Proposals for measures and actions for the reduction of pollution from hazardous substances for the Baltic Sea Action Plan

Final Report

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Note: All annexes, except for Annex A.1 are kept in separate documents (files)

Abbreviations

AFS	Anti fouling-system
BAT	Best Available Technique
BDPE	Brominated diphenyl ether
BFR	Brominated Flame retardant
BSAP	Baltic Sea Action Plan
CAS	Chemical Abstracts Service (Registration number)
Cd	Cadmium
DBP	Dibutylphthalate
DEHP	Diethylhexylphtalate
EC	European Commission
EE	Estonia
EINECS	European Inventory of Existing Chemical Substances
ELV	Emission limit value
EU	European Union
FZ	Federal law (Federalny zakon) [Russia]
GHS	Globally Harmonized System
GOST	Gosudarstvennyy standart (State standart) [Russia]
HBCDD	Hexabromocyclododecane
HELCOM	Helsinki Commission
Hg	Mercury
HS	Hazardous substance(s)
HSE	Health, Safety and Environment / Health and Safety Executive
IMO	International Maritime Organisation
IPPC	Integrated Pollution and Prevention Control
ISO	International Standardization Organisation
LT	Lithuania
LV	Latvia
MARPOL	International Convention for the Prevention of Pollution From Ships
MCCP	Medium chain chlorinated paraffin
NACE	Nomenclature générale des activités économiques dans les communautés européennes (General nomenclature for economic activities in the European Communities)
NGO	Non-governmental organisation
NP	Nonylphenol
NPEO	Nonylphenol ethoxilate
OBUV	Tentative safe levels of impact (Orientirochno bezopasnyy uroven vozdeystviya) [Russia]
ODK	Tentative allowed concentration (Orientirovochno dopustimaya koncentraciya [Russia])
ODU	Tentative allowed level (Orientirovochno dopustimyy uroven [Russia])
OP	Octylphenol
OPE	Octylphenol ethoxylate
PBT	Persistent, Bioaccumulative and Toxic
PCB	Polychlorinated biphenyls
PDK	Maximum allowed concentration (Predelno dopustimaya koncentraciya) [Russia]
PDRO	Maximum allowed waste generation and disposal limit from one source [Russia]
PDS	Maximum allowed concentration (Predelno dopustimye sbrosy) [Russia]
PDV	Norms of allowed impact on water bodies (Normativy dopustimogo vozdeystviya na vodnye obekty) [Russia]

PDVV	Maximum allowed negative impact (Predelnoe dopustimoe vrednoe vozdeystvie) [Russia]
PFOA	Perfluorooctanionic acid
PFOS	Perfluorooctane sulfonate
PL	Poland
POPs	Persistent Organic Pollutants
PVC	Polyvinylchlorid
R&D	Research and Development
REACH	Registration, Evaluation and Authorisation of Chemicals
Rospotrebnadzor	Federal Service for the protection of consumer rights (Federalnaya sluzhba po nadzoru v sfere sashchity prav potrebiteley i blagopoluchiya cheloveka) [Russia]
Rostekhnadzor	Federal Agency for ecological, technological, and nuclear safety (Federalnaya sluzhba po ekologicheskomu, tekhnologicheskomu I atomnuyu nadzoru) [Russia]
Rosvodresursy	Federal Agency of Water Resources (Federalnoe agenstvo vodnykh resursov) [Russia]
RU	Russia
SanPiN	Sanitary-epidemiological rules and norms (Sanitarnye pravila, normy I gigienicheskie normativy) [Russia]
SCCP	Short chain chlorinated paraffin
SDS	Safety datasheet
TACIS	Technical Assistance for the Commonwealth of Independent States
TBBPA	Tetrabomobisphenol A
TBT	Tributyltin
TPhT	Triphenyltin
TU	Technical norm
VDK	Temporary allowed concentrations (Vremenno dopustimye koncentracii) [Russia]
WFD	Water Framework Directive

1. Executive Summary

The measures and actions proposed in this report aim to systematically and substantially reduce emissions, losses and discharges of hazardous substances into the South-Eastern Baltic Sea Region. Its regulatory background is the HELCOM strategy with regard to hazardous substances (19/5) as well as the new EU Marine Strategy/Directive and the EU Water Framework Directive. The proposed measures are meant as input for the HELCOM Contracting Parties to support the elaboration of the **Baltic Sea Action Plan (BSAP)**, which will be adopted in November 2007 by the Environmental Ministers of the HELCOM Contracting Parties.

The Project focussed on the conditions in the new EU member states (Estonia, Latvia, Lithuania and Poland) and Russia (North West Region only). By example of 11 (groups of) hazardous substances, the consultant analysed the available information on current uses and emissions of these substances and the current practise in applying the existing regulatory instruments to reduce releases. Based on this analysis, the consultant proposes a suite of 30 actions to promote the long term process towards meeting HELCOM objective in 2020.

The consultant reports a number of key findings:

- The understanding of the concerns related to HELCOM hazardous substances is still low among trade, industry and authorities. This in particular applies to Russia, but also the four new EU member states. Except for heavy metals and Dioxins, HELCOM priority substances are still considered “exotic” and not very relevant. This may have to do with the fact that the “hazardous substance” concept has not been translated from its scientific basis into practical life, and that a public debate on these substances is absent in the new member states and Russia.
- The assessment methodology applied at EU level to identify substances of concern related to persistency and bioaccumulation is partly different from the methodology applied under HELCOM Recommendation 19/5. This concerns the role of measured concentrations of substances in the environment, the cut-off values for bioaccumulation and toxicity and the way to deal with substances for which toxicity information is lacking.
- Even for well known hazardous substances the information on uses and releases into the environment currently available does not allow to measure the progress made so far towards ceasing releases and to target measures accordingly. This is mainly due to the fact that the primary source of information, which are in fact the companies acting in the market, lack information and understanding on use and release of environmentally hazardous substances from their business.
- The main existing information instrument to communicate about environmentally hazardous substances in products supplied to industrial manufacturers of chemical and non-chemical products does not work in practice. Companies are not able to identify environmentally hazardous substances in their raw materials based on the current communication mechanisms with their suppliers.
- The regulatory instruments existing in the EU to target environmentally hazardous substances at product or process level are not systematically applied. This is illustrated in the current study for environmental permitting, for source and pressure analysis in river basins under the Water Framework Directive and for marketing and use restrictions related to certain substances.
- In Russia, the basic regulatory framework to control environmentally hazardous substances is not yet in place. This is due to a fundamentally different understanding of “hazardousness” and “precaution”, a focus on human toxicity in classification of chemicals and practically unworkable approval mechanisms for chemicals.

Based on these findings, the consultant proposes a number of actions aiming to trigger a systematic and sustainable process on risk management related to these substances. It must be highlighted that principally the recommendations apply to all countries, regardless of their size and their contribution to the pollution load into the Baltic Sea. However, from the environmental perspective, it may be more effective, if specific countries predominantly take certain recommendations into account:

- Launching projects of common public interest to illustrate the concern related to hazardous substances based on practical life examples and to publicly discuss suitable measures. The consultant proposes two such projects: “clean fish food from local/regional waters” and “responsible use of fire” in the domestic sector.
- Setting up administrative and research capacity within the HELCOM structures to actively support the EU processes for identification of substances of very high concern related to the marine environment.
- Developing guidance and training to systematically address environmentally hazardous substances in IPPC and other environmental permitting
- Strengthening the personal and technical capacity of the inspectorates responsible for market surveillance to identify substances under marketing and use restriction in chemical products and articles.
- Building up capacity related to implementation and enforcement of REACH. This is recommended in order to make best use of the REACH mechanisms systematically generating and disseminating information related to environmental hazardousness of substances (as such and in products) and conditions of safe use.
- Setting up a programme to reduce dioxin and mercury emission to air from domestic and municipal heating as well as waste management (investment at municipal level, public information campaign and some regulatory measures).
- Accelerating the reduction plans for dioxin and cadmium emissions in steel industry based on BAT implementation at single installation level.
- Launching a public programme to support formulators of construction chemicals and plastic master batches in substituting chlorinated paraffins and brominated flame retardants in their products. The same applies to the textile finishing and plastic conversion sector.
- Carrying out one-off surveys in all target countries related to certain hazardous substances in municipal and industrial sewage systems. Such action should start with (brominated) flame retardants, short and medium chain chlorinated paraffins, nonylphenol (ethoxilates), mercury and cadmium. Based on these surveys, identification of sources should be carried out were elevated levels have been measured.
- Launching a co-operation process between HELCOM and Russia in order to support Russia in technical aspects of law making to introduce the foundation stones for measures related to hazardous substances into Russian legislation. Such work may start from exemplifying suitable legislative measures to introduce marketing and use restrictions for nonylphenols, chlorinated paraffins and brominated flame retardants.
- Launching a pilot project with Russian exporters of Chemicals to the EU (preferably including Baltic States and Poland) to prepare for REACH.

2. About the project

The project has been commissioned to support the **elaboration of measures** for the reduction of emissions, losses and discharges of certain hazardous substances in the Eastern Baltic Sea Region. These measures shall be included into the **Baltic Sea Action Plan (BSAP)**, which will be adopted in November 2007 by the Environmental Ministers. Its regulatory background is the HELCOM strategy with regard to hazardous substances (19/5) as well as the new EU Marine Strategy/Directive and the Water Framework Directive.

The project has been implemented from 1 February until 30 September 2007 by a consortium consisting of the Baltic Environmental Forum Group, a network of non-governmental, not-for-profit organisations in Latvia, Estonia, Lithuania, Russia, and Germany and the three consulting companies: Ökopol (Germany), eko-net.pl (Poland) and Hendrikson & Ko (Estonia).

The Project focussed on the conditions in the new EU member states (Estonia, Latvia, Lithuania and Poland) and Russia (North West Region only). It analyses the use and emissions of 11 (groups of) hazardous substances:

- four brominated flame retardants (BFR's): penta-, octa- and decabrom dephenylether; hexabromocyclododecane (HBCDD)
- tributyl and triphenyltin (TBT and TPhT),
- Endosulphane,
- short chain and medium chain chlorinated paraffin (SCCP and MCCP),
- alkylphenolethoxilates: nonylphenolethoxilates (NP/NPEOS) and octylphenolethoxilates OP/OPEOS.
- PFOS related substances,
- Mercury (Hg) and Cadmium (Cd)
- Dioxins-related substances

The following products are potentially containing the selected hazardous substances: metal cutting fluids; electroplating and other metal surface treatment chemicals; industrial and institutional cleaners as well as car care products; leather, textile and paper finishing chemicals; plastic and rubber compounds; construction chemicals in particular sealants and foams. We have excluded from the original list non-biocidal paints and adhesives due to the fact that their potential contribution to Baltic Sea pollution is unlikely to be significant. As a particular case in Poland, emission data for heavy metals and dioxin emissions from industrial sources, the domestic sector and the municipal sector have been assessed.

The main objectives of the project were: i) to propose actions suitable to substantially contribute to improving the state of the marine environment; ii) to remove substances and sources from the HELCOM work programs that are not an issue anymore and iii) to design an Action Program which contributes to a front-running role of HELCOM in implementing the EU marine strategy and related legislation.

The consortium was asked to deliver information on the use of the target hazardous substances in selected sectors of industry in the five target countries as well as for information on emissions of target hazardous substances. Furthermore it was supposed to provide information on BAT implementation level in companies in the five target countries analysing to which extent BREF requirements and/or HELCOM recommendation are implemented. In consequence to the information analysed the actions should be proposed for the coming BSAP.

Before contracting, the consortium and the HELCOM Lead Countries agreed that no single enterprise will be exposed/named as "Hot Spot" in HELCOM understanding in the final project report, because making information on use and emission of hazardous substances available to the consortium indicates awareness and openness, which is rare in the region, and exposure of such companies would punish the front runners of environmental awareness.

Furthermore it was agreed that a few issues originally requested by the Lead Countries are out of scope of the contract as they would require different experts and methods: i) remediation and clean-up of contaminated sites/landfills; ii) waste gas treatment from landfills related to volatized hazardous substances from municipal waste; iii) waste water treatment from landfills related to hazardous substances from municipal waste; iv) harbour sediment management related to TBT contamination, and v) rain- and storm water treatment to reduce emissions from urban infrastructure.

The main project activities were:

- Analysis of the legal frameworks addressing hazardous substances;
- Tracing back and verifying the information on certain hazardous substances in HELCOM reports and EPER to the source of origin in the country; in case of significant amounts, exploring which actions/measures are planned in the country respectively for the relevant site;
- Identification of particular relevance of certain industry sectors in the region with help of socio-economic statistics;
- Analysis of new Member States' activities to implement action related to WFD priority substances;
- Analysis of set-up and operational practice regarding substance and product registers in the target countries;
- Screening of national pesticide and biocide registers to identify remaining uses of TBT, TPhT and Endosulphane;
- Evaluation of IPPC (and other) permits and inspectorates' practice regarding identification and minimization of hazardous substances at enterprises;
- Identification of users, formulators and distributors in the market using or supplying products potentially containing the target substances; and,
- Evaluation to which extent the project target substances occur in the products, raw materials or emissions of selected companies.

Due to the substantial difference between the Russian system of hazardous substance classification, management and monitoring practices and the EU system, which is valid in the four other target countries, the consortium was in need to apply a different approach for gathering of data and information on Russia. It decided therefore to illustrate findings and proposals for action for Russia in a separate chapter, taking notice of the particularities and differences of the country, but also trying to raise awareness on these differences on both sides, the Russian and the EU member states. This is to initiate better communication in future and to improve mutual understanding with regard to their different hazardous substance concepts.

Poland and the Baltic states, although largely differing in size, are handled in one chapter as all four countries are having the same regulatory framework as basis for their national hazardous substance management strategies. Some available and comparable Russian data are on purpose included into this chapter (No.3) as well to illustrate the information vis-à-vis the other countries and give a regional impression.

3. Characteristics of the HELCOM Catchment Area

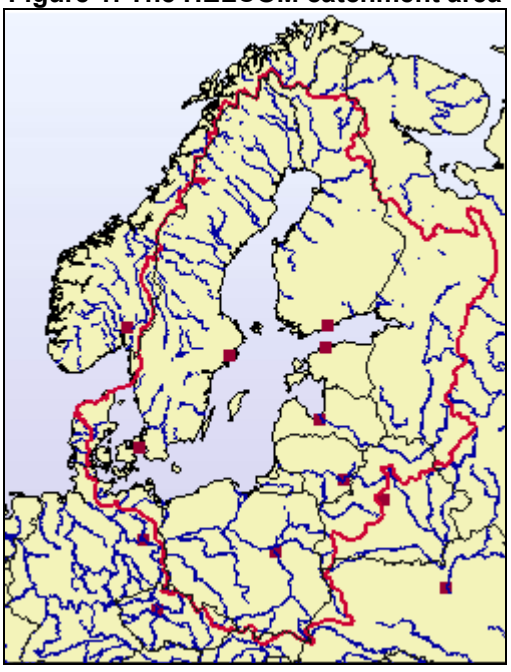
The countries in scope of the study are characterised by one crucial distinctive feature that determines also the arrangement of the report: the Baltic States as well as Poland are members of the European Union since 2004, while Russia remains outside the EU structures and therefore is not obliged to comply with any legislation of the European Union.

Yet, since 1990 the new EU member states have undergone a series of dramatic political, social and economic changes that have had their impact, which is also of concern for the subsequent proposals of measures for the BSAP. The simultaneous transition from planned economy and non-democratic rule was followed by the EU approximation process, which again meant a significant change of principles, rules and procedures for these countries. The process bound a large amount of the national administration. What Western European countries gradually introduced during the European integration process since formation of the Steel and Coal Union in 1952, cannot be expected to be fully and smoothly working in countries which only had about a fifth of the time for its implementation.

This crucial basic feature applies similarly to all five new EU countries. Yet with regard to the Russian Federation, since EU legislation is not an applicable lever for ensuring compliance with certain standards, principles and targets, only international conventions apply.

