

Appendix G: Indicator Fact Sheet on PCDD/F emissions

(copy from the HELCOM web pages:

http://www.helcom.fi/environment2/ifs/ifs2007/en_GB/pcddfemissions/)

1. Atmospheric emissions of PCDD/Fs in the Baltic Sea region

Editor(s): Alexey Gusev, EMEP MSC-E

Key message

Annual emissions of dioxins and furans in HELCOM countries have decreased during the period from 1990 to 2005 by 24%.

Results and Assessment

Relevance of the indicator for describing the developments in the environment

This indicator shows the levels and trends in emissions of dioxins and furans from anthropogenic sources of HELCOM countries to the atmosphere. These emissions represent the pressure of emission sources on the atmosphere of the Baltic Sea region and subsequently on the Baltic Sea aquatic environment.

Policy relevance and policy reference

HELCOM adopted a Recommendation in May 2001 for the cessation of hazardous substance discharges/emissions by 2020, with the ultimate aim of achieving concentrations in the environment near to background values for naturally occurring substances and close to zero for man-made synthetic substances.

On the European level the relevant policy to the control of emissions of PCDD/Fs to the atmosphere is being taken in the framework of UN ECE Convention on Long-Range Transboundary Air Pollution (CLRTAP). The Executive Body of CLRTAP adopted the Protocol on Persistent Organic Pollutants on 24 June 1998 in Aarhus (Denmark). According to one of the basic obligations, Parties to the Convention shall reduce their emissions of PCDD/Fs below their levels in 1990. The Protocol has been signed by 36 and ratified by 28 countries and has been entered into force in 2003.

Assessment

Annual emissions of dioxins and furans have decreased in HELCOM countries during the period from 1990 to 2005 by 24% (Figure 2). The most significant drop of PCDD/F emissions can be noted for Denmark (62%), Estonia (42%), and Sweden (35%). Some decrease of emission can also be noted for Germany (27%), Russia (25%), Poland (21%), and Finland (13%).

For some of the HELCOM countries the level of PCDD/F emissions in 2005 is higher than emission of 1990. In particular, Latvia and Lithuania for reported higher values of emissions for 2005 in comparison with the emissions for 1990.

In 2005 total annual PCDD/F emissions of HELCOM countries amounted to 1.4 kg TEQ. Among the HELCOM countries the largest contributions to the total annual PCDD/F emission of HELCOM countries belong to Russia (55%) followed by Poland (31%) and Germany (5%).

Maps of the Baltic Sea Region and time-series of annual total PCDD/F emissions of HELCOM countries are shown on Figure 2. The diagrams on the maps also show the fractions of emissions deposited to the Baltic Sea. The highest fractions belong to Denmark and Sweden (about 30%), and the lowest one to Russia (about 1.5%).

Supporting information

http://www.msceast.org/HELCOM/PCDDF_emissions_of_HELCOM_countries.pdf

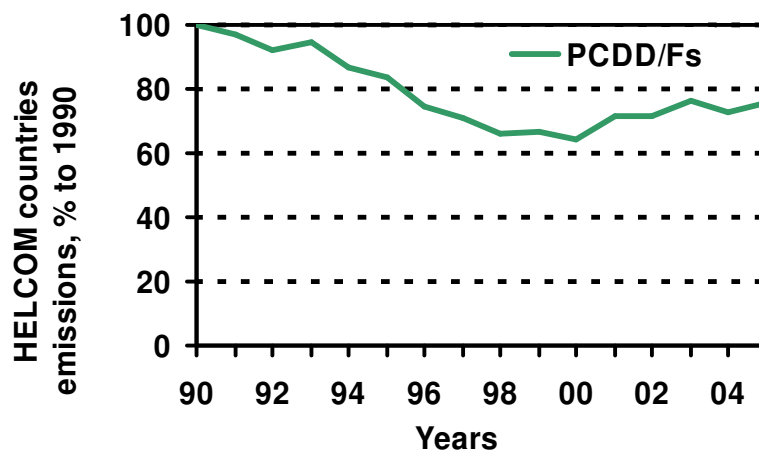


Figure 1. Total annual emissions of PCDD/Fs to air from HELCOM countries in period 1990-2005 (% of 1990).

