salt carbamic acid (1:1)	Soil	1.47E-12	1.23E-12	1.64E-12
1067-14-7	Triethyl lead chloride	Air	1.62E-06	6.90E-07	2.93E-06
1067-14-7	Triethyl lead chloride	Water	1.95E-07	1.62E-07	2.16E-07
1067-14-7	Triethyl lead chloride	Soil	1.20E-07	9.96E-08	1.33E-07
1162-06-7	(Acetyloxy)triphenylplumbane	Air	1.22E-06	5.20E-07	2.21E-06
1162-06-7	(Acetyloxy)triphenylplumbane	Water	1.47E-07	1.22E-07	1.63E-07
1162-06-7	(Acetyloxy)triphenylplumbane	Soil	9.02E-08	7.51E-08	1.00E-07

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
1314-87-0	Lead sulfide	Air	1.22E-09	5.16E-10	2.19E-09
1314-87-0	Lead sulfide	Water	1.46E-10	1.21E-10	1.62E-10
1314-87-0	Lead sulfide	Soil	8.97E-11	7.46E-11	9.96E-11
1317-36-8	Lead oxide	Air	2.47E-09	1.05E-09	4.44E-09
1317-36-8	Lead oxide	Water	2.96E-10	2.46E-10	3.28E-10
1317-36-8	Lead oxide	Soil	1.82E-10	1.51E-10	2.02E-10
1520-77-0	Dichlorodimethylplumbane	Air	4.49E-10	1.91E-10	8.09E-10
1520-77-0	Dichlorodimethylplumbane	Water	5.38E-11	4.48E-11	5.98E-11
1520-77-0	Dichlorodimethylplumbane	Soil	3.31E-11	2.75E-11	3.67E-11
1520-78-1	Trimethyl lead chloride	Air	1.84E-07	7.83E-08	3.32E-07
1520-78-1	Trimethyl lead chloride	Water	2.21E-08	1.84E-08	2.45E-08
1520-78-1	Trimethyl lead chloride	Soil	1.36E-08	1.13E-08	1.51E-08
7439-92-1	Lead	Air	7.61E-08	3.23E-08	1.37E-07
7439-92-1	Lead	Water	9.12E-09	7.58E-09	1.01E-08
7439-92-1	Lead	Soil	5.60E-09	4.66E-09	6.22E-09
7446-14-2	Lead(II) sulfate	Air	3.07E-09	1.30E-09	5.54E-09
7446-14-2	Lead(II) sulfate	Water	3.68E-10	3.06E-10	4.09E-10
7446-14-2	Lead(II) sulfate	Soil	2.26E-10	1.88E-10	2.51E-10
7758-95-4	Lead chloride	Air	5.15E-08	2.19E-08	9.28E-08
7758-95-4	Lead chloride	Water	6.17E-09	5.13E-09	6.85E-09
7758-95-4	Lead chloride	Soil	3.79E-09	3.16E-09	4.21E-09
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Air	1.35E-09	5.72E-10	2.43E-09
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Water	1.61E-10	1.34E-10	1.79E-10
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	Soil	9.93E-11	8.26E-11	1.10E-10
10099-74-8	Nitric acid, Lead (2+) salt	Air	2.06E-06	8.74E-07	3.71E-06
10099-74-8	Nitric acid, Lead (2+) salt	Water	2.47E-07	2.05E-07	2.74E-07
10099-74-8	Nitric acid, Lead (2+) salt	Soil	1.52E-07	1.26E-07	1.69E-07
13231-90-8	Dichlorodiethylplumbane	Air	1.80E-09	7.62E-10	3.24E-09
13231-90-8	Dichlorodiethylplumbane	Water	2.15E-10	1.79E-10	2.39E-10
13231-90-8	Dichlorodiethylplumbane	Soil	1.32E-10	1.10E-10	1.47E-10
13826-65-8	Nitrous acid, Lead (2+) salt	Air	5.97E-09	2.53E-09	1.08E-08
13826-65-8	Nitrous acid, Lead (2+) salt	Water	7.15E-10	5.95E-10	7.94E-10
13826-65-8	Nitrous acid, Lead (2+) salt	Soil	4.40E-10	3.66E-10	4.88E-10
15245-44-0	Lead styphnate	Air	1.53E-07	6.50E-08	2.76E-07
15245-44-0	Lead styphnate	Water	1.84E-08	1.53E-08	2.04E-08
15245-44-0	Lead styphnate	Soil	1.13E-08	9.40E-09	1.25E-08
7782-49-2	Selenium	Air	1.59E-08	6.16E-09	3.07E-08
7782-49-2	Selenium	Water	2.41E-09	1.82E-09	2.86E-09
7782-49-2	Selenium	Soil	1.10E-09	8.34E-10	1.31E-09
54-64-8	Ethyl(2-mercaptobenzoato-s)mercury sodium salt	Air	7.88E-10	2.42E-10	2.89E-09
54-64-8	Ethyl(2-mercaptobenzoato-s)mercury sodium salt	Water	7.08E-10	5.69E-10	8.04E-10
54-64-8	Ethyl(2-mercaptobenzoato-s)mercury sodium salt	Soil	3.36E-10	2.70E-10	3.81E-10
62-38-4	(Acetato-o)phenylmercury	Air	1.84E-06	5.65E-07	6.76E-06
62-38-4	(Acetato-o)phenylmercury	Water	1.65E-06	1.33E-06	1.88E-06
62-38-4	(Acetato-o)phenylmercury	Soil	7.84E-07	6.30E-07	8.90E-07

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
102-99-8	(Acetato)-3-pyridyl mercury	Air	3.10E-09	9.53E-10	1.14E-08
102-99-8	(Acetato)-3-pyridyl mercury	Water	2.79E-09	2.24E-09	3.16E-09
102-99-8	(Acetato)-3-pyridyl mercury	Soil	1.32E-09	1.06E-09	1.50E-09
107-27-7	Chloroethylmercury	Air	1.31E-07	4.04E-08	4.83E-07
107-27-7	Chloroethylmercury	Water	1.18E-07	9.49E-08	1.34E-07
107-27-7	Chloroethylmercury	Soil	5.59E-08	4.50E-08	6.35E-08
115-09-3	Chloromethylmercury	Air	4.39E-06	1.35E-06	1.61E-05
115-09-3	Chloromethylmercury	Water	3.94E-06	3.17E-06	4.48E-06
115-09-3	Chloromethylmercury	Soil	1.87E-06	1.50E-06	2.12E-06
123-88-6	Chloro(2-methoxyethyl)mercury	Air	1.42E-08	4.35E-09	5.20E-08
123-88-6	Chloro(2-methoxyethyl)mercury	Water	1.27E-08	1.02E-08	1.45E-08
123-88-6	Chloro(2-methoxyethyl)mercury	Soil	6.03E-09	4.85E-09	6.85E-09
502-39-6	(Cyanoguanidinato-N')methylmercury	Air	2.59E-07	7.97E-08	9.52E-07
502-39-6	(Cyanoguanidinato-N')methylmercury	Water	2.33E-07	1.87E-07	2.65E-07
502-39-6	(Cyanoguanidinato-N')methylmercury	Soil	1.10E-07	8.88E-08	1.25E-07
1184-57-2	Methylmercury hydroxide	Air	3.45E-07	1.06E-07	1.27E-06
1184-57-2	Methylmercury hydroxide	Water	3.10E-07	2.49E-07	3.52E-07
1184-57-2	Methylmercury hydroxide	Soil	1.47E-07	1.18E-07	1.67E-07
1192-89-8	Bromophenylmercury	Air	7.41E-09	2.28E-09	2.72E-08
1192-89-8	Bromophenylmercury	Water	6.66E-09	5.36E-09	7.57E-09
1192-89-8	Bromophenylmercury	Soil	3.16E-09	2.54E-09	3.59E-09
1600-27-7	Mercuric acetate	Air	7.06E-07	2.17E-07	2.60E-06
1600-27-7	Mercuric acetate	Water	6.35E-07	5.10E-07	7.21E-07
1600-27-7	Mercuric acetate	Soil	3.01E-07	2.42E-07	3.42E-07
2235-25-8	Lignasan	Air	1.04E-08	3.19E-09	3.82E-08
2235-25-8	Lignasan	Water	9.33E-09	7.51E-09	1.06E-08
2235-25-8	Lignasan	Soil	4.42E-09	3.56E-09	5.03E-09
7439-97-6	Mercury	Air	4.58E-07	1.41E-07	1.68E-06
7439-97-6	Mercury	Water	4.11E-07	3.31E-07	4.67E-07
7439-97-6	Mercury	Soil	1.95E-07	1.57E-07	2.21E-07
7487-94-7	Mercuric chloride	Air	3.60E-07	1.11E-07	1.32E-06
7487-94-7	Mercuric chloride	Water	3.23E-07	2.60E-07	3.67E-07
7487-94-7	Mercuric chloride	Soil	1.53E-07	1.23E-07	1.74E-07
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Air	6.56E-07	2.02E-07	2.41E-06
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Water	5.89E-07	4.74E-07	6.69E-07
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Soil	2.79E-07	2.25E-07	3.17E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Air	2.18E-07	6.70E-08	8.01E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Water	1.96E-07	1.58E-07	2.23E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Soil	9.29E-08	7.47E-08	1.06E-07
7783-36-0	Sulfuric acid, Dimercury (1+) salt	Air	1.09E-09	3.35E-10	4.00E-09
7783-36-0	Sulfuric acid, Dimercury (1+) salt	Water	9.79E-10	7.87E-10	1.11E-09
7783-36-0	Sulfuric acid, Dimercury (1+) salt	Soil	4.64E-10	3.73E-10	5.27E-10

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
10045-94-0	Mercuric nitrate	Air	1.70E-06	5.22E-07	6.24E-06
10045-94-0	Mercuric nitrate	Water	1.53E-06	1.23E-06	1.73E-06
10045-94-0	Mercuric nitrate	Soil	7.23E-07	5.82E-07	8.22E-07
10112-91-1	Mercury chloride	Air	4.22E-07	1.30E-07	1.55E-06
10112-91-1	Mercury chloride	Water	3.79E-07	3.05E-07	4.30E-07
10112-91-1	Mercury chloride	Soil	1.80E-07	1.44E-07	2.04E-07
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Air	6.56E-07	2.02E-07	2.41E-06
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Water	5.89E-07	4.74E-07	6.69E-07
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	Soil	2.79E-07	2.25E-07	3.17E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Air	2.18E-07	6.70E-08	8.01E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Water	1.96E-07	1.58E-07	2.23E-07
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	Soil	9.29E-08	7.47E-08	1.06E-07
7783-36-0	Sulfuric acid, Dimercure (1+) salt	Air	1.09E-09	3.35E-10	4.00E-09
7783-36-0	Sulfuric acid, Dimercure (1+) salt	Water	9.79E-10	7.87E-10	1.11E-09
7783-36-0	Sulfuric acid, Dimercure (1+) salt	Soil	4.64E-10	3.73E-10	5.27E-10
10045-94-0	Mercuric nitrate	Air	1.70E-06	5.22E-07	6.24E-06
10045-94-0	Mercuric nitrate	Water	1.53E-06	1.23E-06	1.73E-06
10045-94-0	Mercuric nitrate	Soil	7.23E-07	5.82E-07	8.22E-07
10112-91-1	Mercury chloride	Air	4.22E-07	1.30E-07	1.55E-06
10112-91-1	Mercury chloride	Water	3.79E-07	3.05E-07	4.30E-07
10112-91-1	Mercury chloride	Soil	1.80E-07	1.44E-07	2.04E-07
14235-86-0	[mu-[[[3,3'-Methylenebis[2-naphthalenesulfonato]](2-)]diphenyldimercure	Air	1.59E-08	4.88E-09	5.83E-08
14235-86-0	[mu-[[[3,3'-Methylenebis[2-naphthalenesulfonato]](2-)]diphenyldimercure	Water	1.43E-08	1.15E-08	1.62E-08
14235-86-0	[mu-[[[3,3'-Methylenebis[2-naphthalenesulfonato]](2-)]diphenyldimercure	Soil	6.76E-09	5.44E-09	7.68E-09
22967-92-6	Methyl mercury(1+), Ion	Air	3.36E-05	1.03E-05	1.24E-04
22967-92-6	Methyl mercury(1+), Ion	Water	3.02E-05	2.43E-05	3.43E-05
22967-92-6	Methyl mercury(1+), Ion	Soil	1.43E-05	1.15E-05	1.63E-05
51312-24-4	Mercury chloride	Air	2.23E-07	6.85E-08	8.19E-07
51312-24-4	Mercury chloride	Water	2.00E-07	1.61E-07	2.28E-07
51312-24-4	Mercury chloride	Soil	9.50E-08	7.64E-08	1.08E-07
142-71-2	Acetic acid, Copper(2+) Salt	Air	3.34E-07	1.32E-07	6.29E-07
142-71-2	Acetic acid, Copper(2+) Salt	Water	4.86E-08	3.78E-08	5.65E-08
142-71-2	Acetic acid, Copper(2+) Salt	Soil	2.33E-08	1.82E-08	2.71E-08
1317-39-1	Copper oxide	Air	5.94E-07	2.36E-07	1.12E-06
1317-39-1	Copper oxide	Water	8.66E-08	6.74E-08	1.01E-07
1317-39-1	Copper oxide	Soil	4.15E-08	3.23E-08	4.83E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
1330-38-7	(29H,31H-Phthalocyaninedisulfonate (2-)-N29,N20,N31,N32)copper, Disodium salt	Air	8.66E-10	3.44E-10	1.63E-09
1330-38-7	(29H,31H-Phthalocyaninedisulfonate (2-)-N29,N20,N31,N32)copper, Disodium salt	Water	1.26E-10	9.83E-11	1.47E-10
1330-38-7	(29H,31H-Phthalocyaninedisulfonate (2-)-N29,N20,N31,N32)copper, Disodium salt	Soil	6.05E-11	4.71E-11	7.04E-11
1332-14-5	Sulfuric acid, Copper salt, Basic	Air	6.03E-09	2.40E-09	1.14E-08
1332-14-5	Sulfuric acid, Copper salt, Basic	Water	8.79E-10	6.84E-10	1.02E-09
1332-14-5	Sulfuric acid, Copper salt, Basic	Soil	4.22E-10	3.28E-10	4.90E-10
1332-40-7	Copper chloride mixt. with copper oxide (CuO), Hydrate	Air	6.66E-05	2.65E-05	1.26E-04
1332-40-7	Copper chloride mixt. with copper oxide (CuO), Hydrate	Water	9.71E-06	7.56E-06	1.13E-05
1332-40-7	Copper chloride mixt. with copper oxide (CuO), Hydrate	Soil	4.66E-06	3.62E-06	5.41E-06
1332-65-6	Copper chloride hydroxide	Air	4.92E-09	1.95E-09	9.28E-09
1332-65-6	Copper chloride hydroxide	Water	7.17E-10	5.58E-10	8.33E-10
1332-65-6	Copper chloride hydroxide	Soil	3.44E-10	2.68E-10	4.00E-10
1333-22-8	Copper sulfate, Tribasic	Air	9.55E-07	3.80E-07	1.80E-06
1333-22-8	Copper sulfate, Tribasic	Water	1.39E-07	1.08E-07	1.62E-07
1333-22-8	Copper sulfate, Tribasic	Soil	6.68E-08	5.20E-08	7.77E-08
1338-02-9	Naphthenic acid, Copper salt	Air	9.68E-07	3.85E-07	1.83E-06
1338-02-9	Naphthenic acid, Copper salt	Water	1.41E-07	1.10E-07	1.64E-07
1338-02-9	Naphthenic acid, Copper salt	Soil	6.77E-08	5.27E-08	7.87E-08
1344-67-8	Copper chloride	Air	2.32E-06	9.21E-07	4.38E-06
1344-67-8	Copper chloride	Water	3.38E-07	2.63E-07	3.93E-07
1344-67-8	Copper chloride	Soil	1.62E-07	1.26E-07	1.89E-07
3251-23-8	Nitric acid, Copper(2+) salt	Air	4.93E-06	1.96E-06	9.30E-06
3251-23-8	Nitric acid, Copper(2+) salt	Water	7.18E-07	5.59E-07	8.35E-07
3251-23-8	Nitric acid, Copper(2+) salt	Soil	3.45E-07	2.68E-07	4.01E-07
3251-29-4	Nitric acid, Copper(1+) salt	Air	5.28E-06	2.10E-06	9.96E-06
3251-29-4	Nitric acid, Copper(1+) salt	Water	7.69E-07	5.99E-07	8.94E-07
3251-29-4	Nitric acid, Copper(1+) salt	Soil	3.69E-07	2.87E-07	4.29E-07
4180-12-5	Acetic acid, Copper salt	Air	3.42E-07	1.36E-07	6.46E-07
4180-12-5	Acetic acid, Copper salt	Water	4.99E-08	3.88E-08	5.80E-08
4180-12-5	Acetic acid, Copper salt	Soil	2.39E-08	1.86E-08	2.78E-08
7440-50-8	Copper	Air	2.59E-06	1.03E-06	4.89E-06
7440-50-8	Copper	Water	3.78E-07	2.94E-07	4.39E-07
7440-50-8	Copper	Soil	1.81E-07	1.41E-07	2.11E-07
7447-39-4	Cupric chloride	Air	1.78E-06	7.06E-07	3.35E-06
7447-39-4	Cupric chloride	Water	2.59E-07	2.02E-07	3.01E-07
7447-39-4	Cupric chloride	Soil	1.24E-07	9.67E-08	1.44E-07
7758-89-6	Cuprous chloride	Air	4.33E-07	1.72E-07	8.17E-07
7758-89-6	Cuprous chloride	Water	6.31E-08	4.91E-08	7.34E-08
7758-89-6	Cuprous chloride	Soil	3.03E-08	2.36E-08	3.52E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
7758-98-7	Sulfuric acid, Copper(2+) salt(1:1)	Air	1.16E-06	4.62E-07	2.19E-06
7758-98-7	Sulfuric acid, Copper(2+) salt(1:1)	Water	1.69E-07	1.32E-07	1.97E-07
7758-98-7	Sulfuric acid, Copper(2+) salt(1:1)	Soil	8.13E-08	6.33E-08	9.45E-08
7758-99-8	Sulfuric acid copper (2+) salt (1:1), Pentahydrate	Air	3.38E-06	1.34E-06	6.38E-06
7758-99-8	Sulfuric acid copper (2+) salt (1:1), Pentahydrate	Water	4.93E-07	3.84E-07	5.73E-07
7758-99-8	Sulfuric acid copper (2+) salt (1:1), Pentahydrate	Soil	2.36E-07	1.84E-07	2.75E-07
8066-21-5	[[[1,2-Ethanedithiolbis(carbamodithioato)](2-)]zinc mixt. with Copper chloride (CuCl ₂) and Copper oxide (CuO) hydrate	Air	1.08E-08	4.29E-09	2.04E-08
8066-21-5	[[[1,2-Ethanedithiolbis(carbamodithioato)](2-)]zinc mixt. with Copper chloride (CuCl ₂) and Copper oxide (CuO) hydrate	Water	1.57E-09	1.23E-09	1.83E-09
8066-21-5	[[[1,2-Ethanedithiolbis(carbamodithioato)](2-)]zinc mixt. with Copper chloride (CuCl ₂) and Copper oxide (CuO) hydrate	Soil	7.55E-10	5.88E-10	8.78E-10
10380-28-6	Bis(8-quinolinolato-N1,08)copper	Air	1.63E-07	6.46E-08	3.07E-07
10380-28-6	Bis(8-quinolinolato-N1,08)copper	Water	2.37E-08	1.85E-08	2.76E-08
10380-28-6	Bis(8-quinolinolato-N1,08)copper	Soil	1.14E-08	8.85E-09	1.32E-08
12002-03-8	Bis(acetato)hexametaarsenitetraacopper	Air	6.69E-09	2.66E-09	1.26E-08
12002-03-8	Bis(acetato)hexametaarsenitetraacopper	Water	9.74E-10	7.59E-10	1.13E-09
12002-03-8	Bis(acetato)hexametaarsenitetraacopper	Soil	4.67E-10	3.64E-10	5.44E-10
14025-15-1	[[[N,N'-1,2-Ethanedithiolbis[N-(carboxymethyl)glycinato]](4-)-N,N',O,O',O'',O'''-cuprate (2-), Disodium	Air	8.05E-11	3.20E-11	1.52E-10
14025-15-1	[[[N,N'-1,2-Ethanedithiolbis[N-(carboxymethyl)glycinato]](4-)-N,N',O,O',O'',O'''-cuprate (2-), Disodium	Water	1.17E-11	9.13E-12	1.36E-11
14025-15-1	[[[N,N'-1,2-Ethanedithiolbis[N-(carboxymethyl)glycinato]](4-)-N,N',O,O',O'',O'''-cuprate (2-), Disodium	Soil	5.63E-12	4.38E-12	6.55E-12
14729-82-9	Hydrazine compd. with copper sulfate	Air	2.74E-07	1.09E-07	5.18E-07
14729-82-9	Hydrazine compd. with copper sulfate	Water	4.00E-08	3.11E-08	4.65E-08
14729-82-9	Hydrazine compd. with copper sulfate	Soil	1.92E-08	1.49E-08	2.23E-08
15773-35-0	Pentachlorophenol copper salt	Air	1.82E-06	7.23E-07	3.43E-06
15773-35-0	Pentachlorophenol copper salt	Water	2.65E-07	2.06E-07	3.08E-07
15773-35-0	Pentachlorophenol copper salt	Soil	1.27E-07	9.90E-08	1.48E-07

