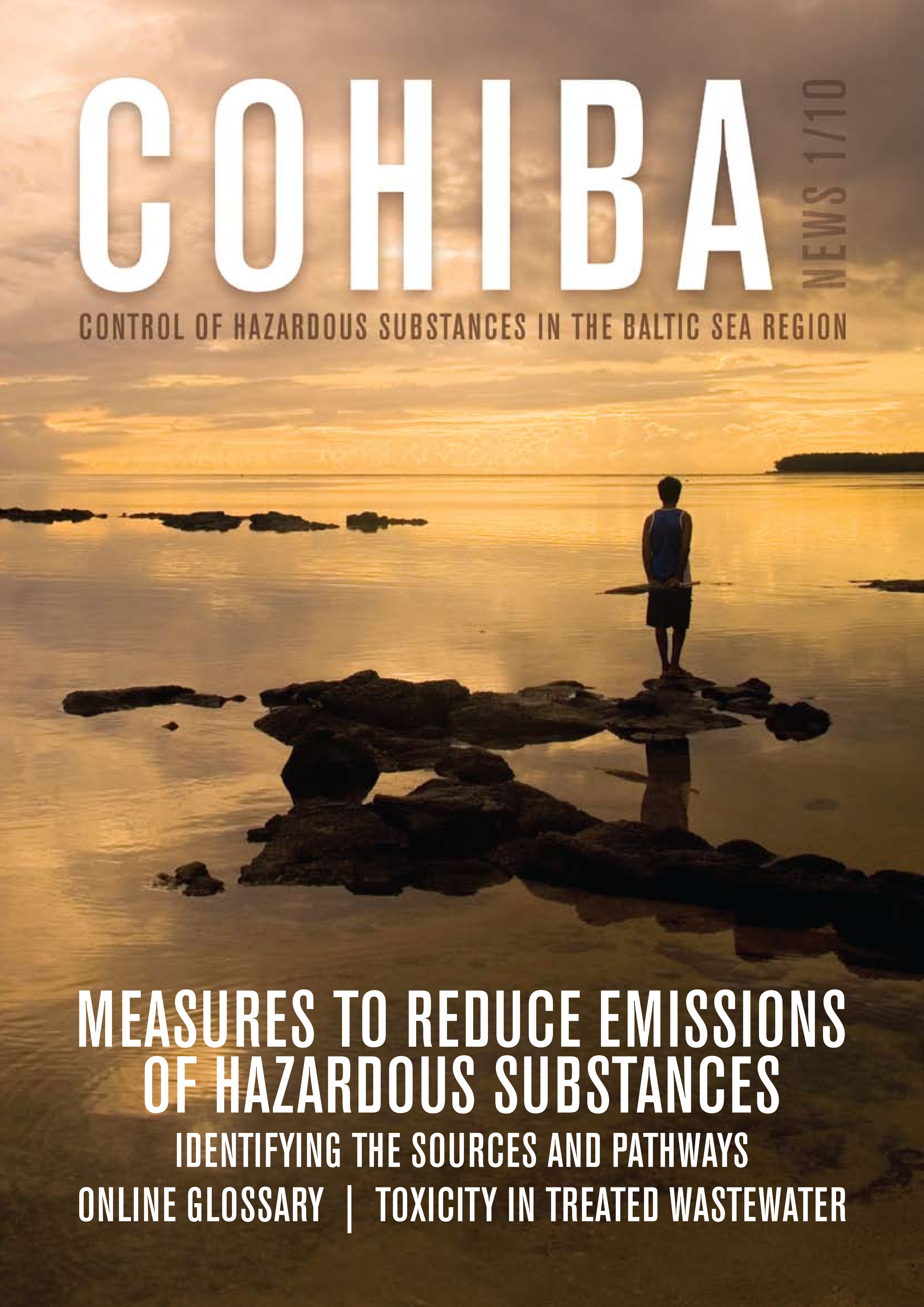


COHIBA

NEWS 1/10

CONTROL OF HAZARDOUS SUBSTANCES IN THE BALTIC SEA REGION

MEASURES TO REDUCE EMISSIONS OF HAZARDOUS SUBSTANCES

IDENTIFYING THE SOURCES AND PATHWAYS

ONLINE GLOSSARY | TOXICITY IN TREATED WASTEWATER

MEASURES TO REDUCE EMISSIO

The COHIBA project has already compiled a Preliminary Inventory of Measures, including 75 measures together with details of their applicability for each of the 11 substances of special concern to the Baltic Sea. The measures are divided in end-of-pipe measures, source control measures, regulatory measures, economic and financial measures, and voluntary agreements.

Regulatory Measures including international conventions, EU directives and national legislation often involve bans on the marketing and use of specific substances such as the TBT formerly used in anti-fouling paints applied on ship hulls. **Economic and Financial Measures** such as the waste water fee or special taxes encourage industry to internalize true environmental costs. **Voluntary agreements** include the voluntary phasing out of substances by industry associations and companies. Such a phasing out is in progress for PFOA.

