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ELECTRONIC SUPPLEMENTARY MATERIAL

This supplementary material has not been peer reviewed.

Title: **Status and trends of mercury pollution of the atmosphere and terrestrial ecosystems in Poland**

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Extended Materials and Methods

Data collection

As already stated in the article, the first results on Hg level, both in the case of terrestrial and freshwater ecosystems, date back to the 1970s. However, most of the results from that period are very difficult to access as the journals and reports publishing them have not been digitized. The uncertainty of the archival data is also related to the capabilities of analytical methods used in that time. The methods commonly used in the 1970s and 1980s detected Hg at part per million (ppm) level and, as shown in Sect. Hg level in abiotic environmental compartments and Sect. Hg level in terrestrial plants and animals of the paper, the Hg concentrations in the investigated elements of Polish environment are generally much lower.

As the toxicity and bioavailability of Hg are dependent on its speciation, to fully assess the risk to wildlife and humans, it is important to consider the form of Hg in the environment. Although methylmercury (MeHg) is one of the most poisonous among Hg compounds, this study focuses only on THg. This It is because the knowledge of Hg speciation, both in abiotic and biotic environmental compartments in Poland, is mostly based on very highly limited data.

To determine the status and the temporal trends of THg pollution in Poland, a total of 85 data sources were used in this work, including 68 peer-reviewed journal articles, 3 books or book chapters, 6 reports, 6 legal acts, 1 thesis, and 1 open-access web material. These works were published between 1975 and 2020, with 84% of them after the year 2000 (**Fig. S1**). The discussion of data concerning Hg in the Polish ecosystem was based on additional 163 literature sources, including 151 peer-reviewed scientific papers, 5 books or book chapters, 3 conference proceeding articles, 3 reports, and 1 open-access web material published in years 1978-2020. As in the case of studies on Hg in Poland, the majority of works relating to Hg in other regions have been published in 2000 or later (**Fig. S1**). Due to the arrangement of the article, some of these references are provided here, in the Electronic Supplementary Material.

Data treatment

In this paper, the THg concentrations were presented in the following units: ng per m^3 for air, ng per L for water, ng per g of dry weight (dw) for soil, plants and mushrooms, and ng per g of wet weight (ww) for animal tissues and organs. In case the source data were in a different format, adequate conversion factors were applied. The converted values are marked with a symbol (*) and the calculation methods with references are given under each table.

Statistical analysis was carried out using the STATISTICA 12 (StatSoft). To model the relationship between variables analysed the linear regression was applied. This method was also used to determine the temporal changes of THg concentration, based on average values for each year. Considering the non-normal distribution of data and their limited number, to determine the significance of differences for data on Hg concentration obtained in the two periods, varying in Hg emission (before and after the year 2002 (**Fig. 1**, **Fig. S2**)), the nonparametric Mann-Whitney Test was used. The hypotheses were tested at a statistical significance level of $p=0.05$.

Figures presented in this study, including **Fig. 1**, **Fig. 3**, **Fig. 5**, **Fig. 6**, **Fig. 7**, **Fig. S1** and **Fig. S2**, were created using MS Excel and CorelDRAW X6. For the preparation of **Fig. 2** and **Fig. 4**, the ArcMap 10.4.1 (ESRI) was used, with the WGS 1984 coordination system and the UTM zone 34N for data projection. **Fig. 2** was prepared by the manual digitisation of the analogue map by Pasieczna (2012), with symbols as in the source. The **Fig. 4**, was created based on the spatial interpolation of point data using the inverse distance weighting (IDW) method (Bartier and Keller, 1996) and the geometrical intervals for symbol classification.