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
16071-86-6	Copper, (5-((4'-((2,5-Dihydroxy-4-((2-hydroxy-5-sulfophenyl)azo)phenyl)azo)(1,1'-biphenyl)-4-yl)azo)-2-hydroxybenzoate(2-	Air	8.66E-10	3.44E-10	1.63E-09
16071-86-6	Copper, (5-((4'-((2,5-Dihydroxy-4-((2-hydroxy-5-sulfophenyl)azo)phenyl)azo)(1,1'-biphenyl)-4-yl)azo)-2-hydroxybenzoate(2-	Water	1.26E-10	9.83E-11	1.47E-10
16071-86-6	Copper, (5-((4'-((2,5-Dihydroxy-4-((2-hydroxy-5-sulfophenyl)azo)phenyl)azo)(1,1'-biphenyl)-4-yl)azo)-2-hydroxybenzoate(2-	Soil	6.05E-11	4.71E-11	7.04E-11
20427-59-2	Copper hydroxide (Cu(OH)2)	Air	9.84E-09	3.91E-09	1.86E-08
20427-59-2	Copper hydroxide (Cu(OH)2)	Water	1.43E-09	1.12E-09	1.67E-09
20427-59-2	Copper hydroxide (Cu(OH)2)	Soil	6.88E-10	5.36E-10	8.00E-10
28275-80-1	Copper-bis(ethylenediamine) dodecylbenzenesulfonate)	Air	8.60E-08	3.42E-08	1.62E-07
28275-80-1	Copper-bis(ethylenediamine) dodecylbenzenesulfonate)	Water	1.25E-08	9.76E-09	1.46E-08
28275-80-1	Copper-bis(ethylenediamine) dodecylbenzenesulfonate)	Soil	6.01E-09	4.68E-09	6.99E-09
28407-37-6	C.I. Direct Blue 218	Air	8.66E-10	3.44E-10	1.63E-09
28407-37-6	C.I. Direct Blue 218	Water	1.26E-10	9.83E-11	1.47E-10
28407-37-6	C.I. Direct Blue 218	Soil	6.05E-11	4.71E-11	7.04E-11
29204-93-1	Copper-2-hydroxy-1,4-naphthoquinone	Air	2.04E-08	8.11E-09	3.85E-08
29204-93-1	Copper-2-hydroxy-1,4-naphthoquinone	Water	2.97E-09	2.32E-09	3.46E-09
29204-93-1	Copper-2-hydroxy-1,4-naphthoquinone	Soil	1.43E-09	1.11E-09	1.66E-09
31089-39-1	2,2',2''-Nitrilotrisethanol copper salt	Air	3.36E-02	1.33E-02	6.35E-02
31089-39-1	2,2',2''-Nitrilotrisethanol copper salt	Water	4.88E-03	3.80E-03	5.68E-03
31089-39-1	2,2',2''-Nitrilotrisethanol copper salt	Soil	2.34E-03	1.82E-03	2.72E-03
37337-13-6	Arsenic acid (H3AsO4), Chromated copper salt (2:3)	Air	4.22E-07	1.68E-07	7.97E-07
37337-13-6	Arsenic acid (H3AsO4), Chromated copper salt (2:3)	Water	6.16E-08	4.79E-08	7.16E-08
37337-13-6	Arsenic acid (H3AsO4), Chromated copper salt (2:3)	Soil	2.95E-08	2.30E-08	3.43E-08
51913-71-4	Copper(II)bis-N,N-dihydroxyethylglycine	Air	7.93E-07	3.15E-07	1.50E-06
51913-71-4	Copper(II)bis-N,N-dihydroxyethylglycine	Water	1.16E-07	9.00E-08	1.34E-07
51913-71-4	Copper(II)bis-N,N-dihydroxyethylglycine	Soil	5.55E-08	4.32E-08	6.45E-08
52769-67-2	Komeen (copper-ethylenediamine complex(elemental copper 8%))	Air	9.98E-07	3.97E-07	1.88E-06
52769-67-2	Komeen (copper-ethylenediamine complex(elemental copper 8%))	Water	1.46E-07	1.13E-07	1.69E-07
52769-67-2	Komeen (copper-ethylenediamine complex(elemental copper 8%))	Soil	6.98E-08	5.43E-08	8.12E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
61912-87-6	Copper Count-N	Air	7.90E-07	3.14E-07	1.49E-06
61912-87-6	Copper Count-N	Water	1.15E-07	8.97E-08	1.34E-07
61912-87-6	Copper Count-N	Soil	5.52E-08	4.30E-08	6.42E-08
66845-29-2	Copper-2-oxy-3-chloro-1,4-naphthoquinone	Air	3.16E-08	1.26E-08	5.96E-08
66845-29-2	Copper-2-oxy-3-chloro-1,4-naphthoquinone	Water	4.61E-09	3.59E-09	5.36E-09
66845-29-2	Copper-2-oxy-3-chloro-1,4-naphthoquinone	Soil	2.21E-09	1.72E-09	2.57E-09
1111-67-7	Thiocyanic acid, Copper(1+)salt	Air	9.60E-07	3.81E-07	1.81E-06
1111-67-7	Thiocyanic acid, Copper(1+)salt	Water	1.40E-07	1.09E-07	1.63E-07
1111-67-7	Thiocyanic acid, Copper(1+)salt	Soil	6.71E-08	5.22E-08	7.80E-08
557-34-6	Zinc acetate	Air	6.80E-08	2.75E-08	1.26E-07
557-34-6	Zinc acetate	Water	9.72E-09	7.72E-09	1.11E-08
557-34-6	Zinc acetate	Soil	4.78E-09	3.79E-09	5.48E-09
1314-13-2	Zinc oxide	Air	1.36E-08	5.49E-09	2.52E-08
1314-13-2	Zinc oxide	Water	1.94E-09	1.54E-09	2.22E-09
1314-13-2	Zinc oxide	Soil	9.53E-10	7.57E-10	1.09E-09
1314-98-3	Zinc sulfide	Air	8.35E-09	3.38E-09	1.55E-08
1314-98-3	Zinc sulfide	Water	1.19E-09	9.48E-10	1.37E-09
1314-98-3	Zinc sulfide	Soil	5.87E-10	4.66E-10	6.73E-10
1332-07-6	Boric acid, Zinc salt	Air	3.27E-09	1.32E-09	6.08E-09
1332-07-6	Boric acid, Zinc salt	Water	4.67E-10	3.71E-10	5.36E-10
1332-07-6	Boric acid, Zinc salt	Soil	2.30E-10	1.82E-10	2.63E-10
1405-89-6	Zinc bacitracin	Air	3.52E-09	1.43E-09	6.55E-09
1405-89-6	Zinc bacitracin	Water	5.04E-10	4.00E-10	5.77E-10
1405-89-6	Zinc bacitracin	Soil	2.48E-10	1.97E-10	2.84E-10
3486-35-9	Carbonic acid, Zinc salt (1:1)	Air	1.97E-11	7.98E-12	3.67E-11
3486-35-9	Carbonic acid, Zinc salt (1:1)	Water	2.82E-12	2.24E-12	3.23E-12
3486-35-9	Carbonic acid, Zinc salt (1:1)	Soil	1.39E-12	1.10E-12	1.59E-12
7440-66-6	Zinc	Air	1.15E-07	4.68E-08	2.15E-07
7440-66-6	Zinc	Water	1.65E-08	1.31E-08	1.89E-08
7440-66-6	Zinc	Soil	8.11E-09	6.44E-09	9.30E-09
7446-20-0	Sulfuric acid, Zinc salt (1:1), Heptahydrate	Air	3.91E-08	1.58E-08	7.27E-08
7446-20-0	Sulfuric acid, Zinc salt (1:1), Heptahydrate	Water	5.59E-09	4.44E-09	6.40E-09
7446-20-0	Sulfuric acid, Zinc salt (1:1), Heptahydrate	Soil	2.75E-09	2.18E-09	3.15E-09
7646-85-7	Zinc chloride	Air	2.06E-06	8.35E-07	3.83E-06
7646-85-7	Zinc chloride	Water	2.95E-07	2.34E-07	3.38E-07
7646-85-7	Zinc chloride	Soil	1.45E-07	1.15E-07	1.66E-07
7699-45-8	Zinc bromide	Air	1.86E-07	7.52E-08	3.45E-07
7699-45-8	Zinc bromide	Water	2.65E-08	2.11E-08	3.04E-08
7699-45-8	Zinc bromide	Soil	1.30E-08	1.04E-08	1.50E-08
7733-02-0	Sulfuric acid, Zinc salt (1:1)	Air	1.67E-07	6.78E-08	3.11E-07
7733-02-0	Sulfuric acid, Zinc salt (1:1)	Water	2.39E-08	1.90E-08	2.74E-08
7733-02-0	Sulfuric acid, Zinc salt (1:1)	Soil	1.18E-08	9.34E-09	1.35E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
1309-64-4	Antimony trioxide	Air	1.61E-07	6.23E-08	3.10E-07
1309-64-4	Antimony trioxide	Water	2.40E-08	1.82E-08	2.85E-08
1309-64-4	Antimony trioxide	Soil	1.12E-08	8.48E-09	1.32E-08
7440-36-0	Antimony	Air	8.01E-08	3.10E-08	1.54E-07
7440-36-0	Antimony	Water	1.20E-08	9.09E-09	1.42E-08
7440-36-0	Antimony	Soil	5.56E-09	4.22E-09	6.59E-09
10025-91-9	Antimony trichloride	Air	3.65E-08	1.41E-08	7.02E-08
10025-91-9	Antimony trichloride	Water	5.45E-09	4.14E-09	6.47E-09
10025-91-9	Antimony trichloride	Soil	2.53E-09	1.92E-09	3.00E-09
28300-74-5	Bis[μ-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-Antimonate(2-) dipotassium trihydrate stereoisomer	Air	1.28E-08	4.95E-09	2.46E-08
28300-74-5	Bis[μ-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-Antimonate(2-) dipotassium trihydrate stereoisomer	Water	1.91E-09	1.45E-09	2.26E-09
28300-74-5	Bis[μ-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-Antimonate(2-) dipotassium trihydrate stereoisomer	Soil	8.87E-10	6.74E-10	1.05E-09
126506-93-2	2-Hydroxy-1,3,2-dioxastilbolane-4,5-dicarboxylic acid 2-oxide	Air	3.09E-09	1.20E-09	5.94E-09
126506-93-2	2-Hydroxy-1,3,2-dioxastilbolane-4,5-dicarboxylic acid 2-oxide	Water	4.61E-10	3.50E-10	5.46E-10
126506-93-2	2-Hydroxy-1,3,2-dioxastilbolane-4,5-dicarboxylic acid 2-oxide	Soil	2.14E-10	1.63E-10	2.54E-10
56-35-9	Hexabutylstannoxane	Air	2.06E-05	8.65E-06	3.75E-05
56-35-9	Hexabutylstannoxane	Water	2.17E-06	1.79E-06	2.43E-06
56-35-9	Hexabutylstannoxane	Soil	1.56E-06	1.29E-06	1.75E-06
56-36-0	(Acetyloxy)tributylstannane	Air	3.65E-05	1.53E-05	6.62E-05
56-36-0	(Acetyloxy)tributylstannane	Water	3.84E-06	3.16E-06	4.30E-06
56-36-0	(Acetyloxy)tributylstannane	Soil	2.76E-06	2.27E-06	3.09E-06
76-87-9	Hydroxytriphenylstannane	Air	1.72E-03	7.23E-04	3.13E-03
76-87-9	Hydroxytriphenylstannane	Water	1.82E-04	1.49E-04	2.03E-04
76-87-9	Hydroxytriphenylstannane	Soil	1.31E-04	1.07E-04	1.46E-04
77-58-7	Dibutylbis[(1-oxododecyl)oxy]stannane	Air	1.27E-05	5.35E-06	2.32E-05
77-58-7	Dibutylbis[(1-oxododecyl)oxy]stannane	Water	1.34E-06	1.10E-06	1.50E-06
77-58-7	Dibutylbis[(1-oxododecyl)oxy]stannane	Soil	9.66E-07	7.94E-07	1.08E-06
78-04-6	2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	Air	4.35E-03	1.82E-03	7.91E-03
78-04-6	2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	Water	4.58E-04	3.77E-04	5.13E-04
78-04-6	2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	Soil	3.30E-04	2.71E-04	3.69E-04
379-52-2	Triphenyltin fluoride	Air	6.54E-06	2.74E-06	1.19E-05
379-52-2	Triphenyltin fluoride	Water	6.89E-07	5.66E-07	7.71E-07
379-52-2	Triphenyltin fluoride	Soil	4.95E-07	4.07E-07	5.55E-07

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
594-27-4	Tetramethylstannane	Air	6.69E-04	2.80E-04	1.22E-03
594-27-4	Tetramethylstannane	Water	7.04E-05	5.79E-05	7.89E-05
594-27-4	Tetramethylstannane	Soil	5.07E-05	4.17E-05	5.67E-05
595-90-4	Tetraphenylstannane	Air	1.78E-01	7.40E-02	3.26E-01
595-90-4	Tetraphenylstannane	Water	1.85E-02	1.52E-02	2.07E-02
595-90-4	Tetraphenylstannane	Soil	1.33E-02	1.09E-02	1.49E-02
639-58-7	Chlorotriphenylstannane	Air	6.09E-05	2.55E-05	1.11E-04
639-58-7	Chlorotriphenylstannane	Water	6.42E-06	5.27E-06	7.19E-06
639-58-7	Chlorotriphenylstannane	Soil	4.62E-06	3.80E-06	5.17E-06
683-18-1	Dibutylchlorostannane	Air	1.28E-03	5.38E-04	2.34E-03
683-18-1	Dibutylchlorostannane	Water	1.35E-04	1.11E-04	1.51E-04
683-18-1	Dibutylchlorostannane	Soil	9.73E-05	7.99E-05	1.09E-04
753-73-1	Dichlorodimethylstannane	Air	8.86E-04	3.71E-04	1.61E-03
753-73-1	Dichlorodimethylstannane	Water	9.33E-05	7.67E-05	1.04E-04
753-73-1	Dichlorodimethylstannane	Soil	6.71E-05	5.52E-05	7.51E-05
818-08-6	Dibutylloxostannane	Air	7.19E-03	3.00E-03	1.31E-02
818-08-6	Dibutylloxostannane	Water	7.53E-04	6.19E-04	8.43E-04
818-08-6	Dibutylloxostannane	Soil	5.42E-04	4.45E-04	6.07E-04
900-95-8	(Acetyloxy)triphenylstannane	Air	1.14E-04	4.78E-05	2.07E-04
900-95-8	(Acetyloxy)triphenylstannane	Water	1.20E-05	9.88E-06	1.35E-05
900-95-8	(Acetyloxy)triphenylstannane	Soil	8.65E-06	7.11E-06	9.69E-06
993-16-8	Trichloromethyl stannane	Air	9.11E-06	3.82E-06	1.66E-05
993-16-8	Trichloromethyl stannane	Water	9.60E-07	7.89E-07	1.07E-06
993-16-8	Trichloromethyl stannane	Soil	6.91E-07	5.68E-07	7.73E-07
1118-46-3	Butyltrichlorostannane	Air	3.32E-03	1.39E-03	6.04E-03
1118-46-3	Butyltrichlorostannane	Water	3.50E-04	2.88E-04	3.92E-04
1118-46-3	Butyltrichlorostannane	Soil	2.52E-04	2.07E-04	2.82E-04
1461-22-9	Tributylchlorostannane	Air	3.26E-05	1.37E-05	5.93E-05
1461-22-9	Tributylchlorostannane	Water	3.44E-06	2.83E-06	3.85E-06
1461-22-9	Tributylchlorostannane	Soil	2.47E-06	2.03E-06	2.77E-06
1461-25-2	Tetrabutylstannane	Air	4.65E-06	1.95E-06	8.46E-06
1461-25-2	Tetrabutylstannane	Water	4.90E-07	4.03E-07	5.49E-07
1461-25-2	Tetrabutylstannane	Soil	3.53E-07	2.90E-07	3.95E-07
2155-70-6	Tributyl[(2-methyl-1-oxo-2-propenyl)oxy]stannane	Air	1.02E-05	4.28E-06	1.85E-05
2155-70-6	Tributyl[(2-methyl-1-oxo-2-propenyl)oxy]stannane	Water	1.08E-06	8.84E-07	1.20E-06
2155-70-6	Tributyl[(2-methyl-1-oxo-2-propenyl)oxy]stannane	Soil	7.74E-07	6.36E-07	8.66E-07
2279-76-7	Chlorotripropylstannane	Air	7.23E-02	3.02E-02	1.32E-01
2279-76-7	Chlorotripropylstannane	Water	7.57E-03	6.22E-03	8.48E-03
2279-76-7	Chlorotripropylstannane	Soil	5.45E-03	4.48E-03	6.10E-03
7440-02-0	Nickel	Air	3.52E-06	1.37E-06	6.75E-06
7440-02-0	Nickel	Water	5.01E-07	3.82E-07	5.93E-07
7440-02-0	Nickel	Soil	2.48E-07	1.89E-07	2.93E-07
373-02-4	Acetic acid, Nickel(2+)salt	Air	1.38E-07	5.37E-08	2.65E-07
373-02-4	Acetic acid, Nickel(2+)salt	Water	1.97E-08	1.50E-08	2.33E-08
373-02-4	Acetic acid, Nickel(2+)salt	Soil	9.73E-09	7.40E-09	1.15E-08