3.1 Geographical characteristics of the HELCOM Catchment Area[1]

Figure 1: The HELCOM catchment area



At an average depth of just 53 metres, the Baltic Sea is much shallower than most of the world's seas. It contains 21,547 km³ of water (290,000 m3 per inhabitant in the catchment area). Every year rivers bring about 2% of this volume of fresh water into the sea as runoff.
The Baltic Sea is only connected to the world's oceans by the narrow and shallow waters of the Sound and the Belt Sea. This limits the exchange of water with the North Sea, and means

[1] http://www.helcom.fi/environment2/nature/en_GB/nature/

that the same water remains in the Baltic for up to 30 years – along with all the organic and inorganic matter it contains.
The brackish water of the Baltic Sea is a mixture of sea water from the North Sea and fresh water from rivers and rainfall. Salinity levels vary with depth, increasing from the surface down to the sea-floor. The Saltier water flowing in through the Sound and the Belt Sea does not mix easily with the less dense water already in the Baltic, and tends to sink down into deeper basins. At the same time, the less saline surface water flows out of the Baltic. Vertical mixing is limited due to relative sharp boundary between these water masses. This means that the oxygen content and the temperature of the deep basins are low and oxidative degradation processes of pollutants will be very slow (pollutant trap).
The Baltic Sea is much more vulnerable to introduction of hazardous substances compared to the North Sea or the North East Atlantic due to slower water exchange processes and a higher population density per available water volume.

Table 3-1: Geographical characteristics of the HELCOM catchment area[2]

Country	Baltic Sea drainage area (km^2)	% total national area within catchment	% of total catchment area	Inhabitants within HELCOM area in 2000	% of total population in HELCOM area	Population density in catchment area
Denmark	31,110	72.2	1.8	4,682,400	6.2	150.5
Estonia	45,100	99.7	2.6	1,483,942	1.8	32.9
Finland	301,300	89.4	17.5	5,107,790	7.0	17.0
Germany	28,600	8.0	1.7	3,140,000	4.2	109.8
Latvia	64,600	100.0	3.8	2,529,000	3.3	39.1
Lithuania	65,200	100.0	3.8	3,717,700	4.9	57.0
Poland	311,900	99.7	18.1	38,609,000	51.0	123.8
Russia	314,800	1.8	18.3	7,738,000	10.2	24.6
Sweden	440,040	97.8	25.6	8,374,000	11.1	19.0
Total	1720170[3]		100%[4]	75.4 Mio		

The present project covers a bit less than half of the territory of the Catchment area and about 70% of the population. Poland makes about half of the population in the HELCOM Catchment Area, thus plays a key role in reducing emission, losses and discharges of hazardous substances into the Baltic Sea from industrial processes, use of chemical products as well as domestic and municipal heating.

3.2 Socio-economic features of the Eastern HELCOM Catchment Area

In economical terms the Eastern part of the Catchment area is highly volatile with partly enormous growth rates far above the EU average; especially Latvia and Estonia have had high rates most recently. The economic growth has been far above the EU 25 average in the Baltic States particularly. This can have a number of effects related to the release of hazardous substances, including:

- For hazardous substances that are directly correlated with growth of the economy (e.g. emissions and discharges from basic metal, non-metal and basic chemical industry, energy production) the releases may have increased. However, the growth will also be connected with the ability to invest in reduction measures. The extent, to which decoupling of emissions from growth has been achieved by now, has not been investigated in the current study and hence, no conclusions have been drawn.

2 (HELCOM Baltic Sea Environment Proceedings No. 108. Heavy Metal Pollution to the Baltic Sea in 2004, p.6)
3 Including 117,520 km^2 non HELCOM area (Belarus and Ukraine)
4 Including 6.8% non HELCOM

- The wealth of the economy may go hand in hand with a growing demand for environmentally sound products and clean food. This expectation is based on broad empirical evidence that awareness on health and environment grows in a society when the basic needs of daily survival are satisfied.

Table 3-2: Growth of GDP per capita (2001-2006)

	2000	2001	2002	2003	2004	2006
EU 25	3.5	1.7	0.6	1.1	1.1	2.7
Estonia	12.0	7.1	10.0	9.1	13.2	11.6
Latvia	10.5	9.5	4.4	8.3	10.3	12.5
Lithuania	5.9	5.6	5.3	15.0	12.5	7.4
Poland	2.9	2.8	0.0	5.4	2.4	7.1
Russia	10.0	5.4	4.3			

Despite the booming economy, we find very differently sized manufacturing sectors in the five countries. The borderlines may be drawn between the Baltic States, which are fairly similar in size and Poland. This difference in size is crucial for the subsequent report on results.

In 2004, the manufacturing sector in Poland contributes 2.4 % to industrial manufacturing gross value in the EU (6,023 billion EUR in EU 25 compared to 144 billion EUR in EU (EUROSTAT). Compared to this, the Baltic States together contribute 0,003% to the EU manufacturing sector (about 19 billion EUR). Thus, implementation of Best Available Techniques in Poland's manufacturing sector plays a key role for cessation of emissions, losses and discharges of hazardous substances into the Baltic Sea.

In the table below the manufacturing sector is broken down according to where it was most likely to find use of the target substances. Comparable data for North-West Russia were not available due to different structure of statistical data.

Table 3-3: Breakdown of the manufacturing sector (gross value in %, EUROSTAT)

Sector	EU 25	Estonia	Latvia	Lithuania	Poland
Manufacturing	100.0	100.0	100.0	100.0	100.0
Food and Beverages	14.0	18.3	26.0	33.8	20.3
Manufacture of textiles	1.8	5.3	2.9	3.9	1.9
Tanning, dressing of leather; luggage	0.7	0.6	0.1	0.4	0.5
Wood and wood products	2.0	15.9	24.0	6.5	3.2
Pulp and paper	2.7	1.7	1.2	1.0	2.3
Coke, refined petroleum prod., nuclear fuel	6.1	0.8	*c*	23.8	8.0
Chemicals and chemical products	10.0	5.6	2.7	5.0	7.4
Rubber and plastic products	4.0	3.9	2.9	4.7	5.1
Non-metallic mineral products	3.5	5.6	4.1	3.0	4.5
Basic metals	4.8	0.3	7.0	0.2	5.1
Fabricated metal products	6.7	8.7	4.0	3.7	6.4
Machinery and equipment n.e.c	8.8	3.3	2.8	2.7	5.3
Motor vehicles, trailers and semi-trailers	11.7	2.0	0.5	0.5	9.7
Other transport equipment	2.6	2.9	2.6	2.0	1.8
Furniture	2.7	6.8	4.5	4,9	4,5

Sector	EU 25	Estonia	Latvia	Lithuania	Poland
Other	18.0	18.3	14.5	3,8	14,0

From the sector break down a number of conclusions can be drawn related to hazardous substances

- Manufacture of textile (including use of textile finishing products) play a more important role in the Baltic States compared to the EU. The same applies to wood and furniture production. A relevant share of these products is exported to EU countries with high consumer awareness related hazardous chemicals in products[5]. Thus, these two sectors may have an intrinsic motivation to raise their knowledge on hazardous substances in their raw materials.
- Compared to the Baltic States, Poland has a large base chemicals and base metal sector with the corresponding emissions. However, base metal production (Latvia) and fertiliser production (Lithuania) play a role in the Baltic States itself.

3.3 Structure of Chemicals manufacturing and trade

The following section takes a closer look at the structure of the Chemicals industries in the four EU members:
While the Estonian (5.6% or the manufacturing industries) and Lithuanian (5.0%) chemicals industry are comparatively similar in terms of turnover, the sector is by a third smaller in Latvia (2.7%). Significant sub-sectors are Basic chemicals in Estonia and Lithuania, painting and coating in Estonia and Latvia and pharmaceuticals in Latvia. The Polish chemicals industry (7.3%) rests on three major sub-sections, the production of basic chemicals, pharmaceuticals and the production of detergents.

Table 3-4: Composition of the chemicals sector in the target countries (EUROSTAT, gross values in %)

Sub-sector	Estonia	Latvia	Lithuania	Poland	EU 25 total
Total	100.0	100.0	100.0	100.0	100.0
Basic	37.9	7.8	85.0	36.4	44.1
Agrochem	*c*	*c*	*c*	1.4	1.6
Paints, coatings	39.4	20.3	2.9	7.5	6.6
Pharmaceuticals	*c*	45.7	*c*	18.7	29,9
Detergents	3.8	16.0	2.3	28.3	11,8
Other chemicals	10.8	4.2	2.0	5.1	8,5
Man made fibres	0.0	*c*	*c*	2.7	1,9
Confidential (Total)	8.1	6.0	7.9		

[5] Such awareness is usually the result of a long term process, triggered by certain events, receiving a high public attention, e.g. through green pressure groups and the media. Differences in such awareness across European countries can for example be measured by market shares of "bio"-food or regular public surveys on ranking of issues that are of concern to the public. For example, the differences in environmental awareness are reflected in a Special Eurobarometer issue (No. 271, 2005) "Attitudes of European chitizens towards the environment" considering the frequency of efforts people make to protect the environment: "*Often*" was mentioned in Lithuania by 47%, Latvia 40%, Estonia 39%, and Poland 23%. In comparison: Finland 57%, Germany 53%, Denmark 49%, Sweden 41%.

The most significant market outside the European Union is for all countries the countries in Eastern Europe, the Caucasus and Central Asia (ECCAA).[6] Export to this area makes 11.5 to 29.3 % of the overall export. Apart from pharmaceuticals these exports also consist of detergents, paints and construction chemicals. One important issue for the new BSAP is therefore the question whether products of lower environmental quality are still exported from new EU member states to Russia, since these may eventually enter into the Baltic Sea from North-West Russia

Also Imports from the ECCAA region play a significant role compared to the overall imports from this region to EU 25. In particular Poland and Latvia seem to import significant amounts of chemicals from this region. Therefore, exporters of chemicals from Russia to the new EU member states may be a "natural" co-operation partner in gaining first practical experience with a system like REACH in Russia.

Table 3-5: Shares of imports from the following regions to the target countries (EUROSTAT, gross values, in %)

Region	Estonia	Latvia	Lithuania	Poland	EU 25 total
Total	100.0	100.0	100.0	100.0	100.0
From EFTA	1.3	1.1	2.8	2.3	3.9
From EECCA	1.7	7.8	2.3	4.3	0.4
From USA	1.3	9.0	1.9	4.1	9.5
From EU 25 (Extra)	6.5	12.7	11.2	16.4	20.7
From EU 25 (Intra)	93.5	87.3	88.8	83.6	79.3

Table 3-6: Shares of exports to the following regions from the target countries (EUROSTAT, gross values, in %)

Region	Estonia	Latvia	Lithuania	Poland	EU 25 total
Total	100.0	100.0	100.0	100.0	100.0
To EFTA	0.8	0.0	0.0	3.6	3.0
To EECCA	24.3	11.5	29.3	18.5	4.0
To USA	1.6	8.0	3.9	16.0	6.2
To EU 25 (Extra)	27.5	31.9	50.0	42.5	35.1
From EU 25 (Intra)	71.4	68.1	50.0	59.6	64.9

[6] Among the EECCA countries, Russia is the main trading partner for all countries.

4. Findings and proposed actions for the BSAP[7]

The HELCOM strategy[8] with regard to hazardous substances has set out the objective to reduce discharges, emissions and losses of hazardous substances towards the target of their cessation until 2020, with the ultimate aim of achieving concentrations in the environment near background values for naturally occurring substances and close to zero concentrations for man-made synthetic substances (HELCOM recommendation 19/5).

The strategy does not make specific reference as to whether implementation of EU and other international frameworks would reduce emission losses and discharges of hazardous into the Baltic Sea environment, towards meeting the objective by 2020. With, the mechanisms established under the Stockholm Convention, REACH having entered into force, with the priority setting under the Water Framework Directive, with the IPPC permitting system and the pesticide and biocide review programs (including authorisation mechanisms), an appropriate framework already exists at EU level to meet the HELCOM objective by 2020. These frameworks also include mechanisms based on which the HELCOM contracting parties can address the particular conditions in the Baltic Sea (compared to North Sea) with regard to potential impacts of emission, discharges, and losses of hazardous substances.[9]

However, the implementation of the requirements and the efficient use of existing instruments can still be improved on EU level, but also in the four new member states of concern. The following suggestions have been elaborated, based on the assumption, that it will be more effective to support the use of these existing mechanisms rather than running a HELCOM implementation structure in parallel. There is a suite of actions, the HELCOM contracting parties, and here in particular addressed are Poland and the three Baltic States, which they could collectively carry out in order to make better use of the EU frameworks for the protection of the marine environment. Most of these actions are required by EU legislation anyway and will therefore improve the policy performance balance as an EU member state.

4.1 Understanding of the Helcom Hazard Substance Concept

4.1.1 Criteria to determine hazardous substances

In the new members states a better understanding of the hazard concept as used on HELCOM and EU levels is needed. However the different legal frameworks use different terms, which does not ease the understanding among authorities and industry in the target countries, especially as in most of the national languages only one word is available and used for different purposes. International frameworks talk about:

- Dangerous = hazardous in normal use of language

7 The actions focus on new member states, for Russia there is a separate chapter 4

8 The Kalmar Communiqué of the Council of the Baltic Sea States, 1996, stated that the uncontrolled use and handling of chemicals, including pesticides, require special attention, and called for the development by the Helsinki Commission of an Action Programme to ensure that discharges, emissions and losses of hazardous substances will be continuously reduced, towards the target of their cessation within one generation, with the ultimate aim of achieving concentrations in the environment near background values for naturally occurring substances and close to zero concentrations for man-made synthetic substances

9 The lower water exchange rate and the larger population discharging into the Baltic Sea, combined with a lower temperature in the northern parts of the Baltic Sea and low vertical mixing due to salinity conditions requires a more conservative approach in identification of hazardous substances.

- The EU system for classification and labelling of chemicals uses the term „dangerous“ substance.
- The Globally Harmonised System (GHS) for classification and labelling uses the term „hazardous“ substance instead of “dangerous”
- In the context of OSPAR, HELCOM and the EU Water Framework Directive (WFD) “hazardous” indicates that the substance is likely to be persistent, liable to bio-accumulate and toxic (PBT), or is of an equal level of concern.
- In the EU BREF documents the terms “harmful” and “hazardous” are used in a general meaning.
- REACH introduces the concept of “substances of very high concern”, and defines PBT/vPvB as one type of such substances. Based on the marine chapter of the current Technical Guidance Document for Risk Assessment of Existing and New Substances (TGD,2004), Annex XIII of REACH defines numeric criteria for PBT/vPvB substances.

A harmonisation of terminology would contribute to a better understanding among all parties; however, it is not an action for the new member states only, but rather an initiative from all HELCOM contracting parties to be carried to the international forums.

In addition, the numerical values applied to determine whether a substance meets criteria of being on (very) high concern are slightly different under the different frameworks.

Table 4-1: Numeric criteria to determine Hazardous substances

	EU Danger. N; R 50/53	**EU PBT**	**EU vPvB**	**OSPAR Haz Sub**	**HELCOM WFD**
P	Not readily degradable	[Not inherently degradable][10] or $DT_{50,wat}$ > [60]40 d[11] $DT_{50,sedi}$> [180]120 d	[Not inherently degradable][12] or $DT_{50,water}$ > 60 d $DT_{50,sed}$ > 180 d	[Not inherently degradable] or DT_{50} > 50 days	The criteria are identical with the EU and OSPAR criteria, however numerical cut-offs have not been defined.
	Or	And	And		
B	Log P > 3 BCF > 100	[Log P > 4.5][13] BCF > 2000	[Log P > 5][14] BCF > 5000	[Log P > 4] BCF > 500	
	And	And			
T1	LC_{50} < 1 mg/l	[LC_{50} < 0.1 mg/l] NOEC < 0.01		[LC_{50} < 1mgf/l] NOEC < 0.1	
		Or			
T2	Not applicable	R45, R46. R60, R61,R62,R63 or T,R48 or Xi,R48		R45, R46 R60,R61,R62,R63 T,R48 or Xi,R48	
		Substance properties giving rise to an equivalent level of concern (e.g. occurrence of man made substances in the environment far distant from emission sources; indication of adverse effects in organisms not sufficiently reflected in standard testing) can be used to complement the criteria listed above.			

