



Final Project Conference

**A networking event with other INTERREG projects
addressing water quality and hazardous substance
management**

June 15-16, 2021

**virtual (zoom) Baltic States Organized by INTERREG BSR NonHazCity 2
(#X006)**



EUROPEAN
REGIONAL
DEVELOPMENT
FUND



NONHAZCITY

Contents

Goal of the NonHazCity 2 Final Conference	3
Welcoming address	3
Session I: More knowledge on occurrence of Hazardous Substances in the aquatic environment vis-a-vis the new policy frames.....	5
Panel 1: From substance evidence to policy – how to make chemicals issues more explicit in policy and who should act?.....	7
Session II: Industrial wastewater management and chemicals risk management tools for industry.....	9
Panel 2: Management instruments versus water purification – new tools for industries? How can we get HS out of the cycle BEFORE they enter the pipes?	13
Session III: What can Municipalities do?	14
Panel 3: Municipalities as key actors for hazardous substance management – how to empower them? ...	21
Session IV: Plastic as an emerging issue for discussion: microplastics, hazardous substances in articles & products, and how to make them more visible.....	22
Panel IV: Plastic material used and consumed by everyone and everywhere – how can we raise awareness, especially about “invisible”?.....	25
Closing of the Conference by Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences, and Heidrun Fammler, BEF-Germany:	26
Participants of the conference, day 1.....	27
Participants of the conference, day 2.....	28
Agenda	30

Goal of the NonHazCity 2 Final Conference:

To discuss hazardous substances by presenting the NonHazCity (NHC1, NHC2) project approach and results, and to provide a platform for other Interreg projects from the Baltic Sea Region and Europe that work on related topics to share their experience and findings.

Moderated by

Heidrun Fammler (BEF Germany) and Ingrida Bremere (BEF Latvia)

Report by

Polina Leskovic (Riga City Council), Ingrida Bremere (BEF Latvia), Daina Indriksone (BEF Latvia)

Welcoming address

The welcoming speech by **the Riga city mayor, Mārtiņš Staķis**: *“I have a great pleasure to welcome you all. We are very proud that Riga is a part of this project, and it’s great that Riga, though virtually, holds this event. This project has done a tremendous contribution in raising awareness about hazardous substances that are around us in everyday products and are harmful to nature and human health. It was very important that NonHazCity has been focusing all the activities on municipal entities, businesses, and private consumers, motivating us to take active measures to avoid the use and purchase of the products containing hazardous substances. When thinking about the future, the municipality of Riga relies on the motto: “Riga is a city of opportunities” – this means that municipality creates diverse opportunities for those, who are living, working, learning, and studying here. I would like to invite you to Riga on other occasions. Riga’s most vivid characteristic has always been its openness – openness to new ideas, trends, experiments, green and ecological thinking. I wish you a fruitful meeting! Stay healthy and I hope to see you soon in our city!”*

Welcoming speech from **Edmunds Cepurītis, the Riga City Council Housing and Environment Committee Chairman (a member of Riga City Council and the head of Committee of Housing and Environment)**: *“I currently represent the new political forces in Riga City Council, and one of the challenges that we are currently tackling is the change of the culture in public companies to reach the environmental targets. Therefore, I very much agree with one of the sessions of the conference, that municipalities can do more than required by law. This is our duty in Riga, as the largest city in the Baltic states to provide this leadership. I believe that companies, as public entities, should do more than is required by national laws; especially regarding hazardous substances there are a lot of small things that can be done to improve the situation and utilize good examples from other municipalities. I wish you a good conference, fruitful discussions, and new solutions that would be easy for us, as policy makers, to implement both, in practical ways and in educational ways.”*

Elena Kolosova, the Advisor for External Cooperation in the INTERREG secretariat: *“Actions on improving the state of the Baltic Sea and regional waters have always been one of the cornerstones of INTERREG Baltic Sea Region, and this is what we also see today, as there are so many participants from different projects. In the current period 2014-2020, more than 70 million euros were allocated to various projects to help reaching the good environmental status of regional waters, as defined in the Baltic Sea action plan. The projects that are present today, as well as many others, have developed many useful solutions for these regional challenges by raising awareness and changing the behavior. Very often NonHazCity stood out as a great example of the INTERREG spirit, showcasing proactive cooperation with municipalities, small businesses, and citizens. The partners developed good solutions and demonstrated how to make lives of citizens around the Baltic Sea greener. The campaigns “Detox your house” and “The Plastic Diet” are amazing examples of direct*

communication with the target groups. Practical solutions, policy improvements, and excellent communication is a benchmark of a good INTERREG project.