Table C.3: Damage factor of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	Damage factors on biodiversity (EINES/kg emitted)			
		Compartment	Value	Min	Max
7718-54-9	Nickelous chloride	Air	2.31E-04	8.96E-05	4.43E-04
7718-54-9	Nickelous chloride	Water	3.29E-05	2.50E-05	3.89E-05
7718-54-9	Nickelous chloride	Soil	1.62E-05	1.24E-05	1.92E-05
7786-81-4	Sulfuric acid, Nickel(2+)salt (1:1)	Air	9.78E-08	3.80E-08	1.88E-07
7786-81-4	Sulfuric acid, Nickel(2+)salt (1:1)	Water	1.39E-08	1.06E-08	1.65E-08
7786-81-4	Sulfuric acid, Nickel(2+)salt (1:1)	Soil	6.89E-09	5.24E-09	8.14E-09
13138-45-9	Nickelous nitrate	Air	1.42E-08	5.52E-09	2.73E-08
13138-45-9	Nickelous nitrate	Water	2.02E-09	1.54E-09	2.39E-09
13138-45-9	Nickelous nitrate	Soil	1.00E-09	7.62E-10	1.18E-09
13927-77-0	(SP-4-1)-Bis(dibutylcarbamodithioato- κ .S, κ .S')-nickel	Air	1.76E-09	6.83E-10	3.38E-09
13927-77-0	(SP-4-1)-Bis(dibutylcarbamodithioato- κ .S, κ .S')-nickel	Water	2.50E-10	1.91E-10	2.96E-10
13927-77-0	(SP-4-1)-Bis(dibutylcarbamodithioato- κ .S, κ .S')-nickel	Soil	1.24E-10	9.42E-11	1.46E-10
14220-17-8	(SP-4-1)-Tetrakis(cyano-c)nickelate, Dipotassium	Air	2.19E-09	8.52E-10	4.21E-09
14220-17-8	(SP-4-1)-Tetrakis(cyano-c)nickelate, Dipotassium	Water	3.12E-10	2.38E-10	3.69E-10
14220-17-8	(SP-4-1)-Tetrakis(cyano-c)nickelate, Dipotassium	Soil	1.54E-10	1.17E-10	1.82E-10
7440-41-7	Beryllium	Air	1.32E-06	5.12E-07	2.54E-06
7440-41-7	Beryllium	Water	1.99E-07	1.51E-07	2.36E-07
7440-41-7	Beryllium	Soil	9.13E-08	6.94E-08	1.08E-07
7787-47-5	Beryllium chloride	Air	4.95E-08	1.92E-08	9.52E-08
7787-47-5	Beryllium chloride	Water	7.46E-09	5.67E-09	8.84E-09
7787-47-5	Beryllium chloride	Soil	3.43E-09	2.60E-09	4.06E-09
7787-55-5	Beryllium nitrate	Air	9.30E-09	3.60E-09	1.79E-08
7787-55-5	Beryllium nitrate	Water	1.40E-09	1.07E-09	1.66E-09
7787-55-5	Beryllium nitrate	Soil	6.43E-10	4.89E-10	7.62E-10
13327-32-7	Beryllium hydroxide	Air	4.23E-10	1.64E-10	8.14E-10
13327-32-7	Beryllium hydroxide	Water	6.38E-11	4.85E-11	7.55E-11
13327-32-7	Beryllium hydroxide	Soil	2.93E-11	2.22E-11	3.47E-11
13510-49-1	Beryllium sulfate	Air	1.21E-08	4.70E-09	2.33E-08
13510-49-1	Beryllium sulfate	Water	1.83E-09	1.39E-09	2.16E-09
13510-49-1	Beryllium sulfate	Soil	8.39E-10	6.37E-10	9.94E-10
1746-01-6	2,3,7,8-TCDD (Dioxin)	Air	1.48E-06	1.12E-06	1.63E-06
1746-01-6	2,3,7,8-TCDD (Dioxin)	Water	4.15E-06	3.91E-06	4.27E-06
1746-01-6	2,3,7,8-TCDD (Dioxin)	Soil	1.68E-08	1.26E-08	1.88E-08



Appendix D

Eutrophication

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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D.1 Water quality of Songkhla lake

Table D.1: Water quality of Songkla lake

Code area	2009	2010	2011/1					2011/2				
	BOD (mg/l)	BOD (mg/l)	BOD (mg/l)	TP (mg/l)	NO ₂ -N (mg/l)	NO ₃ -N (mg/l)	NH ₃ -N (mg/l)	BOD (mg/l)	TP (mg/l)	NO ₂ -N (mg/l)	NO ₃ -N (mg/l)	NH ₃ -N (mg/l)
UTC01	0.9	2.0	1.3	0.217	0.0001	0.018	0.045	1.9	0.685	0.003	0.162	0.007
UTC02	3.9	1.7	1.2	0.164	0.0001	0.004	0.046	0.5	0.073	0.004	0.051	0.056
UTC03	2.7	5.2	1.5	0.178	0.0001	0.014	0.063	0.7	0.035	0.002	0.129	0.034
UTC04	3.1	3.7	1.7	0.173	0.0001	0.009	0.033	4.2	0.149	0.005	0.049	0.095
UTC05	1.5	3.7	1.4	0.105	0.0003	0.023	0.075	3.9	0.314	0.006	0.343	0.036
UTC06	2.6	4.4	0.9	0.950	0.0001	0.009	0.008	4.1	0.001	0.003	0.966	0.169
UTC07	2.5	1.9	1.2	0.389	0.0029	0.011	0.166	2.8	0.401	0.010	0.132	0.011
UTC08	4.4	2.8	0.8	0.444	0.0033	0.012	0.010	1.2	0.136	0.002	0.163	0.121
UTC09	2.2	3.5	2.3	0.415	0.0000	0.037	0.013	1.2	0.214	0.003	0.120	0.182
UTC10	2.4	2.6	2.3	0.070	0.0090	0.007	0.011	4.6	0.733	0.005	0.215	0.198
UTC11	3.4	3.6	0.5	0.056	0.0050	0.010	0.006	2.0	0.153	0.004	0.260	0.007
UTC12	1.9	3.7	0.8	0.388	0.0030	0.003	0.004	2.9	0.211	0.005	0.077	0.008
UTC13	3.2	3.9	3.6	0.111	0.0030	0.024	0.008	3.5	0.162	0.005	0.099	0.027
UTC14	2.0	4.4	0.9	0.214	0.0080	0.021	0.032	1.4	0.145	0.008	0.188	0.034
UTC15	1.8	3.7	0.8	0.106	0.0040	0.004	0.009	0.7	0.165	0.010	0.148	0.047
UTC16	2.2	4.3	1.2	0.287	0.0050	0.047	0.015	1.2	0.094	0.006	0.061	0.023
UTC17	2.5	4.7	2.3	0.444	0.0070	0.041	0.128	0.9	0.436	0.005	0.395	0.043
UTC18	1.3	4.2	1.0	0.422	0.0780	0.004	0.135	0.9	0.159	0.007	0.028	0.057
UTC19	4.6	5.2	1.3	0.201	0.0080	0.163	0.453	4.7	0.310	0.041	0.599	0.113
UTC20	3.9	4.5	1.1	0.225	0.0060	0.190	0.124	4.4	0.533	0.013	0.285	0.118
UTC21	2.5	4.0	0.3	0.395	0.0050	0.018	0.047	2.6	0.175	0.004	1.138	0.014
UTC22	2.4	2.7	2.5	0.161	0.0050		0.355	3.0	0.358	0.083	1.761	0.002
UTC23	3.4	3.2	2.4	0.626	0.0010		0.128	3.1	0.112	0.075	1.552	0.085
UTC24	3.9	3.3	2.6				0.065	4.3	0.341	0.076	0.136	0.018
UTC25	3.6	2.5	1.3				0.132	2.1	0.354	0.006	0.300	0.058
UTC26	2.4	2.9	0.5				0.059	5.6	0.177	0.012	0.056	0.102
UTC27	2.7	1.6	1.4				0.142	3.7	0.181	0.004	0.154	0.134
UTC28	2.4	4.4	2.4				0.085	5.7	0.176	0.002	0.139	0.296
UTC29	2.4	6.5	2.9				0.354	10.8	0.182	0.003	0.119	0.238
UTC30	2.9	3.6		0.389					0.685	0.003	0.162	0.007
UTC31	2.0	3.6		0.444					0.073	0.004	0.051	0.056

Source: Office of Environmental, Songkhla, (2009)-(2011);

Note: 1 data collected during 3-4, 7-9 February 2011; 2 data collected during 23-28 June 2011

D.2 Water quality of Phayao lake

Table D.2: Water quality of Phayao lake

NO₂-N (mg/l)	NO₃-N (mg/l)	NH₃-N (mg/l)	BOD (mg/l)	PO₄³⁻ (mg/l)
0.010	0.01	0.18	3.10	0.20
0.010	0.03	0.18	2.45	0.08
0.003	0.06	0.39	0.93	0.52
0.002	0.01	0.11	1.33	1.18
0.001	0.01	0.28	0.23	0.60
0.004	0.01	0.26	0.23	0.11
0.010	0.01	0.13	1.80	0.14
0.001	0.01	0.21	2.50	0.10
0.001	0.06	0.52	5.13	0.30
0.003	0.01	0.12	2.06	1.71
0.001	0.01	0.26	0.60	0.04
0.004	0.05	0.29	1.60	0.07
0.004	0.01	0.43	2.90	0.98
0.001	0.01	0.43	2.65	0.12
0.001	0.01	0.48	1.86	0.66
0.003	0.01	0.14	1.80	0.85
0.001	0.01	0.29	1.20	0.03
0.004	0.01	0.28	1.80	0.03



Appendix E

Acidification

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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E.1 Estimated air pollution emissions by type from energy consumption

Table E.1: Estimated air pollutant emission by type from energy consumption

Year/Sector	NO _x (10 ³ tons)	SO ₂ (10 ³ tons)
2007 Total	902	520
Transport	253	14
Power	258	359
Manufacturing	187	143
Res. & Com.	33	0
Other	171	4
2008 Total	923	663
Transport	237	11
Power	261	353
Manufacturing	219	295
Res. & Com.	35	0
Other	171	4
2009 Total	905	549
Transport	260	14
Power	253	312
Manufacturing	192	220
Res. & Com.	34	0
Other	166	3
2010 Total	953	559
Transport	271	15
Power	264	303
Manufacturing	205	237
Res. & Com.	39	0
Other	174	4
2011 Total	971	552
Transport	307	14
Power	256	304
Manufacturing	192	231
Res. & Com.	37	0
Other	179	3

Source: DEDE (2011)

E.2 Wet and dry deposition

This study used wet and dry deposition from acid deposition monitoring network in East Asia (EANET) and it can be download in website <http://www.eanet.asia>.

E.2.1 Dry deposition

Table E.2: Annual SO₂ concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok	4.2	2.8	2.5	2.4	3.3	7.3	4.1	0.8	2.1	1.9
	Samutprakarn	4.1	4.7	4.4	5.5	5.9	6.6	6.5	5.8	4.8	4.9
	Patumthani				2.4	1.3	1.6	0.3	1.8	0.5	1.1
	Khanchanaburi	1.0	0.5	1.4	***	1.7	1.2	1.3	1.3	1.6	1.2
	Chiang Mai (Mae Hia)		0.5	0.5	1.4	1.5	1.0	0.8	0.9	0.8	0.6
	Nakhon Ratchasima							2.7	0.4	2.7	0.2

[***]: No data or not measure

Table E.3: Annual HNO₃ concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				0.7	0.9	0.5	1.0	0.5	0.5	0.5
	Samutprakarn										
	Patumthani				0.6	1.3	0.3	0.3	0.8	0.3	0.7
	Khanchanaburi			0.2	***	0.6	N.D.	0.2	N.D.	0.2	0.5
	Chiang Mai (Mae Hia)		0.2	0.2	0.1	0.4	0.4	0.2	0.5	0.4	0.7
	Nakhon Ratchasima							0.6	0.3	0.2	0.2

[***]: No data or not measure

Table E.4: Annual HCl concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				0.7	0.9	1.5	1.5	0.7	0.8	0.9
	Samutprakarn										
	Patumthani				0.5	0.8	0.6	0.4	1.2	0.4	0.9
	Khanchanaburi			0.7	***	0.5	0.1	0.3	0.2	0.3	0.2
	Chiang Mai (Mae Hia)		0.2	0.3	0.2	0.4	0.4	0.5	0.2	0.2	0.3
	Nakhon Ratchasima							1.1	0.3	0.2	0.2

[***]: No data or not measure

Table E.5: Annual HNO₃ concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				5.8	11.1	7.8	10.1	10.2	8.2	8.7
	Samutprakarn										
	Patumthani				6.5	8.5	6.3	2.8	9.2	3.1	8.1
	Khanchanaburi			6.5	***	6.2	1.9	2.1	3.2	2.3	2.6
	Chiang Mai (Mae Hia)		6.5	3.9	6.9	5.5	3.0	3.2	4.7	3.8	5.8
	Nakhon Ratchasima							7.0	2.4	2.6	2.3

[***]: No data or not measure

Table E.6: Annual NO concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok		25.0	21.6	***	15.3	11.2	11.1	11.5	13.6	11.6
	Samutprakarn	23.0	18.9	18.0	14.5	15.5	14.4	16.4	16.7	15.3	15.2
	Patumthani										
	Khanchanaburi	N.D.	1.2	0.3	***	1.0	1.0	0.6	1.8	0.7	0.2
	Chiang Mai (Mae Hia)				7.1	3.0	2.9	2.5	3.1	2.0	2.1
	Nakhon Ratchasima									5.9	***

[***]: No data or not measure

Table E.7: Annual NO₂ concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok	***	25.3	28.5	***	23.8	21.5	23.6	16.4	20.5	23.6
	Samutprakarn	18.4	21.0	15.2	17.6	13.8	16.9	19.3	19.5	16.4	19.0
	Patumthani										
	Khanchanaburi										
	Chiang Mai (Mae Hia)										
	Nakhon Ratchasima										

[***]: No data or not measure

Table E.8: Annual NO_x concentration

Unit: ppb

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok		50.7	50.3	43.7	37.9	32.7	34.6	28.1	34.4	35.2
	Samutprakarn	40.4	38.9	32.7	***	29.0	30.7	35.6	36.2	31.5	34.1
	Patumthani										
	Khanchanaburi	2.5	2.2	4.2	***	3.4	5.5	2.8	3.0	1.2	1.4
	Chiang Mai (Mae Hia)					14.0	8.8	10.4	12.6	10.4	10.8
	Nakhon Ratchasima									16.9	***

[***]: No data or not measure

Table E.9: Annual SO₄²⁻ concentrationUnit: µg/m³

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				3.63	4.02	2.13	4.71	2.97	2.65	2.71
	Samutprakarn										
	Patumthani				2.34	3.46	1.39	3.64	4.69	1.41	3.12
	Khanchanaburi			N.D.	***	5.59	0.15	2.74	3.24	2.54	1.32
	Chiang Mai (Mae Hia)		0.88	2.04	2.11	3.93	1.11	2.22	2.60	1.75	1.97
	Nakhon Ratchasima							3.14	4.80	3.78	3.44

[***]: No data or not measure

Table E.10: Annual NO_3^- in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				1.51	2.07	2.83	1.60	1.51	1.44	1.62
	Samutprakarn										
	Patumthani				0.63	1.11	1.13	0.52	2.02	0.77	1.73
	Khanchanaburi			N.D.	***	0.58	0.06	0.09	0.10	0.15	3.55
	Chiang Mai (Mae Hia)		0.65	0.19	0.28	0.64	0.33	0.67	0.62	0.36	0.66
	Nakhon Ratchasima							0.81	0.48	0.41	0.34

[***]: No data or not measure

Table E.11: Annual Cl^- in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				0.22	1.06	0.59	0.19	0.29	0.18	0.26
	Samutprakarn										
	Patumthani				0.07	0.11	0.31	0.09	0.39	0.07	0.20
	Khanchanaburi			N.D.	***	0.06	0.02	0.08	0.02	0.06	0.04
	Chiang Mai (Mae Hia)		0.09	0.12	0.03	0.30	0.08	0.29	0.11	0.05	0.09
	Nakhon Ratchasima							0.09	0.06	0.06	0.07

[***]: No data or not measure

Table E.12: Annual NH_4^+ in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				1.08	0.71	0.42	1.30	1.29	1.15	0.70
	Samutprakarn										
	Patumthani				0.46	0.73	0.38	1.13	1.37	0.71	1.50
	Khanchanaburi			N.D.	***	1.41	0.04	0.65	0.91	1.10	0.83
	Chiang Mai (Mae Hia)		0.61	0.26	1.23	0.72	0.59	0.67	0.74	0.49	0.58
	Nakhon Ratchasima							0.86	1.37	1.13	0.87

