Supporting Information for:

Temporal and Spatial Trends of Organochlorine Pesticides in Great Lakes Precipitation

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This Supporting Information contains nine tables. Table S1 shows the chemical structure and properties of the organochlorine pesticides discussed in this paper. Tables S2-S8 show the values derived from modeled parameters for pesticides at seven IADN sites. Table S9 is a comparison between the results in this study with previous studies conducted by other researchers.

The following equation was used to fit the data:

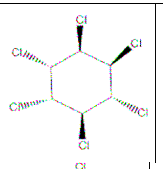
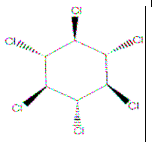
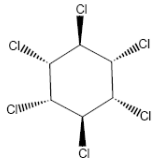
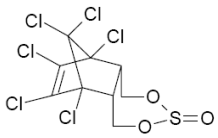
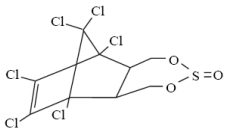
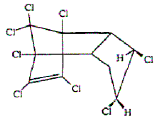
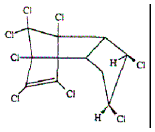
$$\ln C_p = a_0 + a_1 t + a_2 \sin\left(\frac{t}{a_3} + a_4\right)$$

where t is the time in Julian days relative to January 1 1990, a_0 is an intercept (unitless), a_1 is a first-order rate constant (in days^{-1}) describing the rate of exponential decrease or increase over time, a_2 is a periodic amplitude (unitless), a_3 is the length of the period (in days), and a_4 is the periodic offset (in days).

Among 126 data sets, 76 datasets showed significant periodicity as indicating by both a_2 and a_3 being statistically significant at $P < 0.05$, and 52 of the 76 data sets had a period length (a_3) of 366 ± 10 days. Thus, the period length for all 76 datasets with significant periodicity was forced to be one year, which simplified the calculation of the date during the year when the concentrations reached their maximum.

The tables show results of the fit to this sinusoidal model. The results are listed as mean ± standard error. Normal font numbers are significant for $0.01 < P < 0.05$; italic font numbers are significant for $0.001 < P < 0.01$, bold font numbers are significant at $P < 0.001$. "NS" means "not significant" at $P > 0.05$. A negative half-life is actually a doubling time.

Table S1. Chemical structures and properties of OC pesticides[1]

OC pesticide	Structure	MW	Vapor pressure (mm Hg)	Henry's Law constant (atm-m^3/mol, at 25°C)	log K_{ow}
α-HCH		290.83	4.5×10^{-5} at 25°C	1×10^{-5}	3.8
β-HCH		290.83	3.6×10^{-7} at 20°C	7.44×10^{-7}	3.78
γ-HCH		290.83	4.2×10^{-5} at 20°C	1.40×10^{-5}	3.72
α-Endosulfan		406.93	1×10^{-5} at 25°C	1×10^{-5}	3.83
β-Endosulfan		406.93	1×10^{-5} at 25°C	1.91×10^{-5}	3.52
α-Chlordane		409.76	2.2×10^{-5} at 20°C	1.91×10^{-5}	6.0
γ-Chlordane		409.76	2.9×10^{-5} at 20°C	8.31×10^{-5}	6.0

[1] Data is obtained from Agency for Toxic Substances and Disease Registry. www.atsdr.cdc.gov/toxprofiles/