At EU level, action related to PBT (and vPvB) substances is justified with the concern that such may persist for a long time in the environment and may accumulate in biota, and that there is an unacceptable uncertainty to which extent they may cause adverse effects.

10 Data from screening test not foreseen for identification of substances of very high concern based on REACH Annex XIII)

11 These criteria refer to simulation tests on degradation under relevant freshwater conditions in water and sediments (40 and 120 days) or marine conditions (60 or 180 days). Marine conditions are characterised by slower degradation due to lower water temperature and lower density of bacteria.

12 See FN 9

13 See FN 9

14 See FN 9

The concerns connected to this type of substances can be summarised as follows (see current TGD II, section 4.4.1 related to the marine environment):[15]

- Hazardous substances may accumulate in parts of the environment,
  - whereas the effects of such accumulation are unpredictable in the long term
  - and such accumulation would be practically difficult to reverse as cessation of emission will not necessarily result in reduction of chemical concentration
- PBT or vPvB substances may have the potential to contaminate remote areas that should be protected from further contamination by hazardous substances resulting from human activity, because the intrinsic value of pristine environments should be protected;
- For substances which are very persistent and very bio-accumulative, high but unpredictable levels may be reached in wildlife or man over extended time periods. Toxic effects may be difficult to detect at early stage since they may only emerge over long-term exposure at usually low concentration and long life-cycles of species at the top of the trophic net. It is therefore recognized, that even toxicity has not been demonstrated in laboratory testing, and long-term effects can be anticipated.

For substances, which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), conventional quantitative assessment methodologies are not appropriate to evaluate the level of risk they pose to man and the environment. No safe environmental concentration can be determined for these substances with sufficient reliability (see also REACH annex I, point 6.5).

The same concern is addressed under the Water Framework Directive (identification of priority hazardous substances) and will be addressed under REACH as well. In both, a set of criteria related to the inherent properties of substances is used to identify "hazardous" substances. The criteria and the assessment approach under REACH are not fully consistent with the criteria applied under the Marine Conventions and the marine risk assessment under current legislation:

- The Marine Conventions apply more protective cut-offs for bio-accumulation and toxicity. Compared to the EU PBT/vPvB criteria, the number of substances of very high concern is higher by the factor of 2[16].
- The Marine Convention and the marine risk assessment based on the current TGD foresee the use of screening data in the absence of simulations tests and BCF studies. Also this leads to a more protective approach.
- However the Marine Conventions do not foresee identification of hazardous substances based on information on persistency and bioaccumulation only. Compared to the EU PBT/vPvB candidate list, half of the substances of very high concern would not be caught by the regular criteria of the Marine Conventions[17] .

15 EC, 2004. Technical Guidance Document on Risk Assessment in Support of Commission Directive 93/57/EEC on Risk Assessment for New Notified Substances, Commission Regulation (EC) No. 1488/94 on Risk Assessment for Existing Substances, Directive 98/8/EC of the European Parliament and the Council Concerning the Placing of Biocidal Products on the Market, TGD, Part II. European Chemicals Bureau, Institute for Health and Consumer Protection.

16 See ratio between the number of substances on the OSPAR List of Substances of Possible Concern identified based on scenario I criteria (similar to EU PBT criteria) and Scenario III (BCF 500 and T_{acute} = 1 mg/l).

17 See EU PBT candidate list based on screening information (ECB, 2002)

Recommended Action	
1	The nature of substances covered under Recommendation 19/5 should be more clearly defined, in order to allow for targeted action. In the context of this study the phrase "substances of high environmental concern due to persistency and bioaccumulation" or "PBT-like substances" is used instead of "hazardous" substance.
2	In order to align the HELCOM Hazardous substance concept with current EU risk assessment practices, substances being of concern due to their high persistency and a high tendency to bio-accumulate (vPvB) should be addressed under HELCOM 19/5 regardless any available information on toxicity.
3	Based on their intimate knowledge of the Baltic Sea Environment, and their interest to protect the marine environment HELCOM contracting parties should identify substances which are not covered by the EU criteria but which nevertheless present an equivalent level of concern for the marine environment (action for all HELCOM contracting parties). This would include a thorough justification, preferably based on measured data from biota in the Baltic Sea. Such substances can be addressed through the EU frameworks (second priority list of the Water Framework Directive and Annex XV dossiers under REACH)
Actors	HELCOM bodies; Environmental Ministries of HELCOM Contracting parties; research institutions
Target group	Industry, public authorities [action 1]; EU fora responsible prioritising substances and launching regulatory action if needed
Time frame	short term (2008-2010)

4.1.2 Sources of hazardous substances

Site related sources and product related sources of emissions, discharges and losses of hazardous substances are equally addressed in HELCOM recommendation 19/5. However, both approaches have not yet been integrated into one consistent and effective strategy. Companies running IPPC installations can be emission sources of hazardous substances being contained in their raw materials. The experience from the present study, however, shows that most of the industrial end-users of chemical products do not systematically document the identity, the environmental hazard profile, the amount and the area of use of substances in their raw materials. In order to promote generation of knowledge on product sources at the ground level of the system, a number of actions are recommended in chapter 4.4.2.

4.1.3 Understanding the impacts

Furthermore, in the four new member states (as well as in Russia) the hazardous substance issue is not well known and understood in its full consequences for practical life of the public. Thus, there is no public debate and hence no reason for industry and authorities to allocate resources and to take action. In the EU-15 the public debate was very often a driving force for policy makers and authorities taking measures.

Recommended Action	
4	Initiate/support information campaigns addressing authorities, industry and societies in the new Member States (and Russia). The concern related to persistent and bio-accumulative substances should be explained in its consequence for practical life regarding present and future generations: Contamination of fish, contamination of human breast-milk; harmful effects related to the productivity and diversity of the Baltic Sea ecosystem. It would be the role of contracting parties to motivate and support stakeholder groups in placing the issue on the public agenda rather than running public campaigns themselves. Project of common public interest like e.g. "clean fish food from regional waters" or "responsible use of fire" may be suitable issues for public information campaigns.[see also 17]
Actors	Ministries of Environment and NGOs of the target countries
Target group	Public and municipalities of the target countries
Time frame	Short term (2008-2010)

4.2 Availability of information on single target substances

In the following chapter observations made during the present study regarding single target substances and their use in industrial processes in the new members states and, if available and comparable, Russia will be presented. At the end of the chapter some conclusions will be drawn and action recommended for decrease of uses.

4.2.1 Emission of Cadmium, mercury and dioxins

There are significant emission of dioxins, mercury and cadmium from point sources and diffuse sources in Poland and Russia, based on EPER data, EU inventory of dioxins and national reporting.

Table 4.2 provides an overview on the total national loads to air and water. To total riverine input as documented in the HELCOM Pollution Load Compilation [2] was 2.6 to 11.6 t/a total Hg between 1994 and 2004 (except for 1998 to 2000 with mercury peak loads from Poland). The total input for Cadmium was 23-52 t/a total in the years from 1996-2002. Except for Poland, where point source related emission data are available from EPER since 1994, the emission loads via water can hardly be traced back to the point sources. Also, the data based on river concentrations of mercury and cadmium is weak due to methodological problems. For all countries, there are conflicting or questionable data on the water side.

Table 4-2: Emission loads for Cd, Hg, (t/a) and Dioxins (g TEQ/a) (2004)

	Lithuania	Latvia	Estonia	Poland	Russia
Cd emission to water	0.01 [2] 1,416 [3]	3.02 [2,2003]	0.96 [2] 0.003	1.07 [2] EPER: 3.97 EPER: 1.94[18]	25.9 [2,2002] 0.33 [4]
Cd emission to air 2004	0,5 t [1] EPER: 0,017	0,5 t [1] EPER: -	0,6 t [1]) EPER: 0.52	44.9 t [1] EPER: 2.12 EPER: 3.2[19]	55.4 t [1]
Hg to emission to wa-	0.82 [2] 0,832 t [3]	0	3.86 [2] 0,0003	1.13 [2] EPER: 1,36	0.01 [2,2003] 0.01 [4]

[18] Polish Ministry of Environment 2007
[19] Polish Ministry of Environment 2007

	Lithuania	Latvia	Estonia	Poland	Russia
ter				EPER: 1.38[20]	
Hg emission to air 2004	0.4 [1]	0,03 [1]	0,5 [1] EPER: 0,5 t	19.8 [1] EPER: 0,26 EPER: 0.23	11.9 [1]
Dioxin emission to air 2004	No data	18g TEQ [1]	3.7g TEQ [1]	483g TEQ [1] EPER: 246 g TEQ[21]	655g TEQ [1]

[1] Meteorological Synthesizing Centre-East
http://www.msceast.org/countries/Latvia/index.html#poptrans: link for Latvia, but there are other countries too; back-calculation from 0.7-4.7 g/km^2/year Hg in NW Russia; back-calculation from6,9-22 g/km^2/y in NW Russia
[2]http://www.helcom.fi/environment2/ifs/ifs2005/en_GB/runoff/; all data 2004, except for Russia and Lithuania for Cadmium (2002) and Latvia and Russia for mercury (2003)
[3] Baltic Sea Environmental proceeding No. XX. Heavy Metal pollution to the Baltic Sea in 2004, DRAFT version, though, DATA ALREADY CONFIRMED by LIT MoE and Lithuanian Environmental Protection Agency
[4]- data from Neva-Ladoga Water Basin Administration, 2006.

The present study has its focus on the emissions from Poland since they form a significant share of the total load to the Baltic Sea, either via waste water discharge or as airborne deposition. The same applies for North-West Russia with regard to Dioxins and Cadmium[22], however the project team did not manage to identify the major sources of these loads since reports on emission sources are not publicly available and the holder of eventually existing heavy metal and dioxin emission inventories could not be traced[23].
The findings from the Polish monitoring program between 2002 and 2006 show that cadmium, nickel, lead and mercury can sporadically occur in a very high concentration. The maximum values were confirmed by relevant laboratories of State Environmental Inspection, although without giving the reasons. The results indicate that priority substances can be the serious problem in a local scale, but not at whole country level. However, any case of high concentration should be confirmed and the explanation for the situation should be given[24].

Compared to water emissions, the model based national reporting on air emission of Dioxins, Mercury and Cadmium allows to identify major sources and also to draw conclusions for measures to be taken. Based on the available information from Poland action related to mercury, cadmium and dioxin have been taken or should be taken on the following sources:

Dioxins
The contribution of non-industrial sources to the PCDD/F emission in Poland is very high. The reason for that is that the solid fuel consumption in the residential sector (hard coal and wood) is 20 times higher than average of EU-15[25]. Inappropriate management and treatment of waste accounts for about 30% of PCDD/PCDF emissions. Production sites in ferrous and non-ferrous metal production contribute 4.5% (ferrous) respectively 2.9% (non-ferrous), and lime production sites about 2.1%. The calculated figures from the national dioxin inventory do not match the data retrieved from the Polish EPER report (see table 9 in Polish Environmental Ministry 2007). Here cement industry and chemical industry are listed as major industrial sources.

20 Polish Ministry of Environment 2007
21 Ministry of Environment 2007
22 Highly conflicting data related to cadmium emissions via water
23 To be checked with RozTechNadzor
24 Chief Inspectorate for Environmental Protection, 2007
25 See Dioxin Inventory, Polish Ministry of Environment 2007; personal communication with Polish National Emission Center,2007

Mercury
The major source for air emission of mercury is burning of hard coal in the energy sector, in industrial heating, cement production, municipal and domestic heating. This is due to the mercury content of hard coal and the fact that de-dusting system as used in the energy sector and industrial burning processes do not effectively prevent emissions of mercury. Again, the EPER data do not match with the calculated inventory presented in *Polish Ministry of Environment, 2007.*

Emission of mercury to water from the two sites in Poland manufacturing chlorine based on mercury (capacity 180,000 t/a based on *MoE, 2007*) was about 225 kg in 2004. This makes an emission factor of 1.25 g/t. Surprisingly, according to EPER, there are two other industrial sites (Police SA and Boleslaw SA) with equal high or higher emission on the water pathway (132 kg respective 877 kg). The magnitude and source of this emission could not be traced back within project duration.

Cadmium
Hard coal is also the major source for cadmium emissions to air. However, in this case, industrial de-dusting systems work more effectively and hence domestic and municipal sources as well as agriculture, forestry and small industrial boilers are the most relevant sources. According to EPER, MITTAL STEEL is the largest single industrial source for Cadmium emission to air. A detailed comparison to BAT level is contained in Annex 5.

According to EPER, Boleslaw SA is also the major source for Cadmium emissions to water. The magnitude and source of this emission could not be traced back within project duration.

Recommended Action

5 Reduce dioxin and heavy metal emissions from private and municipal heating through an investment program to support the technical improvement (energy efficiency, temperature and oxygen conditions, low dust techniques, regular inspection by technical personal) of domestic and municipal heating. Set up a binding and enforceable norm for the maximum chlorine content in solid fuels for domestic heating (e.g. 0.1%). In long terms, this may also lead to a substitution of hard coal by other fuels.

Launch a public information and engagement campaign on “responsible use of fire”. This would include the communication and explanation of simple rules like: i) No waste burning in stoves, open fires or bonfires, ii) use dry and preferably hard-wood for heating and open fires, iii) operate stoves at optimal conditions. Such action would target about 47% of PCDD/PCDF emissions, 68% of Cadmium emissions to air and 10% of mercury emissions (Basis 2004).

Actors	Environmental ministries and municipalities in Poland
Target group	Industry sectors producing heating devices, local service companies, municipalities, private households
Time frame	long-term (2008-2018)

Recommended Action	
6	Reduce heavy metal emissions from the energy production sector and industrial burning processes through upgrading of dust cleaning installations and use low mercury hard coal or, in the long term, substitute hard coal by other energy sources.
Actors	Ministry of Environment, Ministry of Economy, Poland
Target group	Industry
Time frame	long-term: 2008-2018
Recommended Action	
7	Improve the management of landfills in order to prevent landfill fires. Such action would target about 22% of PCDD/PCDF emissions (Basis 2004). Prevent incineration of industrial waste without or with low efficiency gas cleaning systems. This would include improved supervision of waste stream by the authorities as well as bringing industrial waste incineration site in line with the requirements of the EU Directive on Waste Incineration.
Actors	Ministry of Environment and Inspectorates, Poland
Target group	Waste management sector
Time frame	medium term 2008-2012
Recommended Action	
8	Reduce cadmium and dioxin emissions from steel production by installing BAT. This should include Dioxin emission monitoring and additional dust/dioxin abatement systems (fabric filtration). Reduce dioxin emissions from secondary aluminium and copper production as well as lime production facilities by installing BAT.
Actors	Ministry of Environment and permitting authorities, Poland
Target group	Industry
Time frame	medium term 2008-2012

It can be assumed that that comparable action may be required in North West Russia, however a dioxin, cadmium and mercury inventory from Russia was not available for the present study.

4.2.2 Uses of single organic substances in products and processes

Uses of target substances for the present study were investigated based on product register information, permit screening (IPPC installation), internet screening (Russia) and interviews with companies. Table 4,3 gives an overview on the interviews carried out. Table 4-11 and 4-12 provide an overview on the permits screened during the study.

Table 4-3: Overview on empirical data in the study (Formulators, suppliers, users)

	Lithuania	Latvia	Estonia
No of suppliers (importers or formulators) identified related to the target products	43	20	20
Formulators in the countries in the figure above	25	10	10
No of users identified related to the target products		3	5
Companies contacted and interviewed • formulators • users	 8 0	 4 3	 4 3
Definite Information on use (or no use) of target substances received, including information on the source of information for the company	7	1	3[26]

For Poland and Russia, the approach based on personal contacts and direct company communication, like in Baltic States, doesn't work simply due to size of the countries: they are too large to get a representative sample. Existing personal contacts are not providing sound information. Nevertheless, in Russia interviews have been carried out with 5 companies for testing purpose (see table 5-3).