[***]: No data or not measure

Table E.13: Annual Na⁺ in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				0.46	1.53	0.48	0.68	0.38	0.33	0.57
	Samutprakarn										
	Patumthani				0.23	0.54	0.27	0.17	0.40	0.27	0.38
	Khanchanaburi			N.D.	***	0.38	0.01	0.17	0.12	0.17	0.09
	Chiang Mai (Mae Hia)		0.13	0.10	0.12	0.33	0.08	0.21	0.23	0.15	0.48
	Nakhon Ratchasima							0.34	0.28	0.24	0.21

[***]: No data or not measure

Table E.14: Annual Mg²⁺ in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				0.12	0.43	0.10	0.13	0.09	0.08	0.09
	Samutprakarn										
	Patumthani				0.05	0.80	0.05	0.05	0.08	0.06	0.07
	Khanchanaburi			N.D.	***	0.14	N.D.	0.04	0.04	0.10	0.03
	Chiang Mai (Mae Hia)		0.06	0.02	0.32	0.03	0.02	0.22	0.07	0.04	0.04
	Nakhon Ratchasima							0.05	0.06	0.05	0.04

[***]: No data or not measure

Table E.15: Annual Ca²⁺ in PM concentrationUnit: $\mu\text{g}/\text{m}^3$

Country	Name of sites	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	Bangkok				1.17	1.03	1.20	1.39	1.07	0.80	0.88
	Samutprakarn										
	Patumthani				0.77	0.80	0.47	0.17	0.93	0.36	0.90
	Khanchanaburi			0.14	***	0.65	0.06	0.18	0.12	0.22	0.12
	Chiang Mai (Mae Hia)		0.47	0.41	1.17	0.42	0.29	0.61	0.57	0.44	0.72
	Nakhon Ratchasima							0.65	0.23	0.28	0.22

[***]: No data or not measure

E.2.2 Wet deposition

Table E.16: Annual deposition in 2004

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss-SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss-Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	19.8	19.1	19.3	13.7	45.8	12.3	1.96	13.3	13.0	2.59	7.86
	Samutprakarn	20.7	19.5	12.3	16.2	43.5	20.8	6.15	9.88	9.43	2.36	4.29
	Patumthani	17.1	16.6	23.4	13.9	33.2	8.72	1.16	11.1	11.0	1.55	13.3
	Khanchanaburi	4.71	3.96	6.65	13.9	11.7	12.5	1.52	6.65	6.38	2.29	1.18
	Chiang Mai (Mae Hia)	7.95	7.74	7.04	4.40	18.1	3.52	1.62	5.50	5.42	2.10	2.93

Table E.17: Annual deposition in 2005

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss-SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss-Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	19.5	18.7	23.2	12.3	43.4	12.8	2.2	18.6	18.4	3.8	12.7
	Samutprakarn	19.1	17.9	17.9	19.0	37.4	19.8	4.9	9.7	9.3	3.4	3.4
	Patumthani	13.2	12.8	19.6	7.1	31.2	6.6	1.2	8.5	8.3	1.3	12.9
	Khanchanaburi	2.8	2.4	2.5	7.8	5.0	6.7	<1.0	2.5	2.3	1.1	2.9
	Chiang Mai (Mae Hia)	5.9	5.8	8.4	4.2	21.0	<1.0	<1.0	3.8	3.7	1.0	5.9

Table E.18: Annual deposition in 2006

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss-SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss-Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	22.3	21.8	33.0	10.8	56.1	8.7	2.8	18.4	18.2	2.3	6.9
	Samutprakarn	20.7	19.7	14.1	12.5	49.9	14.6	4.3	14.8	14.5	4.6	1.4
	Patumthani	13.4	13.0	22.0	6.8	33.5	7.5	1.7	12.8	12.7	1.8	13.0
	Khanchanaburi	4.0	3.7	6.1	6.3	17.5	6.9	2.4	2.7	2.6	1.0	1.8
	Chiang Mai (Mae Hia)	4.5	4.3	7.9	3.7	15.2	3.5	1.7	4.7	4.7	2.4	2.0
	Nakhon Ratchasima	8.2	8.0	11.3	5.5	23.1	4.5	<1.0	9.5	9.4	2.0	7.6

Table E.19: Annual deposition in 2007

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss- SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss- Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	27.2	26.5	44.1	13.0	91.3	11.2	2.48	21.5	21.3	2.65	14.1
	Samutprakarn	27.7	26.3	31.0	21.0	88.1	22.8	5.38	20.5	20.0	5.03	4.60
	Patumthani	16.6	16.1	31.4	9.17	47.5	7.97	2.23	11.7	11.6	1.77	21.5
	Khanchanaburi	4.20	3.48	5.01	11.3	23.7	12.0	1.21	5.16	4.90	1.70	2.83
	Chiang Mai (Mae Hia)	5.62	5.46	7.47	5.48	17.7	2.75	2.69	7.53	7.47	1.16	1.05
	Nakhon Ratchasima	8.93	8.56	15.7	7.08	25.4	6.17	1.91	5.20	5.07	2.47	11.5

Table E.20: Annual deposition in 2008

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss- SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss- Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	32.0	31.0	55.4	20.1	95.5	17.3	3.61	28.7	28.3	4.15	9.39
	Samutprakarn	27.2	25.6	30.2	22.1	97.8	26.8	10.6	24.0	23.4	6.91	8.81
	Patumthani	17.8	17.2	35.9	11.0	49.6	9.95	2.51	19.4	19.2	2.84	15.4
	Khanchanaburi	7.41	6.33	9.85	20.1	19.8	18.1	2.26	9.00	8.61	3.16	4.30
	Chiang Mai (Mae Hia)	6.38	6.18	11.7	5.90	25.6	3.35	3.38	8.60	8.52	2.29	1.34
	Nakhon Ratchasima	12.7	12.2	19.8	10.2	36.4	7.24	2.13	5.78	5.62	2.11	16.0

Table E.21: Annual deposition in 2009

Unit: $\text{mmol}\cdot\text{m}^{-2}\cdot\text{y}^{-1}$

Name of sites		SO_4^{2-}	nss- SO_4^{2-}	NO_3^-	Cl^-	NH_4^+	Na^+	K^+	Ca^{2+}	nss- Ca^{2+}	Mg^{2+}	H^+
Thailand	Bangkok	26.3	25.1	58.2	15.86	134.4	20.28	4.10	20.8	20.34	3.09	16.71
	Samutprakarn	30.0	28.8	39.7	16.80	81.5	19.9	5.51	26.2	25.8	5.57	14.73
	Patumthani	11.68	11.24	21.8	8.18	43.3	7.34	2.12	12.08	11.92	1.62	9.26
	Khanchanaburi	7.19	6.05	9.10	17.65	52.1	18.95	2.41	9.85	9.44	2.87	4.35
	Chiang Mai (Mae Hia)	4.52	4.36	8.88	5.16	21.2	2.83	1.55	5.98	5.92	2.87	1.26
	Nakhon Ratchasima	8.11	7.90	16.0	5.81	28.8	3.44	1.65	3.19	3.12	1.60	17.1

E.3 Soil pH and Al³⁺Table E.22: Soil pH and Al³⁺

Depth (cm)	Soil Horizon	Extr.H ⁺	Extr.Al ³⁺	ECEC	Al Sat.
		(-----cmol _c kg ⁻¹ -----)			(%)
Typic Palehumult					
0-20	A1	20.8	1.9	6.6	29.1
20-40/49	A2	18.5	4.2	5.5	76.5
49-75	Bt1	11.7	4.4	5	87.6
75-102	Bt2	10.5	3.7	4.4	84.1
102-130	Bt3	8.7	4.5	5.3	84.7
130-154	Bt4	7	4.4	4.7	92.7
154-179	Bt5	5.6	3.9	4.2	91.7
179-200+	Bt6	5.7	3.8	4.6	81.6
Typic Haplohumult					
0-20	A	20.2	0.7	5.5	12.3
20-45	Bt1	15.1	0.9	3	31.4
45-72	Bt2	9	1.3	3.2	41.8
72-101	Bt3	5.3	1.4	3.5	39.5
101-127	Bt4	5.5	1.2	3.1	36.7
127-153	Bt5	5	1.7	3.2	51.9
153-175	Bt6	3.8	1.9	3.5	53.4
175-200+	Bt7	5.7	1.8	3.1	58
170-200+	Btg2	2.1	1.7	2.6	64.2
Typic Haplohumult					
0-18	A	18.3	1.6	4.9	32.2
18-40	Bt1	9.3	2.4	3.7	61.5
40-66	Bt2	6.3	2	2.8	73.6
66-87	Bt3	2.1	2.2	3	67
87-113	Bt4	1.7	1.7	2.6	69.4

Table E.22: Soil pH and Al³⁺ (cont.)

Depth (cm)	Soil Horizon	Extr.H ⁺	Extr.Al ³⁺	ECEC	Al Sat.
		(-----cmol _c kg ⁻¹ -----)			(%)
113-118/146	Bt5	2.6	2.1	3.2	65.7
146-160/170	Bt6	1.8	2.2	3	70.4
170-200+	BCrt	1.4	2	3	70.3
Typic Haplohumult					
0-18	A	14.6	1.5	4.3	34.4
18-39	Bt1	14.2	1.9	2.6	72
39-67	Bt2	6.5	2	3	67.1
67-96	Bt3	1.3	1.5	2	76.4
96-126	Bt4	2.9	1.9	2.5	76.4
126-150	Bt5	2.1	1.6	2.2	74
150-175	Bt6	2.9	1.9	2.5	72.9
175-200+	Bt7	3.7	1.9	2.6	73.9
Typic Palehumult					
0-20	A1	32.9	2.2	3.4	63.5
20-38	A2	16.7	2.3	2.6	86.8
38-64	Bt1	9.4	2	2.5	81.1
64-91	Bt2	4.7	2	2.7	73.3
91-118	Bt3	5.9	1.6	2.6	63.8
118-148	Bt4	6.4	1.2	1.6	75.8
148-170	Bt5	5.9	0.7	1.5	44.8
170-200+	Bt6	6.8	0.7	1.1	63.8
Typic Hapludult					
0-16/29	A	23.2	1.5	2.8	54.6
29-20/82	Bt1	7.9	1.9	2.9	65.2
82-25/125	Bt2	6.1	1.4	2.1	68.9
125-38/164	Bt3	4.6	1.4	2.5	57.3

Table E.22: Soil pH and Al^{3+} (cont.)

Depth (cm)	Soil Horizon	Extr.H ⁺	Extr.Al ³⁺	ECEC	Al Sat.
		(-----cmol _c kg ⁻¹ -----)			(%)
164-105/200	Bt4	4.5	1.5	1.9	77.7
-	BCrt1	4.9	1.1	2	55.2
-	BCrt2	3.4	1.8	3.1	58
Typic Hapludult					
0-18	A	6.9	2.8	4.6	61.8
18-45	Bt1	5.3	1.5	2.9	52.1
45-72	Bt2	3.6	1.6	4.1	39.9
72-105	Bt3	4.9	1.1	2.6	42.2
105-136	Bt4	2.9	1.6	2.9	55.7
136-170	Bt5	2.4	2.1	2.7	78.9
170-200+	BCrt	2.4	1.4	2.2	60.7

Source: Sri-umpai (2010)



Appendix F

Weighting Factor

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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F.1 Questionnaire

สำหรับผู้ตอบแบบสอบถาม

ปัจจุบันผู้จัดทำแบบสอบถามนี้มุ่งเน้นผลตอบรับเชิงบวกเพื่อสร้างความพึงพอใจ
เช่น ความแปรปรวนของสภาพภูมิอากาศ ปัญหาสภาพทางอากาศในเมืองใหญ่
เช่น กรุงเทพมหานคร เป็นต้น ซึ่งปัญหาดังกล่าวมีผลกระทบต่อ
ดำรงชีวิตอยู่ และการมีคุณภาพชีวิตที่ดีของมนุษย์

แบบสอบถามชุดนี้มีวัตถุประสงค์เพื่อให้ท่านนักวิจัยมีความสำคัญของกลุ่ม
ผลกระทบทางสิ่งแวดล้อม 4 ด้าน คือ สุขภาพอนามัยของมนุษย์ สัตว์ทรัพยากรสังคม
ปริมาณผลผลิตประมง และ ความหลากหลายทางชีวภาพ โดยผลการศึกษานี้สามารถ
นำไปสู่แนวทางการจัดการสิ่งแวดล้อมที่นโยบายทางสิ่งแวดล้อมต่อไป

ผู้วิจัย

ข้อที่ 1: ในบรรดาปัญหาดังกล่าวต่อไปนี้ของประเทศไทยที่ระบุไว้ข้างล่าง กรุณาเรียงลำดับ
ความสำคัญ **เพียง 3 อันดับ** โดยใส่เลข (1) ในช่องของปัญหาที่ท่านเห็นว่าสำคัญที่สุด และเลข (2) นักวิทยาศาสตร์ได้แบ่งกลุ่มความเสียหายที่ได้รับผลกระทบออกเป็น 4 กลุ่ม หลัก
สำหรับปัญหาที่ท่านเห็นว่ามีความสำคัญอันดับ 2 และใส่เลข (3) สำหรับปัญหาที่ท่านคิดว่ามีความสำคัญอันดับ 3

- 1) ปัญหาการเปลี่ยนแปลงสภาพภูมิอากาศ
- 2) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 3) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 4) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 5) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 6) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 7) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 8) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 9) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 10) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 11) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 12) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 13) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล
- 14) ปัญหาการเปลี่ยนแปลงของระดับน้ำทะเล

ลำดับที่ 1 เลือกข้อ..... ลำดับที่ 2 เลือกข้อ..... ลำดับที่ 3 เลือกข้อ.....

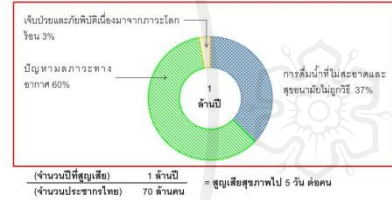
คำชี้แจง: ส่วนประกอบของแบบสอบถามแบ่งออกเป็น 3 ส่วนหลัก คือ

- ส่วนที่ 1: ความคิดเห็นทั่วไป
ส่วนที่ 2: ความเห็นใจ
ส่วนที่ 3: ข้อมูลเศรษฐกิจและสังคม

ความคิดเห็นทั่วไป

ทุกปี เราจะสูญเสียสุขภาพที่ไป 5 วัน ต่อ คน

ปัจจุบันปัญหาสิ่งแวดล้อมเป็นปัญหาที่มีความสำคัญ
ทุกคนได้รับผลกระทบจากปัญหาดังกล่าว โดยพบว่า
อัตราการสูญเสียสุขภาพที่ไปเฉลี่ย 5 วัน ต่อคน
ซึ่งคำนวณได้เป็น 50 ปี พบว่าสูญเสียสุขภาพที่ไปประมาณ 8 เดือนต่อคน



อธิบายความหมายและความเสียหายที่ 4 ด้าน

ทุกปี เราจะสูญเสียทรัพยากรธรรมชาติประมาณ 4,000 ต่อ คน

ปัจจุบันปัญหาสิ่งแวดล้อมเป็นปัญหาที่มีความสำคัญ พบว่า
อัตราการสูญเสียทรัพยากรธรรมชาติประมาณ 4,000 บาทต่อคน
ทรัพยากรธรรมชาติ เช่น ธรณีวิทยาเกษตรกรรม และอื่น ๆ เป็นต้น
ซึ่งคำนวณได้เป็น 50 ปี พบว่าสูญเสียทรัพยากรธรรมชาติประมาณ 200,000 บาทต่อคน



ข้อ 4 คุณคิดว่า การสูญเสียทรัพยากรธรรมชาติมีความสำคัญหรือไม่

- ☐ (1) สำคัญมาก
☐ (2) สำคัญ
☐ (3) สำคัญปานกลาง
☐ (4) สำคัญน้อยมาก
☐ (5) ไม่มีความสำคัญ

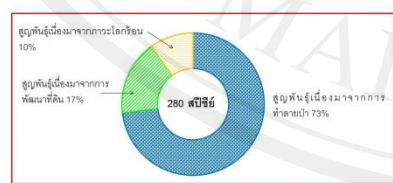
ข้อ 3 คุณคิดว่า การสูญเสียสุขภาพมีความสำคัญหรือไม่

- ☐ (1) สำคัญมาก
☐ (2) สำคัญ
☐ (3) สำคัญปานกลาง
☐ (4) สำคัญน้อยมาก
☐ (5) ไม่มีความสำคัญ

ทุกปี เราจะสูญเสียความหลากหลายทางชีวภาพ 280 สปีชีส์

ปัจจุบันปัญหาสิ่งแวดล้อมทางชีวภาพประมาณ 280 สปีชีส์ เมื่อมาจาก
ปัญหาสิ่งแวดล้อมที่การเปลี่ยนแปลงของระดับน้ำทะเล และอัตราการสูญเสียพันธุ์สัตว์

อัตราการสูญเสียพันธุ์สัตว์จากปัญหาสิ่งแวดล้อมประมาณ 280 สปีชีส์ ต่อปี



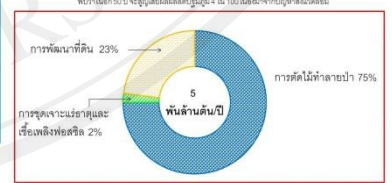
ข้อ 5 คุณคิดว่า การสูญเสียความหลากหลายทางชีวภาพมีความสำคัญหรือไม่

- ☐ (1) สำคัญมาก
☐ (2) สำคัญ
☐ (3) สำคัญปานกลาง
☐ (4) สำคัญน้อยมาก
☐ (5) ไม่มีความสำคัญ

ทุกปี เราจะสูญเสียผลผลิตประมงจากปี 5 พันล้านตัน

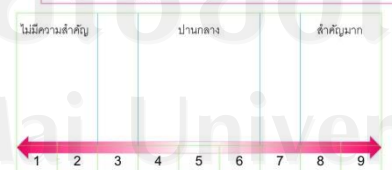
ปัจจุบันทั่วโลก ทุกปี เราสูญเสียผลผลิตประมงจากปี 5 พันล้านตัน
เนื่องมาจากปัญหาสิ่งแวดล้อมที่การเปลี่ยนแปลงของระดับน้ำทะเล และอัตราการสูญเสียพันธุ์สัตว์

อัตราการสูญเสียผลผลิตประมงจากปี 5 พันล้านตัน



คุณคิดว่าในแต่ละด้านที่กล่าวไว้ข้างต้นมีความเสียหายระดับใด

- ข้อที่ 7 ☐ (1) สูญเสียด้านสุขภาพอนามัย (สูญเสียสุขภาพที่ไป 5 วัน ต่อคน ใน 50 ปี)
ข้อที่ 8 ☐ (2) สูญเสียด้านทรัพยากรธรรมชาติ (สูญเสียเงิน 4,000 บาทต่อปี)
ข้อที่ 9 ☐ (3) สูญเสียความหลากหลายทางชีวภาพ (ทุกปี สปีชีส์สูญพันธุ์ไป 280 สปีชีส์)
ข้อที่ 10 ☐ (4) สูญเสียผลผลิตประมง (ใน 50 ปี สูญเสียผลผลิตประมงไป 4 ใน 100)



ข้อ 6 คุณคิดว่า การสูญเสียปริมาณผลผลิตประมงมีความสำคัญหรือไม่

- ☐ (1) สำคัญมาก
☐ (2) สำคัญ
☐ (3) สำคัญปานกลาง
☐ (4) สำคัญน้อยมาก
☐ (5) ไม่มีความสำคัญ

คุณคิดว่า 4 กลุ่มความเสียหายที่กล่าวไว้ข้างต้น
แต่ละกลุ่มมีความเสียหายระดับใด

[illegible]

ข้อที่ 21 ท่านอาศัยอยู่ในภาคใด

- ☐ (1) ภาคกลาง
- ☐ (2) ภาคเหนือ
- ☐ (3) ภาคตะวันออกเฉียงเหนือ
- ☐ (4) ภาคใต้
- ☐ (5) ภาคตะวันออก
- ☐ (6) ภาคตะวันตก

ข้อที่ 22 สมาชิกในครอบครัวของท่าน

- ☐ (1) บิด/มารดา
☐ (2) ปู่/ย่า/ตา/ยาย
☐ (3) ลุง/ป้า/น้า/อา
☐ (4) พี่สาว/พี่ชาย
☐ (5) บุตร
☐ (6) พี่สาว/น้องสาว/พี่ชาย/น้องชาย
☐ (7) หลาน
☐ (8) อื่นๆ

ข้อที่ 23 ระดับการศึกษาของท่าน

- ☐ (1) ประถมศึกษา
☐ (2) มัธยมศึกษาหรือเทียบเท่า
☐ (3) อนุปริญญา
☐ (4) ปริญญาตรี
☐ (5) ปริญญาโทหรือสูงกว่า
☐ (6) ไม่ได้เรียนหนังสือ

ข้อที่ 24 ท่านนับถือศาสนาใด

- ☐ (1) พุทธ
☐ (2) คริสต์
☐ (3) อิสลาม
☐ (4) อื่นๆ.....