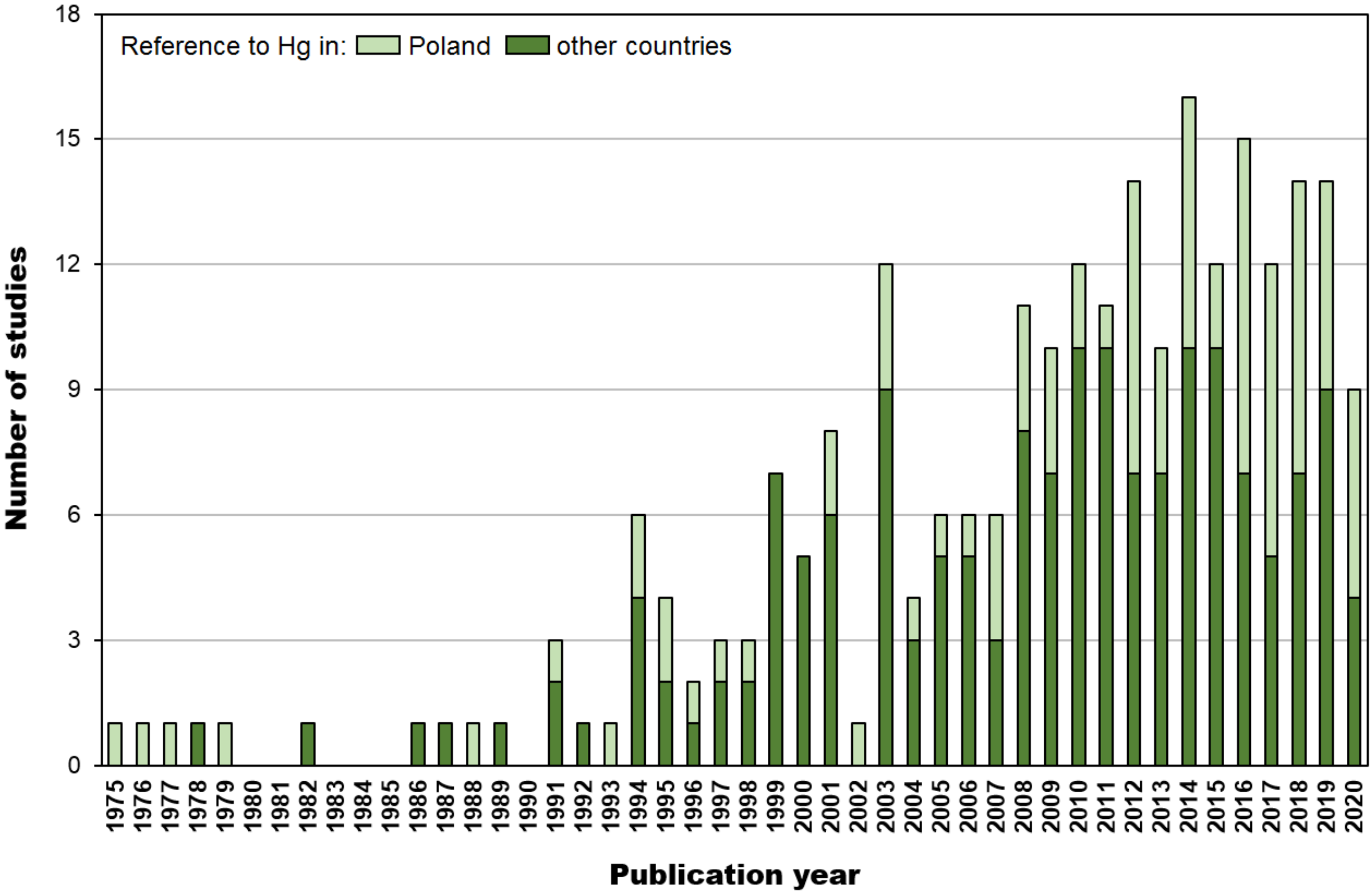

Figure S1 Number and publication year of studies cited in this work. The total number of references in this article, including the supplementary material, is 248

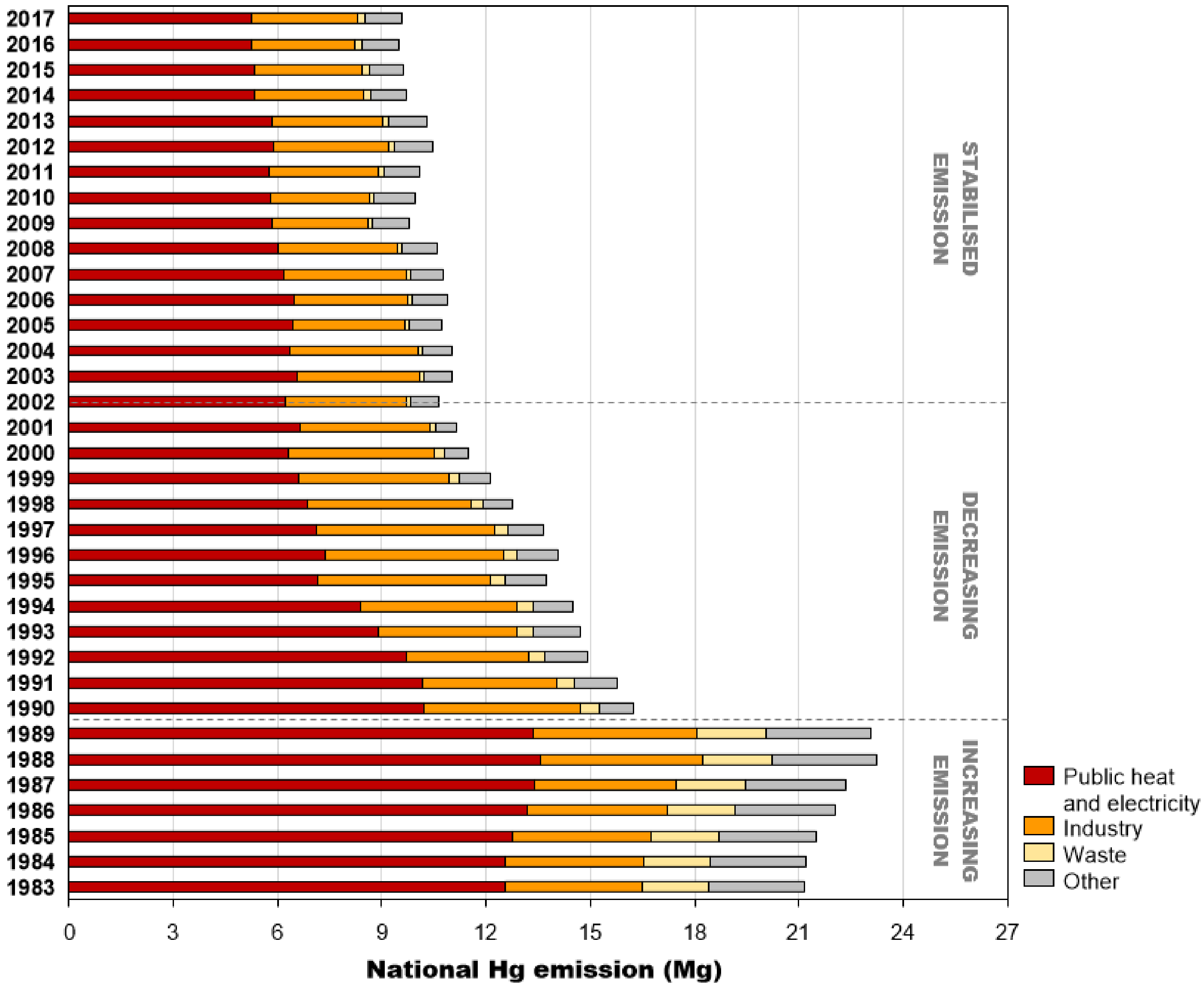

Figure S2 Annual total Hg emission (Mg) from the territory of Poland in the years 1983-2017. Data for 1983-1989 were estimated based on the Hg emission from Eastern Europe and the former USSR published by Pirrone et al. (1996) with the accuracy from 94 to 107%. Data for 1990-2017 were published by the KOBiZE (2019)