4.2.2.1 Status of marketing and use restriction at EU level

Many of the target substances have been banned or heavily restricted at EU level during the recent years. For these substances the focus within the BSAP should be on enforcing the marketing and use restrictions. For other substances, risk assessments (including PBT assessment) at community level are ongoing, and there is no final conclusion yet whether or not the substances need to be treated like PBTs or POPs in risk management. This for example applies to the brominated flame retardants (decBDPE and HBCD), and for the various use of medium chain chlorinated paraffins (MCCP). Table 4-4 provides a brief overview on marketing and use restrictions.

Table 4-4: Marketing and Use restrictions at EU level

Substance	Status of marketing and use restrictions	Reference
TBT and TPhT	Banned for biocidal uses since 2006	98/8/EC
PentaBDPE and OctaBDPE	Banned since 2004 in chemical products and articles > 0.1%	2003/11/EC
DecaBDPE	Banned in electric and electronic articles since 2006	2002/95/EC
Nonylphenol and Nonylphenolethoxilates	Banned since 2005 in chemical products > 0.1% ▪ Domestic cleaners ▪ Industrial and institutional cleaners (closed systems exempted) ▪ Textile and leather finishing (processes without releases to sewage system exempted) ▪ Pulp and paper agents ▪ Metal surface treatment (closed systems with incineration of residues exempted) ▪ Cosmetics and other personal care ▪ Emulsifier for veterinary products ▪ Co-formulant in PPP and biocides	2003/53/EC
Short chain chlorinated	Banned since 2004 in chemical products > 1% for	2002/45/EC

[26] Includes 2 paint manufacturers

Substance	Status of marketing and use restrictions	Reference
paraffin	▪ Metal working fluids ▪ Lat liquoring in leather finishing	
PFOS	Banned from 2008 in chemical products > 0.005% with a few exemptions related to ▪ Photographic industry ▪ Hydraulic systems in aviation ▪ ChromVI plating	
Cd	Banned with a few exemptions as ▪ colorant in PVC and paints ▪ stabilizer in PVC ▪ plating of metal surfaces ▪ portable batteries and accumulators > 0.002% (exemption for emergency and medical devices and cordless power tools) ▪ electric and electronic articles ▪ cars	1991/338/EEC 1907/2006/EC 2006/66/EC 2002/95/EC

This overview illustrates that enforcement and product control should be an important element of the BSAP. This applies in particular to imported articles (see action 15).

4.2.2.2 Substances in sewage treatment plants

Table 4-5 presents the findings from a one-off-survey in 25 Lithuanian waste water treatment plants compared with the findings from similar measurements in Finland, Sweden and Denmark.

Table 4-5: Concentration of hazardous substances in WWTP [HELCOM LAND 12/ 2007]

	µg/l in treated waste water in Lithuania	µg/kg (dw) in WWTP sludge in Lithuania	Comparison with range of findings from Sweden, Finland, Denmark
TBT	Not detected	4.3-53 (median 9.3)	10-100 (mean/median 9.3-44)
pentaBDPE		5.1-29.5 (3 WWTP)	81-150 (mean 60)
decaBDPE		293.–3,410 (2 WWTP)	5.6 – 1000 (mean 120)
HBCD			3.8-650 (mean 45)
NP	<0.01-1.8 (median 9)		0.03 – 5.5 (mean 0.3-0.5)
NPEO		0.4 – 95 (median 2.7)	1.7 – 437 (mean 2.8-88)

The comparison suggests that use of TBT, NP and NPEO in Lithuania does not significantly differ from the level and pattern of use in the Nordic countries. Whether this also applies to the other new EU member states cannot be concluded based on the available information. For brominated flame retardants, the situation is slightly different. The measured concentrations in sewage sludge in three Lithuanian WWTPs suggest the presence of local emission sources of decaBDPE. The source(s) have not yet been identified.

4.2.2.3 Nonylphenols and Nonylphenolethoxilates

Phasing out of NP/NPEOs and OP/OPEOs is progressing in all countries, often driven by suppliers of chemical products located in Western European countries. The marketing and use restrictions in the EU for certain product areas (since 2003) have triggered awareness also in other markets not directly targeted by the restrictions (e.g. the paint sector in Estonia).

The remaining concentration levels in waste water may be related to residual, not restricted uses, illegal uses and amounts imported in textiles from non-EU countries.

In the chemicals registers of Poland and Latvia the following amounts are reported: 12100 t for 2003 in Poland. About 68 preparations contained NP and 340 preparations contained NPE. The reported amounts for Latvia are about 2 t in 2004 and also in 2005 (car care products and construction chemicals). In addition, by permit screening NPE products have been identified in Estonian and Latvian leather industry. However, these permits were issued in 2003 and may not reflect the current state of production. Nevertheless, such cases illustrate that the permitting authorities in 2003 did not insist on BAT implementation regarding substitution.

4.2.2.4 BFR

For penta and octabromodiphenylether a total ban is in place at EU level since 2003. Preparations and Articles must be free of these substances down to a concentration of 0.1%. This concentration is far below any technical application of flame retardants.

The use of brominated flame retardants (including decaBDPE and HBCD) was not identified in any of the screened permits. Also, it was not reported in any of the registers. This may be explained by the following:

- BFR imported with articles do not need to be reported to registers and are usually not taken into account in environmental permitting;
- For DecaBDPE and HBCD there is no harmonised classification and labelling yet at EU level. Thus, suppliers of master batches or other flame retardant preparations are likely not to provide information on these components to their customers;
- Since these substances are not classified as dangerous, companies in the textile finishing and plastic conversion sector (e.g. polystyrene converters) may be unaware of the hazardousness of these products. In addition, plastic conversion is an activity that does not require an IPPC permit.

4.2.2.5 SCCP and MCCP

The only indication for use of short chain chlorinated paraffin is an entry in the Polish chemicals register (59 tons in 2003). However, in Russia SCCP seem to be in legal use (see Annex 8). In none of the screened IPPC and water permits SCCP was identified as substance of interest.

Different from that, significant uses of MCCP have been identified in polyurethane foams production in Estonia and in sealants production in Latvia. In both cases MCCP are used although the companies are aware of alternatives with better performance - but higher price. Both companies produce for the Russian market. In Poland, about 1100 tons were registered in 2003. A minor use was identified in the Estonian leather industry.

Table 4-6: MCCP case in Latvia

Sector	Production of construction and insulation materials
Amount used	530 to 929 t in 2005 according to product register (HELCOM Land, 2007)
Target products	3 products – sealants (water proof insulation products)
Function of MCCP in product	MCCPs are used as plasticizers starting from 5 up to 24% concentration in product
Use of products	In construction and building industry: • in bathrooms; • for windows • for wooden parts • for any other material
Import of substance	• approx 1/7 is imported from Russia • approx 6/7 are imported from Western Europe
Export of products	• CIS, Common wealth of Independent States
Substitution plans	• No • Alternatives have been considered, however the determining factor price has lead to choice of MCCP

Table 4-7: MCCP case Estonia

Sector	Production of construction and insulation materials
Amount	950 tons in 2005 based on information from companies
Target products	2 companies, both with 2 products exported outside EU: single component polyurethane foams
Function of MCCP in product	MCCPs are used as fillers, also acting marginally as plasticizer. Content 5 % up to 15 % of overall canned product;
Use of products	Construction activities: • Mounting window- and doorframes • Filling of cavities • Sealing of openings in roof constructions and insulation materials • Creating a soundproof screens • Filling of cavities around pipes • Fixing and insulating of wall panels, roof tiles, etc.
Import of substance	• 100 % imported from Western Europe
Export of products	• Common wealth of Independent States, Turkey; Approximately up to 15 000 tons of MCCP foams annually
Substitution plans	• No • Alternative is TCCP (tris-2-chloroiso-propylphosphate), however the determining factor – competitive price - has lead to choice of MCCP, although TCCP exhibits much better performance

4.2.2.6 PFOS substances

Information on PFOS and PFOS related substances is hardly available at all. Except for a minor use of PFOA in an Estonian metal processing enterprise and the identification of one supplier in Russia (see Annex 8) no further information could be obtained during the present study.

4.2.2.7 Endosulphane and TBT

TBT and TPhT are being phased out and hence the concentration still found in municipal waste water all over Europe are remains of past production and use. Ship yards may be still an actual source due to the removal of coatings in maintenance and repair of ships.

Residual uses of Endosulphane, TBT and Nonylphenolethoxilates as co-formulant have been identified in Poland. However, a complete phase out is likely since the substance are/will not be authorized as active ingredient at EU level. TBT and NP/NPEO are also banned.

Table 4-8: Substances in registered Pesticide and /Biocide products

	Lithuania	Latvia	Estonia	Poland	Russia
TBT	No/No	No/No	No/No	No/Yes	No/No
TPhT	No/No	No/No	No/No	No/No	No/No
Endosulphane	No/No	No/No	No/No	Yes/Yes	No/No
NP	No/No	No/No	No/No	Yes/Yes[27]	No/No

4.2.2.8 Cadmium

No use of Cadmium has been identified in the present study. However, a producer of Cadmium containing products in Russia has been identified selling his products in applications that are banned on the EU market (paints, plating). Also, Cadmium is added to copper in wire production to improve the mechanical properties of the wire (Source of information see Annex 5).

Recommended Action	
9	Particular action is proposed related to the use of MCCPs in isolation foams and sealants. The cases in Estonia and Latvia suggest that there is a significant mass flow of MCCP from a few substance manufacturers in old EU via formulators in the new EU Member States to the Russian market. This trend seems to be driven by comparable low prices of MCCP, but not necessarily its technical performance in these applications. The action should aim to substitute MCCPs and may include the following elements: Inform the respective formulators on the results of the EU Risk Assessment and the state of discussion in the PBT assessment group of the EU member states related to MCCP; launch a project on comparative cost-benefit-analysis related to available alternatives in co-operation with the concerned companies; carry out a market analysis in North-West Russia to explore the potential demand for more environmentally sound building and construction chemicals;
Actors	Ministry of Environment in Cooperation with Ministry of Economy of Estonia and Latvia
Target group	Manufactures of building and construction chemicals
Time frame	Short : (2008-2010)

[27] For NPE

Recommended Action	
10	Carry out screening measurements in WWTP related to brominated flame retardants in Latvia, Estonia, and Poland. In case of significantly increased levels, search for local emission sources (e.g. textile finishing companies, plastic converters, waste treatment). If sources identified, support companies to comply with EU legislation: cease use of pentaBDPE and octaBDPE containing products; apply BAT regarding use of decaBDPE and HBCD in processing; switch to (less hazardous) substitutes in order to improve the environmental performance of the corresponding products
Actors	Ministries of Environment of EE, LV, PL, NW RU
Target group	Sewage treatment sector and companies discharging waste water into the public system
Time frame	short-term: (2008-2009)

4.3 Information from substance/product registration systems

A systematic basis for reporting on uses and emission of single hazardous substances does not exist in the new member states for different reasons:

- no limit values are indicated in permits and thus no monitoring is taking place,
- insufficient quality of SDS (originated from many suppliers world-wide) and consequently large information gaps in the companies' inventories,
- Shortcomings in existing product registers as follows:

Poland and Latvia have established a product register, and Estonia is going to do the same. Product registers can be a useful instrument for better targeting chemicals policy and to support the implementation of REACH on the national level. However, if such a register is set up, proper design (e.g. functioning updating mechanisms, identification of manufacturers and importers possible), sufficient evaluation capacity (e.g. making the information form SDS accessible in electronic format; checking the SDS information for correctness) and a well-defined role in the national system on chemicals control is needed. Otherwise operating such a system is wasting resources and may even lead to misinformation. Once the eSDS under REACH will become available, systematic analysis of SDS in a product register system will allow identifying products that are likely to contribute to emission, losses and discharges of hazardous substances.

Table 4-9: Chemicals registration systems[28]

Type of info	Lithuania	Latvia	Estonia	Poland	Russia
Identity of substances produced or imported into country	YES	YES	YES[29]	YES	YES[30]
Identity of importer	NO	YES	YES	YES	NO
Volume of substance	YES	YES	YES	YES	NO
Intended Use of substances	YES	YES	YES	NO	NO
Identity of preparations imported or produced	YES	YES	YES[5]	YES	YES*[31]
Identity of importer	NO	YES	YES	YES	YES*
Full composition with/without per-cent	YES	YES	NO	YES	NO
Identity of single dangerous sub-stances contained, with or without (%)	YES[32]	YES	YES	YES	YES*
SDS	NO	NO	YES[33]	YES	YES*
Volume per company	YES	YES	NO	NO	NO
Information on intended Use	YES	YES	YES	YES	NO
Does register reflect actual mar-ket situation	YES	YES	NO	NO	NO
How many substances and/or products in the register	3,458[34] sub-stances 671 preparations	3,284[35]	969 sub-stances	30,000	> 2000
Are only dangerous preparations or all preparations registered.	All	All	Dangerous to humans	dangerous	
All state authorities concerned with health, environment , econ-omy have access	YES	YES	YES	NO[36]	NO

28 Overview does not include notification of substances placed on the market for first time

29 Registration of existing (EINECS) substances produced or imported to Estonia over 10 t/year

30 Register of Potentially Dangerous Substances

31 * A register of Safety Data Sheets exists (about 10,000 entries) however the market coverage is quite low since i) the register has no clearly defined role in the system, and ii) the duty to provide safety data sheets is also not adequately defined in the leg-islation.

32 to be confirmed by Lithuanian register

33 SDS shall be submitted for each chemical being classified to have health hazards

34 reflects present market situation

35 reflects present market situation

36 The Bureau for Chemical Substances and Preparations claims to be obliged to provide detailed data only to medical and emergency services.

Recommended Action	
11	The product registers in Poland and Latvia were a valuable source of information for tracing substances of concern. Latvia, Lithuania and Poland as countries running already a product register should decide which role it shall play under the REACH system. For substances, there will be a central register at EU level, also including volume bands and general information on the uses of substances. However, this register will not include information on uses of chemical products (preparations). A national product register can be a valuable tool to complement REACH and to support the enforcement of REACH. However, it binds resources and needs proper enforcement.
Actors	Responsible Ministries and Agencies in LV, PL
Target group	Government
Time frame	Short term 2008-2009

4.4 Implementation of existing legislation

Different from the old EU member states, especially the Nordic countries, specific legislation targeting chemical substances of environmental concern has not been a tradition in the new member states. Such policy elements have been mainly introduced into national legislation with the transposed EU frameworks such as the Water Framework Directive, IPPC Directive, Biocide Directive, Marketing and Use Restriction Directive etc. The requirements are still relatively new for the multitude of involved authorities as well as for industry in the new member states. Permitting authorities, enforcement authorities and state institution managing information with regard to use, emission and exposure to chemicals have been partly re-organised or newly established in parallel to a large variety of new legislation to be implemented. Also, the discussion on the REACH regulation has created more awareness; however, it is still far from being sufficient to properly control and eliminate emission, discharges and losses of environmentally hazardous substances in the countries.

The main problem is the lack of orders, by-laws and/or guidance documents following the primary legislation (which is in place) to facilitate its implementation. In consequence, authorities and industry lack guidance for correct implementation of the legislation. Also, implementation of different pieces of legislation related to hazardous substances is not well interconnected due to the lack of inter-institutional co-operation. In the following chapters, a number of actions are proposed to eliminate relevant gaps in implementation of existing legislation.

4.4.1 Priority hazardous substances under the WFD

The process towards measures related to priority substances under the WFD appears to be slow, at national level and at EU level. Six years after adoption of the Parliament and Council Decision on establishing a list of priority substances in the field of water policy (2455/2001/EC), water authorities in Estonia, Latvia, and Poland have not yet started a systematic *source and pressure analysis* related to these substances. Only Lithuania has started to screen effluents from municipal and industrial waste water (as well as sewage sludge, receiving waters and sediment in the receiving environment) in a one-off survey with Finnish assistance. However also here, like in the other countries, source analysis did not address yet chemicals at all. Identifying further priority substances at national (river basin) level, as foreseen under EU WFD has not yet taken place. Also, setting up a second EU wide priority list has only recently started at EU level. In this way, the time frame of the WFD implementation regarding priority hazardous substances more and more disconnects from the 2020 target of HELCOM Recommendation 19/5.
Table 8 provides an overview on the status of WFD priority substances in national water policy. The table refers to the subset of priority substances covered in the present study.