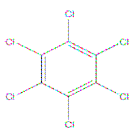
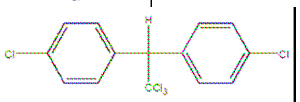
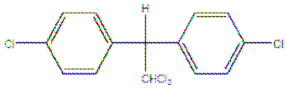
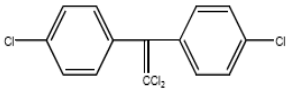
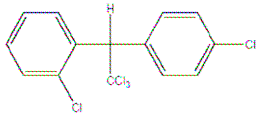
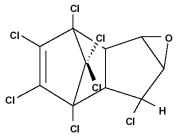
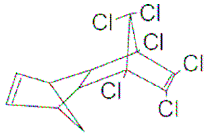
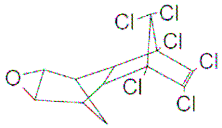
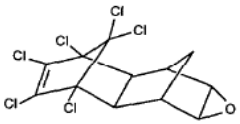
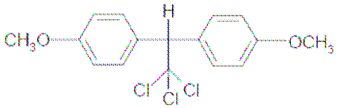
Hexachlorobenzene		284.78	1.09×10^{-5} at 20°C	5.8×10^{-4}	5.73
p, p'-DDT		354.49	1.6×10^{-7} at 20°C	8.3×10^{-6}	6.91
p, p'-DDD		320.05	1.35×10^{-6} at 25°C	4.0×10^{-6}	6.02
p, p'-DDE		318.03	6.0×10^{-6} at 25°C	2.1×10^{-5}	6.51
o, p'-DDT		354.49	1.1×10^{-7} at 20°C	5.9×10^{-7}	6.79
Heptachlor epoxide		389.40	2.6×10^{-6} at 20°C	3.2×10^{-5}	5.40
Aldrin		364.91	7.5×10^{-5} at 20°C	4.9×10^{-5}	6.50
dieldrin		380.91	3.1×10^{-6} at 20°C	5.2×10^{-5}	6.2
Endrin		380.90	2.0×10^{-7} at 20°C	4.0×10^{-7}	5.6
Methoxychlor		345.65	1.4×10^{-6} at 25°C (estimate)	1.6×10^{-5} (estimate)	4.68-5.08

Table S2. Fit parameters for pesticides at Brule River

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	NS	NS	NS	39	710 ± 60	NS
β-HCH	–2.8 ± 1.2*	**3.8 ± 1.3**	**Feb 8 ± 12**	34	170 ± 24	0.50
γ-HCH	3.2 ± 1.6	**6.5 ± 1.3**	**Jun 24 ± 9**	39	860 ± 150	0.56
α-Endosulfan	NS	*2.1 ± 1.2*	**Jun 24 ± 16**	39	380 ± 31	0.28
β-Endosulfan	2.7 ± 1.2	**3.8 ± 1.3**	**Jul 13 ± 12**	39	450 ± 53	0.47
α-Chlordane	NS	**5.1 ± 1.4**	**Jan 21 ± 15**	63	180 ± 41	0.31
γ-Chlordane	NS	**3.9 ± 1.3**	*Feb 10 ± 13*	56	33 ± 5.5	0.31
trans-Nonachlor	NS	NS	NS	49	16 ± 2.2	NS
Dieldrin	NS	**2.4 ± 1.2**	NS	65	270 ± 20	0.30
Hexachlorobenzene	–6.3 ± 2.1*	**4.8 ± 1.4**	*Feb 3 ± 10*	65	21 ± 1.9	0.30
p,p'-DDT	NS	*4.9 ± 1.8*	NS	50	77 ± 21	0.15
p,p'-DDD	NS	NS	NS	22	20 ± 4.6	NS
p,p'-DDE	4.7 ± 2.4	**4.1 ± 1.3**	NS	61	36 ± 5.7	0.52
o,p'-DDT	Limited data	NS	NS	13	12 ± 3.7	NS
Heptachlor epoxide	NS	**2.3 ± 1.2**	NS	50	82 ± 7.0	0.35
Aldrin	Not available					
Endrin	1.1 ± 0.4	NS	NS	24	180 ± 45	0.49
Methoxychlor	NS	NS	NS	24	150 ± 35	NS

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S3. Fit parameters for pesticides at Eagle Harbor