Table S1 Total Hg concentration (ng L^{-1}) in unfiltered water of rivers and streams in Poland and other regions of the world

	Region	Country	Study area	Period	Mean	Range	Reference
A)BASE FLOW							
	Europe	Spain	Valdeazogues (P)	1995-1997		LOD-23300	Berzas-Nevado et al., 2003
			Jarama (U)	2002-2004	10	8.1-15	Berzas-Nevado et al., 2008
			Tagus (U)	2002-2004	8.3	4.0-12.1	Berzas-Nevado et al., 2008
		Russia	Dvina	2011	48	2-95	Ovsepyan et al., 2016
		Poland	**Warta (P)**	**2003-2004**	**40**		Kowalski et al., 2007
			Warta (U)	**2003-2004**	**27**	**20-36**	Kowalski et al., 2007
			Warta (U)	**2003-2004**	**27**	**20-36**	Kowalski et al., 2007
			Cybina (U)	**2003-2004**	**12**		Kowalski et al., 2007
			Odra	**2014**	**12**		HELCOM, 2018 *
			Kacza	**2012-2013**	**6.7**	**0.7-10.6**	Gębka et al., 2018
				2008-2009	**2.9**	**0.2-14.7**	Saniewska et al., 2014b
			Vistula	**2012**	**7.4**		Bełdowska et al., 2016
				2010	**7.3**	**4.7-11.7**	Saniewska et al., 2014a
				2014	**6.7**		HELCOM, 2018 *
			Gizdepka	**2012-2013**	**5.2**	**0.1-14.4**	Gębka et al., 2018
			Zagórska Struga	**2012-2013**	**4.9**	**1.2-19.8**	Gębka et al., 2018
			Reda	**2012-2013**	**4.1**	**1.4-17.3**	Gębka et al., 2018
			Płutnica	**2010**	**4.1**	**1.0-16.0**	Saniewska, 2013
			Oliwski Stream	**2008-2009**	**2.8**	**0.5-9.3**	Saniewska et al., 2014b
		Estonia	Pärnu	2014	11.1		HELCOM, 2018 *
		Finland	Tornionjoki	2014	4.1		HELCOM, 2018 *
			Kemijoki	2014	2.7		HELCOM, 2018 *
			Kokemäenjoki	2014	2.6		HELCOM, 2018 *
			Oulujoki	2014	1.7		HELCOM, 2018 *
			Kymijoki	2014	1.7		HELCOM, 2018 *
		Lithuania	Nemunas	2014	2.8		HELCOM, 2018 *
		Sweden	various watercourses	2000-2010		0.5-4.5	Eklöf et al., 2012
				2016	0.5	0.2-0.9	Bravo et al., 2018
			Dalälven	2014	2.2		HELCOM, 2018 *
			Ljusnan	2014	2.1		HELCOM, 2018 *
			Ångermanälven	2014	1.6		HELCOM, 2018 *
			Lule älv	2014	1.5		HELCOM, 2018 *
			Göta älv	2014	1.4		HELCOM, 2018 *
			Kalix älv	2014	1.3		HELCOM, 2018 *
			Ume älv	2014	1.0		HELCOM, 2018 *
			Indalsälven	2014	0.8		HELCOM, 2018 *
		Latvia	Slocene	2005-2011	1.4		Bogans et al., 2011
			Lielupe	2005-2011	0.4		Bogans et al., 2011
		UK	various watercourses	2016	1.5	0.3-2.8	Bravo et al., 2018
		Czech Republic	various watercourses	2016	0.8		Bravo et al., 2018
		France	various watercourses	2016	0.7	0.5-0.9	Bravo et al., 2018
		Austria	various watercourses	2016	0.6	0.1-1.0	Bravo et al., 2018
		Germany	various watercourses	2016	0.4	0.3-0.6	Bravo et al., 2018
		Spain	various watercourses	2016	0.4	0.1-0.9	Bravo et al., 2018
		Bulgaria	various watercourses	2016	0.3		Bravo et al., 2018
	North America	USA	San Carlos Creek (P)	1997-1999		640-12400	Ganguli et al., 2000
			Kuskokwim (P)			1 800-2500	Gray et al., 2000
			Hudson River (U)	2001	62	28-116	Heyes et al., 2004
			Ohio	2009		0.6-37	Naik and Hammerschmidt, 2011
			San Carlos Creek	1997-1999		4.2-12	Ganguli et al., 2000
			Provo	2015-2017	3.1	0.3-8.2	Packer et al., 2020
			Herring Run (U)	1997	2.4		Lawson et al., 2001
			Choptank	1997	2.4		Lawson et al., 2001
			Potomac	1997	2.4		Lawson et al., 2001
			Rappahannock	1997	2.1		Lawson et al., 2001
			Susquehanna	1997	1.4		Lawson et al., 2001
			Patapsco	1997	1.4		Lawson et al., 2001
		Canada	Yukon	2001-2005	15		Schuster et al., 2011
	South America	Brasil	Xingu (P)	2014		LOD-220	Gomes Ribeiro et al., 2017
			Tapajós	2013	4.6	0.7-23.8	Lino et al., 2019
		Bolivia	Coroico	1995-1996		2.9-9.6	Maurice-Bourgoin et al., 1999
			Zongo	1995-1996		7.2-8.2	Maurice-Bourgoin et al., 1999
			Beni	1995-1996		2.2-2.6	Maurice-Bourgoin et al., 1999