Table 4-10: WFD priority substances (2001) addressed in national legislation or action programs

	Lithuania	Latvia	Estonia	Poland
EQS established for	Cd, Hg, TBT, NP, NPE, PeBDPE Endosulphane	Cd Hg	Cd, Hg.,TBT, ThPT,xBDPE NP, OP, SCCP Endosulphane	Cd,, Hg, Endosulphane
Emission limit values	Cd, Hg, TBT PeBDPE NP, (NPE)	Cd Hg	Cd, Hg PCDD/F	Cd,, Hg, TBT,PCDD/F
Regular surface water monitoring	Cd,Hg, Endosulphane,	Cd, Hg	Cd, Hg	Cd,, Hg, Endosulfane
One off survey related to WFD priority sub-stances	Performed[37]	not performed	Not performed	Not performed[38]
Source and pres-sure analysis	not yet	Not yet	Not yet	Not yet

Recommended Action

12 With a view to the 2020 commitment under HELCOM, the four new EU member states would be well advised to start the pressure and source analysis related to the EU list of priority substances as soon as possible (not waiting for final agreement on "hazard" status or EQS at EU level. In this work, other substances of high concern for the water environment identified by HELCOM could be included as national priority substances. A one-off screening of waste water discharges (as carried out in Lithuania) as well as surveys of chemical products or information from existing product registers is suitable instruments to start this work. The pressure and source analysis should always result in a conclusion whether national action is needed going beyond enforcing i) the existing marketing and use restrictions and ii) implementing BAT in the IPPC permitting system

Actors	Ministry of Environment and regional water authorities, waste water companies, in co-operation with Environmental inspectorates in EE, LV, LT and PL
Target group	Public policy
Time frame	short term (2008-2010)

4.4.2 Environmental permitting

4.4.2.1 Overall characterisation of present practice

Industrial production processes account for a considerable share of the overall pollution in Europe, and the EU has a set of common rules for permitting and controlling industrial installations with major polluting potential laid down the IPPC Directive of 1996. For other installations (non-IPPC) the basis of environmental permitting is regulated in the national legislation taking into account the EU legislations on water, waste and air pollution, however the Member States have diverse practices.

[37] (Source – HS found in LT wastewater/sewage sludge or receiving environment according to Finnish and Lithuanian Environmental Agency "Report on dangerous substances in the aquatic enironment of Lithuania")

[38] Results were presented in: 1. International Report from Oder Basin district - report for UE Com-mission 2005: no in-formation from polish part of international Odra basin district and 2. Report for Vistula Basin district 2005: No information about haz-ardous substances, only metals.

In essence, the IPPC Directive is about minimising pollution from various industrial sources throughout the European Union, and to ensure a high level of protection of the environment taken as a whole. The IPPC Directive is based on several principles, namely (1) an integrated approach, (2) best available techniques, (3) flexibility, and (4) public participation.

The permit conditions, including emission limit values (ELVs) must be based on Best Available Techniques (BAT), as defined in the IPPC Directive. To assist the licensing authorities and companies to determine BAT, the Commission has adopted BAT Reference Documents (BREFs), which are guidance documents on the selection of techniques and assigning ELVs for pollutants associated with certain installations. Flexibility in determining permit conditions allows the licensing authorities to take into account: a) the technical characteristics of the installation, b) its geographical location, and c) the local environmental conditions.

New installations, and existing installations which are subject to "substantial changes", have been required to meet the requirements of the IPPC Directive since 30 October 1999. Other existing installations must be brought into compliance by 30 October 2007[39]. This is the key deadline for the full implementation of the Directive.

It must be noted that BAT is however not a fixed technical standard for a certain industrial process, but part of a broader concept towards a common approach to pollution prevention and control in Europe:

- It is a dynamic concept which develops over time; this means that adapting to BAT requirements is a continuous process;
- Although BREFs are not legally binding in determining specific technique nor ELVs, substances associated with certain types of activities shall be considered in a permit application and in permit conditions. This includes: establishing an appropriate monitoring programme (either by direct measurements or calculation by process data)[40]; actual emissions of these pollutants are reported to EPER registry if annual emission load is above assigned reporting threshold values;
- ELVs provided by EU directives shall be considered as minimum requirements, better performance of an installation should be aimed while establishing pollution prevention and control targets.

Compared to that, the current practise in addressing environmentally hazardous substances in the environmental permitting system can be characterised as follows.

- There is sufficient general legal basis to regulate hazardous substances in environmental permits (IPPC permits, wastewater discharge permits).
- The criteria and methodology to identify substances requiring in-depth-evaluation before granting a permit are not sufficiently worked out. This is related to both, the understanding of the concern related to persistent and bioaccumulative substances and a workable methodology to identify sources of such substances in i) the input material or ii) certain process steps, and to evaluate the fate of such substances in the technical process down to the emissions and product output.
- The burden on permitting authorities is quite high, i.e. there is no capacity for in-depth investigations in a single company. Thus, the quality of permits is directly related to quality of applications.
- The expertise of consultants assisting companies and permitting authorities is usually quite low regarding the hazardous substance issue.

39 Poland was granted 3 years derogation period for some installations to achieve BAT

40 Commission Decision of 17 July 2000 on the implementation of a European pollutant emission register (EPER) according to article 15 of Council Directive 96/61/EC concerning integrated pollution prevention and control (IPPC) 2000/479/EC; Guidance mentioned in Article 3(2) is available at http://ec.europa.eu/environment/ippc/eper/index.htm

- Industries discharging into municipal sewery are not subject to environmental permitting. At present, no systematic identification of environmentally hazardous substances from these sectors and companies take place. .

Quality of IPPC permits with regard to reflecting use of hazardous substances is diverse: some permits contain long list of substances, including those in preparations, in some cases hazardous preparations are grouped not indicating hazardous substances in them, in some cases the tables to list the raw material input in the permits are simply empty.

Further, even if hazardous substances are listed at the input side, the information is usually not reflected at water discharge side, unless the substance is specifically mentioned in the national legislation or the BREFs, and an emission limit value and/or an environmental quality standard exists. Except for Mercury and Cadmium, such EQS for priority substances under WFD have only recently been introduced in Lithuania and Estonia. This is not the case yet in Latvia and Poland.

4.4.2.2 Results from screening of permits

In practice, hazardous substances are not well-addressed in IPPC and water permitting systems in the new member states. The project has assessed approximately 100 permits for the target industrial sectors in all four new member states, and concludes that the demands of the IPPC Directive to address hazardous substances as listed in the WFD (Annex 8) are not fulfilled.

Table 4-11: Overview on empirical data in the study (IPPC permits[41] or chemicals users)

	Lithuania	Latvia	Estonia	Poland
Total number of IPPC issued	159	83	20	1471[42]
Number of permits/installations in target sectors[43]	7	8	14	272
Total number of IPPC permits checked	7	8	20	27
Total number of non IPPC permits checked	0	25	10	0
No of companies characterised regarding use of hazardous substances and measures to prevent emissions (substitution, pollution control measures); compared with BAT standard in a wider sense, based on in depth analysis	No	15	13	?

41 = includes permit application, permit itself and conditions set in the condition
42 without life-stock
43 see next table;

Table 4-12: Permits checked by sector or type of installation[44]

	Lithuania	Latvia	Estonia	Poland
Total permits screened	7	33	30	27
Textile finishing	2	1	1	2
Producing paper and board	3		2	2
Steel	1	1	1	2
Cable coating	1		1	
Metal finishing		19		4
Leather		4		
Chemicals industry		7	3[45]	13[46]
Shipyards		1	2	
Smelters				3
Cement plant/Mill				1
Manufacturing of plastic products			2	
Municipal waste water discharge			9	
Tannery			1	
Electroplating			2	
Non-target-sectors			6	

Table 4-13: Results of permit screening (information content in ... of the sample)[47]

	Lithuania	Latvia	Estonia	Poland
Total permits screened	7	33	20	27
Inventory (present in the application or part of conditions)	7	32	20	21
Is it possible to identify environmentally hazardous raw material from the inventory	PARTLY	PARTLY	5	21
Have environmentally hazardous substance been identified in the permit	NO[48]	PARTLY[49]	4	12
Particular (environmentally hazardous) single substances addressed in the permit • Emission limit or • Control measures • Substitution	NO[50] NO NO	NO[51] NO 4 permits	7	General statements only

44 for details see Annex 3
45 Including paint manufacturing
46 In Poland the figure includes cable coating, rubber and plastics, fertilizer, pesticides and biocides)
47 For details see Annex 3
48 Preparations listed, but no Hazardous constituents indicated
49 Where only preparations are listed – it is not possible, where substances are listed – yes, some environment hazardous substances are identified. Permit requires to identify substances or preparation. 2 of Helcom substances identified – MCCPs and Nonylphenols according to CAS numbers in substance and preparations. However it is not possible to relate substances to the processes in which they might be used)
50 for metals only
51 for metals only

	Lithuania	Latvia	Estonia	Poland
Particular (environmentally hazardous) preparation types addressed in the permit • Emission limit or • Control measures • Substitution	 NO NO NO	 NO NO NO	 NO NO NO	General statement only
Action plan with regard to environmentally hazardous substances	NO	1 permit	NO	NO

In most cases the requirement for a "chemicals inventory" is the most specific demand to companies with regard to hazardous substances. Reason for this incompliance is largely due to the lack of training among all involved stakeholders (permitting authorities, external experts and permit-receiving companies) and guidance from the national authorities. As already mentioned above, the primary legal basis exists, but there is a lack of by-laws, orders, guidelines to ease implementation.

Recommended Action

13 Development of technical guidance (national languages, but recommended to join efforts among the four countries with one template, e.g. developed in frame of a joint project) for IPPC permits addressing the hazardous substances in details (for instance, obligatory screening for hazardous substances in the input of an installation and obligatory screening of waste water e.g. based on the WEA methodology); Implementing a series of training courses for authorities and companies (joint template recommended, possible to be developed in a joint project). For more details, see chapter 4.4.2.3.

Actors	MoE and permitting authorities in EE, LV, LT, PL
Target group	Permitting authorities and industry
Time frame	medium term (2008-2012)

Based on the EU IPPC Directive and the BREF documents for some sectors, identification and minimisation of PBT-like substances in raw materials, and in emission, discharges and waste of production sites can be regarded as BAT. However, not all BREF documents address the hazardous substances and define BAT. Nevertheless, we can state from screening of the permits that no measures related to BAT requirements particularly addressing hazardous substances are found as demand towards the enterprises in the new member state. An obvious reason for this is the large volume of the BREF documents and the efforts it needs to extract from them concrete guidance on BAT for hazardous substances.

Recommended Action

14 National legislation should be amended stating clearly requirements with regard to the substances of concern. In those sectors, where the BREF documents explicitly require substitution, a qualified substitution statement should be part of the permit application. It would be recommended to elaborate a reference list for BREF documents where to find requirements on the substances (for more details see following chapter 4.4.2.3)

Actors	MoE and permitting authorities in EE, LV, LT, PL
Target group	Government
Time frame	Short term (2008-2009)

Hazardous substances are not only used in enterprises that require an IPPC permit due to the size of the installation, but also in smaller scale enterprises. Furthermore it is common practice in companies, not only in new member states, to split their installation into several legal

entities trying to avoid an IPPC permit. This means that IPPC permits may not be the only instrument reducing emissions of the hazardous substances, as only a few companies, especially in the Baltic States, fall under IPPC.

However, also non-IPPC companies need to apply for a water permit for discharges. A screening requirement for "hazardous substances input" can be introduced in this permitting procedure, as water permitting system does not address hazardous substances used, although the requirement to address them in discharges is legally adopted. The additional burden to companies would be limited since an inventory of dangerous chemicals is required anyway under the legislation related to occupational health and safety, and also to dangerous sites.

Furthermore, there are a large number of companies, belonging to the target sectors of the project, discharging their wastewater to the municipal sewer. In this case there is no wastewater discharge permit, and the control over hazardous substance discharge could be done only by contractual agreement on conditions between an enterprise and an operator of the common sewer.

4.4.2.3 Proposed elements of a technical guideline for IPPC installations

The proposed action is i) to better define legal duties (e.g. by amending the national legislation) and ii) to draft technical guidelines to companies and permitting authorities on how to carry out a site specific assessment on integrated pollution prevention and control with regard to substances of particular environmental concern[52]. This should include guidance to municipal waste water treatment companies and/or municipal authorities on how to prevent environmentally hazardous substances to be discharged into the public sewer system. The guidance should be limited to raw materials as a source of emission and discharges of hazardous substances to the environment.

A. Reference list of substances of high environmental concern[53]

In order to facilitate a harmonised approach in targeting environmentally hazardous substances, a reference list of such substances should be established and regularly applied in permitting. It would be the duty of the applicant to make a formal statement that i) the substances on the list are not used and/or generated during the processes, and ii) if they are used/generated that there is no release to the environment[54]. If the applicant cannot make such statement, he would be obliged to demonstrate in the application, that the substance cannot be replaced by a less hazardous substance and that all BAT measures have been taken to minimise emissions to the environment on all relevant pathways (including sludge from sewage treatment). The reference list should be built on the following elements (partly overlapping):

- EU list of priority substances under the Water Framework Directive (except plant protection products)

52 Substances being persistent, bioaccumulative and toxic, or posing an equal level of concern, by their intrinsic properties.

53 In the current study, HELCOM "Hazardous Substances" are addressed as substances of "high environmental concern due to their intrinsic persistence, liability to bioaccumulate and/or high toxicity". This is to avoid confusion related to the term "hazardous" which has a much broader meaning in other frameworks. The reference list operationalises Annex II of the IPPC Directive with regard to the following substance groups: 4 and 5, 3,7,8 via water and 5, 13 via air.

54 For naturally occurring substances, impurities of PBT/vPvB substances in raw materials or emissions of hazardous substances formed in technical processes (PCDD and PCDF) the guidance should include cut-offs, below a substance is regarded as not emitted (detection limit based on standardised analytical methods) or not to be assessed when contained in a raw material (e.g. 0.1% for organic, non CMR or sensitising substances).

- List of POPs under the Stockholm Convention
- List of substances banned for marketing and use in the EU based on environmental concerns
- EU list of PBTs and vPvBs as assessed under the EU Existing Substance Program
- Substances with harmonised classification R50/53 according to Annex 1 of the current Directive 67/548.
- Additional substances having been assessed to be of priority concern[55] under HELCOM recommendation 19/5 or the OSPAR Hazardous Substance Strategy

From 2009/2010 such list needs to be updated with information from the EU List of substances of very high concerns (established under article 59 of REACH), the EU classification and labelling inventory under REACH and the second list of priority substances under the WFD.

B. Duty to carry out investigation

In order to fulfil his duty under IPPC legislation the applicant should be obliged to carry out investigations to identify environmentally dangerous substances (including those of high environmental concern) in his raw materials. This regards relevant impurities in raw materials as well as components in preparation he buys from his suppliers. The applicant should ask his suppliers to identify all environmentally dangerous substances (according to the classification rules under Directive 67/548) above 1% [0.1% under REACH] with their CAS and EINECS numbers in the safety data sheet supplied with the preparation. Based on this information the applicant can draw up an inventory, including substance identities, amounts and pathways through the production process. The volumes of substances contained in more than one input material can be summed up. The applicant should be also obliged to include i) a prediction of emissions via air, water and waste into his application and ii) a justification why further reduction of emissions is not possible[56] or not needed based on exposure and risk considerations. Quantitative exposure and risk considerations would be only relevant for substances on the reference list that are not classified as PBT, vPvB or POPs.