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	NS	NS	NS	56	890 ± 84	NS
β-HCH	*–3.2 ± 1.0**	**2.8 ± 1.2**	**Feb 8 ± 8**	64	160 ± 14	0.54
γ-HCH	*3.8 ± 1.5*	**5.2 ± 1.3**	**Jun 24 ± 8**	56	810 ± 130	0.54
α-Endosulfan	NS	1.5 ± 1.2	**Jun 14 ± 25**	56	400 ± 27	0.10
β-Endosulfan	4.7 ± 2.4	**5.1 ± 1.3**	**Jun 12 ± 8**	54	370 ± 40	0.52
α-Chlordane	NS	**8.3 ± 1.3**	**Feb 14 ± 9**	74	110 ± 14	0.52
γ-Chlordane	NS	**3.3 ± 1.3**	**Feb 4 ± 11**	64	22 ± 2.3	0.30
trans-Nonachlor	NS	*2.2 ± 1.3*	*Feb 1 ± 16*	53	12 ± 1.2	0.20
Dieldrin	NS	**2.6 ± 1.2**	*Jan 24 ± 7*	83	250 ± 19	0.32
Hexachlorobenzene	NS	**2.9 ± 1.2**	**Feb 12 ± 8**	82	21 ± 1.5	0.41
p,p'-DDT	NS	**5.1 ± 1.4**	NS	69	49 ± 7.4	0.25
p,p'-DDD	NS	NS	NS	19	36 ± 12	NS
p,p'-DDE	*4.7 ± 1.2*	**3.3 ± 1.2**	NS	78	27 ± 3.6	0.38
o,p'-DDT	NS	NS	NS	24	16 ± 5.9	NS
Heptachlor epoxide	NS	*1.8 ± 1.2*	*Feb 13 ± 17*	67	78 ± 4.8	0.14
Aldrin	Limited data	NS	NS	6	3.5 ± 2.8	NS
Endrin	NS	**5.2 ± 1.5**	**Jan 16 ± 12**	43	200 ± 37	0.33
Methoxychlor	Limited data	NS	NS	24	75 ± 11	NS

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S4. Fit parameters for pesticides at Sleeping Bear Dunes

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	NS	1.8 ± 1.2	Feb 4 ± 22	54	670 ± 60	0.13
β-HCH	*–2.8 ± 1.0**	*3.0 ± 1.4*	NS	51	270 ± 27	0.29
γ-HCH	NS	**4.4 ± 1.3**	**Jun 9 ± 11**	56	720 ± 110	0.39
α-Endosulfan	NS	**2.5 ± 1.2**	**Jun 30 ± 14**	56	590 ± 64	0.27
β-Endosulfan	NS	**5.4 ± 1.3**	**Jul 18 ± 9**	55	600 ± 70	0.49
α-Chlordane	NS	**5.4 ± 1.3**	**Jan 23 ± 8**	81	250 ± 31	0.39
γ-Chlordane	NS	**2.7 ± 1.2**	*Feb 28 ± 9*	73	26 ± 1.8	0.37
trans-Nonachlor	NS	**3.7 ± 1.2**	**Feb 22 ± 9**	78	22 ± 2.0	0.36
Dieldrin	9.5 ± 4.7	**2.7 ± 1.1**	Mar 14 ± 8	85	420 ± 24	0.46
Hexachlorobenzene	NS	**2.6 ± 1.1**	**Feb 25 ± 7**	84	18 ± 1.0	0.46
p,p'-DDT	NS	NS	NS	77	79 ± 6.9	NS
p,p'-DDD	3.8 ± 1.5	**7.3± 1.5**	Mar 1 ± 12	41	24 ± 4.2	0.46
p,p'-DDE	4.7 ± 1.2	**2.8 ± 1.2**	NS	83	42 ± 8.4	0.40
o,p'-DDT	NS	**3.8 ± 1.3**	NS	35	13 ± 1.8	0.42
Heptachlor epoxide	NS	**2.4 ± 1.1**	NS	45	32 ± 3.3	0.33
Aldrin	Limited Data			5	2.7 ± 1.2	NS
Endrin	2.8 ± 1.4	2.9 ± 1.5	*Feb 3 ± 20*	48	160 ± 34	0.39
Methoxychlor	NS	NS	NS	41	250 ± 50	NS

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S5. Fit parameters for pesticides at Sturgeon Point

