HELCOM policy framework for prevention of contamination of the Baltic Sea by hazardous substances

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- 1. Goals and objectives of the Baltic Sea Action Plan;
- 2. Progress in nutrients input reduction
- 3. HELCOM frame for hazardous substances;
- 4. State of the Baltic Sea and HELCOM indicators;
- 5. New commitments and BSAP update



# The goals of the Baltic Sea Action Plan

- Baltic Sea unaffected by eutrophication
- Baltic Sea undisturbed by hazardous substances
- Biodiversity and nature conservation segment of the HELCOM Baltic Sea Action Plan
- Towards a Baltic Sea with maritime activities carried out in an environmentally friendly way



# Long-term trends of riverine input of nutrients into the Baltic Sea 1900-2014

# HELCOM Nutrient reduction scheme is a part of the Baltic Sea Acton plan



HELCOM Baltic Sea Action Plan – Eutrophication





Municipal waste water treatment in accordance with HELCOM RECOMMENDATION 28E/5 removes 70-90% of phosphorus.

Phosphate Rock

3.5 million ton of dry solids per year in the BS region PURE project

Quick calculation based on pessimistic assumptions on P content and recovery gives:

- 21 th. t/P per year
- 270 th. t of phosphate rock
- 30 mln. dollars

HELCOM Baltic Sea Action Plan – Eutrophication

# Baltic Sea undisturbed by hazardous substances

Ecological objectives specifying the goal:

- Concentrations of hazardous substances close to natural levels,
- All fish safe to eat
- Healthy wildlife



The BSAP also committed to develop programmes taking into account:

- identification of sources of the selected hazardous substances or substance groups;
- a ban or restrictions on the use of identified relevant hazardous substances or substance groups;
- substitution of the selected hazardous substances or substance groups with less hazardous substances;
- development of technical guidance documents for environmental permitting addressing hazardous substances;
- capacity building for authorities and industries with regard to identification of hazardous substances and the possibilities for elimination of the use of substances as well as application of BEP and BAT;
- raising awareness among consumers by arranging campaigns and disseminating information about environmentally friendly products;

#### HELCOM RECOMMENDATION 31E/1 Adopted 20 May 2010, IMPLEMENTING HELCOM'S OBJECTIVES FOR HAZARDOUS SUBSTANCES

#### ATTACHMENT 2 Appendix I List of substances of possible concern (to be further developed and completed on basis of the list of potential substances of concern to be considered by HELCOM, as contained in Recommendation 19/5 and Annex I of the Helsinki Convention)

Appendix II List of Priority Hazardous Substances (to be updated)

#### Hazardous substances prioritised by RECOMMENDATION 31E/1

Substances	Usage	HELCOM policy	Assessment of contamination level	Input assessment
1. Dioxins (PCDD), furans (PCDF)	Combustion product	Core indicator	2010, sub GES status	EMEP monitoring
2. Tributyltin compounds (TBT) (TPhT)	Prohibited	Core indicator	2010, variable data	no data
3. Pentabromodiphenyl ether (pentaBDE)	Prohibited	Core indicator	GES exceeded	EMEP report
4. Perfluorooctane (PFOS) (PFOA)	restricted use	Core indicator	2013, shows GES	no data
5. Hexabromocyclododecane (HBCDD)	used	Core indicator	tentative evaluation 2013 show GES	Assessed as 300-700 kg/year
6. Nonylphenols (NP), Nonylphenol ethoxylates (NPE)	restricted use		no assessment	no data
7. Octylphenols (OP)	used		no assessment	no data,
8a. Short-chain chlorinated paraffins (SCCP, C10-13)	banned or limited		no assessment	no data
8b. Medium-chain chlorinated paraffins (MCCP, C14-17)	used		no assessment	no data
9. Endosulfan	banned		no assessment	no data
10. Mercury	restricted	Core indicator	2011, concentrations close to the targets	EMEP monitoring PLC monitoring
11. Cadmium	restricted	Core indicator	2013 show sub-GES for some points	EMEP monitoring PLC monitoring

#### **Recommendations on Industrial Point Sources**

14/3	Limitation of Emissions to the Atmosphere and Discharges into Water from Glass Industry
16/4	Reduction of Emissions into the Atmosphere from the Pulp and Paper Industry
17/8	Reduction of Discharges from the Kraft Pulp Industry
17/9	Reduction of Discharges from the Sulphite Pulp Industry
16/7	Basic Principles in Waste Water Management in the Leather Industry
17/6	Reduction of Pollution from Discharges into Water, Emissions into the Atmosphere and Phosphogypsum out of the Production of Fertilizers
17/10	Basic Principles for Realization of BAT and BEP in Food Industry
23/7	Reduction of discharges and emissions from the metal surface treatment
23/8	Reduction of discharges from oil refineries
23/9	Restriction of atmospheric emissions and waste water discharges from hard coal cokeries
23/10	Reduction of discharges and emissions from production and formulation of pesticides
23/11	Requirements for discharging of waste water from the chemical industry
23/12	Reduction of Discharges and emissions from production of textiles
24/4	Reduction of Emissions and Discharges from the Iron Steel Industry
27/1	Limitation of emissions into atmosphere and discharges into water from incineration of waste
31E/4	Proper handling of waste/landfilling