Using alternatives or substitutes is a **Management/Technical Measure** for the source control of emissions. User-oriented measures can target consumer behavior through awareness-raising measures or product labelling. One example is the labelling of textiles that contain no nonylphenols and nonyphenol ethoxylate. Consumer awareness of hazardous substances is still relatively low, due to the complexity of related problems. Process-oriented measures target the production process, a typical example is the phasing out of mercury in the chlor-alkali electrolysis.

End-of-pipe Measures are technical measures that prevent emission streams from reaching the environment. Some end-of-pipe measures target one specific substance. Special air filters in crematoria

Regulatory Measures	Economic and Financial Measures	Voluntary Agreements
	International level	
	EU-level	
	HELCOM level	
	National level	
	Sub-national level	

Management and Technical Measures
Source Control
Process-oriented
User-oriented
Substitution, Alternatives
End-of-pipe Measures

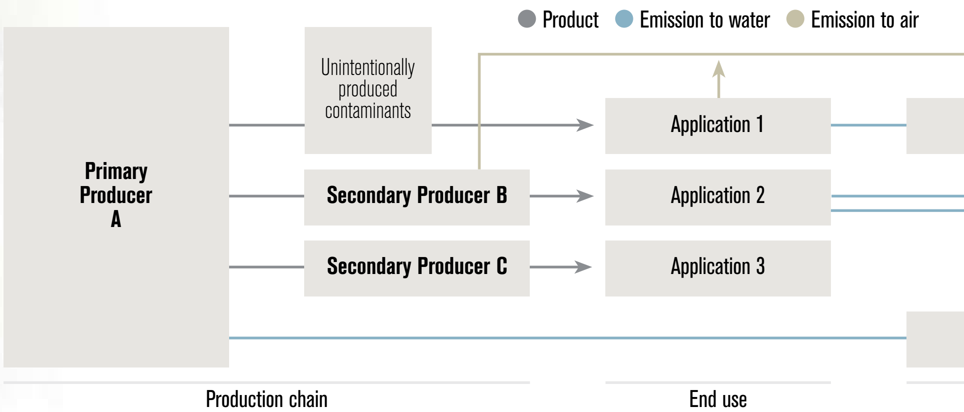
IDENTIFYING THE SOURCES A

The sources and pathways of hazardous substances of specific concern to the Baltic Sea will be assessed. This improves our understanding of the links between the sources of the substances and their impacts in the marine environment.

Substance flow analyses investigate the main sources and pathways of target substances. Several of the substances under investigation are regulated within the EU, so industrial sources may only be of minor importance in relation to diffuse sources such as consumer goods. In many cases data is limited, and analyses have to work with rough estimates. Efforts are made to ensure that results from different countries are comparable.

Emission data obtained from each country in the Baltic Sea region for the substance flow analyses will be incorporated into a chemical fate model, which will predict the overall picture and identify

PATHWAYS OF HAZARDOUS SUBSTANCES



VASTAVALO

NS OF HAZARDOUS SUBSTANCES

can reduce mercury emissions, for instance, and treating runoff from shipyards targets TBT from old layers of anti-fouling paint. Other end-of-pipe measures, especially those targeting waste, waste water and urban runoff, can reduce the emissions of multiple substances simultaneously (cross-substance effects).

Inventory of Measures was compiled using information from a questionnaire, literature studies and workshops.

Core measures

In COHIBA project, measures are referred to as "core measures" if they have to be put into practice according to the implementation of the Urban Waste Water Directive, Waste Directive or the IPPC Directive (as best available techniques). The implementation of these core measures will affect the future need for action on the different substances.

The core measures may also be technical prerequisites for more advanced measures targeting hazardous substances. For example, loads of dissolved organic substances in waste water must be reduced before the absorption of hazardous substances on activated carbon can be initiated in industrial or municipal waste water treatment. Therefore, the degree of implementation of core measures has to be taken into account when evaluating the scope for further measures addressing hazardous substances.

Guidance documents for substances

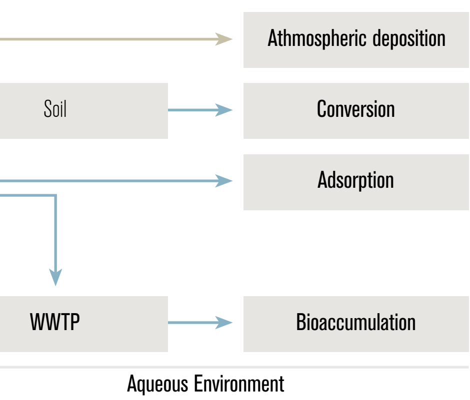
The Federal Environment Agency of Germany as the Work package 5 project leader and all other project partners have also already begun to produce guidance documents for the 11 substances. These documents give an overview of the substances' chemical and physical properties, emission sources and reduction measures.