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	NS	NS	NS	58	580 ± 62	NS
β-HCH	NS	NS	NS	44	380 ± 38	NS
γ-HCH	NS	**3.7 ± 1.3**	**Jun 19 ± 13**	60	690 ± 96	0.28
α-Endosulfan	NS	**4.5 ± 1.2**	**Jul 24 ± 7**	59	710 ± 62	0.56
β-Endosulfan	–3.8 ± 1.5*	**6.6 ± 1.3**	**Aug 4 ± 9**	60	960 ± 110	0.46
α-Chlordane	NS	*3.0 ± 1.4*	**Jan 14 ± 15**	68	540 ± 62	0.20
γ-Chlordane	NS	**2.2 ± 1.2**	NS	79	34 ± 2.5	0.19
trans-Nonachlor	NS	NS	NS	84	24 ± 1.8	0.16
dieldrin	NS	*1.8 ± 1.2*	NS	87	310 ± 17	0.17
Hexachlorobenzene	NS	**2.3 ± 1.2**	Mar 7 ± 11	87	19 ± 1.2	0.25
p,p'-DDT	NS	NS	NS	85	130 ± 13	NS
p,p'-DDD	4.7 ± 2.4	*3.5 ± 1.4*	*Feb 5 ± 15*	61	31 ± 4.0	0.23
p,p'-DDE	6.3 ± 2.1	*2.0 ± 1.2*	**May 3 ± 18**	86	67 ± 9.1	0.19
o,p'-DDT	NS	NS	NS	48	29 ± 4.9	NS
Heptachlor epoxide	NS	*1.7 ± 1.2*	NS	62	77 ± 4.5	0.33
Aldrin	Limited Data			7	1.4 ± 0.4	NS
Endrin	NS	NS	NS	47	180 ± 24	NS
Methoxychlor	2.2 ± 0.7	NS	NS	52	370 ± 66	0.17

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S6. Fit parameters for pesticides at Chicago

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	NS	NS	NS	50	470 ± 48	NS
β-HCH	NS	NS	NS	34	650 ± 82	NS
γ-HCH	6.3 ± 4.2	**4.1 ± 1.4**	**Jun 1 ± 13**	50	1100 ± 270	0.37
α-Endosulfan	NS	*3.0 ± 1.3*	**Jul 7 ± 14**	50	700 ± 82	0.26
β-Endosulfan	NS	2.3 ± 1.4	*Jul 17 ± 19*	47	680 ± 94	0.21
α-Chlordane	NS	NS	NS	36	1100 ± 230	NS
γ-Chlordane	NS	*2.7 ± 1.3*	NS	69	150 ± 17	0.23
trans-Nonachlor	NS	*2.9 ± 1.3*	NS	67	100 ± 12	0.22
Dieldrin	NS	*2.6 ± 1.3*	NS	69	1400 ± 180	0.24
Hexachlorobenzene	6.3 ± 2.1	*2.8 ± 1.3*	NS	67	32 ± 3.9	0.25
p,p'-DDT	NS	*3.2 ± 1.4*	NS	68	570 ± 93	0.21
p,p'-DDD	**2.1 ± 0.2**	*3.0 ± 1.3*	NS	64	110 ± 17	0.52
p,p'-DDE	*3.8 ± 1.5*	**4.3 ± 1.4**	**May 3 ± 18**	67	210 ± 37	0.34
o,p'-DDT	NS	NS	NS	44	130 ± 24	NS
Heptachlor epoxide	NS	**3.0 ± 1.3**	NS	58	290 ± 33	0.29
Aldrin	NS	NS	NS	29	16 ± 5.8	NS
Endrin	NS	NS	NS	34	180 ± 25	NS
Methoxychlor	NS	NS	NS	52	370 ± 56	NS

Table S7. Fit parameters for pesticides at Brunt Island

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	**3.2 ± 0.5**	NS	NS	58	660 ± 56	0.38
β-HCH	NS	NS	NS	32	340 ± 76	NS
γ-HCH	**2.9 ± 0.5**	**4.0 ± 1.2**	Apr 28 ± 11	80	1400 ± 220	0.50
α-Endosulfan	NS	**2.9 ± 1.2**	**Jul 3 ± 12**	80	600 ± 93	0.26
β-Endosulfan	NS	**6.4 ± 1.3**	**Jul 10 ± 8**	80	760 ± 85	0.36
α-Chlordane	3.2 ± 1.6	NS	NS	68	540 ± 62	0.20
γ-Chlordane	NS	NS	NS	47	86 ± 19	NS
trans-Nonachlor	**–1.6 ± 0.3***	*4.2 ± 1.6*	*Feb 5 ± 16*	51	110 ± 42	0.39
Dieldrin	NS	NS	NS	80	300 ± 26	NS
Hexachlorobenzene	*2.9 ± 0.8*	*3.5 ± 1.4*	*Feb 15 ± 14*	59	82 ± 16	0.34
p,p'-DDT	2.0 ± 0.8	4.8 ± 2.0	NS	32	92 ± 21	0.31
p,p'-DDD	**0.9 ± 0.1**	NS	NS	32	29 ± 6.9	0.62
p,p'-DDE	**2.6 ± 0.6**	*2.8 ± 1.4*	*Feb 8 ± 17*	71	130 ± 36	0.32
o,p'-DDT	*1.5 ± 0.4*	NS	NS	38	100 ± 27	0.33
Heptachlor epoxide	NS	NS	NS	65	100 ± 11	NS
Aldrin	Limited Data			3	470 ± 230	NS
Endrin	NS	NS	NS	18	230 ± 88	NS
Methoxychlor	*2.0 ± 0.7*	*5.5 ± 1.8*	**Jun 8 ± 23**	42	280 ± 80	0.33