C. Assessing implementation of BAT by the permitting authorities

It would be the task of the permitting authorities to evaluate whether the argumentation of the applicant is convincing and well documented. For this, the authorities need criteria and guidelines, e.g.

- Criteria for assessment of relevance for each substance or substance groups taking into account that final recipient is the Baltic Sea.
- Emission limit values or control measures or any other permit conditions (e.g. substitution) and foresee appropriate monitoring mechanisms
- Examples, on extent of information to be presented in the application, how to perform concentration / load calculations, how to set limit values or other appropriate permit condition, including substitution.

D. Non-IPPC permits and discharges into the public sewage system

Action should not be limited to permitting of IPPC sites, since also smaller installation belonging to the sectors listed in Annex I of the IPPC Directive or types of activities not falling under IPPC at all (e.g. plastic converters) can be a relevant sources of emission, losses and dis-

[55] In depth assessment providing evidence for the concern has been carried out and agreed under HELCOM.

[56] based on technical and economical considerations, taking into account the relevant BREF document

charges of environmentally hazardous substances. However, the requirements to the applicant must be more limited - simply for reasons of practicability, and there should be a cut-off releasing micro companies from the duties listed below. The cut-off can be based on a number of employees [e.g. 20], the amount of chemicals used [e.g. 0.1 t/a per product without fuels] or the amount of waste water discharged [e.g. …]. For the non-IPPC and non-micro companies, the following legal duties should be established and enforced:

- Setting up an inventory of all environmentally dangerous substances based on the information in the safety data sheets received from suppliers. The inventory should include information on the volumes of the substance applied and the likely percentage discharged via waste water. This inventory should be part of the documents required to apply for a waste water discharge permit [duty in principal identical with IPPC companies].
- Obtaining an official confirmation from all suppliers of substances and preparations that the substances on the reference list of substances of high environmental concern are not contained in the products supplied (threshold 0.1%). It should be the duty of the company to have such conformation available for each chemical product used in amounts above threshold.

4.4.3 Market surveillance

During the past years, for a number of HELCOM "hazardous" substances marketing and use restrictions have been imposed on EU level (e.g. NP, SCCP, octa and penta BDPEs, Pb, Cd, Hg, organotin compounds). Enforcement of these restrictions depends on the market surveillance bodies and inspection strategies in the EU member states. Surveillance of documents and labels, as currently undertaken in the new member states, is important but not sufficient:

- Currently 650 to 2500[57] chemical (non cosmetic) products are checked per year: the rate of incompliance related to classification, labelling and SDS is 20-40%;
- Only few (up to 100) products are checked analytically in Estonia and Poland; such checks are not at all performed in Lithuania and Latvia;

Table 4-14: Market surveillance

	Lithuania	Latvia	Estonia	Poland
Total number of chemical products on the market	3,458[58]!	3,284	Not registered	30,000
Cosmetics in this	N/A	0	-	N/A
Biocide in this	N/A	0	-	N/A
Pesticides in this	N/A	0	-	818
Total Number of products checked per year	4635[59]	1200	2527	2,395[60] 776[61]
Rate if incompliance	26 %	35 %	17-24 %	(SSI: 18%). [62] TI: 32,3%
Number of products checked with analytical means with regard to restricted substances	0	0	No info	TI: 51

57 to be confirmed with information from Poland.
58 Data from the Dangerous chemical substances' and preparations register and Environmental Protection Agency (Inconsistencies in the data are likely, however no other formal source can be obtained at present, May 2007.
59 Data from 2006; about 3,160 of this are cosmetic and biocide products.
60 Data from September 2007.
61 Data from August 2007.
62 The rate of incompliance is related to the total number of entities checked, not products. In 2006 out of 19,650 checked 3,563 entities were indicated as incompliant.

	Lithuania	Latvia	Estonia	Poland
Rate of incompliance	N/A	N/A	N/A	TI: 14%

Recommended Action	
15 Strengthen market surveillance capacity and strategies, in particular analytical product checks – including resource allocation and staff training. Exchange of experience with market surveillance bodies in other EU countries.	
Actors	Government and market surveillance bodies in EE, LV, LT, PL
Target group	Trade and industry
Time frame	medium term 2008-2012

4.4.4 Prepare for REACH implementation

Under REACH, for each substance >10 t/a an assessment related to intrinsic PBT/vPvB properties has to be carried out by the manufacturer and /or importer. If the criteria for concern are met, an emission minimisation strategy has to be worked out by the manufacturer and importer. The manufacturer or importer and his direct customers are obliged to communicate both, results of this safety assessment further down the supply chain. Thus, conceptually REACH can solve the present problems with regard to availability of information and proper risk management.

Recommended Action	
16 Set up a support and enforcement structure for REACH to be operational from 2009. This includes in particular capacities to help industry to implement the new requirements related to the safety data sheet system (exposure scenarios) and notification of articles containing substances of very high concern. This includes the information mechanisms related to persistency, toxicity and bioaccumulation of substances (PBT assessment). Proper implementation of i) the PBT assessment and information mechanisms and ii) the exposure scenario mechanisms of REACH is considered to be the most systematic way to achieve the HELCOM 2020 target.	
Actors	Competent authority for REACH, national help desk, product inspectorates, environment and health inspectorates in EE, LV, LT, PL
Target group	Trade and industry
Time frame	medium term (2008-2012)

4.5 Promote public interest and access to existing information

Without the public becoming interested in the implementation of the hazardous substance strategy, it is likely that HELCOM will fail to meet its objective. Without sufficient and stable awareness, neither the authorities nor industry will manage to allocate sufficient resources to the issue. Currently, the benefits of meeting the objective in 2020 are not well explained to people outside the circles that invented the objective. The present project clearly illustrates the difficulties to identify the existence of information and to get access.

Recommended Action	
17	It would be therefore a useful investment of the HELCOM contracting parties to support the development and implementation of a communication program on why the 2020 objective is important, how consumers, services, trade and industry would benefit and what the consequences are if policy fails to meet the objective. Such action should be based on a project of common interest like for example “clean fish food from local waters” or “responsible use of fire”.
Actors	Environmental ministries and municipal authorities
Target group	Concerned trade and industry organisations, local service companies, municipalities, private households
Time frame	medium term (2008-2012)

5. Findings and proposed actions within the BSAP (Russia)

The analysis of the Russian situation was separated in this report from the other target countries due to significant differences in the legislative basis (not being an EU member) and in order to ensure an individual approach, guaranteeing specifically tailored recommendations.

Abbreviations used in the text are explained in Annex 7.

5.1 Understanding of the concern related to Hazardous Substances

In Russia, hazardous properties of a substance are mostly understood as **high toxicity to humans**. Other considerations, like chronic environmental hazards, in particular accumulation of substances in biota, including humans **are not widely accepted as a reason for immediate actions.** As Russia is not bound to legal requirements from the EU legislative frameworks, substances which are causing long term effects in the environment or via the environment to humans, but which do not show very high acute toxicity to humans, are not really addressed in policy and legislation. One of the consequences is the absence of measured data from environmental media related to such substances. Therefore none of the target substances (except heavy metals) can be traced from the environmental and emission monitoring programmes[63]. Another problem is the absence of the precautionary principle in the legislation e.g. a regulatory activity starts only if health problems are scientifically proven.

This different understanding and perception results in a lack of attention towards the current HELCOM priority hazardous substance list and, therefore, impede Russian reporting under HELCOM requirements.

Recommended Action	
1	The basic step for Russia, in order to be able to identify and report on the HELCOM "hazardous" substance is an agreement between the HELCOM contracting parties with its member Russia that the HELCOM definition of "hazardousness", which is based on the PBT concern (or equivalent level of concern) would also be introduced into the Russian strategies/policies on protection of the marine environment from land based sources. This would include introduction of an appropriate definition of "substances of high long term environmental concern", a "minimisation goal" related to these substances and the "precautionary principle" in the corresponding legislation.
Actors	Federal state authorities in RU, HELCOM Contracting Parties/Secretariat
Target group	Federal legislation on i) chemicals, ii) protection of water and iii) environmental permitting of production sites/installations
Time frame	Short term (2008-2010)

[63] Only mercury and cadmium are monitored in waste water discharges

Recommended Action	
2 To achieve this, there is a need in Russia to facilitate a better understanding of the EU system and vice versa in HELCOM of the Russian system, e.g. comparison and exchange among experts. An in-depth discussion process could be initiated through HELCOM with the different Russian state authorities (environment, health, economy etc) and subordinate scientific bodies to come to an understanding of the PBT concept and its applicability in Russia in the future.	
Actors	Federal and regional (NW) state authorities, HELCOM Contracting Parties/Secretariat, EU experts, scientific-research institutions in RU (Fed. and NW)
Target group	Stakeholders from different sectors (NW Russia)
Time frame	Short term (2008-2009)
Recommended Action	
3 This understanding should be also supported by screening measurements in order to demonstrate with concrete examples the occurrence of man made, environmentally hazardous organics in sewage systems and in the environment (in particular in biota). It is proposed to carry out such surveys for a limited number of substances, as for example the target substances of the present study [see action 13]	
Actors	Federal and regional state authorities and scientific-research institutions in NW RU
Target group	Federal and regional monitoring and data collection bodies
Time frame	short-term (2008-2009)

5.2 Legal basis

5.2.1 International level

Russia is a party to many international agreements. However, the Convention on POPs (Stockholm) as well as the International Convention on the Control of Harmful Anti-fouling Systems on Ships are still not ratified and enforced in the Russian Federation. Furthermore, there is no clear implementation plan yet for the Globally Harmonised System (GHS) for classification and labelling of Chemicals, although the new draft "Chemical Act" from 2005 used GHS classification - but so far this is not adopted, nor its exact status is traceable. It exists only a very general political statement that GHS implementation is foreseen, same as ratification of POPs Convention.

The implementation of international requirements in the traditional fields of environmental protection (like the hazardous waste movement – Basel Convention, or transboundary air pollution – Geneva Convention) is more developed. However, the information on emission sources of heavy metals and the corresponding action plan is not publicly available and could not be traced during the present project[64].

[64] to be checked with RozTechNadzor

Table 5-1: Status of international agreements implementation for target countries[65]

Conventions	Estonia	Latvia	Lithuania	Poland	Russia
Stockholm convention	P, (A)[66]	S, R, T	S, R, T	S, L, A	S,A[67]
Geneva Convention	S, R, T, L, A	S, R, T, (A)[68]	S, R, T	S, R, T, L	S,R,T,L,A
Basel Convention	S, R, T	S, R, T	S, R, T	S, R, T, L	S,R,T,L,A
Control of Harmful Anti-fouling Systems on Ships	NO	R	R	R	NO

Explanatory note: P = in process, S = signed, R = ratified , T = transposed, L = national legislation is developed; A = action plan is developed, NO = none above-mentioned actions

The Stockholm Convention defines criteria for substances that are of high concern due to their persistence in the environment, long range transport, bioaccumulation and toxicity. Implementing the Convention includes identification of sources of identified POPs (including POPs contain in substances not meeting the POP criteria themselves) and actions to reduce emission, losses and discharges and/or to ban marketing and use. Thus, implementing the POP Convention is the first step in systematically addressing all substances of similar concern, including the HELCOM hazardous substances.

The GHS defines criteria to classify substances and mixtures with chronic environmental hazards, including those potentially qualifying for being identified as PBT/vPvB or equivalent level of concern. In particular the environmental classes “chronic 1” and “chronic 4” give a first indication of a PBT/vPvB concern. The GHS guidance on Safety Data Sheets requires the supplier to inform his customers on the content of such substances in products he sells to him (see A 4.3.3.2 of the GHS guidance on SDS). Implementing (and enforcing) the relevant building blocks from the GHS in Russia would substantially increase awareness and information on the presence of HELCOM hazardous substances in products on the Russian market.

Recommended Action

4 Ratify the Stockholm Convention and implement it through national legislation. This includes setting up an inventory of dioxin emission sources and an action plan to reduce the emissions.

Actors	Duma (Federal Parliament) and Federal state authorities
Target group	Federal legislation implementing international conventions
Time frame	short-term (2008-2009) ratification and setting up an action program;

Recommended Action

5 Implement the GHS building blocks on i) environmental classification of substances and mixtures and ii) guidance on Safety Data Sheets through national legislation.

Actors	Federal state authorities and industry (pilot region: NW)
Target group	Federal legislation implementing international conventions
Time frame	short term implementation (2008-2010)

[65] for more details see Annex Rus-3
[66] An action plan for the POPs-protocol exists
[67] partial implementation, Action Plain is under preparation; to be checked with RozTechNadzor
[68] Plan under development

5.2.2 National level

Currently, there is no core legal act, addressing hazardous substances in water. Very scattered requirements regarding hazardous substances can be found in different federal laws, governmental regulations and ministerial acts. Also, there is no specific legal instrument to directly restrict the marketing and use of chemical substances present the market. Thus, suitable legal instruments for most of the HELCOM hazardous substances are currently missing.

The key place is taken by i) the federal law "On Environmental Protection" (2002) establishing a framework for environmental protection including also environmental permitting, ii) the Water Code (2006) regulating wastewater discharges (standard-setting, permitting and enforcement) and iii) several regulatory acts recently adopted by the Federal government. The Water Code provides the procedure of decision-making by executive authorities as an authorization to discharge. The federal law "On Air Protection" (1999) addresses issues of air quality and air emission limitations, provides a permitting procedure for facilities that emit pollutants and outlines the control procedures.

The federal law "On Technical Regulation" (2002) opens a new area of comprehensive regulation – quality of products (including buildings and constructions), processes of their production, operation, storage, trade and disposal. Therefore it concerns directly environmental limitations at various stages and waste disposal.

Of particular importance is the federal law "On Sanitary and Epidemiological Well-being of the Population" which regulates standard-setting, permitting and enforcement in relation to air, water and waste in human settlements. So far there has not been any known proposal to include PBT considerations into assessment of hazardousness of chemical substances.

In general, the Russian environmental legislation is stipulating that substances may not be used until environmental concentration limit values (PDK) have been assigned. Currently such limit values are assigned for approximately 1500 substances and preparations (1356 entries for sanitary purposes, 1204 entries for fishery water; some substances are only in a single list). Similar stipulations can be found in legal acts on the management of hazardous chemicals: Substances must not be used without having been notified to the state register (Registry of Potentially Hazardous Chemicals).

In table 5.2 illustrates the status of some target hazardous substances with regard to these different legal requirements. Based on these examples a number of observation can be made which are possible representative in a broader sense:

- Chlorinated paraffins are in legal use[69] (even a technical norm (TU) is issued), but there is no PDK for them.
- A substantial list of perfluorinated substances exists, produced upon request in a single company[70], but none of them having a registration nor a PDK assigned, but a corresponding technical norm has been issued.
- The number of available PDKs is surprisingly high compared to the number of substances for which environmental quality targets exist in EU member states. This may be interpreted as an indication that a transparent regulatory process based on which environmental quality targets are assigned does not exist in Russia.

69 Evidence by internet research, see Annex 8
70 Evidence by internet research , see Annex 8

Table 5-2: Legal occurrence of selected target substances according to chemical and environmental legislation

Substance	Registered	Sanitary PDK, mg/l	Fishery PDK, mg/l	Toxicity class	CAS No provided
Cadmium	YES	0,001	0,005 (0,01)	2	YES
Mercury	YES	0,0005	< 0,00001 (0,0001)	1	YES
PCB	NO	**NO**	< 0,00001	1	N/A
OP-7 (GOST 8433 – 819)	YES	0,1	0,3	4 / 3	NO
Chlorinated paraffins (TU-6-01-16-90**)**	YES	**NO**	**NO**	-	NO
Perfluorheptanoic acid	NO	1	**NO**	2	YES (375-85-9)
5-oxo-6-perfluorhep-tanoic acid Na salt	NO	**NO**	7,0	3	NO
Perfluor nonaoic acid	NO	**NO**	0,1	4	NO
Ethoxylated perfluor-decylalcohol	NO	0,1	**NO**	3	NO
Pentabromodiphenyl oxide **($C_{12}H_5Obr_5$)**	NO	**NO**	Discharge prohibited	Not toxic[71]	NO
Tributyl[(2-methyl-1-oxoprop-2-enyl) oxy]tin (= **tributyltin methacrylate**)	NO	0,0002	**NO**	1	YES (2155-70-6)
Tributyltin chloride	NO	0,02	< 0,00001	2	YES
Triphenyltin chloride	NO	**NO**	< 0,00001	1	NO

Another issue of concern is the common practice of assigning “provisional” environmental concentration limit values (OBUV, VDK). In legal terms it means that they should be assigned only in certain cases, valid for not more than for 2 years, and upon availability of an action plan to achieve the PDK. In practice, however, the OBUV has become widely used as administrative and industrial community is considering PDK values generally too strict, often claimed to be exceed by natural background concentrations, or not taking into account actual pollution control possibilities.