Table S1 Continued

	Region	Country	Study area	Period	Mean	Range	Reference
	Asia	China	Xiaxihe (P)	2000		550-10580	Horvat et al., 2003
			Wuli (U)	2007	920	210-2700	Wang et al., 2009
			Meizixi (P)	2002	586		Feng et al., 2003
			Lianshan (U)	2007	260	230-290	Wang et al., 2009
			Xiaxihe	2000	130	20-310	Horvat et al., 2003
			Yantgze	2013	90	50-160	Wu, 2014
			Cishan (U)	2007	84		Wang et al., 2009
			Dongjiang	2009	19	11-49	Liu et al., 2012
		China, Nepal, India	Koshi	2017-2019	5.8	0.6-33	Sun et al., 2020
		Indonesia	Kahayan (P)	2004-2007		20-2260	Elvince et al., 2008
			Rungan	2004-2007		16-117	Elvince et al., 2008
B)HIGH FLOW							
	Europe	**Poland**	**Poland, Vistula (flood)**	**2010**	**59**	**21-299**	Saniewska et al., 2014a
	North America	USA	Potomac	1997	18.6		Lawson et al., 2001
			Herring Run (U)	1997	12.6		Lawson et al., 2001
			Provo (snowmelt)	2015-2017	8.9	3.7-19.4	Packer et al., 2020
			Susquehanna	1997	6.6		Lawson et al., 2001
			Patapsco	1997	5.2		Lawson et al., 2001
			Rappahannock	1997	5.0		Lawson et al., 2001
			Choptank	1997	3.1		Lawson et al., 2001
	Asia	China, Nepal, India	Koshi River (monsoon)	2017-2019	6.7	0.7-27	Sun et al., 2020

P – polluted area, U – urban area

* Values calculated on the basis of the annual Hg load and average river flow.
Data were obtained through national monitoring programmers and reported by Contracting Parties to HELCOM in the frame to the Sixth Baltic Sea Pollution Load Compilation project (PLC-6). In accordance to EU Water Frame Directive (EC, 2013), heavy metals can be reported as dissolved concentrations, i.e. the dissolved phase of a water sample obtained by filtration through a 0.45 μm filter or any equivalent pre-treatment (HELCOM, 2015).

Table S2 Total Hg concentration (ng g^{-1} dw) in terrestrial vegetation: **a)** moss, **b)** grass, and **c)** caps of edible mushroom from Poland and other regions of the world

	Region	Study area	Period	Mean	Range	Reference
A) MOSS						
Mixed species	Europe	Slovakia	2000	180	<840	Harmens et al., 2008
		Lithuania	2000	88	62-114	Harmens et al., 2008
		France	2000	70	42-98	Harmens et al., 2008
		Italy	2000	70	<492	Harmens et al., 2008
		Poland, Holy Cross Mountains	**2008**	**55**	**28-97**	Migaszewski et al., 2010
		Norway	2000	52	30-74	Harmens et al., 2008
		Russia	1995	50	<132	Harmens et al., 2008
		Latvia	2000	50	29-71	Harmens et al., 2008
		Austria	2000	50	20-80	Harmens et al., 2008
		Czech Republic	2000	48	33-63	Harmens et al., 2008
				44	22-150	Suchara et al., 2011
		Finland	2000	42	19-61	Harmens et al., 2008
		Germany	2000	41	19-63	Harmens et al., 2008
		Iceland	2000	39	18-60	Harmens et al., 2008
		Ukraine	2000	39	17-61	Harmens et al., 2008
		Switzerland	2000	32	21-43	Harmens et al., 2008
		Poland, Sudety Mountains	**2010**	**18**	**12-35**	Kłos et al., 2012
		Poland, Baltic coast	**2012**	**17**	**11-23**	Bełdowska et al., 2016
		Sweden	2000	17	1-36	Harmens et al., 2008
	North America	USA, Pennsylvania	2000-2005	424	300-580	Davis et al., 2007
		Canada, Kejimkujik Park	1997		45-395	Rencz et al., 2003
		Greenland		108	59-196	Riget et al., 2000
		USA, Alaska	2014-2016	58	52-64	Olson et al., 2019
			2007	52	20-101	Migaszewski et al., 2010
		Canada, Yukon	2010	41	24-97	Rempel, 2010
	Asia	China, Guizhou (P)	2002	16212	980-95000	Qiu et al., 2005
		China, Mt. Gongga	1990	90	85-95	Wang et al., 2019
		China, Tibetan Plateau	2010-2012	54	13-273	Shao et al., 2017
	Antarctica	Victoria Land	2002	180	27-570	Bargagli et al., 2005
		Deception Island	2011	43	27-56	Mão de Ferro, et al., 2014
B) GRASS						
Mixed species	Europe	Spain, Almaden (P)			740-28100	Molina et al. 2006
		Sweden	1990-1994	66	36-98	Xiao et al., 1998
		Poland, LGCD (P)		**39**	**4-69**	Barej, et al., 2009
		Poland, Karkonosze Mountains		**30**	**19-53**	Barej, et al., 2009
		Czech Republic		13	5-29	Suchara et al., 2011
		Poland, Baltic coast	**2012**	**12**	**10-16**	Bełdowska et al., 2016
	North America	USA, Alaska	2014-2016	9	8-10	Olson et al., 2019
	South America	Bolivia, ASGM (P)	2009	6300	3000-10400	Terán-Mita et al., 2013
		Brasil, Tapajós (P)		242	20-480	Egler et al., 2006
	Africa	Ghana, Obuasi (P)	1992-1993	2580	200-6200	Amonoo-Neizer et al., 1996
C) MUSHROOMS						
King bolete						
(*Boletus edulis*)	Europe	Slovenia, Idrja (P)	2014-2016	69000	54200-83800	Kavčič et al., 2019
		Slovakia (P)		16260	4940-35870	Musilová et al., 2019
		Poland, Holy Cross Mountains	**2000**	**7600**	**4000-14000**	Falandysz et al., 2007
		Slovenia		5790	4430-7150	Kavčič et al., 2019
		Slovakia		4087	624-23390	Musilová et al., 2019
		Czech Republic	2001-2003	3295	2000-6100	Nováčkova et al., 2007
		Italy, Tuscany	2008-2009	2800	1000-6100	Giannaccini et al., 2012
		Italy, Emilia		2670	1020-4320	Cocchi et al., 2006
		Poland, NE	**1996-2000**	**2530**	**200-8600**	Falandysz et al., 2007
		Poland, NW	**2009**	**2340**	**2120-2500**	Mazurkiewicz and Podlasińska, 2014
		Poland, Tatry Mountains	**2000**	**2300**	**670-4300**	Falandysz et al., 2007
		Croatia	2013	2180	730-5710	Širić et al., 2015
		Poland, Sudety Mountains	**2000**	**2100**	**1300-3100**	Falandysz et al., 2007
		Spain	2005-2006	2000	800-3200	Melgar et al., 2009
		Sweden	1995	1200	58-5400	Falandysz et al., 2001
	Asia	China, Yunnan	2011-2014	4500	1600-22000	Falandysz et al., 2015
		China, Sichuan	2000-2011	4000	1600-7500	Zhang et al., 2010