ข้อที่ 25 รายได้ของท่านในปัจจุบัน/เดือน

- ☐ (1) ไม่มีรายได้
☐ (2) น้อยกว่า 10,000 บาท
☐ (3) 10,001 – 15,000 บาท
☐ (4) 20,001 – 25,000 บาท
☐ (5) 25,001 – 30,000 บาท
☐ (6) 30,001 – 35,000 บาท
☐ (7) 35,001 – 40,000 บาท
☐ (8) 40,001 – 50,000 บาท
☐ (9) 50,001 – 100,000 บาท
☐ (10) 100,000 บาท ขึ้นไป

ข้อที่ 26 คุณไปต่างประเทศบ่อยหรือไม่

- ☐ (1) อย่างน้อยเดือนละครั้ง
☐ (2) อย่างน้อยปีละ 2 ครั้ง
☐ (3) อย่างน้อยปีละครั้ง
☐ (4) น้อยกว่าที่กล่าวข้างต้น

ข้อที่ 27 ท่านรับทราบข่าวสารเกี่ยวกับทรัพยากรธรรมชาติและสิ่งแวดล้อมจากแหล่งใด (เลือกตอบได้มากกว่า 1 ข้อ)

- ☐ (1) หนังสือพิมพ์
☐ (2) วารสาร/สิ่งพิมพ์
☐ (3) วิทยุ
☐ (4) อินเทอร์เน็ต
☐ (5) โทรทัศน์
☐ (6) อื่นๆ ระบุ.....

ขอขอบพระคุณทุกท่านในการร่วมมือตอบคำถามครั้งนี้

F.2 Source code

Example source code for human health damage using stata program

Source code

```
. probit HH_answer bid female age income status Education Eninportant knowledge Envicri GenPro HealthC3 C7health group
```

Result

Iteration 0: log likelihood = -265.12914

Iteration 1: log likelihood = -234.27337

Iteration 2: log likelihood = -234.15399

Iteration 3: log likelihood = -234.15398

Probit regression

Number of obs = 418

LR chi2(13) = 61.95

Prob > chi2 = 0.0000

Log likelihood = -234.15398

Pseudo R2 = 0.1168

Covariates	Coefficients	Standard error	z	p > z	95% confidence	
					Lower	Upper
Bid	-0.0003897	0.0000664	-5.67	0.000	-.0015705	-.0007639
Group	0.0215424	0.0197166	0.99	0.321	-.0589185	.1795474
Gender	0.0012538	0.0448268	-0.06	0.952	-.2802345	.2636793
Age	-0.0320689	0.0211716	-1.55	0.120	-.227309	.0263485
Income	0.0694568	0.0182728	3.80	0.000	.1081337	.3384791
Marital status	-0.0474337	0.0499909	-1.00	0.319	-.4526463	.1474076
Education	-0.1774731	0.0488341	-3.52	0.000	-.8293831	-.2365185
Environmental damage on area of safeguard attribute	-0.0056859	0.0213638	-0.18	0.854	-.1428186	.1183326
Knowledge	-0.1500055	0.0796243	-1.74	0.081	-.9562298	.0562296
Environmental concern	-0.000439	0.0067664	0.06	0.949	-.0402846	.0430104
General problem concern	0.0177773	0.0079762	2.17	0.030	.0051015	.1019876
Loss of safeguard subject attribute	-0.0350329	0.0232161	-1.57	0.116	-.2481952	.0274241
Loss of damage attribute	-0.004772	0.0146164	-0.42	0.675	-.1067416	.0691496
Constant	1.053158	0.2650133	1.97	0.049	.0081306	3.280192

Source code

```
. summarize gender, meanonly
. scalar gender_m = r(mean)
. summarize age, meanonly
. scalar age_m = r(mean)
. summarize income, meanonly
. scalar income_m = r(mean)
. summarize Marital status, meanonly
. scalar Marital status_m = r(mean)
. summarize Education, meanonly
. scalar Education_m = r(mean)
. scalar Environmental damage on area of safeguard attribute _m = r(mean)
. scalar Environmental damage on area of safeguard attribute _m = r(mean)
. summarize knowledge, meanonly
. scalar knowledge_m = r(mean)
. summarize Environmental concern, meanonly
. scalar Environmental concern _m = r(mean)
. summarize Loss of safeguard subject attribute, meanonly
. scalar H Loss of safeguard subject attribute _m = r(mean)
. summarize group, meanonly
. scalar group_m = r(mean)
. summarize Loss of damage attribute , meanonly
. scalar Loss of damage attribute _m = r(mean)

. nlcom (WTP: -( _b[_cons]+age_m*_b[age]+gender_m*_b[gender]+income_m*_b[income]+status_m*_b[ status]+
Education_m*_b[ Education]+ Environmental damage on area of safeguard attribute _m*_b[ Environmental damage on
area of safeguard attribute]+ knowledge_m*_b[ knowledge]+ Environmental concern _m*_b[Environmental concern]+
Loss of safeguard subject attribute _m*_b[ Loss of safeguard subject attribute]+ Loss of damage attribute _m*_b[ Loss
of damage attribute + Loss of damage attribute _m*_b[ Loss of damage attribute ]+ group_m*_b[
group])/_b[bid]),noheader
```

Result

WTP	Mean WTP _{1,e} (Baht/unit ¹)	Standard error	z	95% confidence	
				Lower	Upper
Human health	856.80	89.04	9.62	682.28	1031.34

F.3 Weighting coefficients

Weighting coefficient can be calculation in equation (F.1)

$$I_e = DF_{i,e} \times WF_e \quad (F.1)$$

Where I_e is weighting coefficient of endpoint e ; $DF_{i,e}$ is damage factor of substance i of endpoint e ; WF_e is weighting factor of endpoint e .

F.3.1 Weighting coefficients of global warming

Table F.1: Weighting factor coefficients of global warming on human health

Industrial Designation or Common Name	Chemical Formula	Human health (Baht/kg)					Total
		Damage					
		Diarrhea	Malaria	Cardiovascular diseases	Malnutrition	Natural Disaster	
Carbon dioxide	CO ₂	1.97E-04	9.82E-05	1.59E-05	1.40E-04	2.01E-05	4.71E-04
Methane	CH ₄	5.75E-03	2.86E-03	4.62E-04	4.07E-03	5.86E-04	1.37E-02
Nitrous oxide	N ₂ O	6.44E-02	3.20E-02	5.18E-03	4.56E-02	6.56E-03	1.54E-01
Chlorofluorocarbons							
CFC-11	CCl ₃ F	-2.46E-01	-1.22E-01	-1.98E-02	-1.74E-01	-2.51E-02	-5.88E-01
CFC-12	CCl ₂ F ₂	4.97E-01	2.47E-01	4.00E-02	3.52E-01	5.07E-02	1.19E+00
CFC-13	CClF ₃	3.12E+00	1.55E+00	2.51E-01	2.21E+00	3.18E-01	7.44E+00
CFC-113	CCl ₂ FCClF ₂	6.58E-01	3.27E-01	5.29E-02	4.66E-01	6.71E-02	1.57E+00
CFC-114	CClF ₂ CClF ₂	2.07E+00	1.03E+00	1.67E-01	1.47E+00	2.11E-01	4.95E+00
CFC-115	CClF ₂ CF ₃	1.56E+00	7.75E-01	1.25E-01	1.10E+00	1.59E-01	3.72E+00
Hydrochlorofluorocarbons							
HCFC-21	CHCl ₂ F	-	-	-	-	-	-
HCFC-22	CHClF ₂	3.16E-01	1.57E-01	2.54E-02	2.24E-01	3.22E-02	7.54E-01
HCFC-123	CHCl ₂ CF ₃	1.64E-02	8.18E-03	1.32E-03	1.16E-02	1.68E-03	3.93E-02
HCFC-124	CHClF ₂ CF ₃	1.32E-01	6.54E-02	1.06E-02	9.32E-02	1.34E-02	3.14E-01
HCFC-141b	CH ₃ CCl ₂ F	1.35E-01	6.71E-02	1.09E-02	9.55E-02	1.38E-02	3.22E-01
HCFC-142b	CH ₃ CClF ₂	4.80E-01	2.39E-01	3.86E-02	3.40E-01	4.89E-02	1.15E+00
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	2.63E-02	1.31E-02	2.12E-03	1.86E-02	2.68E-03	6.28E-02
HCFC-225cb	CHClF ₂ CF ₂ CClF ₂	1.29E-01	6.40E-02	1.04E-02	9.12E-02	1.31E-02	3.07E-01
Hydrofluorocarbons							
HFC-23	CHF ₃	3.19E+00	1.59E+00	2.57E-01	2.26E+00	3.25E-01	7.62E+00
HFC-32	CH ₂ F ₂	1.46E-01	7.25E-02	1.17E-02	1.03E-01	1.49E-02	3.48E-01
HFC-41	CH ₃ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-125	CHF ₂ CF ₃	7.57E-01	3.77E-01	6.09E-02	5.36E-01	7.72E-02	1.81E+00
HFC-134	CHF ₂ CHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-134a	CH ₂ FCF ₃	3.09E-01	1.53E-01	2.48E-02	2.19E-01	3.15E-02	7.37E-01
HFC-143	CH ₂ FCHF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table F.1: Weighting factor coefficients of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (Baht/kg)					
		Damage					Total
		Diarrhea	Malaria	Cardiovascular diseases	Malnutrition	Natural Disaster	
HFC-143a	CH ₃ CF ₃	9.66E-01	4.80E-01	7.77E-02	6.84E-01	9.84E-02	2.31E+00
HFC-152	CH ₂ FCH ₂ F	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-152a	CH ₃ CHF ₂	2.68E-02	1.33E-02	2.16E-03	1.90E-02	2.74E-03	6.41E-02
HFC-227ea	CF ₃ CHFCF ₃	6.96E-01	3.46E-01	5.60E-02	4.93E-01	7.09E-02	1.66E+00
HFC-236cb	CH ₂ FCF ₂ CF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236ea	CHF ₂ CHFCF ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFC-236fa	CF ₃ CH ₂ CF ₃	2.12E+00	1.05E+00	1.70E-01	1.50E+00	2.16E-01	5.05E+00
HFC-245fa	CHF ₂ CH ₂ CF ₃	2.23E-01	1.11E-01	1.80E-02	1.58E-01	2.28E-02	5.34E-01
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	1.71E-01	8.52E-02	1.38E-02	1.21E-01	1.75E-02	4.09E-01
HFC-43-10mee	CF ₃ CHFCFCHFCF ₂ CF ₃	3.54E-01	1.76E-01	2.85E-02	2.51E-01	3.61E-02	8.45E-01
Chlorocarbons							
Methyl chloroform	CH ₃ CCl ₃	-4.32E-02	-2.15E-02	-3.47E-03	-3.06E-02	-4.40E-03	-1.03E-01
Carbon tetrachloride	CCl ₄	-3.51E-01	-1.74E-01	-2.82E-02	-2.48E-01	-3.58E-02	-8.38E-01
Methyl chloride	CH ₃ Cl	2.78E-03	1.38E-03	2.24E-04	1.97E-03	2.84E-04	6.65E-03
Dimethylether	CH ₃ OCH ₃	9.14E-05	4.54E-05	7.35E-06	6.47E-05	9.31E-06	2.18E-04
Methylene chloride	CH ₂ Cl ₂	1.89E-03	9.39E-04	1.52E-04	1.34E-03	1.93E-04	4.51E-03
Bromocarbons							
Methyl bromide	CH ₃ Br	-3.15E-01	-1.57E-01	-2.54E-02	-2.23E-01	-3.21E-02	-7.53E-01
Halon-1201	CHBrF ₂	-	-	-	-	-	-
Halon-1211	CBrClF ₂	-3.73E+00	-1.85E+00	-3.00E-01	-2.64E+00	-3.80E-01	-8.91E+00
Halon-1301	CBBrF ₃	-1.31E+01	-6.53E+00	-1.06E+00	-9.30E+00	-1.34E+00	-3.14E+01
Halon-2402	CBBrF ₂ CBBrF ₂	-6.18E+00	-3.07E+00	-4.97E-01	-4.37E+00	-6.30E-01	-1.48E+01
Fully fluorinated species							
Sulfur hexafluoride	SF ₆	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluoromethane (PFC-14)	CF ₄	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluoroethane (PFC-116)	C ₂ F ₆	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluoropropane (PFC-218)	C ₃ F ₈	5.33E+04	2.65E+04	4.29E+03	3.77E+04	5.44E+03	1.27E+05
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	5.33E+04	2.65E+04	4.29E+03	3.77E+04	5.44E+03	1.27E+05
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Halogenated alcohols and ethers							
HFE-125	CHF ₂ OCF ₃	3.22E+00	1.60E+00	2.59E-01	2.28E+00	3.28E-01	7.69E+00
HFE-134	CHF ₂ OCHF ₂	1.36E+00	6.78E-01	1.10E-01	9.65E-01	1.39E-01	3.26E+00
HFE-143a	CH ₃ OCF ₃	1.63E-01	8.12E-02	1.31E-02	1.16E-01	1.66E-02	3.90E-01
HCFE-235da2	CHF ₂ OCHClCF ₃	7.53E-02	3.74E-02	6.05E-03	5.33E-02	7.67E-03	1.80E-01
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	1.42E-01	7.09E-02	1.15E-02	1.01E-01	1.45E-02	3.40E-01
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	8.52E-02	4.24E-02	6.85E-03	6.03E-02	8.69E-03	2.03E-01
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table F.1: Weighting factor coefficients of global warming on human health (cont.)

Industrial Designation or Common Name	Chemical Formula	Human health (Baht/kg)					
		Damage					Total
		Diarrhea	Malaria	Cardiovascular diseases	Malnutrition	Natural Disaster	
HFE-7200(HFE-56-9)	$C_2H_5OC_4F_9$	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HFE-245cb2	$CH_3OCF_2CF_3$	1.74E-01	8.64E-02	1.40E-02	1.23E-01	1.77E-02	4.15E-01
HFE-347mcc3	$CH_3OCF_2CF_2CF_3$	1.25E-01	6.19E-02	1.00E-02	8.81E-02	1.27E-02	2.97E-01
HFE-347pcf2	-	1.25E-01	6.22E-02	1.01E-02	8.85E-02	1.27E-02	2.98E-01
HFE-356pcc3	$CH_3OCF_2CF_2CHF_2$	2.37E-02	1.18E-02	1.91E-03	1.68E-02	2.42E-03	5.66E-02
HFE-374pc2	$CH_3CH_2OCF_2CHF_2$	-	-	-	-	-	-
	$CH_3OCF(CF_3)_2$						
HFE-43-10pccc124	$CHF_2OCF_2OC_2F_4OCHF_2$	4.05E-01	2.01E-01	3.26E-02	2.87E-01	4.13E-02	9.66E-01
	$(CF_3)_2CHOH$						
HFE-236ca12	$CHF_2OCF_2OCHF_2$	6.11E-01	3.04E-01	4.91E-02	4.32E-01	6.23E-02	1.46E+00
HFE-338pcc13	$CHF_2OCF_2CF_2OCHF_2$	3.24E-01	1.61E-01	2.61E-02	2.30E-01	3.31E-02	7.74E-01
Perfluoropolyethers							
PFPME		2.23E+00	1.11E+00	1.79E-01	1.58E+00	2.27E-01	5.31E+00
Species whose lifetimes have a high uncertainty							
Nitrogen trifluoride	NF_3	4.57E+01	2.27E+01	3.67E+00	3.23E+01	4.66E+00	1.09E+02
Perfluorocyclopropane	$c-C_3F_8$	-	-	-	-	-	-
HFE-227ea	$CF_3CHFOCF_3$	-	-	-	-	-	-
HFE-236ea2	$CHF_2OCHF_2CF_3$	-	-	-	-	-	-
HFE-236fa	$CF_3CH_2OCF_3$	-	-	-	-	-	-
HFE-245fa1	$CHF_2CH_2OCF_3$	-	-	-	-	-	-
HFE-329mcc2	$CHF_2CF_2OCF_2CF_3$	-	-	-	-	-	-
HFE-338mcf2	$CF_3CH_2OCF_2CF_3$	-	-	-	-	-	-
HFE-347mcf2	$CHF_2CH_2OCF_2CF_3$	-	-	-	-	-	-
HFE-347mcf2	$CHF_2CH_2OCF_2CF_3$	-	-	-	-	-	-
HFE-356mcc3	$CH_3OCF_2CHFCF_3$	-	-	-	-	-	-
HFE-356pcf2	$CHF_2CH_2OCF_2CHF_2$	-	-	-	-	-	-
HFE-356pcf3	$CHF_2OCH_2CF_2CHF_2$	-	-	-	-	-	-
	$CHF_2OCH(CF_3)_2$						
HFE-449sl	$-(CF_2)_4CH(OH)-$	6.63E-02	3.30E-02	5.33E-03	4.69E-02	6.76E-03	1.58E-01
	-						
HFE-569sf2	-	1.23E-02	6.12E-03	9.90E-04	8.71E-03	1.25E-03	2.94E-02