We see that a lot still needs to be done in this field, because the overall goal of the Baltic Sea action plan to reach the good environmental status of the Baltic Sea will not be reached by 2021 (as already communicated by HELCOM). Pressure on the marine environment and inland water bodies from contaminants is high and the ecosystem remain impacted by hazardous substances and litter. And that is why the new program will continue working with water-related topics in the new period 2021-2027, with the priority on water-smart societies. Regarding sustainable waters, the program plans to support actions that will improve the state of the water in the region and make its management more sustainable. When we talk about waters, we always refer to the Baltic Sea, to the coastal waters, as well as inland waters - rivers, lakes, and ground water. We hope to see the projects that will adopt existing solutions, develop, or implement new solutions to prevent and reduce water pollution, adapt water management practices to the changing climate and implement these actions across different sectors. We plan to launch our first call for proposals already in the end of this year, and we hope to see many participants of the current conference, also as developers of new project ideas.”

Eva Iveroth, Senior Policy Officer in the Swedish Environmental Protection Agency, PA Hazards coordinator:

The EUSBSR (European Union strategy for the Baltic Sea Region) is a macroregional strategy, where regions are identified sharing common challenges, and having a need for collaboration to create a common strategy. The overall goal of the EUSBSR is to increase prosperity, save the sea, and connect the region. Countries around the Baltic Sea account for 17% of the EU population, so, any measure accomplished in this region can have a good impact at the EU level. Hazards is one of the policy areas identified within the region. The PA Hazards is striving to go along the goals and ambitions of the European policy developments, e.g., chemicals strategy, the EU Action Plan: “Towards a Zero Pollution for Air, Water and Soil” (adopted on 12th of May, 2021). By the year 2030, the target is to reduce air, water, soil, noise, and waste pollution.

In the period 2020-2025, the focus is on pharmaceuticals and highly fluorinated substances (PFAS/PFOS) in the Baltic Sea environment. The actions of the policy area include: (i) prevention of pollution and reduction of the use of hazardous substances (HS), (ii) mitigation and remediation of contamination, (iii) facilitation of implementation of regulatory frameworks and conventions, and (iv) promotion of research and innovative management. Implementation of actions is led by PA Hazards coordinator and a Steering group, as well as the Flagship projects.

Agnieszka Ilola, project coordinator in the Union of the Baltic Cities Sustainable Cities Commission:

The Union of the Baltic Cities (UBC) is a proactive network of 70 member cities in 10 countries around the Baltic Sea, who work for safe, green, and sustainable BSR. The UBC works in 7 thematic commissions that cover various aspects of urban sustainability, including the social aspect, economic, cultural, and environmental dimensions. The UBC Sustainability Action Program 2022-2030 is a guiding strategic document for the whole network, linking the work of the UBC to the regional, European, and global policy framework, such as EUSBSR, HELCOM BSAP and HELCOM recommendations, European Green Deal, and the 2030 Agenda for Sustainable Development.

In practice, UBC does a lot of networking with member cities through regular commission meetings, conferences, seminars, and thematic working groups. The network develops and implements projects and is looking for funding opportunities to mobilize the cities for further actions. Moreover, they are exchanging good practices and information, as well as provide learning environments for the cities. Another important action of the UBC is the representation of the member cities in sustainability matters on the EU and global levels (consultations, position papers, policy briefs, etc.). The network is working to strengthen the

implementation of the policy framework and the involvement of global actors to the European and global agendas. The UBC aims are: (i) the reduction of emissions and inputs of microplastic, hazardous substances, and pharmaceuticals, (ii) combating marine litter pollution, (iii) strengthening the already existing regional policy implementation, (iv) strengthening cross-sectoral cooperation and communication with citizens, and (v) collaborating in environmental monitoring.