#### **Recommendations on Industrial Point Sources**

14/3	Limitation of Emissions to the Atmosphere and Discharges into Water from Glass Industry	BREF (12.2001)
16/4	Reduction of Emissions into the Atmosphere from the Pulp and Paper Industry	BREF (12.2001)
17/8	Reduction of Discharges from the Kraft Pulp Industry	BREF (12.2001)
17/9	Reduction of Discharges from the Sulphite Pulp Industry	BREF (12.2001)
16/7	Basic Principles in Waste Water Management in the Leather Industry	BREF (02.2003)
17/6	Reduction of Pollution from Discharges into Water, Emissions into the Atmosphere and Phosphogypsum out of the Production of Fertilizers	2 <u>BREF (08.2007)</u>
17/10	Basic Principles for Realization of BAT and BEP in Food Industry	BREF_(08.2006)
23/7	Reduction of discharges and emissions from the metal surface treatment	2 BREF (08.2006,7)
23/8	Reduction of discharges from oil refineries	BREF (02.2003)
23/9	Restriction of atmospheric emissions and waste water discharges from hard coal cokeries	BREF (12.2001)
23/10	Reduction of discharges and emissions from production and formulation of pesticides	BREF_(08.2006)
23/11	Requirements for discharging of waste water from the chemical industry	6 <u>BREFs (02.2003)</u>
23/12	Reduction of Discharges and emissions from production of textiles	BREF_(07.2003)
24/4	Reduction of Emissions and Discharges from the Iron Steel Industry	3 <u>BREFs (12.2001)</u>
27/1	Limitation of emissions into atmosphere and discharges into water from incineration of waste	BREF (08.2006)
31E/4	Proper handling of waste/landfilling	BREF (08.2006)

#### MD 2013 commitment - early ratification of Minamata convention

Measures Aimed at the Reduction of Mercury Resulting from Dentistry	<u>6-4</u> /1985	Hazardous	Mercury
Measures aimed at the reduction of mercury pollution resulting from light sources and electrical equipment	<u>23-4</u> /2002	Hazardous	Mercury
Reduction of emissions and discharges of mercury from chloralkali industry	<u>23-6</u> /2002	Hazardous	Mercury

HELCOM Recommendation 25/2 Reduction of Emissions and Discharges from Industry by effective use of BAT

the Contracting Parties make all efforts to minimize emissions and discharges of hazardous substances and nutrients by effective use of BAT

#### HELCOM RECOMMENDATION 13/2, 5.01.1992

Industrial Connections and Point Sources other than Household Connected to Municipal Sewerage Systems

# **RECOMMENDS** to the Governments of the Contracting Parties to the Helsinki Convention that:

a) the receiving water must not be harmed by persistent, toxic or bioaccumulating substances from point sources that can not be treated in the municipal sewage treatment plant;

b) before connection to the municipal treatment plant of such waste water a pretreatment utilizing BAT (best available technology) is recommended;

f) limit values for these substances based on the best available technology should be established separately for industry and other relevant sectors discharging indirectly;

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g) industrial connections and other point sources connections must be authorized before the connection is made and supervised by authorities thereafter,



#### HELCOM Indicators on hazardous substances

Core indicator	HBCDD	PBDE	PAH and	l metak	olites	PFOS	Metals							PCB, dioxin and furan		TBT and imposex		Radioactiv substance		
Substance			benzo(a) pyrene	anthr acene	fluorant hene		Hg		Cd			Pb		non-DL PCB	dioxin	impo- sex	TB	BT	Cs-1	137
Matrix B-biota, S-sediment, W- water	В	В	В	S	В	В	В	В	S	W	В	S	W	В	В	B <sup>2</sup>	S <sup>2</sup>	W	В	W
Bothnian Bay							i		i		i	i		i						
The Quark																				
Bothnian Sea	F	F				F	F+i		i		F+i	i		F+i						
Åland Sea									i			i								
Northern Baltic Proper	F	F	F		F	F	F				F			F						
Gulf of Finland																				
Western Gotland Basin	F	F				F	F		i		F	i		F						
Eastern Gotland Basin	F	F					F	F			F			F						
Gulf of Riga							i		i			i								
Gdansk Basin			i		i		i		i	i	i	i	i							
Bornholm Basin	F	F				F	F		F+i	i	F	F+i	i	F						
Arkona Basin	F	F+i	F+i	i	F+i	F	F+i	F+i	F+i	i	F+i	F+i	i.	F			i			
Bay of Mecklenburg			i		i		i	i	F		i.	F								
Kiel Bay		F		i			F		F		F	F		F			i			
Great Belt				i					i			i				F	i			
The Sound			F+i	i	F+i		i	i	i		i	i				F	i			
Kattegat	F	F		i		F	F		i			i		F		F	i			

# Trends in the hazardous substances groups, shown as counts of time series assessed at the monitoring stations



# **HELCOM Ministerial Declaration 2018**

that levels of hazardous substances continue to be elevated and a cause for concern;

#### WE AGREE:

to re-examine the effectiveness of measures and recommendations for legacy pollutants;

to identify the scale of problems of contaminants of emerging concern, including micropollutants in coastal and marine waters and, based on this knowledge, to consider possible cost-effective mitigation measures.