Table F.2: Weighting factor coefficients of global warming on social assets and primary production

Industrial Designation or Common Name	Chemical Formula	Social assets (Baht/kg)			Primary production (Baht/kg)	
		Damage		Total	Damage	Total
		Soybean	Rice		Terrestrial plant	
Carbon dioxide	CO ₂	1.74E-11	3.05E-11	4.78E-11	4.03E-02	4.03E-02
Methane	CH ₄	5.06E-10	8.87E-10	1.39E-09	1.17E+00	1.17E+00
Nitrous oxide	N ₂ O	5.67E-09	9.93E-09	1.56E-08	1.31E+01	1.31E+01
Chlorofluorocarbons						
CFC-11	CCl ₃ F	-2.17E-08	-3.80E-08	-5.97E-08	-5.03E+01	-5.03E+01
CFC-12	CCl ₂ F ₂	4.38E-08	7.67E-08	1.20E-07	1.01E+02	1.01E+02
CFC-13	CClF ₃	2.74E-07	4.81E-07	7.55E-07	6.36E+02	6.36E+02
CFC-113	CCl ₂ FCF ₂	5.79E-08	1.02E-07	1.59E-07	1.34E+02	1.34E+02
CFC-114	CClF ₂ CClF ₂	1.82E-07	3.20E-07	5.02E-07	4.23E+02	4.23E+02
CFC-115	CClF ₂ CF ₃	1.37E-07	2.40E-07	3.78E-07	3.18E+02	3.18E+02
Hydrochlorofluorocarbons						
HCFC-21	CHCl ₂ F	-	-	-	-	-
HCFC-22	CHClF ₂	2.78E-08	4.87E-08	7.65E-08	6.45E+01	6.45E+01
HCFC-123	CHCl ₂ CF ₃	1.45E-09	2.54E-09	3.99E-09	3.36E+00	3.36E+00
HCFC-124	CHClFCF ₃	1.16E-08	2.03E-08	3.19E-08	2.69E+01	2.69E+01
HCFC-141b	CH ₃ CCl ₂ F	1.19E-08	2.08E-08	3.27E-08	2.76E+01	2.76E+01
HCFC-142b	CH ₃ CClF ₂	4.23E-08	7.41E-08	1.16E-07	9.80E+01	9.80E+01
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	2.32E-09	4.06E-09	6.38E-09	5.37E+00	5.37E+00
HCFC-225cb	CHClFCF ₂ CClF ₂	1.13E-08	1.99E-08	3.12E-08	2.63E+01	2.63E+01
Hydrofluorocarbons						
HFC-23	CHF ₃	2.81E-07	4.92E-07	7.73E-07	6.51E+02	6.51E+02
HFC-32	CH ₂ F ₂	1.28E-08	2.25E-08	3.53E-08	2.98E+01	2.98E+01
HFC-41	CH ₃ F	-	-	-	-	-
HFC-125	CHF ₂ CF ₃	6.67E-08	1.17E-07	1.84E-07	1.55E+02	1.55E+02
HFC-134	CHF ₂ CHF ₂	-	-	-	-	-
HFC-134a	CH ₂ FCF ₃	2.72E-08	4.76E-08	7.48E-08	6.30E+01	6.30E+01
HFC-143	CH ₂ FCHF ₂	-	-	-	-	-
HFC-143a	CH ₃ CF ₃	8.50E-08	1.49E-07	2.34E-07	1.97E+02	1.97E+02
HFC-152	CH ₂ FCH ₂ F	-	-	-	-	-
HFC-152a	CH ₃ CHF ₂	2.36E-09	4.14E-09	6.50E-09	5.48E+00	5.48E+00
HFC-227ea	CF ₃ CHFCF ₃	6.13E-08	1.07E-07	1.69E-07	1.42E+02	1.42E+02
HFC-236cb	CH ₂ FCF ₂ CF ₃	-	-	-	-	-
HFC-236ea	CHF ₂ CHFCF ₃	-	-	-	-	-
HFC-236fa	CF ₃ CH ₂ CF ₃	1.86E-07	3.27E-07	5.13E-07	4.32E+02	4.32E+02
HFC-245ca	CH ₂ FCF ₂ CHF ₂	-	-	-	-	-
HFC-245fa	CHF ₂ CH ₂ CF ₃	1.97E-08	3.45E-08	5.41E-08	4.56E+01	4.56E+01
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	1.51E-08	2.64E-08	4.15E-08	3.50E+01	3.50E+01
HFC-43-10mee	CF ₃ CHFCHFCF ₂ CF ₃	3.12E-08	5.46E-08	8.58E-08	7.23E+01	7.23E+01
Chlorocarbons						

Table F.2: Weighting factor coefficients of global warming on social assets and primary production (cont.)

Industrial Designation or Common Name	Chemical Formula	Social assets (Baht/kg)			Primary production (Baht/kg)	
		Damage		Total	Damage	Total
		Soybean	Rice		Terrestrial plant	
Methyl chloroform	CH ₃ CCl ₃	-3.80E-09	-6.66E-09	-1.05E-08	-8.81E+00	-8.81E+00
Carbon tetrachloride	CCl ₄	-3.09E-08	-5.41E-08	-8.50E-08	-7.16E+01	-7.16E+01
Methyl chloride	CH ₃ Cl	2.45E-10	4.30E-10	6.75E-10	5.68E-01	5.68E-01
Dimethylether	CH ₃ OCH ₃	8.04E-12	1.41E-11	2.21E-11	1.87E-02	1.87E-02
Methylene chloride	CH ₂ Cl ₂	1.66E-10	2.91E-10	4.58E-10	3.86E-01	3.86E-01
Bromocarbons						
Methyl bromide	CH ₃ Br	-2.77E-08	-4.86E-08	-7.64E-08	-6.43E+01	-6.43E+01
Halon-1201	CHBrF ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Halon-1211	CBrClF ₂	-3.28E-07	-5.76E-07	-9.04E-07	-7.61E+02	-7.61E+02
Halon-1301	CBrF ₃	-1.16E-06	-2.03E-06	-3.18E-06	-2.68E+03	-2.68E+03
Halon-2402	CBrF ₂ CBrF ₂	-5.44E-07	-9.53E-07	-1.50E-06	-1.26E+03	-1.26E+03
Fully fluorinated species						
Sulfur hexafluoride	SF ₆	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Trifluoromethylsulfurpentafluoride	SF ₅ CF ₃	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluoromethane (PFC-14)	CF ₄	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluoroethane (PFC-116)	C ₂ F ₆	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluoropropane (PFC-218)	C ₃ F ₈	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluorobutane (PFC-3-1-10)	C ₄ F ₁₀	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluorocyclobutane (PFC-318)	c-C ₄ F ₈	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluoropentane (PFC-4-1-12)	C ₅ F ₁₂	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluorohexane (PFC-5-1-12)	C ₆ F ₁₄	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluorodecalin (PFC-9-1-18)	C ₁₀ F ₁₈	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Halogenated alcohols and ethers						
HFE-125	CHF ₂ OCF ₃	2.83E-07	4.97E-07	7.80E-07	6.57E+02	6.57E+02
HFE-134	CHF ₂ OCHF ₂	1.20E-07	2.10E-07	3.30E-07	2.78E+02	2.78E+02
HFE-143a	CH ₃ OCF ₃	1.44E-08	2.52E-08	3.96E-08	3.33E+01	3.33E+01
HCFE-235da2	CHF ₂ OCHClCF ₃	6.63E-09	1.16E-08	1.82E-08	1.54E+01	1.54E+01
HFE-245fa2	CHF ₂ OCH ₂ CF ₃	1.25E-08	2.20E-08	3.45E-08	2.91E+01	2.91E+01
HFE-254cb2	CH ₃ OCF ₂ CHF ₂	7.50E-09	1.31E-08	2.06E-08	1.74E+01	1.74E+01
HFE-7100(HFE-44-9)	CH ₃ OC ₄ F ₉	-	-	-	-	-
HFE-7200(HFE-56-9)	C ₂ H ₅ OC ₄ F ₉	-	-	-	-	-
HFE-245cb2	CH ₃ OCF ₂ CF ₃	1.53E-08	2.68E-08	4.21E-08	3.55E+01	3.55E+01
HFE-347mcc3	CH ₃ OCF ₂ CF ₂ CF ₃	1.10E-08	1.92E-08	3.02E-08	2.54E+01	2.54E+01
HFE-347pcf2	-	1.10E-08	1.93E-08	3.03E-08	2.55E+01	2.55E+01
HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	2.09E-09	3.66E-09	5.75E-09	4.84E+00	4.84E+00
HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	-	-	-	-	-
HFE-43-10pccc124	CH ₃ OCF(CF ₃) ₂	3.56E-08	6.25E-08	9.81E-08	8.26E+01	8.26E+01
	CHF ₂ OCF ₂ OC ₂ F ₄ OCHF ₂ (CF ₃) ₂ CHOH					

Table F.2: Weighting factor coefficients of global warming on social assets and primary production (cont.)

Industrial Designation or Common Name	Chemical Formula	Social assets (Baht/kg)			Primary production (Baht/kg)	
		Damage		Total	Damage	Total
		Soybean	Rice		Terrestrial plant	
HFE-236ca12	CHF ₂ OCF ₂ OCHF ₂	5.38E-08	9.42E-08	1.48E-07	1.25E+02	1.25E+02
HFE-338pcc13	CHF ₂ OCF ₂ CF ₂ OCHF ₂	2.85E-08	5.00E-08	7.86E-08	6.62E+01	6.62E+01
Perfluoropolyethers						
PFPMIE		1.96E-07	3.43E-07	5.39E-07	4.54E+02	4.54E+02
Species whose lifetimes have a high uncertainty						
Nitrogen trifluoride	NF ₃	4.02E-06	7.05E-06	1.11E-05	9.33E+03	9.33E+03
Perfluorocyclopropane	c-C ₃ F ₆	-	-	-	-	-
HFE-227ea	CF ₃ CHFOCF ₃	-	-	-	-	-
HFE-236ea2	CHF ₂ OCHF ₂ CF ₃	-	-	-	-	-
HFE-236fa	CF ₃ CH ₂ OCF ₃	-	-	-	-	-
HFE-245fa1	CHF ₂ CH ₂ OCF ₃	-	-	-	-	-
HFE-329mcc2	CHF ₂ CF ₂ OCF ₂ CF ₃	-	-	-	-	-
HFE-338mcf2	CF ₃ CH ₂ OCF ₂ CF ₃	-	-	-	-	-

F.3.2 Characterization, damage, and weighting coefficients of human toxicity

Table F.3: Weighting factor coefficients of human toxicity on human health

CAS	Chemical name	HTP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
79-06-1	2-Propenamide	1.70E-02	1.49E-08	1.07E-06
140-88-5	Ethyl acrylate	5.04E-04	1.20E-05	2.81E-05
107-13-1	2-Propenenitrile	1.12E-02	9.97E-04	6.67E-04
75-07-0	Acetaldehyde	4.65E-05	1.48E-06	1.75E-06
62-53-3	Benzenamine	1.49E-04	1.06E-06	2.37E-06
1309-64-4	Antimony trioxide	3.46E-03		
78-79-5	Isoprene	3.41E-04	4.01E-05	9.25E-05
100-41-4	Ethylbenzene	1.64E-03	3.47E-04	2.57E-04
151-56-4	Aziridine	3.05E-03	1.85E-04	7.49E-05
75-21-8	Ethylene oxide	2.44E-02	3.30E-03	1.83E-03
62-44-2	Phenacetin	5.43E-04	8.42E-10	1.73E-08
106-89-8	(Chloromethyl)oxirane	2.73E-04	1.64E-05	1.15E-05
75-56-9	Propylene oxide	8.81E-04	7.27E-05	6.96E-05
122-60-1	1-Phenoxy-2,3-epoxypropane	6.93E-03	2.29E-05	8.18E-05
-	cadmium and its compounds	2.27E-01		
10108-64-2	Cadmium chloride	8.32E+01		
10124-36-4	Cadmium sulfate	4.54E+01		
1306-19-0	Cadmium oxide	6.14E+01		
7440-43-9	Cadmium	3.00E-01		
-	chromium(VI) compounds	1.51E+00		
-	chromium(VI) compounds	1.51E+00		
1333-82-0	Chromium oxide	2.00E+00		
13530-65-9	Zinc Chromate	2.00E+00		
13765-19-0	calcium chromate	4.57E-03		
7758-97-6	Lead chromate	2.00E+00		
7789-06-2	strontium chromate	2.00E+00		
106-47-8	4-Chloroaniline	5.69E-04	1.54E-05	1.01E-05
75-01-4	Vinyl chloride	1.66E-03	3.95E-04	7.64E-04
67-66-3	Trichloromethane	1.03E-02	3.71E-03	3.79E-03
1314-62-1	vanadium pentoxide	3.46E-03		
108-05-4	Vinyl acetate	3.43E-03	1.12E-04	3.27E-04
56-23-5	Tetrachloromethane	4.66E-03	1.60E-03	1.93E-03
123-91-1	1,4-Dioxane	8.10E-05	1.32E-06	2.06E-06
107-06-2	1,2-Dichloroethane	6.34E-03	2.33E-03	2.11E-03
101-14-4	4,4'-Methylenebis(2-chloroaniline)	4.47E-04	5.83E-11	1.16E-10

Table F.3: Weighting factor coefficients of human toxicity on human health (cont.)

CAS	Chemical name	HTP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
542-75-6	1,3-Dichloro-1-propene	5.78E-04	5.83E-05	7.01E-05
106-46-7	1,4-Dichlorobenzene	6.22E-03	2.14E-03	7.46E-04
75-09-2	Methylene chloride	1.15E-04	4.38E-05	4.99E-05
121-14-2	2,4-Dinitrotoluene	2.49E-03	3.99E-07	2.75E-05
606-20-2	2,6-Dinitrotoluene	2.34E-03	2.81E-08	2.33E-05
-	mercury and its compounds	6.28E-03		
100-42-5	Ethenylbenzene	1.21E-05	1.07E-06	9.01E-07
7446-34-6	sulfur selenide	3.46E-03		
1746-01-6	2,3,7,8-TCDD (Dioxin)	7.37E+01	9.47E-01	8.26E-01
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	2.93E-03	4.75E-06	2.44E-05
127-18-4	Tetrachloroethene	1.32E-04	2.53E-05	3.63E-05
79-01-6	Trichloroethene	8.10E-04	1.64E-04	2.09E-04
75-25-2	Bromoform	2.67E-04	8.03E-05	3.48E-05
-	lead and its compounds	3.46E-03	5.37E-19	
95860-12-1	Lead methanesulfonate	3.46E-03	5.37E-19	
1309-60-0	Lead dioxide	3.46E-03	5.37E-19	
1317-36-8	Lead oxide	3.46E-03	5.37E-19	
25808-74-6	Lead hexafluorosilicate	3.46E-03	5.37E-19	
1314-41-6	Lead(II,IV) oxide	3.46E-03	5.37E-19	
598-63-0	Lead(2+)salt carbamic acid (1:1)	3.46E-03	5.37E-19	
13424-46-9	Lead azide	3.46E-03	5.37E-19	
7783-46-2	Lead fluoride	3.46E-03	5.37E-19	
1314-87-0	Lead sulfide	3.46E-03	5.37E-19	
7446-14-2	Lead(II) sulfate	3.46E-03	5.37E-19	
7446-27-7	Lead phosphate	3.46E-03	5.37E-19	
7758-95-4	Lead chloride	3.46E-03	5.37E-19	
10099-76-0	Silicic acid	3.46E-03	5.37E-19	
1335-25-7	Lead oxide	3.46E-03	5.37E-19	
19783-14-3	Lead Hydroxide	3.46E-03	5.37E-19	
12060-00-3	lead titanate	3.46E-03	5.37E-19	
3687-31-8	Lead arsenate	3.46E-03	5.37E-19	
10214-39-8	Lead borate	3.46E-03	5.37E-19	
592-87-0	lead thiocyanate	3.46E-03	5.37E-19	
1335-32-6	lead subacetate	3.46E-03	5.37E-19	
7440-02-0	Nickel	3.46E-03		
12035-36-8	Nickel dioxide	4.28E-02		
12035-72-2	Nickel subsulfide	7.99E-02		

Table F.3: Weighting factor coefficients of human toxicity on human health (cont.)