The BSR Water project - as an example of good practice.

BSR Water is a platform on Integrated Water Cooperation. It aims to enhance cross-sectorial cooperation in the water sector by providing a possibility for transnational experience exchange, sharing of good practices and solutions, and developing regional policy recommendations for storm water management, nutrient recycling, and HS. Main outputs of the BSR Water project are:

- the Baltic Smart Water Hub (at www.balticwaterhub.net), the online portal enabling exchange of practical experience and promotion of local achievements in the region, and showcasing over 100 good practices, technical solutions, tools and innovations in four water areas;
- pallet of solutions for nutrient recycling;
- policy recommendations for implementing the holistic and sustainable stormwater management in BSR;
- policy briefs on micropollutants in wastewater and sewage water;
- inputs to HELCOM Regional Nutrient Recycling Strategy; HELCOM Rec 23/5 on “reduction of discharges from urban areas by the proper management of storm water systems”; and HELCOM Baltic Sea Action Plan update.

Session I: More knowledge on occurrence of Hazardous Substances in the aquatic environment vis-a-vis the new policy frames

Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences, “NHC1 - Hazardous Substance Screening Summary”:

Hazardous substances screening at the NonHazCity1 project:

At the beginning of the NonHazCity1 there was a goal to explore and demonstrate what hazardous substances were present in municipalities and build an evidence base to give people a clear picture of what was going on in their areas, with the specific idea of addressing emissions from small emission sources, rather than big industrial ones. A snapshot survey was conducted, during which the focus was put on 5 sampling environments (industrial, residential, service, stormwater, and Wastewater Treatment Plants and 3 HS classes: metals, organics, and Perfluorinated substances). Team doing this work tried to sample as broad range of water samples in as many water environments, as possible, to try and identify the presence of HS in places where they weren't typically considered before.

Findings from substance screening at the NonHazCity1 project are summarized:

- Metals are in a way considered yesterday's problem. There are regulations to address them, their use is being reduced, and they are being substituted. However, metals were found in all water samples.

- Organics are the problem of today and are mostly found in the residential and service waters, and they pose a high concern, because all of them have endocrine disrupting properties, and many of them are widely used in the industry. Many of the organics were found in quite high frequency, BPAs was found almost everywhere, as well as phthalates.
- Perfluorinated substances are considered tomorrow's problem, but their presence has increased a lot, as they are still widely used as stain repellents, surfactants, and fire-fighting foams. They are highly persistent in the environment, degrade very slowly, bioaccumulate in humans and wildlife. Health effects of these compounds are still being researched and the long-term health effects are less known than for some other substances. In urban water samples they were not detected as frequent, but they are found almost everywhere, mostly in industrial and stormwater.

To put these results into context, the regulatory action should be continuously supported. The enforcement of existing rules must be pushed, and court system should be used to clarify the issues and uncertainties in the existing regulations; new regulations and policies must be created. **If we are going to solve tomorrow's problems, we cannot rely solely on today's regulations, which are based on yesterday's science.** We must be proactive in our push for substitution and awareness raising – this is where cities can go further than nations.

Ieva Putna-Nimane, the Latvian Institute of Aquatic Ecology, Project MEDWwater, “Pharmaceuticals in wastewaters – levels, impacts, and reduction”:

In 2017 there was a status report released on pharmaceuticals occurrence in the Baltic Sea, and major data gaps were indicated in Lithuania and Latvia, related to sources and pathways, including sales and consumption of pharmaceuticals, their concentration in freshwater and wastewater systems. Both countries currently lack a common approach to tackle the pharmaceutical related problems: there are no national strategies on political level concerning pharmaceuticals/micro pollutant issues; there are no “relevant pharmaceuticals” suggested for monitoring based on consumption data, toxicity, reliability, or comparability of the available monitoring.