P – polluted area

Table S3 Total Hg concentration (ng g^{-1} ww) in terrestrial animals: **a)** freshwater fish, **b)** wild animals, and **c)** livestock from Poland and other regions of the world

	Region	Study area	Period	Muscle Mean	Range	Liver Mean	Range	Reference
A) FRESHWATER FISH								
Common bream								
(*Abramis brama*)	Europe	Czech Republic	2003	960	550-1230	1500	630-2980	Marsálek et al., 2005
			1991-1996	298	108-597			Dušek et al., 2005
		Finland	1972-1975	340	50-810			Hattula et al., 1978
		France	2007-2013	194	171-246			Nguetseng et al., 2015
			2000-2008	128	65-241			Noël et al., 2013
			2009-2010	36	19-46	35	7-63	Gentès et al., 2013 *
		Slovenia	2006	160	50-480			Mazej et al., 2010
		Netherlands	2007-2013	158	103-236			Nguetseng et al., 2015
		Sweden	2007-2013	150	123-180			Nguetseng et al., 2015
		Poland	**2011-2013**	**87**	**1-391**			Szkoda et al., 2014
		UK	2007-2013	51	43-60			Nguetseng et al., 2015
		Germany	2007-2013	26	18-43			Nguetseng et al., 2015
			1989-1991	19	3-47			Scharenberg et al., 1994
		Hungary	1999-2000	25	15-37	23	5-62	Farkas et al., 2003 *
	Asia	Russia		400	50-2600			Koval et al., 1999
Pike								
(*Esox lucius*)	Europe	Finland	1972-1975	1070	230-3690			Hattula et al., 1978
			2009-2013	290	118-590			Ahonen et al., 2018 *
		Sweden	1994-2006	560	160-2400			Åkerblom et al., 2012
			1974-1999		350-1390			Lindeström, 2001
		France	2009-2010	544	353-736			Gentès et al., 2013 *
			2000-2008	162	92-232			Noël et al., 2013
		UK (P)	1995-1996	342	252-432			Yamaguchi et al., 2003
		Germany	1993-1994		220-850		<450	Meinelt et al., 1997
		Poland	**2011-2013**	**229**	**1-400**			Szkoda et al., 2014
		Hungary	2000		150-303			Fleit and Lakatos, 2003
		Czech Republic	2005	180				Kensova et al., 2010
	North America	Canada	1978-2004	666	70-4110			Lavigne te al., 2010
		USA, Alaska	2000		628-1506			Jewett et al., 2003
		USA, Royale Is.	2004-2006	122-299	69-622	87-392	48-3074	Drevnick et al., 2008
	Asia	Iran	2011	24-48	21-84			Zamani-Ahmadmahmoodi et al., 2014
Common roach								
(*Rutilus rutilus*)	Europe	Czech Republic	2003	810	580-1270	880	390-1690	Marsálek et al., 2005
			1991-1996	278	89-445			Dušek et al., 2005
		Finland	1972-1975	500	110-1130			Hattula et al., 1978
			2009-2013	100	53-150			Ahonen et al., 2018 *
		Slovakia	2004	310	200-380			Andreji et al., 2005
		Germany	2008-2015	165	39-332			Lepom and Wellmitz, 2017
			1993	59	16-169			Falter and Schöler, 1994
		Sweden	1991-1993	130	20-540			Sonesten, 2001
		France	2000-2008	94	36-299			Noël et al., 2013
			2009-2010	81	35-123	87	10-597	Gentès et al., 2013 *
		Slovenia	2006	80	30-160			Mazej et al., 2010
		UK (P)	1995-1996	76	42-101			Yamaguchi et al., 2003
		UK	1991-1994	54	19-99			Edwards et al., 1999
		Poland	**2014**	**72**	**58-102**	**38**	**20-52**	Łuczyńska et al., 2018
	Asia	Russia		220	50-700			Koval et al., 1999
		Iran		45	22-65			Zolfaghari, 2018 *
B) WILD ANIMALS								
Red deer								
(*Cervus elaphus*)	Europe	Croatia	2002-2005	6		9		Lazarus et al., 2008
			1990-2012	3.7		7.4		Lazarus et al., 2014
			2007-2008		0.6-1.1		2.2-5.1	Srebočan et al., 2012
		Poland (P)	**2009-2010**	**1.8-5.4**	**0.1-8.6**	**6.7-17.2**	**2.6-10.6**	**Albińska et al., 2011**
		Poland	**2013-2014**	**1.0**	**0.1-2.0**	**7.0**	**0.1-48.0**	**Giżejewska et al., 2014**
		Spain	2004-2006	0.3	0.1-2.8	3.6	0.1-16.9	Berzas Nevado et al., 2012
Roe deer								
(*Capreolus capreolus*)	Europe	Hungary		870	240-1460			Lehel et al., 2015
		Slovenia (P)	1991-1997	79	28-143	849	295-2270	Gnamuš et al., 2000