CAS	Chemical name	HTP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
1313-99-1	Nickelous oxide	4.28E-02		
1314-06-3	nickel oxide	4.28E-02		
13463-39-3	Nickel Carbonyl	4.28E-02		
16812-54-7	Nickel(II)Sulfide	4.28E-02		
-	arsenic and its inorganic compounds	7.16E-01		
-	arsenic and its inorganic compounds	5.42E-01		
1303-28-2	Arsenic pentoxide	5.42E-01		
1327-53-3	Arsenic oxide	5.42E-01		
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	5.42E-01		
10031-13-7	lead(II)-arsenite	6.53E-02		
1303-00-0	Gallium arsenide	6.53E-02		
302-01-2	Hydrazine	6.00E-02	1.20E-04	9.31E-04
100-40-3	Cyclohexene, 4-ethenyl-	5.06E-04	5.27E-05	3.51E-05
120-80-9	1,2-Benzenediol	5.46E-04	2.20E-09	2.36E-07
106-99-0	1,3-Butadiene	6.35E-04	6.73E-05	3.20E-04
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	1.10E-05	6.84E-08	3.75E-08
115-28-6	Bicyclo 2.2.1 hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachlor	1.22E-03	5.15E-13	1.37E-12
7440-41-7	Beryllium	4.00E-01		
100-44-7	(Chloromethyl)benzene	4.67E-03	1.61E-04	1.47E-04
71-43-2	Benzene	5.13E-04	4.94E-05	1.03E-04
87-86-5	Pentachlorophenol	1.42E-03	2.33E-07	1.18E-07
1336-36-3	1,1'-Biphenyl, Chloro derivs.	1.54E-01	1.51E-02	2.42E-03
50-00-0	Formalin	3.29E-04	2.06E-07	3.68E-06
26471-62-5	2,4/2,6-Toluenediisocyanate mixture	2.48E-03	7.37E-05	3.42E-05
120-71-8	p-Cresidine	2.21E-04	1.66E-06	2.95E-06
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	2.96E-03	1.51E-05	9.29E-05

F.3.3 Characterization, damage, and weighting coefficients of ecotoxicity

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
557-34-6	Zinc acetate	5.36E-05	7.66E-06	3.77E-06
1314-13-2	Zinc oxide	1.07E-05	1.53E-06	7.51E-07
1314-98-3	Zinc sulfide	6.58E-06	9.41E-07	4.63E-07
1332-07-6	Boric acid, Zinc salt	2.57E-06	3.68E-07	1.81E-07
1405-89-6	Zinc bacitracin	2.78E-06	3.97E-07	1.95E-07
3486-35-9	Carbonic acid, Zinc salt (1:1)	1.55E-08	2.22E-09	1.09E-09
7440-66-6	Zinc	9.10E-05	1.30E-05	6.39E-06
7446-20-0	Sulfuric acid, Zinc salt (1:1), Heptahydrate	3.08E-05	4.40E-06	2.16E-06
7646-85-7	Zinc chloride	1.62E-03	2.32E-04	1.14E-04
7699-45-8	Zinc bromide	1.46E-04	2.09E-05	1.03E-05
7733-02-0	Sulfuric acid, Zinc salt (1:1)	1.32E-04	1.88E-05	9.26E-06
79-06-1	2-Propenamide	5.59E-04	3.11E-03	2.36E-06
79-10-7	2-Propenoic acid	1.14E-09	2.89E-09	2.15E-11
140-88-5	Ethyl acrylate	2.07E-10	6.65E-08	9.49E-11
107-13-1	2-Propenenitrile	2.19E-09	3.24E-08	2.42E-10
107-02-8	2-Propenal	1.19E-07	3.75E-06	7.54E-09
103-23-1	Bis(2-ethylhexyl)ester hexanedioic acid	5.44E-07	1.51E-06	1.18E-10
75-07-0	Acetaldehyde	2.92E-08	1.85E-06	3.37E-09
75-05-8	Acetonitrile	7.26E-08	2.41E-07	7.03E-09
62-53-3	Benzenamine	5.87E-09	9.99E-08	4.08E-10
107-18-6	2-Propen-1-ol	5.70E-08	1.90E-07	1.22E-09
106-92-3	2-Propenyloxy-2,3-epoxypropane	4.82E-09	2.45E-08	1.66E-10
26248-24-8	Tridecylbenzenesulfonic acid, Sodium salt	1.54E-07	3.67E-07	4.57E-10
25155-30-0	Dodecylbenzenesulfonic acid, Sodium salt	7.82E-08	1.87E-07	2.33E-10
1309-64-4	Antimony trioxide	1.27E-04	1.89E-05	8.80E-06
7440-36-0	Antimony	6.32E-05	9.43E-06	4.38E-06
10025-91-9	Antimony trichloride	2.88E-05	4.30E-06	2.00E-06
28300-74-5	Bis[mu-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-Antimonate(2-) dipotassium trihydrate stereoisomer	1.01E-05	1.51E-06	6.99E-07
126506-93-2	2-Hydroxy-1,3,2-dioxastilbolane-4,5-dicarboxylic acid 2-oxide	2.43E-06	3.63E-07	1.69E-07
78-79-5	Isoprene	0.00E+00	9.85E-09	3.00E-12
80-05-7	4,4'-(1-Methylethylidene)bisphenol	9.30E-09	1.26E-07	9.42E-11
76578-14-8	2-[4[(6-Chloro-2-quinoxalinyloxy)phenoxy]propanoic acid ethyl ester	2.83E-06	8.37E-06	5.61E-10
40487-42-1	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	2.34E-06	1.39E-05	5.47E-09
2212-67-1	Hexahydro-1H-azepine-1-carbothioic acid, S-Ethyl ester	1.34E-08	1.96E-07	1.77E-10
100-41-4	Ethylbenzene	2.85E-11	6.49E-08	4.91E-11
151-56-4	Aziridine	7.44E-07	1.78E-06	3.45E-08
75-21-8	Ethylene oxide	7.79E-10	5.87E-09	8.97E-11
107-21-1	1,2-Ethanediol	2.29E-10	4.16E-10	1.34E-12

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
110-80-5	2-Ethoxyethanol	2.94E-09	5.70E-09	9.33E-11
12122-67-7	[[1,2-Ethanediybis(carbamodithioato)](2-)]zinc	2.70E-06	4.00E-06	3.80E-08
12427-38-2	[[2- [(Dithiocarboxy)amino]ethyl]carbamodithioato(2-)-kappaS,kappaS']manganese	5.83E-08	1.89E-06	8.78E-09
106-89-8	(Chloromethyl)oxirane	1.12E-08	4.35E-08	8.34E-10
75-56-9	Propylene oxide	8.30E-10	5.34E-09	1.23E-10
122-60-1	1-Phenoxy-2,3-epoxypropane	3.11E-09	2.16E-08	8.11E-11
513-78-0	Carbonic acid, Cadmium salt (1:1)	1.84E-08	2.70E-09	1.29E-09
543-90-8	Cadmium acetate	3.01E-05	4.40E-06	2.10E-06
1306-19-0	Cadmium oxide	1.64E-03	2.40E-04	1.14E-04
1306-23-6	Cadmium sulfide	1.11E-03	1.63E-04	7.77E-05
2223-93-0	Octadecanoic acid, Cadmium salt	1.77E-02	2.59E-03	1.24E-03
7440-43-9	Cadmium	5.42E-04	7.93E-05	3.79E-05
7790-80-9	Cadmium iodide	2.99E-04	4.37E-05	2.09E-05
10108-64-2	Cadmium chloride	4.95E-04	7.24E-05	3.46E-05
105-60-2	Hexahydro-2H-azepin-2-one	1.28E-10	3.59E-10	2.61E-12
1330-20-7	Xylene	4.37E-09	6.61E-06	1.52E-09
1066-30-4	Acetic acid, Chromium(3+) salt	2.24E-07	3.33E-08	1.56E-08
7440-47-3	Chromium	1.11E-04	1.65E-05	7.70E-06
10025-73-7	Chromium chloride	1.38E-04	2.05E-05	9.56E-06
10101-53-8	Sulfuric acid, Chromium(3+)salt(3:2)	6.45E-05	9.59E-06	4.48E-06
10141-00-1	Sulfuric acid, Chromium (3+)potassium salt (2:1:1)	3.40E-06	5.06E-07	2.36E-07
13548-38-4	Nitric acid, Chromium(3+) salt	7.07E-04	1.05E-04	4.91E-05
1333-82-0	Chromium oxide	1.83E-05	2.73E-06	1.27E-06
7775-11-3	Chromic acid, Disodium salt	2.77E-03	4.12E-04	1.92E-04
7778-50-9	Chromic acid dipotassium salt	1.22E-04	1.82E-05	8.51E-06
7788-98-9	Chromic acid, Diammonium salt	2.45E-04	3.65E-05	1.71E-05
7789-00-6	Chromic acid, Dipotassium salt	5.25E-05	7.80E-06	3.64E-06
10588-01-9	Sodium dichromate	1.99E-05	2.95E-06	1.38E-06
13530-68-2	Chromic acid	7.80E-06	1.16E-06	5.42E-07
106-47-8	4-Chloroaniline	2.52E-08	7.41E-07	1.36E-09
108-42-9	m-Chloroaniline	1.32E-08	2.86E-07	2.82E-09
1912-24-9	6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5- triazine-2,4-diamine	2.48E-05	1.48E-04	3.14E-07
51218-45-2	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2- methoxy-1-methylethyl)acetamide	6.43E-10	6.47E-06	3.28E-09
15972-60-8	2-Chloro-N-(2,6-diethylphenyl)-N- (methoxymethyl)acetamide	9.87E-06	4.21E-05	1.01E-08
122-34-9	6-Chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine	7.55E-06	1.22E-05	8.19E-08
107-05-1	3-Chloro-1-propene	8.58E-12	6.39E-08	6.21E-11
108-90-7	Chlorobenzene	3.85E-10	1.55E-07	6.68E-10
67-66-3	Trichloromethane	1.57E-10	4.46E-08	6.60E-10
74-87-3	Chloromethane	7.61E-12	3.19E-09	1.29E-11

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
111-15-9	2-Ethoxyethanol, Acetate	1.96E-09	1.02E-08	7.66E-11
108-05-4	Vinyl acetate	6.48E-11	4.39E-09	1.99E-11
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester	3.79E-04	8.86E-04	1.46E-08
52315-07-8	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl)methyl ester	1.61E-04	4.77E-04	1.84E-09
100-37-8	N,N-Diethylethanolamine	9.91E-11	6.68E-10	3.26E-12
28249-77-6	Diethylcarbamothioic acid, S-[(4-Chlorophenyl)methyl]ester	2.25E-06	1.28E-05	1.30E-08
56-23-5	Tetrachloromethane	5.03E-11	9.52E-08	3.10E-10
123-91-1	1,4-Dioxane	3.42E-11	2.56E-10	3.54E-12
108-91-8	Cyclohexanamine	4.06E-10	8.53E-09	1.13E-11
107-06-2	1,2-Dichloroethane	2.25E-10	1.76E-08	6.18E-10
75-35-4	1,1-Dichloroethene	5.14E-12	1.28E-08	8.51E-11
156-60-5	trans-1,2-Dichloroethylene	1.22E-11	1.04E-08	6.47E-11
330-54-1	N'-(3,4-Dichlorophenyl)-N,N-dimethylurea	4.56E-05	1.56E-04	3.10E-07
330-55-2	N'-(3,4-Dichlorophenyl)-N-methoxy-N-methylurea	2.02E-05	5.88E-05	7.17E-08
78-87-5	1,2-Dichloropropane	1.01E-10	2.13E-08	3.02E-10
709-98-8	N-(3,4-Dichlorophenyl)propanamide	2.01E-05	5.35E-05	4.14E-08
542-75-6	1,3-Dichloro-1-propene	5.73E-10	2.10E-07	3.29E-10
106-46-7	1,4-Dichlorobenzene	1.21E-09	2.86E-07	4.66E-10
75-09-2	Methylene chloride	1.90E-10	3.42E-08	9.87E-10
298-04-4	Phosphorodithioic acid, O,O-Diethyl-S-[2-(ethylthio)ethyl] ester	2.04E-07	1.49E-06	3.48E-11
121-75-5	[(Dimethoxyphosphinothioyl)thio]butanedioic acid, Diethyl ester	7.36E-08	2.59E-07	2.01E-11
60-51-5	Phosphorodithioic acid, O,O-Dimethyl S-[2-(methylamino)-2-oxoethyl] ester	7.19E-08	6.08E-07	6.75E-09
51-28-5	2,4-Dinitrophenol	4.15E-08	7.31E-08	1.80E-09
122-39-4	Diphenylamine	3.19E-08	4.65E-07	2.41E-10
55285-14-8	[(Dibutylamino)thio]methyl carbamic acid, 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl ester	9.96E-07	4.96E-06	4.59E-10
52-68-6	2,2,2-Trichloro-1-hydroxyethyl phosphonic acid, Dimethyl ester	4.52E-07	6.87E-07	7.97E-09
54-64-8	Ethyl(2-mercaptobenzoato-s)mercury sodium salt	6.21E-07	5.58E-07	2.64E-07
62-38-4	(Acetato-o)phenylmercury	1.45E-03	1.30E-03	6.17E-04
102-99-8	(Acetato-3-pyridyl mercury	2.44E-06	2.19E-06	1.04E-06
107-27-7	Chloroethylmercury	1.03E-04	9.30E-05	4.41E-05
115-09-3	Chloromethylmercury	3.46E-03	3.11E-03	1.47E-03
123-88-6	Chloro(2-methoxyethyl)mercury	1.12E-05	1.00E-05	4.75E-06
502-39-6	(Cyanoguanidinato-N')methylmercury	2.04E-04	1.83E-04	8.70E-05
1184-57-2	Methylmercury hydroxide	2.72E-04	2.44E-04	1.16E-04
1192-89-8	Bromophenylmercury	5.84E-06	5.25E-06	2.49E-06
1600-27-7	Mercuric acetate	5.57E-04	5.00E-04	2.37E-04

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
2235-25-8	Lignasan	8.19E-06	7.35E-06	3.49E-06
7439-97-6	Mercury	3.61E-04	3.24E-04	1.54E-04
7487-94-7	Mercuric chloride	2.83E-04	2.55E-04	1.21E-04
7782-86-7	Nitric acid, Mercury (1+) salt, Monohydrate	5.17E-04	4.64E-04	2.20E-04
7783-35-9	Sulfuric acid, Mercury(2+) salt(1:1)	1.72E-04	1.54E-04	7.32E-05
7783-36-0	Sulfuric acid, Dimercury (1+) salt	8.58E-07	7.71E-07	3.66E-07
10045-94-0	Mercuric nitrate	1.34E-03	1.20E-03	5.70E-04
10112-91-1	Mercury chloride	3.32E-04	2.98E-04	1.41E-04
14235-86-0	[mu-[[[3,3'-Methylenebis[2-naphthalenesulfonato]](2-)]]]diphenyldimercury	1.25E-05	1.12E-05	5.33E-06
22967-92-6	Methyl mercury(1+), Ion	2.65E-02	2.38E-02	1.13E-02
51312-24-4	Mercury chloride	1.76E-04	1.58E-04	7.48E-05
56-35-9	Hexabutyldistannoxane	1.63E-02	1.71E-03	1.23E-03
56-36-0	(Acetyloxy)tributylstannane	2.87E-02	3.03E-03	2.18E-03
76-87-9	Hydroxytriphenylstannane	1.36E+00	1.43E-01	1.03E-01
77-58-7	Dibutylbis[(1-oxododecyl)oxy]stannane	1.00E-02	1.06E-03	7.62E-04
78-04-6	2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	3.43E+00	3.61E-01	2.60E-01
379-52-2	Triphenyltin fluoride	5.15E-03	5.43E-04	3.90E-04
594-27-4	Tetramethylstannane	5.27E-01	5.55E-02	3.99E-02
595-90-4	Tetraphenylstannane	1.40E+02	1.46E+01	1.05E+01
639-58-7	Chlorotriphenylstannane	4.80E-02	5.06E-03	3.64E-03
683-18-1	Dibutyldichlorostannane	1.01E+00	1.07E-01	7.67E-02
753-73-1	Dichlorodimethylstannane	6.98E-01	7.35E-02	5.29E-02
818-08-6	Dibutyloxostannane	5.67E+00	5.93E-01	4.27E-01
900-95-8	(Acetyloxy)triphenylstannane	8.99E-02	9.47E-03	6.82E-03
993-16-8	Trichloromethyl stannane	7.18E-03	7.56E-04	5.44E-04
1118-46-3	Butyltrichlorostannane	2.62E+00	2.76E-01	1.98E-01
1461-22-9	Tributylchlorostannane	2.57E-02	2.71E-03	1.95E-03
1461-25-2	Tetrabutylstannane	3.67E-03	3.86E-04	2.78E-04
1983-10-4	Tributylfluorostannane	6.55E-02	6.90E-03	4.97E-03
2155-70-6	Tributyl[(2-methyl-1-oxo-2-propenyl)oxy]stannane	8.04E-03	8.47E-04	6.10E-04
2279-76-7	Chlorotripropylstannane	5.70E+01	5.97E+00	4.29E+00
100-42-5	Ethynylbenzene	2.00E-07	4.35E-04	1.50E-07
7446-08-4	Selenium dioxide	1.08E-04	1.63E-05	7.45E-06
7782-49-2	Selenium	1.26E-05	1.90E-06	8.67E-07
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	2.48E-07	3.74E-06	1.02E-08
62-56-6	Thiourea	2.30E-08	1.41E-07	5.67E-10
333-41-5	Phosphorothioic acid, O,O-Dimethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl]ester	3.59E-05	5.43E-05	1.42E-07
2921-88-2	Phosphorothioic acid, O,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) ester	1.17E-05	2.88E-05	2.87E-10
122-14-5	Phosphorothioic acid O,O-dimethyl O-(3-methyl-4-nitrophenyl)ester	2.20E-06	8.88E-06	1.73E-09

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
55-38-9	O,O-Dimethyl O-[3-Methyl-4-(methylthio)phenyl]ester phosphorothioic acid	3.47E-06	1.62E-05	8.10E-10
41198-08-7	O-(4-Bromo-2-chlorophenyl)phosphorothioic acid O-ethyl S-propyl ester	1.88E-04	6.77E-04	3.31E-08
1897-45-6	2,4,5,6-Tetrachloro-1,3-benzenedicarbonitrile	4.11E-06	1.00E-05	4.28E-08
127-18-4	Tetrachloroethene	1.72E-10	2.44E-07	4.57E-10
137-26-8	Tetramethylthioperoxydicarbonic diamide	5.51E-06	8.28E-06	7.24E-08
142-71-2	Acetic acid, Copper(2+) Salt	2.63E-04	3.83E-05	1.84E-05
1317-39-1	Copper oxide	4.68E-04	6.82E-05	3.27E-05
1330-38-7	(29H,31H-Phthalocyaninedisulfonate (2-)-N29,N20,N31,N32)copper, Disodium salt	6.82E-07	9.95E-08	4.77E-08
1332-14-5	Sulfuric acid, Copper salt, Basic	4.75E-06	6.93E-07	3.32E-07
1332-40-7	Copper chloride mixt. with copper oxide (CuO), Hydrate	5.25E-02	7.65E-03	3.67E-03
1332-65-6	Copper chloride hydroxide	3.87E-06	5.65E-07	2.71E-07
1333-22-8	Copper sulfate, Tribasic	7.53E-04	1.10E-04	5.26E-05
1338-02-9	Naphthenic acid, Copper salt	7.63E-04	1.11E-04	5.33E-05
1344-67-8	Copper chloride	1.83E-03	2.66E-04	1.28E-04
3251-23-8	Nitric acid, Copper(2+) salt	3.88E-03	5.66E-04	2.71E-04
3251-29-4	Nitric acid, Copper(1+) salt	4.16E-03	6.06E-04	2.91E-04
4180-12-5	Acetic acid, Copper salt	2.70E-04	3.93E-05	1.89E-05
7440-50-8	Copper	2.04E-03	2.97E-04	1.43E-04
7447-39-4	Cupric chloride	1.40E-03	2.04E-04	9.78E-05
7758-89-6	Cuprous chloride	3.41E-04	4.97E-05	2.38E-05
7758-98-7	Sulfuric acid, Copper(2+) salt(1:1)	9.16E-04	1.34E-04	6.40E-05
7758-99-8	Sulfuric acid copper (2+) salt (1:1), Pentahydrate	2.66E-03	3.88E-04	1.86E-04
8066-21-5	[[1,2-Ethanediybis(carbamodithioato)](2-)]zinc mixt. with Copper chloride (CuCl2) and Copper oxide (CuO) hydrate	8.51E-06	1.24E-06	5.95E-07
10380-28-6	Bis(8-quinolinolato-N1,08)copper	1.28E-04	1.87E-05	8.96E-06
12002-03-8	Bis(acetato)hexametaarsenitetetracopper	5.27E-06	7.68E-07	3.68E-07
14025-15-1	[[[N,N',1,2-Ethanediybis[N-(carboxymethyl)glycinato]](4-)-N,N',O,O',O'',O'''-cuprate (2-), Disodium	6.34E-08	9.24E-09	4.43E-09
14729-82-9	Hydrazine compd. with copper sulfate	2.16E-04	3.15E-05	1.51E-05
15773-35-0	Pentachlorophenol copper salt	1.43E-03	2.09E-04	1.00E-04
16071-86-6	Copper, (5-((4'-((2,5-Dihydroxy-4-((2-hydroxy-5-sulfophenyl)azo)phenyl)azo)(1,1'-biphenyl)-4-yl)azo)-2-hydroxybenzoate(2-	6.82E-07	9.95E-08	4.77E-08
20427-59-2	Copper hydroxide (Cu(OH)2)	7.75E-06	1.13E-06	5.42E-07
28275-80-1	Copper-bis(ethylenediamine)dodecylbenzenesulfonate)	6.77E-05	9.87E-06	4.74E-06
28407-37-6	C.I. Direct Blue 218	6.82E-07	9.95E-08	4.77E-08
29204-93-1	Copper-2-hydroxy-1,4-naphthoquinone	1.61E-05	2.34E-06	1.12E-06
31089-39-1	2,2',2''-Nitrilotrisethanol copper salt	2.65E+01	3.85E+00	1.85E+00