WE WELCOME the joint HELCOM-UNESCO-EUSBSR status report on pharmaceuticals in the aquatic environment in the Baltic Sea Region as the information basis for developing measures, as appropriate, to prevent pharmaceuticals from reaching the Baltic Sea, and also WELCOME the EU Strategy for the Baltic Sea Region (EUSBSR) regional cooperation platform to reduce pharmaceuticals in the Baltic Sea;

#### MD 2018 commitment – to advance HELCOM indicators

#### New structure of HELCOM indicators first time tested for the diclofenac indicator









http://www.helcom.fi/Lists/Publications/BSEP149.pdf

# Joint documentation of regional coordination of programmes of measures

HELCOM 37-2016 agreed on the Joint documentation to be finalized and made available by 31 March.

ACTION 4: Micropollutants in effluents from wastewater treatment plants

- Step 1: Compilation and assessment of available information and data of micropollutants of concern for Contracting Parties in the Baltic Sea – during 2016 (PRESSURE)
- Step 2: Compile information from CPs of treatment techniques and experiences– during 2016/7
- Step 3: Summary report on advanced treatment techniques, including consideration of feasibility, costs, good practice and management options during 2017

#### Micropollutants in effluents of the WWTP identified by the HELCOM counties.

Substance (group)	WWTP
Dioxins (PCDD, PCDF, dioxin-like PCBs)	3
Other PCBs (other than dioxin-like)	5
Organotin compounds (TBT, TPhT, etc)	6
PBDEs (pentaBDE, octaBDE, decaBDE)	4
PFAS (PFOS, PFOA)	8
HBCDD	4
Nonylphenols (NP, NPE)	12
Octylphenols (OP, OPE)	12
Short-chain chlorinated paraffins (C10-13)	5
Medium-chain chlorin. paraffins (C14-17)	3
Endosulfan	2
DDTs (sum-DDT, DDE, etc)	2
PAHs (incl. metabolites)	8
BFRs (PBDEs etc)	5
HCHs ( alpha, beta, gamma)	4
Heptachlor	4
Heavy metals	14
Pharmaceutical residues	12
Herbicides (except listed above)	6
Fungicides (except listed above)	5
Insecticides (except listed above)	5
Endocrine disrupting substances (EDS, except listed above)	9
Animal/veterinary drug residues (except listed above)	2
Disinfectants (except listed above)	5



HELCOM data call for micropollutats in WWTP effluents and POPs of high concern in rivers.



Name HELCOM Baltic Sea Action Plan – Hazardous Substances

Utilization of BREF to obtain information on the use of chemicals in the region for HELCOM indicators (HAZBREF)

a. update the list of HELCOM target substances;

- b. identify the use of the substances in the region;
- c. target actions of the HELCOM BSAP to reach the goal for hazardous substances.
- d. identify specific regional actions concerning hazardous substances

# HELCOM vision for nutrient recycling VISION

• Nutrients are managed sustainably in all HELCOM countries, securing the productivity of agriculture through efficient use of nutrients and cost effective nutrient recycling, minimizing nutrient loss to the Baltic Sea environment.

# OBJECTIVES

- Nutrient rich organic residues originating from areas with high nutrient surplus and accumulation are utilized for production of safe and economically viable fertilizer products.
- Nutrients are recycled using best available technologies for the specific conditions and ensuring environmental safety.
- Regional challenges are solved by applying scientific research and knowledge exchange bringing added value for the whole Baltic region.

The updated BSAP will be adopted by Contracting Parties at the HELCOM Ministerial Meeting in 2021.

# Guiding principles

- The fundamental principles of the Helsinki Convention and principles of the BSAP;
- The adopted HELCOM vision "A healthy Baltic Sea environment, with diverse biological components functioning in balance, resulting in a good environmental/ecological status and supporting a wide range of sustainable human economic and social activities"
- Ocean-related UN Sustainable Development Goals and associated targets, and in particular SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development", which will be used as a framework in updating the BSAP.

## Conclusions – questions:

- Whether the list of HELCOM priority substances should be revised?
- How the problem of emerging pollutants can be addressed in the BSAP?
- Whether HELCOM specific recommendations can be substituted by BREFs?
- Does the extension HELCOM of indicators including loads and sources of hazardous substances can help to follow up the state of contamination of the BS environment?
- Can BREFs provide relevant information to identify regional priorities in hazardous substances?
- Whether industrial releases is the main challenge for recycling of nutrients from sewage water?
- What are the solutions to prevent deterioration of the sewage based fertilising products by industrial discharges?

BSAP commitment with regard to hazardous substances in WW sector

practical introduction of the whole effluent assessment (WEA) approach to monitoring of complex discharges of hazardous substances

establish PBT (persistent, bioaccumulating, toxic)-based discharge limit values based on the WEA approach