Table S3 Continued

	Region	Study area	Period	Muscle Mean	Muscle Range	Liver Mean	Liver Range	Reference
		Slovakia	1991			27	2-132	Findo et al., 1993
		Austria	1995			12	0-36	Gufler et al., 1997
			2012-2013	<4				Ertl et al., 2016
		Poland (P)	**2011-2013**	**3**	**0.1-12**	**9**	**0.1-61**	Durkalec et al., 2015
		Slovenia	1991-1997	2.8	2-5	14	10-17	Gnamuš et al., 2000
		Croatia	1990-2012	1.5		9		Lazarus et al., 2014
		Poland	**2011-2013**	**1**	**0.1-9**	**5.0**	**0.1-25.0**	Durkalec et al., 2015
		Serbia	2013-2014	<1				Baloš et al., 2015
		Czech Republic	2005-2007	0.6	0.5-3.5	11	3-41	Čelechovská et al., 2008
Wild boar (*Sus scrofa*)	Europe	Serbia	2004-2005				6-388	Petrović, 2007
		Slovakia	2009-2010	30		40		Gasparik et al., 2012
		Italy	1992	10	9-12			Barghigiani and Ristori, 1994
		Croatia	1990-2012	9		53		Lazarus et al., 2014
			2008-2009	4-12	1-61			Bilandžić et al., 2010b
			2008-2009	4-10	1-125	12-27	1-146	Florijančić et al., 2015
		Austria	2012-2013	8				Ertl et al., 2016
		Poland (P)	**2011-2013**	**7**	**0.1-23**	**26**	**6-84**	Durkalec et al., 2015
		Poland	**2011-2019**	**6**	**0.1-20**	**19**	**3-28**	Durkalec et al., 2015
		Spain (P)	2005			18	<96	Berzas Nevado et al., 2012
		Spain	2005	6	8-103	8	0.2-41	Berzas Nevado et al., 2012
Red fox (*Vulpes vulpes*)	Europe	Spain	2004-2006	120		283		Millán et al., 2008
		Russia (P)	2007-2011	90	20-160	310	150-470	Komov et al., 2016
		Poland	**2004-2006**	**70**	**20-240**	**140**	**40-520**	Kalisińska et al., 2012
		Russia	2015-2018	44	12-83	107	22-204	Khabarova et al., 2018
		Croatia	2008-2009	29	4-82	89	11-288	Bilandžić et al., 2010a
		Slovakia	1998-1999	13	1-32	220	1-450	Piskorová et al., 2003
		Italy (P)	1992			160	20-300	Corsolini et al., 1999
		Italy	1994-1995			30	0-620	Alleva et al., 2006
	North America	Canada	1997-1998	220		410		Champoux et al., 1999
		USA, Alaska	2010-2011	157	27-556	341	32-1708	Dainowski et al., 2015
		USA, Wisconsin	1972-1975	20		40		Sheffy and Amant, 1982
C) LIVESTOCK								
Cattle	Europe	Czech Republic	2005-2007	21		24		Čelechovská et al., 2008
		Finland	1987-1988	12		11		Niemi et al., 1991
		Sweden	1984-1988	5	3-17	6	3-26	Jorhem et al., 1991
		Slovakia	2011-2012	2.7	1.6-3.8			Lukáčová et al., 2014
		Netherlands	1980-1985	1	0-16	3	7-14	Vos et al., 1987
		Poland	**2009-2018**	**0.8**	**0.5-53**	**1.8**	**0.5-51**	Nawrocka et al., 2020
		Spain	1996-1997	0.5	0-19	1	0-94	Alonso et al., 2003
	South America	Brazil	2011	12	0.3-40			Batista et al., 2012
	Asia	Saudi Arabia	2011	16	9-24			Alturiqi and Albedair, 2012*
		Iran		3	0-170	2	0-11	Hashemi, 2018
		Pakistan		0.6	0.4-0.9	0.3	0.2-0.4	Mariam et al., 2004
	Africa	Ghana	2012	14	12-17			Nkansah and Ansah, 2014*
		Tanzania	2005	11-16	10-81	49-112	10-436	Chibunda and Janssen, 2009
		Algeria	2012	11	9-14			Badis et al., 2014 *
		Egypt		4	3-5	6	5-7	Khallafalla et al., 2011
Pigs	Europe	Finland	1987-1988	11		12		Niemi et al., 1991
		Sweden	1984-1988	9	3-30	15	6-54	Jorhem et al., 1991
		Netherlands	1980-1985	2	1-20	2	1-29	Vos et al., 1986
		Slovakia	2011-2012	1.3	0.8-1.8			Lukáčová et al., 2014
		Spain	2004	1	0.15-5	1	0.15-4	López-Alonso et al., 2007
		Poland	**2009-2018**	**0.7**	**0.5-36**	**1.2**	**0.5-108**	Nawrocka et al., 2020
		France	2014		<LOD		<LOD	Parinet et al., 2018
	South America	Brazil	2011	23	0.5-130			Batista et al., 2012
Chicken	Europe	Turkey					39-84	Demibraş, 1999
		Poland	**2003**	**3**	**1-11**	**4**	**1-12**	Opaliński et al., 2004
			2014-2015	**0.7**	**0.1-1.8**	**2.5**	**0.4-16**	Dobrzański et al., 2017
		Greece			0.1-3.1		0.5-16.5	Kambamanoli-Dimou et al., 1989
		Romania					<2.8	Ghimpeteanu et al., 2012