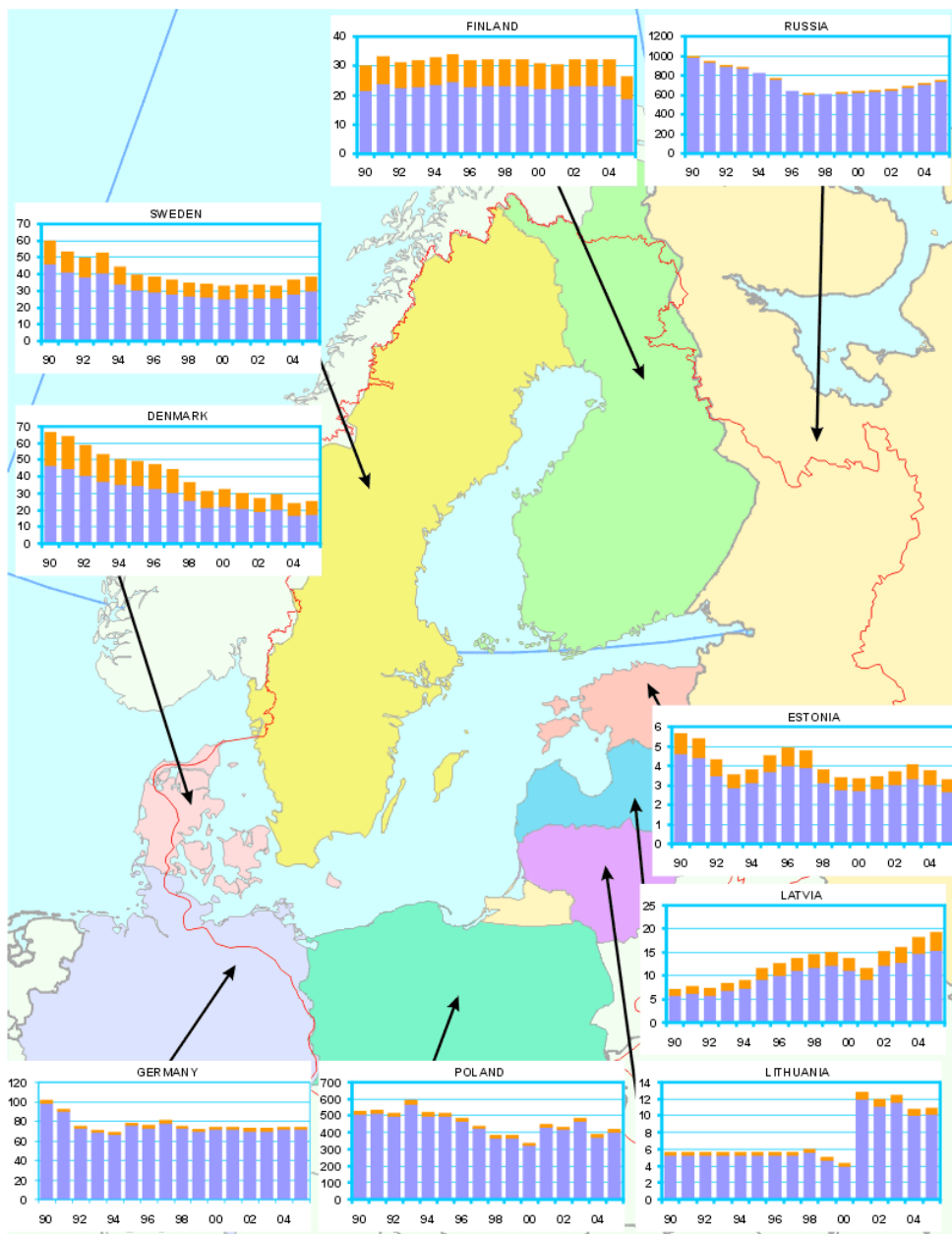


Figure 2: Map of PCDD/F emissions of HELCOM Contracting Parties (CP) to air as totals in tonnes/year for the period 1990-2005. Red sections of the bars identify the fraction of emission deposited to the Baltic Sea. (*The emission data of the CP refer to the total area of the CP except for Russian Federation, for which emissions from the territory of Russian Federation within the EMEP domain is used*).

Note: different scales have been used for different countries!

1.1.1.1.1**Data****Table 1.** Total annual PCDD/F emissions from anthropogenic sources of HELCOM countries in period from 1990 to 2005. Values of emissions estimated using interpolation or extrapolation are shaded. Units: g TEQ/year

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	67	64	59	53	51	49	47	44	37	31	32	30	27	29	24	25
Estonia	6	5	4	4	4	5	5	5	4	3	3	3	4	4	4	3
Finland	30	33	31	32	33	34	32	32	32	32	31	31	32	32	32	26
Germany	102	93	75	71	69	78	75	81	75	72	74	74	72	72	74	74
Latvia	7	8	7	8	9	11	13	14	14	15	14	11	15	16	18	19
Lithuania	6	6	6	6	6	6	6	6	6	5	4	13	12	12	11	11
Poland	529	535	517	592	520	515	484	440	381	381	333	447	433	482	387	416
Russia	991	947	901	878	825	769	637	614	606	625	631	643	655	686	716	747
Sweden	60	53	50	53	44	40	38	37	35	34	33	34	34	33	36	39
Total (HELCOM CPs)	1796	1744	1650	1697	1559	1506	1337	1271	1190	1199	1156	1286	1285	1367	1302	1360

1.1.1.2.1.1 Meta dataTechnical information:

1. Source:

EMEP/MSC-E
UN ECE Secretariat

2. Description of data:

Annual total emissions of all three metals were officially reported to the UN ECE Secretariat by HELCOM countries.

3. Geographical coverage:

European region

4. Temporal coverage:

Data on PCDD/F emissions are available for the period 1990 - 2005. These can be obtained from the EMEP emission database WEBDAB: <http://webdab.emep.int>. Some of the HELCOM countries submitted part of the data for this period. Lithuania

submitted data for 1997-2005. For previous years emission values were obtained using extrapolation. Russia did not report the information on emission for 2001, and 2003- 2005. Value of emission for 2001 was obtained using interpolation between emissions for 2000 and 2002. Emissions for 2003-2005 were estimated using interpolation between emission for 2002 and forecast of emission for 2010.

5. Methodology and frequency of data collection:

National data on PCDD/F emissions are annually submitted by countries Parties to CLRTAP Convention to the UN ECE Secretariat; the methodology is based on combination of emission measurements and emission estimates based on activity data and emission factors. Submitted data are passing through QA/QC procedure and stored in the UN ECE/EMEP emission database at EMEP/MSC-W.

Quality information:

6. Strength and weakness:

Strength: data on emissions are annually submitted, checked and stored in the database

Weakness: gaps in time series of national emissions, uncertainties in national emissions, lack of gridded emissions, and incompleteness

7. Uncertainty:

Among the HELCOM countries the level of uncertainty of official data on PCDD/F emission was reported by Finland. From the EMEP countries the information on uncertainties of PCDD/F official emissions is available for Austria, France, and the United Kingdom. The uncertainty of reported data on PCDD/F emissions expressed as percentage relative to mean value of emission is as follows:

Finland: -62% - +111%

8. Further work required:

Further work is required on filling gaps in time series of emissions and reducing their uncertainties.