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S8. Fit parameters for pesticides at Point Petre

Pesticides	*Half-life (years), (ln2)/365*a_1*	*Peak-to-valley ratio,* e^{2a_2}	*Maximum date (± days)*	*No. of detects*	*Average conc. (pg/L)*	R^2
α-HCH	**2.2 ± 0.3**	1.7 ± 1.2	**Dec 3 ± 26**	81	630 ± 68	0.48
β-HCH	NS	NS	NS	36	390 ± 88	NS
γ-HCH	**2.5 ± 0.3**	**2.9 ± 1.2**	NS	79	1400 ± 170	0.58
α-Endosulfan	*5.3 ± 2.0*	**6.4 ± 1.3**	**Jun 17 ± 8**	80	600 ± 93	0.44
β-Endosulfan	5.8 ± 2.6	**14 ± 1.4**	**Jun 17 ± 7**	80	760 ± 85	0.52
α-Chlordane	NS	NS	NS	46	50 ± 13	NS
γ-Chlordane	NS	NS	NS	36	110 ± 58	NS
trans-Nonachlor	**–1.6 ± 0.3***	NS	NS	29	110 ± 42	0.39
Dieldrin	7.3 ± 2.8	*2.0 ± 1.2*	*Feb 1 ± 18*	77	300 ± 35	0.19
Hexachlorobenzene	NS	*2.4 ± 1.3*	*Jan 29 ± 17*	65	55 ± 9.3	0.34
P,p'-DDT	3.2 ± 1.0	NS	NS	59	200 ± 40	0.12
p,p'-DDD	**1.5 ± 0.3**	NS	NS	45	57 ± 14	0.30
p,p'-DDE	*6.3 ± 2.1*	NS	NS	77	180 ± 23	0.16
o,p'-DDT	*2.7 ± 0.8*	2.6 ± 1.5	NS	42	71 ± 14	0.38
Heptachlor epoxide	NS	NS	NS	52	78 ± 7.4	NS
Aldrin	Limited Data			3	470 ± 230	NS
Endrin	1.8 ± 0.7	NS	NS	20	180 ± 52	0.25
Methoxychlor	3.8 ± 2.3	3.6 ± 1.7	**Jun 20 ± 22**	46	420 ± 92	0.33

*A negative half-life indicates that the concentrations are increasing and the listed value is the doubling time.

Table S9. Range and Annual Mean Concentration (ng/L) of Selected Organochlorine Pesticides in Precipitation from Various Studies