Project MEDWwater

The project started in February 2021, and it focuses on pharmaceutical pollution of the environment, and ways how to reduce its levels. Project partners and associated organizations participating in the project are municipalities, environment and water associations from Latvia and Lithuania. The topic of pharmaceuticals was chosen, because pharmaceuticals are designed to be biologically active and can be potentially harmful to environment and have adverse effects on crustaceans, fish, and mammals living in the water. MEDWwater project aims to:

- decrease the emissions and adverse effects of Active Pharmaceutical Ingredients (API) in Latvia and Lithuania;
- create a cross-border cooperation between research institutions, and national public and regional institutions, to increase knowledge and experience that serve to shape policy and specific measures dealing with pharmaceuticals in both countries;
- develop strategical recommendations targeted to support future prioritization and development of policy measures for the reduction of pharmaceuticals and other micropollutants in the environment by improving integration and efficiency in environmental resource management.

Main outputs of the project are going to be the development of a priority list of waste water treatment plants for future upgrading on API pollution loads and contamination status of receiving water bodies in Latvia and Lithuania, and the development of the list of priority pharmaceuticals for further monitoring in both countries.

Harri Moora, Programme Director in Stockholm Environment Institute Tallinn Centre, “A new perspective: Interlinking chemicals, climate and circularity issues”:

Hazardous substances issue is neglected in the overall discussion of the most important environmental policy-related issues, such as climate change and circularity. There are very few solutions to guide decision-makers through this very complex future which should in a way integrate carbon neutral, circular and zero pollution/toxic free future. A focus on energy efficiency and decarbonization alone is not enough and can only address a little bit more than 50% of global greenhouse gas emissions. The rest should come from how we develop, manufacture, use and treat our products.

Plastics – as an example for interlinking chemicals, climate, and circularity issues

Earlier, the focus was mainly put on plastics, and plastics, as a material which is around us more and more, gives us a very good view into this problematic, complex, and integrated approach that should be implemented. Plastics, using fossil fuels, contributes very significantly to the climate change, but even more to the circularity. From the policy level, dealing with plastics is a real headache for countries, with rising recycling targets for plastic materials. This is a relevant problem for decision-makers, industries, producers, and even consumers.

Without proper attention to chemicals, circular economy will never work:

- Today’s chemicals legislation is not adapted for a sustainable circular economy, as many hazardous chemicals are not regulated.
- Substantial data gaps are accounted for chemical properties of products, especially on the toxicity, which creates a challenge when it comes to a circular product design and development. There is a lack of methodologies to assess exposure due to the complexity of products.

Thus, it is crucial that the chemicals issue is recognized and systematically introduced into the circular economy approach, as well as climate change considerations through innovative and effective policies, considering different materials/chemicals and products, waste, public procurement, trade, innovation, industry, etc., and intervention at different levels – regional, national, and global.

Panel 1: From substance evidence to policy – how to make chemicals issues more explicit in policy and who should act?

Arne Jamrot, Chemicals Centre, Environment and health department of the City of Stockholm;

Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences;

Harri Moora, Programme Director in Stockholm Environment Institute Tallinn Centre;

Eva Iveroth, Senior Policy Officer in the Swedish Environmental Protection Agency, PA Hazards coordinator;

Agnieszka Ilola, project coordinator in the Union of the Baltic Cities Sustainable Cities Commission;

Ieva Putna-Nimane, the Latvian Institute of Aquatic Ecology, Project MEDWwater.

The panel discussion started with a reflection from City of Stockholm on **evolution of role of chemicals at the municipality:**

- Initially, the idea was that we need to shift yesterday's thinking, that was mainly focusing on production emissions, to legislation, which is focusing on emissions related to consumption of services, goods, products, and the exposure that comes from our everyday use of articles.
- Currently the more appropriate thinking is that chemicals in the production and consumption, and chemicals that are in the articles after consumption, will be an obstacle in the recycling stage. **Yesterday's picture or understanding was very much production-related, and today's discussions and understanding is consumption-related.**
- Basis for our work with Chemicals Action Plan and our Environmental program is that we should go further than the law demands, because we want to be a sustainable city. We have our objectives (Non-toxic Stockholm), which is why we want to do not only what we have to, but as much as we can.
- Chemicals are in the "heart" of the circular economy, which is important to people working on climate change, resources, and waste management. A cooperation with research, academia, national authorities is necessary.