[71] restriction due to covering the bottom of the water body

Recommended Action	
6	Legislative demands with regard to hazardous substances being of concern due to their PBT properties should be included into Russian federal legislation. The new Water Code and the Law "On Environmental Protection" should be amended analogous to the EU WFD (priority substances) and the EU IPPC Directive (Indicative List of Main Polluting Substances; operationalised as described in chapter 4.4.2 of this report). Also, the concern related to persistent and bioaccumulative substances, provisions to classify such substances and to communicate related information in the market, as well as mechanisms to restrict the marketing and use should be incorporated into the Russian Chemical Act [Follow-up to action 1,4, and 5]
Actors	Federal state authorities and scientific-research institutions
Target group	Federal legislation on chemicals and environmental protection, enforcement.
Time frame	Medium-term (2008-2012); enforcement (long-term)

5.3 Institutional setup

A large number of different authorities are involved in management of hazardous substances: Ministry of Health (Registry of Potentially Hazardous Chemical and Biological Substances), Ministry of Natural Resources (especially Water Resources Agency - Rosvodresursy), Ministry of Energy and Economy, Governmental Agency "Rostechnadzor" (Federal Service of Environmental, Technological and Nuclear Supervision), Ministry of Health Care and Social Development by Governmental Agency "RosPotrebNadzor" (Federal Service on Protection of Consumer Rights; responsible for elaboration of hygienic norms for substances), Ministry of Agriculture (elaboration of environmental quality standards for potentially hazardous substances). However, there is **no "competent authority"** with leadership over others designated on chemicals management.

In Figures 2 and 3 responsibilities on hazardous substance management and environmental permitting are illustrated:

Figure 2: Institutional setup of hazardous substance management in Russian Federation

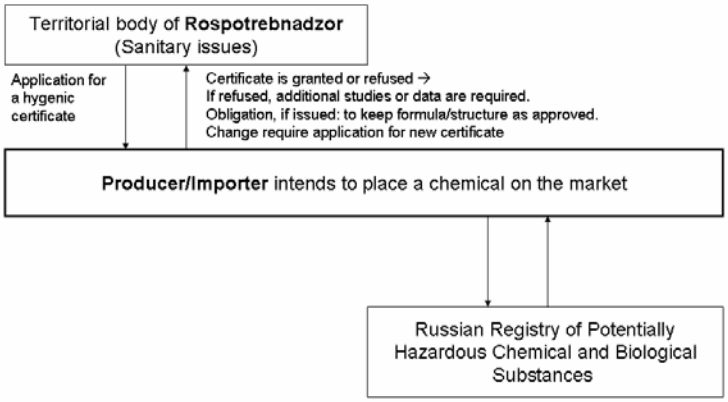
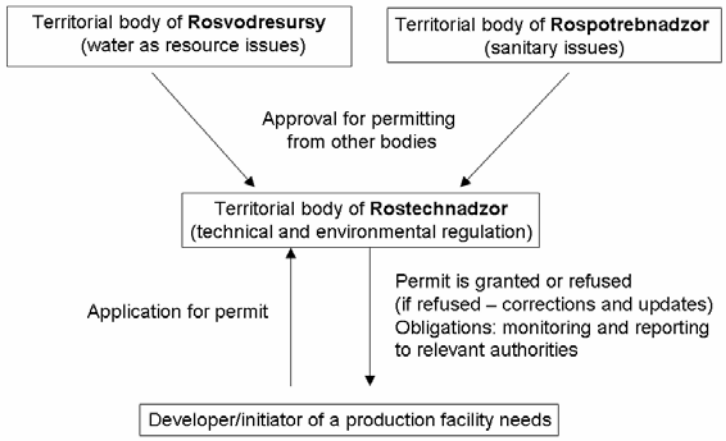


Figure 3: Environmental permitting in the Russian Federation



During the application of an environmental permit, information is forwarded to those authorities, which are responsible for setting the sanitary and fishery PDK. The Registry of Potentially Hazardous Substances seems to be a stand-alone system (see section on "Requirements to products and market control"), and it is not clear if any flow of information or cooperation exists between RosPotrebnadzor and the Registry while processing their applications from producers and importers.
The status of Registry of Potentially Hazardous Chemical and Biological Substances is anyway not fully transparent – its representatives are participating actively in international fora on chemicals management, but the organisation is quite "invisible" at national level.
Furthermore, it is not obvious if there is any coordination between RozPotrebNadzor and Ministry of Agriculture while setting plans for PDK development, and if any plans are existing at all (or how a PDK development is initiated).

In addition, there has been extensive reorganisation of administrative structure and responsibilities since 2002, which may be not finalised yet as different authorities are still competing to gain or re-gain certain responsibilities. This has lead to the situation, that the Ministry of Natural Resources and its sub-structures, which are responsible for the implementation of the HELCOM recommendation 19/5 and reporting to the HELCOM, are lacking instruments and information from the other governmental bodies – for instance: currently RozTechNadzor is responsible for environmental reporting, but it is neither a HELCOM partner nor obliged to provide the relevant information to the environmental authority.

Recommended Action	
7	Carry out a pilot project (e.g. "clean fish food from regional waters") in a selected pilot region North-West Russia (HELCOM target area), to facilitate the cooperation among the different national and regional authorities holding information on the hazardous substances of concern. This includes also rules of access of the civil society to these data. Based on the experience of such a pilot exercise, institutional setup and cooperation could be strengthened. This would also increase the availability and quality of information at the local, regional and national levels.
Actors	Federal and regional authorities, donor agencies, scientific/research institutions, NGOs
Target group	relevant authorities and stakeholders on NW RU
Time frame	medium-term (2008-2010)

Recommended Action	
8	Experience exchange with relevant EU experts and comprehensive training programmes for the most important authorities would be a long term action.
Actors	Federal and regional authorities, donor agencies, EU authorities and experts/consultancy
Target group	relevant environmental and health authorities
Time frame	long-term (2008-2015)

5.4 Environmental permitting

The Russian system for environmental permits of industrial installations and processes is currently under revision, amongst others, also with the help of a large scale Technical Assistance project funded by TACIS, but it is not predictable, when and if at all the system will change and which result the project will reach.

BAT activities in Russia	
Case	A pilot project in NW Russia aimed at introducing BAT into the legal requirements was carried out with support from foreign donors during which a number of pilot enterprises have received BAT-based permits with the purpose to demonstrate the applicability of BAT in Russia. However, due to several factors (including administrative reforms where some project partners – state bodies - were reformed or simply abolished) these pilot enterprises were forced to get a second ”regular” permit after some time in order to follow the existing national requirements Another project addressing the pulp and paper industry has developed BAT guidelines for this branch – however, it is still not adopted as an official guidance, i.e. it cannot be used for permitting.
Conclusion	BAT implementation in Russia is far from being reality: one of the main reasons is the lack of approved technologies, relevant guidance and standards. Pilot enterprises could loose their motivation to take part in future actions due to such experiences and current neglecting official attitude towards BAT principles.

The current Russian environmental permitting system does not support a strategy towards the prevention of emissions of hazardous substances:

- The legislation requires to use state “approved” techniques rather than “best available” techniques. Thus the legislation includes a mechanism to freeze the technological state of the art.
- The system prevents transparency on the substances used at company level. This is due to the fact that a substance, for which no PDK exists, is not allowed to be discharged, unless the applicant provides a PDK and carries out local monitoring. This can be a costly exercise companies try to avoid.
- There are no transparent rules and binding information requirements related to the content of an application and no rules on the methodology to derive a PDK for a substance to be discharged.
- The system allows the enterprises to pay for pollution instead of fulfilling legal obligations. This approach is not comparable with the “polluter pays” principle established in the EU, since the Russian system seems to be quite flexible to compensate incompliance with legal norms through fees and fines.

Recommended Action	
9	Industry permits should explicitly require ceasing emission and discharges of substances being of high environmental concern due to persistency and bioaccumulation. It is recommended to elaborate a Russian version of BAT guidelines (like for pulp and paper industries) for industry and permitting authorities. However, they should be treated as official standard and not be neglected after a while. The elaboration of permits, including activities concerning hazardous substances, should be harmonised and a template produced giving guidance and setting standards.
Actors	Federal authorities, donor agencies and scientific/research institutions
Target group	industry sector and environmental/health authorities
Time frame	medium-term (2008-2012)

5.5 Registration of Chemicals and market surveillance

Theoretically, Russia has a very strong pre-market control – but in practice, the system is not preventing the introduction of products on the market, which are not assessed: A substance may not be placed on the market before being registered in the Russian State Register of Potentially Dangerous Chemical and Biological Substances (established in 1992). In 2003 this register contained records of ca. 1,500 substances. Quite obviously it does not include all substances which are actually in use (for comparison, EINECS contained 100,204 entries) and this is the main weakness of the register.

The list of substances is regularly published every 3-5 years as a book and contains the following information: name of the substance, CAS number, the number in the register, number of state registration, registration year, date of validity of the registration, but the information on properties is available at the register only upon request (payable service); amounts on the market are not recorded in the register.

The system for plant protection products is more comparable with the EU system: the plant protection products have to be registered before entering the market; no plant protection product may be used, until registered (e.g. a white list similarly as in the EU exists). Endosulfane, being a target substance of the project, is NOT mentioned in the Russian list for acaricides and insecticides.

In Russia a state register for biocides exists for disinfection products to be used in households. [72]Before being introduced on the market, household chemicals have to undergo expertise and receive a hygienic certificate from RosPotrebNadzor. However, long term (chronic) environmental effects are not assessed. The data on hygienic certificates are highly confidential and are most likely not processed further.

The interlinking of the registers with the environmental permitting system is unclear – obviously there is neither exchange of information between registering of chemicals and environmental permitting nor awareness and knowledge of the experts of both systems on the information of the other one. Currently there are no uniform requirements towards the classification of chemicals for placing them on the market. It should be made clear, how far the plans for implementation have developed and whether it includes the component of environmental classification. Besides, the system of CAS numbers is not really used in the Russian Federation, hence challenging the identification of substances in Russia.
The control of chemicals in retail sale is foggy, e.g. it has not been clarified to which extent RosPotrebNadzor – the authority in charge of supervising shops – shall control chemicals.

[72] Available at http://fp.crc.ru/ (Last accessed, 14/09/2007). In total 583 entries (last update April 2007).

Recent developments in Russia show that REACH as a system for registration and authorisation of chemicals is attractive for Russia and has a lot of supporters. Efforts are currently made to develop new framework legislation in Russia, transferring chapters of the REACH regulation into Russian legislation, especially, since some elements of REACH (e.g. Register of Potentially Hazardous Substances) are already existing in Russia.
Also, Russia with its exports to EU markets is one of the first concerned countries facing the new registration obligations and has an interest to keep its market share for chemicals at EU market.

Recommended Action	
10	Capacity building for Russian stakeholders on the deeper understanding of REACH and its origin is of importance to avoid the common myths that REACH is "just the same way of registering chemicals which anyway exists in Russia since a long time". We recommend promoting the right understanding of REACH in Russia to avoid further misconceptions with "registration" and to start with capacity building for exporters. These stakeholders have the most rationale intrinsic interest of under-standing REACH. Such action would ensure that parts of industry, so far difficult to address and get hold off, would be involved voluntarily, as being highly interested in the EU markets. The most relevant element for the BSAP in this action is the PBT assessment for each substance > 10 t/a before it can be registered for the European market. Thus with support from a small number of motivated industries the process of data collection, assessment and decision making can be worked out. The experienced based model can be later on transferred to the internal Russian market.
Actors	Federal and regional authorities, EU experts and scientific/research institutions
Target group	industry sector, environmental/health authorities and NGOs in NW RU
Time frame	short-term (2008-2010)

Recommended Action	
11	Cessation of emission, losses and discharges of HELCOM hazardous substances can only be achieved if there is a mechanism to systematically assess the substances placed on the market in NW Russia with regard to their intrinsic persistency, liability to bioaccumumulate and toxicity (PBT assessment). Therefore it is recommended to support Russia in setting up a substance registration system similar to REACH in the long term. Based on a pilot project with exporting companies, setting up a development strategy for such system may start from 2010. In such strategy it should be considered whether regionalisation is possible since it is unlikely to run such a system as a central register without support from regional authorities.
Actors	Federal authorities, EU experts, industry
Target group	industry and authorities in NW Russia
Time frame	long-term (2010-2020)

5.6 Marketing and use restrictions

Some of the target substances of the present project are in unrestricted use in Russia (documentation see Annex 8), e.g. nonylphenol ethoxylates (mixtures of alkylphenol ethoxylates C8-C12; introduced as OP-7 in registries)

- liquid chlorinated paraffins
- perfluorinated compounds (PFAS, but no PFOS detected

The current Russian legislation does not include dedicated and generally applicable mechanisms to restrict the marketing and use of chemical substances present in the market. Thus it may be necessary to prepare the legal basis before action 13 can be carried out (see action 7).

Recommended Action	
12	Prepare for eventually banning Nonylphenols and Nonylphenolethoxylates, short chain chlorinated paraffins, pentaBDPE and OctaBDPE and PFOS for marketing and use in Russia. Start with an impact analysis for North-West Russia for a scenario that the EU marketing and use restriction would be taken over 1:1 to Russia.
Actors	Federal authorities, industry companies, local research organisation and EU experts
Target group	trade and industry in NW RU
Time frame	short-term (2008-2010)

5.7 Monitoring, data and information availability and quality

As already mentioned, HELCOM target substances (investigated under the current project) are only partially monitored (mainly heavy metals – Cd and Hg), partially regulated (those having a PDK assigned) and, in most cases, they are not really investigated, consequently, available data is very limited or even inexistent.

Information on HS is highly scattered among different authorities (Ministry of Natural Resources, Rostechnadzor, Rospotrebnadzor, and Hydrometeorological Agency) and in various databases. In addition, these data are not shared among different users and often are considered as a commercial product thus preventing information dissemination and systematic data collection.

Data quality is suffering from the issues mentioned above – this is clearly visible in the current HELCOM reporting activities when data is collected in an ad-hoc manner and not always sufficiently processed.

Vodokanal-case on PCB	
Case	A transport company paid a fine 250,000 Roubles when Vodokanal detected PCB in water discharged to municipal sewery in their spot-test programme. Monthly follow-up tests did not indicate PCB and in fact, company is nor using PCB neither do they have transformer units on their territory. On the neighbouring territory, however, a large boiler house with transformer stations is operating.
Conclusion	There is no sufficient processing of findings, e.g. source analysis; the case supports the suspicion that the environmental permitting system with associated PDK assignment and monitoring is a "money making tool" for enforcement authorities; b) it could be an analytical mistake; if so, the reliability of results of monitoring programmes is not very high.

The quality and availability of data is also decreasing due to limited state financing for the monitoring programmes and missing limit values for many HELCOM substances. These factors are of high concern for private businesses – in case of disclosing new substances at their own sites they would have to develop PDK values and then conduct local monitoring, which is very costly. Therefore, this "information vacuum" is a support to the status-quo, since both sides (state and enterprises) benefit financially from a less careful treatment of HS.