Work package 5:
Cost effective management options to reduce discharges, emissions and losses of hazardous substances

ND PATHWAYS

the most important flows. Assessments of the importance of urban areas will be conducted using an urban model, based on a case study in Stockholm. This model is being further developed to also include indoor air, which is highly relevant, as several of the target substances are present in articles used inside buildings.

Work package 4:
Identification of sources and estimation of inputs/impacts on the Baltic Sea



ONLINE GLOSSARY

The COHIBA project has published an electronic glossary of terms related to hazardous substance management and chemicals safety. Hazardous substances can only be effectively controlled and managed if everyone involved shares a common understanding of the relevant terminology.

This glossary has been compiled to overcome a potential communication barrier that could hinder collaboration between professionals working around the Baltic Sea. It features the English terms already used in the EU, together with their translations in five languages: Estonian, Latvian, Lithuanian, Polish and Russian.

A special Russian appendix has been added to the glossary, since the Russian hazardous substances management system differs greatly from the EU system, especially with regard to certain environmental hazards that are not addressed by Russian regulations. This is to help Russian stakeholders who may not yet be fully aware of the environmental concerns that lie behind current EU legislation on hazardous substances.

The glossary contains a section on Russian terminology which aims to explain the Russian hazardous substance management system to an EU audience in English. The content of the Russian section of the glossary has been developed in cooperation with the project "Capacity-building on chemicals management in North West Russia"(CapChemRU), supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

The glossary is available online at:
http://hs.befgroup.net/
Work package 6:
Capacity building and knowledge transfer

ENVIRONMENTAL PROTECTION AGENCY, MARINE RESEARCH DEPARTMENT, LITHUANIA

The harmful acute impacts were detected by directly exposing test organisms to series of diluted effluent samples under controlled laboratory conditions. The COHIBA project used various standardised short-term tests focusing on factors including survival rates of the water flea ***Daphnia magna****, luminescence of* ***Vibrio fisheri*** *bacteria, and the growth of green algae.*

TIMO VÄNNI | FINNISH ENVIRONMENT INSTITUTE

TOXICITY IN TREATED WASTEWATER

The preliminary results of the COHIBA project showed detectable acute toxicity in some treated effluents, although the concentrations of the 11 chemicals analysed were low.

Well-treated effluents should not show any acute toxicity. The presence of observable and measurable acute toxicity in effluents is a sign that either wastewater is not being sufficiently treated, or the treatment plant in question is not functioning properly, since compounds harmful to aquatic organisms still remain in its effluent.

The COHIBA project has carried out case studies in 8 Baltic Sea countries where municipal and industrial wastewater, landfill effluents and storm water outflows from selected sites have been screened for ecotoxicity and the presence of 11 selected hazardous substances.

A vast sampling programme

COHIBA's sampling programme is enormous, with 240 water and sludge samples taken during a single year. Project will perform biological tests to survey the acute and chronic toxicity of effluents, as well as chemical analyses to identify nine organic substances or substance groups and two heavy metals listed as being of concern in the Baltic Sea.

Screening sites and number of samples in each country

- 6 water samples from 2 municipal WWTPs*
- 6 water samples from 2 industrial WWTPs*
- 2 storm water samples
- 2 water samples from landfills
- 2 sludge samples from WWTPs*

*wastewater treatment plants

Preliminary results

So far, effluents from the wastewater treatment plants have been screened five times for acute toxicity and three times for the identification of the COHIBA target substances. Results of the longer-term biotests (chronic tests) will be available by autumn 2010.

The results of the toxicity screenings showed detectable acute toxicity in some of the treated effluents. The quality of the effluents evidently varied between sampling seasons.

So far results from the screenings for the 11 selected harmful substances have indicated possible sources, although concentrations of many of the compounds were low or even below analytical detection limits. Observed levels were such that none of these chemicals alone would be acutely toxic to aquatic organisms at the measured concentrations. However, it should be remembered that these compounds are persistent and bioaccumulative, and that there is no information yet available concerning their combined effects on aquatic organisms.

Acute toxicity risk to organisms

Acute toxicity means that effects on exposed organisms are observable within a relatively short time, such as 24 hours. If effluents cause harmful effects on exposed organisms already within this timeframe, this is an indication of the potential risk of these effluents causing long-term effects on organisms in the recipient waters, although dilution factors would need to be taken into account. Most of the harmful organic compounds under consideration are bioaccumulative, which means that they may biomagnify in the aquatic food chain. Bioaccumulation in organisms can occur even if environmental concentrations of a substance are very low.

Work package 3:
Innovative approaches to chemical controls of hazardous substances

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Ansa Pilke Project Manager, Finnish Environment Institute (SYKE) | ansa.pilke@ymparisto.fi | Phone +358 (0) 40 834 6537
Mikhail Durkin Professional Secretary, HELCOM | mikhail.durkin@helcom.fi | Phone +358 (0) 46 850 9195
Ulla Ahonen Communications Officer, HELCOM | ulla.ahonen@helcom.fi | Phone +358 (0) 400 315 790

WWW.COHIBA-PROJECT.NET

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