Pesticide	Sample Location	Site type	Sample time	Conc. Range	Mean Conc.	Ref.
α-HCH	Gdansk region, N. Poland	urban[2]	1998-2000	1-12		(42)
	Paris, France	urban	Oct. 1999-Oct. 2000	0.6-7.4	2.8	(37)
	Chicago, U.S.	urban	Jun 1999-Dec 2003	0.066-1.6	0.47	this study
	Quessant, France	rural	Oct. 1999-Oct. 2000	0.3-0.9	0.48	(37)
	Senga Bay, South Africa	rural	Feb 1997-May 1998	0.06-0.3	0.13	(17)
	Sleeping Bear Dunes, U.S.	rural	Jun 1999-Dec 2003	0.2-2.4	0.67	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.04-2.5	0.66	this study
β-HCH	Senga Bay, South Africa	rural	Feb 1997-May 1998	<0.06	0.024	(17)
	Chicago, U.S.	urban	Jun 1999-Dec 2003	0.018-1.8	0.64	this study
	Sleeping Bear Dunes, U.S.	rural	Jun 1999-Dec 2003	0.013-0.93	0.27	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.009-1.5	0.34	this study
γ-HCH	Paris, France	urban	Oct. 1999-Oct. 2000	5.2-28.6	15.9	(37)
	Chicago, U.S.	urban	Jun 1999-Dec 2003	0.031-13.6	1.1	this study
	Quessant, France	rural	Oct. 1999-Oct. 2000	0.5-2.6	1.7	(37)
	Senga Bay, South Africa	rural	Feb 1997-May 1998	0.04-0.5	0.15	(17)
	Sleeping Bear Dunes, U.S.	rural	Jun 1999-Dec 2003	0.072-4.1	0.72	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.074-33.7	1.84	this study
α-Endosulfan	Cuiaba, Brazil	urban	Nov. 1999- Mar 2000	4-14	9	(16)
	Jersey City. U.S.	urban	Jan 2000-May 2001	0.025-0.067	0.046	(14)
	Chicago, U.S.	urban	Jun 1999-Dec 2003	0.038-3.0	0.70	this study
	Pineland, U.S.	rural	Jan 2000-May 2001	0.071-0.24	0.15	(14)
	Sleeping Bear Dunes, U.S.	rural	Jun 1999-Dec 2003	0.037-3.3	0.58	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.020-7.0	0.60	this study

[2] As defined by the census bureau in 1990, "urban" comprises all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas. Territory, population, and housing units not classified as urban constitute "rural."

Table S9 (continued). Range and Annual Mean Concentration (ng/L) of Selected Organochlorine Pesticides in Precipitation from Various Studies.

Pesticide	Sample Location	Site type	Sample time	Conc. Range	Mean Conc.	Ref.
β-Endosulfan	Cuiaba, Brazil	urban	Nov. 1999-Mar 2000	8-57	20	(16)
	Jersey City. U.S.	urban	Jan 2000-May 2001	0.16-0.42	0.29	(14)
	Chicago, U.S.	urban	Jun 1999-Dec 2003	0.10-3.4	0.68	this study
	Pineland, U.S.	rural	Jan 2000-May 2001	0.20-0.36	0.28	(14)
	Sleeping Bear Dunes, U.S.	rural	Jun 1999-Dec 2003	0.050-2.6	0.60	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.006-4.9	0.76	this study
ΣChlordane	Jersey City. U.S.	urban	Jan 2000-May 2001	0.13-0.14	0.18	(14)
	Chicago, U.S.	urban	Mar 1997-Dec 2003	0.057-41.3	1.8	this study
	Pineland, U.S.	rural	Jan 2000-May 2001	0.058-0.074	0.066	(14)
	Senga Bay, South Africa	rural	Feb 1997-May 1998	<0.23	0.029	(17)
	Sleeping Bear Dunes, U.S.	rural	Mar 1997-Dec 2003	0.004-1.7	0.026	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.002-4.6	0.22	this study
p,p'-DDT	Jersey City. U.S.	urban	Jan 2000-May 2001	0.18-0.55	0.37	(14)
	Gdansk region, N. Poland	urban	1998-2000	1-10		(37)
	Chicago, U.S.	urban	Mar 1997-Dec 2003	0.007-18.1	0.96	this study
	Senga Bay, South Africa	rural	Feb 1997-May 1998	<0.35	0.075	(17)
	Pineland, U.S.	rural	Jan 2000-May 2001	0.039-0.077	0.058	(14)
	Sleeping Bear Dunes, U.S.	rural	Mar 1997-Dec 2003	0.004-1.0	0.09	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.002-4.6	0.30	this study
p,p'-DDE	Senga Bay, South Africa	rural	Feb 1997-May 1998	<0.03	0.014	(17)
	Chicago, U.S.	urban	Mar 1997-Dec 2003	0.011-3.5	0.30	this study
	Sleeping Bear Dunes, U.S.	rural	Mar 1997-Dec 2003	0.0089-0.59	0.044	this study
	Burnt Island, Canada	rural	Mar 1997-Dec 2003	0.002-1.7	0.13	this study