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
51913-71-4	Copper(II)bis-N,N-dihydroxyethylglycine	6.25E-04	9.11E-05	4.37E-05
52769-67-2	Komeen (copper-ethylenediamine complex(elemental copper 8%))	7.87E-04	1.15E-04	5.50E-05
61912-87-6	Copper Count-N	6.23E-04	9.08E-05	4.35E-05
66845-29-2	Copper-2-oxy-3-chloro-1,4-naphthoquinone	2.49E-05	3.63E-06	1.74E-06
1111-67-7	Thiocyanic acid, Copper(1+)salt	7.56E-04	1.10E-04	5.29E-05
71-55-6	1,1,1-Trichloroethane	6.80E-11	7.15E-08	3.00E-10
79-00-5	1,1,2-Trichloroethane	3.78E-10	2.62E-08	5.40E-10
79-01-6	Trichloroethene	1.11E-11	1.05E-08	2.47E-11
115-32-2	4-Chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)benzenemethanol	3.99E-06	6.41E-06	1.02E-10
118-96-7	2-Methyl-1,3,5-trinitrobenzene	5.94E-06	3.07E-05	5.28E-07
1582-09-8	2,6-Dinitro-N,N-dipropyl-4-(trifluoromethyl)benzenamine	5.60E-07	6.07E-06	7.88E-09
75-25-2	Bromoform	1.98E-09	8.39E-08	1.28E-09
108-67-8	Mesitylene	3.78E-11	9.78E-08	4.22E-11
108-88-3	Methylbenzene	7.72E-12	1.88E-08	2.92E-11
75-74-1	Tetramethyl lead	1.24E-04	1.49E-05	9.15E-06
78-00-2	Tetraethyl lead	8.41E-04	1.01E-04	6.20E-05
301-04-2	Acetic acid, Lead(2+) salt	1.95E-05	2.34E-06	1.44E-06
598-63-0	Lead(2+)salt carbamic acid (1:1)	1.58E-08	1.89E-09	1.16E-09
1067-14-7	Triethyl lead chloride	1.28E-03	1.53E-04	9.43E-05
1162-06-7	(Acetyloxy)triphenylplumbane	9.65E-04	1.16E-04	7.11E-05
1314-87-0	Lead sulfide	9.59E-07	1.15E-07	7.06E-08
1317-36-8	Lead oxide	1.94E-06	2.33E-07	1.43E-07
1520-77-0	Dichlorodimethylplumbane	3.54E-07	4.24E-08	2.61E-08
1520-78-1	Trimethyl lead chloride	1.45E-04	1.74E-05	1.07E-05
7439-92-1	Lead	5.99E-05	7.18E-06	4.42E-06
7446-14-2	Lead(II) sulfate	2.42E-06	2.90E-07	1.78E-07
7758-95-4	Lead chloride	4.06E-05	4.86E-06	2.99E-06
7784-40-9	Arsenic acid, Lead(2+) salt (1:1)	1.06E-06	1.27E-07	7.82E-08
10099-74-8	Nitric acid, Lead (2+) salt	1.62E-03	1.95E-04	1.20E-04
13231-90-8	Dichlorodiethylplumbane	1.42E-06	1.70E-07	1.04E-07
13826-65-8	Nitrous acid, Lead (2+) salt	4.70E-06	5.64E-07	3.46E-07
15245-44-0	Lead styphnate	1.21E-04	1.45E-05	8.90E-06
7440-02-0	Nickel	2.77E-03	3.95E-04	1.95E-04
373-02-4	Acetic acid, Nickel(2+)salt	1.09E-04	1.55E-05	7.66E-06
7718-54-9	Nickelous chloride	1.82E-01	2.59E-02	1.28E-02
7786-81-4	Sulfuric acid, Nickel(2+)salt (1:1)	7.71E-05	1.10E-05	5.43E-06
13138-45-9	Nickelous nitrate	1.12E-05	1.60E-06	7.88E-07
13927-77-0	(SP-4-1)-Bis(dibutylcarbamo-dithioato-kappa.S.,kappa.S')-nickel	1.39E-06	1.97E-07	9.75E-08
14220-17-8	(SP-4-1)-Tetrakis(cyano-c)nickelate, Dipotassium	1.73E-06	2.46E-07	1.22E-07

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
55-63-0	1,2,3-Propanetriol, Trinitrate	1.11E-08	8.43E-08	1.13E-10
100-00-5	1-Chloro-4-nitrobenzene	1.21E-07	5.93E-07	1.44E-08
86-30-6	N-Nitroso-N-phenylbenzenamine	1.94E-10	5.94E-09	7.76E-12
100-02-7	4-Nitrophenol	7.02E-12	3.91E-07	1.18E-10
75-15-0	Carbon disulfide	7.66E-11	7.35E-08	2.80E-10
563-12-2	Phosphorodithioic acid, S,S'-Methylene O,O,O',O'-tetraethyl ester	1.37E-07	8.65E-06	2.07E-10
137-30-4	Zinc dimethyldithiocarbamate	4.46E-07	3.82E-06	1.21E-08
1303-28-2	Arsenic pentoxide	1.11E-04	1.21E-05	8.31E-06
1303-33-9	Arsenic trisulfide (As ₂ S ₃)	2.60E-06	2.86E-07	1.96E-07
1327-53-3	Arsenic oxide	3.79E-04	4.16E-05	2.85E-05
7440-38-2	Arsenic	3.68E-03	4.04E-04	2.77E-04
7631-89-2	Arsenic acid (H ₃ AsO ₄) sodium salt (1:?)	2.06E+00	2.26E-01	1.55E-01
7778-39-4	Arsenic acid (H ₃ AsO ₄)	9.01E-04	9.90E-05	6.77E-05
7778-43-0	Arsenic acid, Disodium salt	7.56E-05	8.30E-06	5.68E-06
7784-41-0	Arsenic acid, Monopotassium salt	9.87E-03	1.08E-03	7.42E-04
10048-95-0	Arsenic acid, Disodium salt, Heptahydrate (Na ₂ AsH ₃ O ₄ ·7H ₂ O)	8.83E-07	9.70E-08	6.64E-08
13464-38-5	Arsenic acid, Trisodium salt	2.72E-04	2.99E-05	2.04E-05
302-01-2	Hydrazine	3.67E-06	5.46E-05	1.79E-07
123-31-9	1,4-Benzenediol	8.45E-09	6.10E-08	1.23E-10
110-86-1	Pyridine	2.24E-08	5.22E-08	2.53E-09
120-80-9	1,2-Benzenediol	6.10E-09	2.24E-08	7.46E-11
108-95-2	Phenol	1.64E-09	7.03E-09	3.20E-11
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-Phenoxyphenyl)methyl ester	1.10E-05	3.34E-05	6.38E-11
117-84-0	1,2-Benzenedicarboxylic acid, Dioctyl ester	3.59E-09	7.15E-09	2.35E-13
84-74-2	1,2-Benzenedicarboxylic acid, Dibutyl ester	5.22E-07	2.21E-06	1.05E-09
117-81-7	1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl)ester	1.66E-07	5.85E-07	5.65E-10
85-68-7	1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	1.05E-07	7.11E-07	4.77E-10
17804-35-2	[1-[(Butylamino)carbonyl]-1H-benzimidazol-2-yl]carbamic acid, Methyl ester	2.61E-07	1.18E-06	6.27E-09
2312-35-8	2-[4-(1,1-Dimethylethyl)phenoxy]cyclohexyl-2-propynyl ester sulfurous acid	2.76E-06	1.16E-05	5.37E-10
74-83-9	Methyl bromide	1.49E-09	5.50E-07	2.29E-09
115-29-7	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin 3-oxide	1.25E-06	2.89E-05	1.85E-08
7440-41-7	Beryllium	1.04E-03	1.57E-04	7.20E-05
7787-47-5	Beryllium chloride	3.90E-05	5.88E-06	2.70E-06
7787-55-5	Beryllium nitrate	7.33E-06	1.10E-06	5.07E-07
13327-32-7	Beryllium hydroxide	3.34E-07	5.03E-08	2.31E-08
13510-49-1	Beryllium sulfate	9.56E-06	1.44E-06	6.61E-07
100-44-7	(Chloromethyl)benzene	1.25E-09	5.65E-08	5.14E-11

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
100-52-7	Benzaldehyde	1.83E-10	7.40E-09	8.57E-12
71-43-2	Benzene	2.63E-10	3.92E-07	6.39E-10
82-68-8	Pentachloronitrobenzene	1.58E-06	5.52E-05	5.35E-08
87-86-5	Pentachlorophenol	8.24E-06	1.22E-05	7.97E-10
1336-36-3	1,1'-Biphenyl, Chloro derivs.	6.74E-07	1.61E-05	1.07E-08
50-00-0	Formalin	5.23E-10	4.18E-09	1.05E-11
85-44-9	Phthalic anhydride	9.47E-11	1.35E-10	0.00E+00
108-31-6	2,5-Furandione	0.00E+00	2.24E-13	0.00E+00
79-41-4	2-Methyl-2-propenoic acid	4.46E-09	1.57E-08	1.19E-10
80-62-6	2-Methyl-2-propenoic acid, Methyl ester	5.54E-12	4.38E-10	1.54E-12
114-26-1	2-(1-Methylethoxy)phenol, Methylcarbamate	1.42E-07	8.63E-07	5.49E-09
1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranol, Methylcarbamate	1.13E-07	6.81E-07	1.16E-09
63-25-2	1-Naphthalenol methylcarbamate	3.06E-09	4.97E-07	9.16E-10
33089-61-1	N'-(2,4-Dimethylphenyl)-N-[[[(2,4-dimethylphenyl)imino]methyl]-N-methyl methanimidamide	1.81E-08	7.26E-07	1.58E-10
470-90-6	Phosphoric acid, 2-Chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester	6.06E-06	2.21E-05	2.15E-09
300-76-5	Phosphoric acid, 1,2-Dibromo-2,2-dichloroethyldimethyl ester	3.22E-06	5.35E-05	7.32E-07
62-73-7	Phosphoric acid, 2,2-dichloroethenyl dimethyl ester	1.74E-10	5.14E-08	9.49E-12
115-96-8	Tris(beta-chloroethylphosphate)	1.01E-08	2.89E-08	3.61E-10
60-35-5	Acetamide	2.14E-10	7.59E-10	3.05E-12
834-12-8	N-Ethyl-N'-((1-methylethyl)-6-methylthio)-1,3,5-triazine-2,4-diamine	3.15E-05	1.41E-04	1.03E-07
25311-71-1	2-[[Ethoxy(1-methylethyl)amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester	1.90E-06	3.79E-05	6.08E-10
105-67-9	2,4-Dimethylphenol	1.89E-09	1.43E-08	3.03E-11
21725-46-2	2-[[[4-Chloro-6-(ethylamino)-S-triazin-2-yl]amino]-2-methylpropionitrile	7.67E-06	5.69E-05	7.09E-08
106-48-9	4-Chlorophenol	6.86E-08	3.27E-07	7.61E-10
1937-37-7	4-Amino-3-((4'-((2,4-diamophenyl)azo)(1,1'-biphenyl)-4-yl)azo)-5-hydroxy-6-(phenylazo)-2,7-naphthalenedisulfonic acid	2.47E-09	3.39E-08	2.50E-10
534-52-1	2-Methyl-4,6-dinitrophenol	1.36E-07	2.54E-07	3.72E-09
57-41-0	5,5-Diphenyl-2,4-imidazolidinedione	2.15E-06	4.43E-06	8.90E-09
57-14-7	1,1-Dimethylhydrazine	4.16E-08	5.40E-07	
79-34-5	1,1,2,2-Tetrachloroethane	4.48E-08	9.59E-07	
85-01-8	Phenanthrene	1.54E-06	1.94E-05	
121-82-4	Hexahydro-1,3,5-trinitro-1,2,3-triazine	5.98E-09	1.08E-07	
60-34-4	Monomethylhydrazine	7.89E-09	2.54E-06	2.55E-08

Table F.4: Weighting factor coefficients of ecotoxicity on biodiversity (cont.)

CAS No.	Substance Name	ETP weighting coefficient (Baht/ kg emitted)		
		Air	Water	Soil
82657-04-3	(1R,3R)-rel-3-[(1Z)-2-Chloro-3,3,3-trifluoro-1-propenyl]-2,2-dimethylcyclopropanecarboxylic acid (2-methyl[1,1'-biphenyl]-3-yl)methyl ester	2.00E-04	5.63E-04	1.12E-08
78-42-2	Tris(2-ethylhexyl)ester phosphoric acid	3.64E-10	1.00E-07	6.64E-12
1746-01-6	2,3,7,8-TCDD (Dioxin)	1.17E-03	3.27E-03	1.32E-05

F.3.4 Weighting factor coefficients of eutrophication on social assets

Table F.5: Weighting factor coefficients of eutrophication on social assets

Substance	Formula	EP weighting coefficient (Baht/ kg emitted)		
		Value	Min	Max
Ammonia (air)	NH ₃	4,433.60	911.47	15,797.73
Ammonia (water)	NH ₃	10,120.18	2,080.53	36,060.05
Ammonium	NH ₄ ⁺	9,638.27	1,981.46	34,342.90
Nitrate	NO ₃ ⁻	3,766.68	4,376.17	71,954.23
Nitrogen	N	9,793.37	19,284.81	317,086.45
Nitrogen dioxide (air)	NO ₂	416.62	815.90	13,415.20
Nitrogen monoxide (air)	NO	638.82	1,260.93	20,732.58
Phosphate	PO ₄ ³⁻	47,785.13	8,625.19	176,186.24
Phosphorus	P	146,222.50	26,393.07	539,129.90
Chemical Oxygen Demand	COD	117.80	-	309.44

F.3.5 Weighting factor coefficients of acidification on primary production and social assets

Table F.6: Weighting factor coefficients of acidification on primary production and social assets

Substance	Formula	AP weighting coefficient (Baht/ kg emitted)		
		Social assets		
		Value	Min	Max
Sulfur dioxide	SO ₂	112,481.42	14,055.11	136,206.57
Nitrogen oxide	NO	11,972.55	1,496.03	14,497.87
Nitrogen dioxide	NO ₂	7,808.19	975.67	9,455.13
Hydrogen chloride	HCl	663.60	82.92	803.57
Ammonia	NH ₃	1,705.94	213.17	2,065.76
Substance	Formula	AP weighting coefficient (Baht/ kg emitted)		
		Primary production		
		Value	Min	Max
Sulfur dioxide	SO ₂	3,128.78	2,269.85	3,662.96
Nitrogen oxide	NO	333.03	241.60	389.89
Nitrogen dioxide	NO ₂	217.19	157.57	254.27
Hydrogen chloride	HCl	18.46	13.39	21.61
Ammonia	NH ₃	47.45	34.43	55.55



Appendix G
Definition

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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	Definition
Fate analysis	The environmental fate of chemicals describes the processes by which chemicals move and are transformed in the environment. Environmental fate processes that should be addressed include: persistence in air, water, and soil; reactivity and degradation; migration in groundwater; removal from effluents by standard waste water treatment methods; and bioaccumulation in aquatic or terrestrial organisms.
Exposure analysis	Exposure Analysis is the first complete resource in the emerging scientific discipline of exposure analysis. A comprehensive source on the environmental pollutants that affect human health, the book discusses human exposure through pathways including air, food, water, dermal absorption, and, for children, non-food ingestion.
DALY	Disability-adjusted life year is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.
Relative risk	Relative risk is a measure of the strength of the relationship between risk factors and the particular cancer.
Global warming	Global warming refers to the increase in the average temperature of global surface air and oceans since about 1950, and to continuing increases in those temperatures.
Human toxicity	The human toxicity potential (HTP), a calculated index that reflects the potential harm of a unit of chemical released into the environment, is based on both the inherent toxicity of a compound and its potential dose.
Ecotoxicity	Ecotoxicology is the study of how chemicals affect the environmental and the organisms living in it.

Eutrophication	The process by which a body of water acquires a high concentration of nutrients, especially phosphates and nitrates. These typically promote excessive growth of algae. As the algae die and decompose, high levels of organic matter and the decomposing organisms deplete the water of available oxygen, causing the death of other organisms, such as fish. Eutrophication is a natural, slow-aging process for a water body, but human activity greatly speeds up the process
Acidification	Acidification is the name given to the ongoing decrease in the pH of the Earth's oceans, caused by their uptake of anthropogenic carbon dioxide from the atmosphere.
Social assets	Loss of resource
Net primary production	Net Primary Productivity (NPP) is the rate at which plants incorporate atmospheric carbon through photosynthesis
Intake fraction	The fraction of the quantity emitted that enters the human population
Dose – response function	The dose-response relationship is a function that provides a link between the dose that is ingested and the response that occurs
EINES	Expected Increase in Number of Extinct Species

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