Recommended Action	
13	Screening of HS at Vodokanal\WWTF. This action seems to be highly feasible and recommended as a potential action of the BSAP in order to find relevant substances and focus future investigations. Such one-off action as recently undertaken in Lithuania, which is analysing municipal waste water effluents would be a recommended action, possibly best in one target region bordering the Baltic Sea, e.g. Kaliningrad region, Leningrad region or St. Petersburg City. The long year intensive cooperation between the St. Petersburg Vodokanal waste water treatment company and the Finnish Contracting Party of HELCOM could lead to a good project by transferring the Finnish methodology to Russia and giving it a test. This would then also give evidence of the occurrence or non-occurrence of the target substances in Russian waters and a reason for including them into state reduction and monitoring programmes. Referring to the previous experience with PCB examination, St. Petersburg Vodokanal is ready to take an active part in this action and co-fund it.
Actors	St. Petersburg Vodokanal (or other WWTF), federal authorities, donor agencies, consulting bodies/research agencies
Target group	St. Petersburg Vodokanal (or other WWTF)
Time frame	short-term (2008-2009)

5.8 Management of hazardous substances on company level

Table 5-3 provides an overview on the type of companies contacted and visited under the current project. The findings and conclusions are based on sample of companies.

Table 5-3: companies contacted for site-visits performed under the project

Industry branches	Number of interviewed/ approached companies	Positive feedback (ready for site-visits)	**Negative feedback (incl. given reasons)**	
			No interest and motivation	Absence of target substances
Transport	1	1		
cable coating	1	1		
Chemistry/lacquers and paints	1		1	
Chemistry/plastic	2	2		
Chemistry/cosmetics	1		1	
furniture	1			1
Machinery	2	1		1
metal processing	1		1	
Total number	**10**	**5**	**3**	**2**

The identification of substances of concern at company-level is difficult: supply of safety data sheets with dangerous products is not obligatory, the system of CAS numbers is not really used, and there are various different classification systems for hazardous chemicals in use. Companies are ready to follow requirements of their business partners abroad, and thus e.g. all exporters are keen to improve their own performance. Due to the growing number of ISO 14000 certified companies, advanced enterprises are also ready to pay more attention towards the HS issue. However, even companies motivated to get an overview on the (potentially hazardous) chemicals they use fail with their efforts due to the absence of appropriate instruments to classify and labelling chemicals and to communicate chemicals safety information in the supply chains.

Hazardous substance inventories of enterprises	
Case	A cable-coating company, having ISO 14000 certificate and existing environmental policies, as well as environmental and health specialists, is ready to cooperate on HS issues and screen used chemicals regarding target HELCOM substances. However, they import several products from the EU market and have rather limited information from their suppliers, which the cable coater would however need to comply with Russian legislation (e.g. sanitary certificate and SDS). In order to get information on the dangerous substances used in the preparations they must rely on the good will of their suppliers, since officially suppliers are not requested to supply all the information the Russian company needs. Naturally, not all EU suppliers would be eager to provide such data if it is not mandatory.
Conclusion	even in such rather rare cases that a company is really interested and ready to dig into HS investigations, they still depend on their suppliers' willingness to provide "extra data" i.e. own initiatives are not sufficient enough and therefore state policies and requirements should be changed in order to make such investigations a norm

Recommended Action	
14 Since the lack of awareness in the market and among authorities is enormous, information materials in an easily understandable language and systematic training, together with a train-the-trainer concept, are recommended to be implemented in a long term project, supported by the Russian government. It is obvious that a larger investment into local trainer capacity and also education (university) must be undertaken to transfer the basic knowledge and understanding to industry.	
Actors	Federal authorities, donor agencies, consulting bodies/research agencies and NGOs
Target group	industrial sector
Time frame	long-term (2008-2015)
Recommended Action	
15 Harmonising the Russian system with GHS (classification, labelling, SDS), as well as the systematic introduction of the CAS numbering-system in the registries of Russian Federation, would be a very important step towards a better management of chemicals in the industries.[see actions 5,6, and 11]	
Actors	Federal authorities, donor agencies, executing bodies, scientific and research institutions
Target group	existing HS regulations and norms in the Russian Federation
Time frame	long term (2008-2015)

ANNEX A.1
List of recommended actions

Recommended Actions related to the Baltic States and Poland

No.	Recommended action	Actors	Target groups	Time frame
1	The nature of substances covered under Recommendation 19/5 and the related concern should be more clearly defined and explained. The "hazardous substance" phrase should possibly replaced/complemented by a phrase more specifically addressing the concern..	HELCOM bodies; Environmental Ministries of HELCOM Contracting parties; research institutions	Industry, public, authorities	Short term (2008-2010)
2	Substances being of concern due to their high persistency and tendency to bio-accumulate (vPvB) should be addressed under HELCOM 19/5 regardless any available information on toxicity.	HELCOM bodies; Environmental Ministries of HELCOM Contracting parties; research institutions	EU fora responsible prioritising substances and launching regulatory action if needed	Short term (2008-2010)
3	Identify substances which are not covered by the EU PBT/vPvB criteria but which nevertheless present an equivalent level of concern for the marine environment (action for all HELCOM contracting parties).	HELCOM bodies; Environmental Ministries of HELCOM Contracting parties; research institutions	EU fora responsible prioritising substances and launching regulatory action if needed	Short term (2008-2010)
4	Initiate and support information campaigns addressing authorities, industry and societies in the new Member States (and Russia), to better explain the "hazardous substance" concern. Projects of common public interest like e.g. "clean fish food from regional waters" or "responsible use of fire" may be suitable issues for such public campaigns. [see also 17]	Ministries of Environment and NGOs of the target countries	Public and municipalities of the target countries	Short term (2008-2010)

Recommended Actions related to the Baltic States and Poland

No.	Recommended action	Actors	Target groups	Time frame
5	Reduce dioxin and heavy metal emissions from private and municipal heating through an investment program to support the technical improvement (energy efficiency, temperature and oxygen conditions, low dust techniques, regular inspection by technical personal) of domestic and municipal heating. Set up a binding and enforceable norm for the maximum chlorine content in solid fuels for domestic heating (e.g. 0.1%). In long terms, this may also lead to a substitution of hard coal by other fuels. Launch a public information and engagement campaign on "responsible use of fire". This would include the communication and explanation of simple rules like: i) No waste burning in stoves, open fires or bonfires, ii) use dry and preferably hard-wood for heating and open fires, iii) operate stoves at optimal conditions.	Environmental ministries and municipalities in Poland	Industry sectors producing heating devices, local service companies, municipalities, private households	long-term (2008-2018)
6	Reduce heavy metal emissions from the energy production sector and industrial burning processes through upgrading of dust cleaning installations and use low mercury hard coal or, in the long term, substitute hard coal by other energy sources.	Ministry of Environment, Ministry of Economy, Poland	Industry	long-term 2008-2018
7	Improve the management of landfills in order to prevent landfill fires. Prevent incineration of industrial waste without or with low efficiency gas cleaning systems. This would include improved supervision of waste stream by the authorities as well as bringing industrial waste incineration site in line with the requirements of the EU Directive on Waste Incineration.	Ministry of Environment and Inspectorates, Poland	Waste management sector	medium term 2008-2012
8	Reduce cadmium and dioxin emissions from steel production by installing BAT. This should include Dioxin emission monitoring and additional dust/dioxin abatement systems (fabric filtration). Reduce dioxin emissions from secondary aluminium and copper production as well as lime production facilities by installing BAT.	Ministry of Environment and permitting authorities, Poland	Industry	medium term (2008-2012)

Recommended Actions related to the Baltic States and Poland

No.	Recommended action	Actors	Target groups	Time frame
9	Particular action is proposed related to the use of MCCPs in isolation foams and sealants. It aims to substitute MCCPs and may include the following elements: Inform the respective formulators on the results of the EU Risk Assessment related to MCCP; launch a project on comparative cost-benefit-analysis related to available alternatives in co-operation with the concerned companies; carry out a market analysis in North-West Russia to explore the potential demand for more environmentally sound building and construction chemicals;	Ministry of Environment in Cooperation with Ministry of Economy of Estonia and Latvia	Manufactures of building and construction chemicals	Short term (2008-2010)
10	Carry out screening measurements in WWTP related to brominated flame retardants in Latvia, Estonia, and Poland.. In case of significantly increased levels, search for local emission sources (e.g. textile finishing companies, plastic converters, waste treatment). If sources identified, support companies to comply with EU legislation	Ministries of Environment of EE, LV, PL,	Sewage treatment sector and companies discharging waste water into the public system	Short term (2008-2009)
11	Lithuania, Latvia and Poland as countries running already a product register should decide which role it shall play under the REACH system. Based on this, the registers should be further developed to form a complementary tool to REACH.	Responsible Ministries and Agencies in Lit, LV, PL	Government	Short term (2008-2009)
12	Starting the pressure and source analysis related to the EU list of priority substances as soon as possible. In this work, other substances of high concern for the water environment identified by HELCOM could be included as national priority substances.	Ministry of Environment and regional water authorities, waste water companies, in co-operation with Environmental inspectorates in EE, LV, LT and PL	Public policy	short term (2008-2010)
13	Development of technical guidance for IPPC permits addressing the hazardous substances in details. Implementing a series of training courses for authorities and companies.	MoE and permitting authorities in EE, LV, LT, PL	Permitting authorities and industry	medium term (2008-2012)

Recommended Actions related to the Baltic States and Poland

No.	Recommended action	Actors	Target groups	Time frame
14	National legislation should be amended establishing clear requirements with regard to the substances of concern. In those sectors, where the BREF documents explicitly require substitution, a qualified substitution statement should be part of the permit application.	MoE and permitting authorities in EE, LV, LT, PL	Government	Short term (2008-2009)
15	Strengthen market surveillance capacity and strategies, in particular analytical product checks – including resource allocation and staff training. Exchange of experience with market surveillance bodies in other EU countries.	Government and market surveillance bodies in EE, LV, LT, PL	Trade and industry	medium term (2008-2012)
16	Set up a support and enforcement structure for REACH to be operational from 2009. This includes in particular capacities to help industry to implement the new requirements related to i) safety assessment of substances (including PBT assessment) ii) the safety data sheet system (exposure scenarios) and iii) notification of articles containing substances of very high concern.	Competent authority for REACH, national help desk, product inspectorates, environment and health inspectorates in EE, LV, LT, PL	Trade and Industry	medium term (2008-2012)
17	Initiate and support a communication program on why the 2020 objective is important, how consumers, services, trade and industry would benefit and what the consequences are if policy fails to meet the objective. Such action should be based on a project of common interest like for example “clean fish food from local waters” or “responsible use of fire”. [see also action 4]	Environmental ministries and municipal authorities	Concerned trade and industry organisations, local service companies, municipalities, private households	medium term (2008-2012)

Recommendations related to the Russian Federation

No.	Recommended action	Field	Actors	Target groups	Time frame
1	Facilitate an agreement between the HELCOM contracting parties with its member Russia that the HELCOM definition of "hazardousness" would be introduced into the Russian strategies/policies on protection of the marine environment from land based sources and subsequently into the relevant legislation.	Political agreement	Federal state authorities in RU, HELCOM Contracting Parties/Secretariat	Federal legislation on i) chemicals, ii) protection of water and iii) environmental permitting of production sites/installations	Short term (2008-2010)
2	Initiate an in-depth discussion process through HELCOM with the different Russian state authorities (environment, health, economy etc) and subordinate scientific bodies to come to an understanding of the PBT concept and its applicability in Russia in the future.	Raising awareness	Federal and regional (NW) state authorities, HELCOM Contracting Parties/Secretariat, EU experts, scientific-research institutions in RU (Fed. and NW)	Stakeholders from different sectors (NW Russia)	Short term (2008-2009)
3	Carry out screening measurements in order to demonstrate with concrete examples the occurrence of man made, environmentally hazardous organics in sewage systems and in the environment (in particular in biota). [see also action 13]	Raising awareness	Federal and regional state authorities and scientific-research institutions in NW RU	Federal and regional monitoring and data collection bodies	short-term (2008-2009)
4	Ratify the Stockholm Convention and implement it through national legislation. This includes setting up an inventory of dioxin emission sources and an action plan to reduce the emissions.	Legislation	Duma (Federal Parliament) and Federal state authorities	Federal legislation implementing international conventions	short-term (2008-2009)
5	Implement the GHS building blocks on i) environmental classification of substances and mixtures and ii) guidance on Safety Data Sheets through national legislation.	Legislation	Federal state authorities and industry (pilot region: NW)	Federal legislation implementing international conventions	short (2008-2010)

No.	Recommended action	Field	Actors	Target groups	Time frame
6	The concern related to persistent and bioaccumulative substances, provisions to classify such substances and to communicate related information in the market, as well as mechanisms to restrict the marketing and use should be incorporated into the Russian Chemical Act. Also, the new Water Code and the Law "On Environmental Protection" should be amended analogous to the EU WFD (priority substances) and the EU IPPC Directive (Indicative List of Main Polluting Substances) [Follow up of action 1,4,5]	Legislation	Federal state authorities and scientific-research institutions	Federal legislation on chemicals and environmental protection Enforcement	Medium-term (2008-2012) Long-term
7	Carry out a pilot project (e.g. "clean fish food from regional waters") in a selected pilot region North-West Russia (HELCOM target area), to facilitate the cooperation among the different national and regional authorities holding information on the hazardous substances of concern.	Institutional co-operation	Federal and regional authorities, donor agencies, scientific/research institutions, NGOs	relevant authorities and stakeholders on NW RU	medium-term (2008-2010)
8	Experience exchange on institutional co-operation in the field of chemicals control with relevant EU experts and comprehensive training programmes for the most important authorities	Capacity building	Federal and regional authorities, donor agencies, EU authorities and experts/consultancy	relevant environmental and health authorities	long-term (2008-2015)
9	Work out a Russian version of BAT guidelines (like for pulp and paper industries) for industry and permitting authorities. The elaboration of permits, fully covering activities concerning hazardous substances, should be harmonised, and a template should give guidance and set standards.	Technical guidance on environmental permitting	Federal authorities, donor agencies and research institutions	industry sector, environmental and health authorities	medium-term (2008-2012)
10	Promote the right understanding of REACH in Russia. Start with capacity building for chemical exporters to enable some of these companies to maintain their exports to EU under REACH conditions	Capacity building	Federal and regional authorities, EU experts and scientific/research institutions	industry sector, environmental and health authorities	short-term (2008-2010)

No.	Recommended action	Field	Actors	Target groups	Time frame
11	Support Russia in setting up a substance registration system similar to REACH in the long term. In such a strategy it should be considered whether regionalisation is possible since it is unlikely to run such a system as a central register without support from regional authorities.	Legislation	Federal authorities, EU experts, industry	industry and authorities in NW Russia	long-term (2010-2020)
12	Prepare for eventually banning Nonylphenols and Nonylphenolethoxylates, short chain chlorinated paraffins, pentaBDPE and OctaBDPE and PFOS for marketing and use in Russia. Start with an impact analysis for North-West Russia for a scenario that the EU marketing and use restriction would be taken over 1:1 to Russia.	Legislation	Federal authorities, industry companies, local research organisation and EU experts	trade and industry in NW RU	short-term (2008-2010)
13	Carry out a one off screening for selected hazardous substances (Hg, Cd, SCCP and MCCP, pentaBDPE, octaBDPE, DecaBDPE, HBCD, NP and NPEO) at Vodokanal waste water treatment plant and possibly other WWTP in the Kaliningrad or Leningrad region or Petersburg City.	Measurements	St. Petersburg Vodokanal (or other WWTF), federal authorities, donor agencies, consulting bodies/research agencies	St. Petersburg Vodokanal (or other WWTF)	short-term (2008-2009)
14	Develop information materials for industry in an easily understandable language and carry out systematic training, together with a train-the-trainer concept,	Information and Training	Federal authorities, donor agencies, consulting bodies/research agencies and NGOs	industrial sector	long-term (2008-2015)
15	Harmonising the Russian system with GHS (classification, labelling, SDS), as well as the systematic introduction of the CAS numbering-system in the registries of Russian Federation. [see action 5, 6, 11]	Legislation	Federal authorities, donor agencies, executing bodies, scientific and research institutions	existing HS regulations and norms in the Russian Federation	long term (2008-2015)

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