In the discussion on how researchers **could support municipalities with enabling knowledge on chemicals** the panellists stated, amongst others:

- We need to go beyond research, as there is going to be more and more research about what substances are of concern. Setting the agenda is of importance, because research depends on available targeted funding and politicians may lack knowledge and thus, they follow advice provided. It would be good time to stress the importance of hazardous substances.
- One of the things we need to do is **do more than required by law and open the door to making decision under uncertainty**. For example, now there is a research on cocktail effects of chemicals. We suspected their interaction with one another, but no real work was done on how to assess the effects of mixtures and cocktails.
- It is important to bring different stakeholders to the table, not only researchers and policy makers, but also other sectors, e.g., private sector. It is crucial that companies that are producing are part of the communication.
- It is important to collaborate across sectors because HS concern many sectors, e.g., health, well-being of citizens, economy, green public procurement (GPP). All these sectors should be represented in communication and cooperation to strengthen these ties and link the research, policymaking, and the practitioners.
- Addressing the chemical use and substitution would be the issues where the research should go forefront and communicate by explaining and bringing the knowledge, data and facts to citizens, consumers. The awareness raising and translating the research into a very easy language could be well-taken by society.
- When talking about messages to the society brought from researchers, and other stakeholders, it's very important not to exaggerate them. People are complaining that scientists and environmentalists have been talking for many years about environmental threats, about global warming, but it is not happening yet, so they stop believing.

It was pointed out that the common approach by the decision makers is to follow requirements set by a law instead of doing more than requested by legislation. Specific discussion among the panellists on examples what can be done "*more than a law request*" highlighted **possible options at municipalities**:

- Changing the procurement approaches at municipalities by buying safer products and thus acting as an example to others and in this way doing more than requested by law.

- However, GPP is more complicated to choose the “right product”; finding out differences between sustainable and regular choice requires tracking information about the composition (chemical contents) of articles that are procured, because suppliers often cannot give an answer on substances present. That limits the possibilities of procurement as an instrument, which is why we need to cooperate with research.
- Networking can mobilize municipalities to join projects and build the knowledge (including experience in administrative issues) and involvement. Networking can motivate cities to go beyond and raise ambitions, e.g., water quality aspects going beyond the Water Framework Directive requirements are taken up by forerunners in the region who try to achieve more than required.
- Successful campaign aimed to change the consumption behaviour towards less amount, better quality, not only towards substituting one product with another, can be applicable tool at municipality. That does not have to be made ideological or confrontational, but rather making people to see benefits from environmentally friendly choices (e.g., “Less, but better”) and how they can have a better life.
- When municipality talks about circular economy, it should go beyond the “reduce, reuse, recycle” economy. New business models should be considered, bringing them to the market, giving services by replacing purchases of articles or goods thus enabling less material consumption. The result should be better, we should use less, but better things.

[Session II: Industrial wastewater management and chemicals risk management tools for industry](#)

Kajsa Rosqvist, Senior Environmental Adviser in the City of Helsinki, the Project BEST Manager, “Recommendations for industrial wastewater treatment – results from Project BEST”:

Industrial wastewater can have high organic content, hazardous substances present, and can be in high volumes. The industrial wastewater shall be managed in a specific way to avoid problems for municipal wastewater treatment plants (WWTP):

- An industry needs to know what kind of wastewater they have, what is the content and how it is discharged, and, based on this information, they apply for the environmental permit from the environment authority.
- The environmental authority should consult the WWTP on requirements for the discharge of wastewater to the municipal WWTP. In addition, the industry also needs to contact the WWTP and decide if they need a contract with specific requirements regarding the handling of a discharge at the municipal WWTP.
- The industry, the environmental authority and the municipal WWTP should have a continuous cooperation and should decide on the monitoring practices, have meetings, go through the processes, and have contingency plans for accidental leakages.