Table S3 Continued

	Region	Study area	Period	**Muscle** Mean	Range	**Liver** Mean	Range	Reference
	South America	Brazil	2011	8.4	0.5-30			Batista et al., 2012
	Asia	Saudi Arabia	2011	3.2	2.3-3.8			Alturiqi and Albedair, 2012 *
		Pakistan	2008-2009	0.5	0.4-0.7	0.8	0.4-1	Shah et al., 2010 *
		Indonesia		0.6				Surtipanti et al., 1995
	Africa	Algeria	2012	2.3-3.8				Badis et al., 2014 *

P – polluted area

* Values converted from dry weight
To convert the THg concentration in dry weight (dw) to wet weight (ww) the following conversion factors were applied: fish: 4.0 (Nogueira et al., 2013); cattle: 3.6 (Olsson et al., 2001); chicken: 3.9 (Mazzoni et al., 2015)

Table S4 Total Hg concentration in muscles and livers of terrestrial animals with different feeding habits: **a)** freshwater fish, **b)** wild animals, and **c)** livestock (ng g^{-1} ww) from Poland (data are also presented in the **Fig. 5**)

	Feeding habit	Period	Muscle Mean	Muscle Range	Liver Mean	Liver Range	Reference
A) FRESHWATER FISH							
Common rudd (*S. erythrophthalmus*)	planktivorous	2009-2014	92	66-109			Kalisińska et al. 2017
Vendace (*C. albula*)	planktivorous	2010	114	50-139			Łuczyńska et al., 2016
European whitefish (*C. lavaretus*)	benthivorous	2010	65	54-81			Łuczyńska et al., 2016
Common roach (*R. rutilus*)	benthivorous	2014	72	58-102	38	20-52	Łuczyńska et al., 2018
Common bream (*A. brama*)	benthivorous	2011-2013	87	<391			Szkoda et al., 2014
White bream (*B. bjoerca*)	benthivorous	2009-2014	132	96-148			Kalisińska et al. 2017
Crucian carp (*C. carassius*)	benthivorous	2000-2014	156	100-270			Wyrzykowska et al., 2012; Kalisińska et al. 2017
European eel	benthivorous		179	28-487			Polak-Juszczak and Nermer, 2016
Tench (*T. tinca*)	benthivorous	2000	340	220-520			Wyrzkowska et al., 2012
Burbot (*L. lota*)	piscivorous	2000	94	72-120			Wyrzkowska et al., 2012
Pike-perch (*S. lucioperca*)	piscivorous	2011-2013	153	<456			Szkoda et al., 2014
Perch (*P. fluviatilis*)	piscivorous	2014	162	98-259	58	43-94	Łuczyńska et al., 2018
Ide (*L. idus*)	piscivorous	2009-2014	189	185-228			Kalisińska et al. 2017
Pike (*E. lucius*)	piscivorous	2011-2013	229	<400			Szkoda et al., 2014
B) WILD ANIMALS							
European rabbit (*O. cuniculus*)	herbivorous	1988-1989	1	<5	2	1-3	Żarski et al., 1995a
European bison (*B. bonasus*)	herbivorous	2012-2016			3	1-6	Durkalec et al., 2018
Red deer (*C. elaphus*)	herbivorous	2013-2014	1	<2	7	<48	Giżejewska et al. 2017
Roe deer (*C. capreolus*)	herbivorous	2011-2013	1	<9	5	<25	Durkalec et al. 2015
European hare (*L. europeaus*)	herbivorous	1988-1989	8	3-13	22	1-43	Żarski et al., 1995b
Eurasian beaver (*C. fiber*)	herbivorous	2011	11	10-11	24	18-42	Gizejewska et al., 2014
Wild boar (*S. scrofa*)	omnivorous	2011-2013	6	<20	19	3-28	Durkalec et al. 2015
Red fox (*V. vulpes*)	omnivorous	2004-2006	70	20-240	140	40-520	Kalisińska et al. 2012b
Racoon (*P. lotor*)	omnivorous	2009-2014	152	3-730			Kalisińska et al. 2017
Eurasian otter (*L. lutra*)	piscivorous	2009-2014	972	508-1601			Kalisińska et al. 2017
American mink (*N. vison*)	piscivorous	2009-2011	2801	1781-4178	3650	1020-6470	Kalisińska et al., 2012a
C) LIVESTOCK							
Rabbit		1987	1.0	<2.0	3.0	1.0-4	Falandysz, 1991
Cattle		2009-2018	1.0	0.5-7	1.8	0.5-14	Nawrocka et al., 2020
Sheep		2002-2006	1.9	1.0-14.5	3.1	1.0-15.8	Zięba, 2003; Rudy, 2009
Pig		2009-2018	0.7	0.5-16.4	1.2	0.5-24.1	Nawrocka et al., 2020
Chicken		2014-2015	0.7	<1.8	2.5	<16	Dobrzański et al., 2017
Geese		1987	1.0	<4.0	4.0	1.0-7.0	Falandysz, 1991
Duck		1987	3.1	1.0-7.0	10.0	5.0-17	Falandysz, 1991
Turkey		1987	6.0	3.0-9.0	8.0	5.0-10	Falandysz, 1991

Table S5 Temporal changes of total Hg concentration in muscles and livers of: **a)** wild animals, and **b)** livestock (ng g^{-1} ww) from Poland (data are also presented in the **Fig. 6** and the **Fig. 7**)

		Muscle			**Liver**			
	Year	Mean	Range	N	Mean	Range	N	Reference
A)WILD ANIMALS								
Wild boar								
(*Sus scrofa*)	1988	5	1-23	118	18	5-42	57	Falandysz, 1994
	1989	3	1-9	116	13	7-23	10	Falandysz, 1994
	1990	2	1-5	119	8	5-12	12	Falandysz, 1994
	1991	2	1-6	69				Falandysz, 1994
	1998	7	<32	186				Szkoda and Żmudzki, 2001
	1999	6	<30	150	20		460	Szkoda and Żmudzki, 2001
	2000	7	<39	124	17	4-25	45	Szkoda and Żmudzki, 2001; Sobańska, 2005
	2001				36	15-61	14	Dobrowolska and Melosik, 2002
	2009	5	1-30	59	12	1-26	40	Nawrocka et al., 2020
	2010	8	3-15	13	20	14-32	12	Nawrocka et al., 2020
	2011	8	1-215	63	15	1-40	47	Nawrocka et al., 2020
	2012	4	1-9	27	17	1-37	26	Nawrocka et al., 2020
	2013	5	1-15	51	19	1-142	48	Nawrocka et al., 2020
	2014	7	1-26	59	14	1-42	53	Nawrocka et al., 2020
	2015	4	1-21	49	12	1-73	40	Nawrocka et al., 2020
	2016	4	1-23	70	18	3-76	50	Nawrocka et al., 2020
	2017	7	1-48	111	20	1-93	95	Nawrocka et al., 2020
	2018	5	1-29	98	16	1-83	65	Nawrocka et al., 2020
Cervids	1988	2	<18	171	10	2-65	77	Falandysz, 1994
	1989	1	<5	177	5	2-11	20	Falandysz, 1994
	1990	1	<3	165	7	2-23	20	Falandysz, 1994
	1991	1	<4	119				Falandysz, 1994
	1998	3	<28	205				Szkoda and Żmudzki, 2001
	1999	3	<32	222	7		616	Szkoda and Żmudzki, 2001
	2000	2	<19	189				Szkoda and Żmudzki, 2001
	2001				6		6	Dobrowolska and Melosik, 2002
	2009	1	<5	56	8	<32	37	Nawrocka et al., 2020
	2010	1	1-11	16	2	1-14	16	Nawrocka et al., 2020
	2011	1	1-3	20	3	1-16	20	Nawrocka et al., 2020
	2012	1	1-3	24	4	1-12	24	Nawrocka et al., 2020
	2013	1	1-11	31	2	1-10	26	Nawrocka et al., 2020
	2014	1	1-4	52	2	1-9	35	Nawrocka et al., 2020
	2015	1	1-28	55	4	1-41	41	Nawrocka et al., 2020
	2016	1	1-3	51	2	1-13	29	Nawrocka et al., 2020
	2017	1	1-3	60	2	1-20	65	Nawrocka et al., 2020
	2018	1	1-8	86	3	1-21	79	Nawrocka et al., 2020
B)LIVESTOCK								
Cattle	1988	2	1-5	58	5	2-15	58	Falandysz, 1993
	1989	1	<2	53	4	1-10	53	Falandysz, 1993
	1990	1	<3	44	5	1-66	44	Falandysz, 1993
	1991	1	<5	44	4	<21	44	Falandysz, 1993
	2009	2	1-7	4	1		1	Nawrocka et al., 2020
	2010	2	1-53	33	3	1-14	25	Nawrocka et al., 2020
	2011	1	1-9	49	3	1-23	29	Nawrocka et al., 2020
	2012	1	1-7	131	2	1-11	51	Nawrocka et al., 2020
	2013	1	1-7	83	2	1-12	37	Nawrocka et al., 2020
	2014	1	1-9	91	2	1-8	22	Nawrocka et al., 2020
	2015	1	1-4	59	1	1-5	50	Nawrocka et al., 2020
	2016	1	1-3	41	1	1-7	34	Nawrocka et al., 2020
	2017	1	1-10	155	1	1-11	215	Nawrocka et al., 2020
	2018	1	<1	170	2	1-51	175	Nawrocka et al., 2020
Pigs	1988	3	<18	324	5	1-29	324	Falandysz, 1993
	1989	1	<6	330	4	1-15	330	Falandysz, 1993
	1990	1	<5	280	3	<17	280	Falandysz, 1993
	1991	1	<3	247	3	1-11	246	Falandysz, 1993
	2009	1	1-4	17	2	1-10	12	Nawrocka et al., 2020
	2010	1	1-15	35	2	1-8	27	Nawrocka et al., 2020
	2011	1	1-4	96	1	1-4	58	Nawrocka et al., 2020
	2012	1	1-7	242	1	1-24	78	Nawrocka et al., 2020

Table S5 Continued

		Muscle			**Liver**			
	Year	Mean	Range	N	Mean	Range	N	Reference
	2013	1	1-36	183	1	1-10	46	Nawrocka et al., 2020
	2014	**1**	1-8	170	**1**	1-4	47	Nawrocka et al., 2020
	2015	**1**	1-3	123	**1**	1-6	87	Nawrocka et al., 2020
	2016	**1**	<1	101	**1**	1-15	105	Nawrocka et al., 2020
	2017	**1**	1-4	240	**1**	1-108	341	Nawrocka et al., 2020
	2018	**1**	1-16	234	**1**	1-24	273	Nawrocka et al., 2020

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