However, in practice it happens that there are deficiencies in the requirements of the permits, discrepancies between permits and contracts, as well as permits and contracts are outdated. If the requirements in contracts and permits are not in place, it leads to the lack of monitoring of HS, insufficient pre-treatment, gaps in cooperation and communication, accidental leaks, load peaks.

Project BEST in a nutshell

Aim of the project was to ensure efficient co-treatment of industrial wastewater in municipal networks by promoting cooperation and best practices between industries, municipal WWTPs and environmental authorities in the BSR. The project was finalized on 30.09.2020. As an outcome, a toolbox of best practices was built, and can be found via this link: www.bestbalticproject.eu

The project BEST has elaborated and compiled documents:

- Guidelines for management of industrial wastewater – recommendations for legislative and industrial developments; co-treatment and pre-treatment; industrial wastewater contracts; cooperation and communication (<https://bestbalticproject.eu/outputs/guideines-for-management-of-industrial-wastewaters/>)
- Policy brief – recommendations from the stakeholder point of view with targeted actions for industrial operators, wastewater treatment plants, environmental authorities, and policy makers.

Recommendations from the project to **industries** point out important aspects to consider: (i) ensure sufficient pre-treatment of industrial wastewater if it does not comply with the set limit values, (ii) be responsible for monitoring of their wastewater to be aware of the wastewater quality, (iii) obey the polluter pays principle to pay for the increased costs for treatment and for the potential harm caused by the wastewater, and (iv) ensure an open and regular cooperation and information exchange among the water utilities and the industrial operators thus reaching mutual benefits.

Water utilities need to map the industrial wastewater, its content and amount in their sewers. Based on the results, water utilities need to conclude contracts with industrial customers that should be treated equally in permits and contracts, especially if they are connected to the same wastewater network. WWTPs must be prepared for possible problems caused by industrial wastewater and plan and rehearse needed actions beforehand. Water utilities should exchange information and experience on challenges and best practices for industrial wastewater management. Water utilities should set up yearly meetings with industrial operators and environmental authorities.

The environmental authorities have their responsibilities to include sufficient requirements in environmental permits for industrial wastewaters, including limit values for quality and quantity. The WWTPs should be a part of the permit negotiation process, be heard, and have the right to impact the permit terms. The most alarming finding of the project was that insufficient permitting was found in some BSR countries, e.g., no limit values or monitoring of HS which cannot be treated at municipal WWTPs thus endangering the proper operation and posing threat to the environment. Limit values and terms of sanctioning should be harmonized nationwide and included in permits. Environmental authorities need to have enough resources to interfere with non-compliance of permit requirements. Regional business politics should not steer setting of permit terms; these should be set based on the needs of water treatment and for protecting the environment.

Janusz Krupanek, researcher in IETU Institute for Ecology of Industrial Areas, HAZBREF project, “Hazardous Industrial Chemicals in the IED BREFs: Recommendations for the management of chemical industry”:

The Industrial Emissions Directive (IED) is the main instrument on the EU level to control industrial releases, including Best Available Techniques (BAT) Reference documents (BREFs) for different sectors. Main policy strategies and regulatory frameworks refer to the IED concerning reduction of emissions from industry, but BREFs have not always contained comprehensive information on hazardous substances and industrial chemicals and their abatement measures.

Project HAZBREF in a nutshell:

The project focus on identification of links and gaps between the European legislation and HELCOM recommendations by providing data on relevant approaches to include hazardous substances into BREFs, tools for identification of substances to be considered in revisions of BREF documents and by the operators managing IED installations, as well as Best Practices in Chemicals Management in industries. 18 case studies were performed in the industrial installations in 3 sectors: the surface treatment of metals and plastics, Chemical Industry with sub-sectors of polymers and large volume inorganic chemicals (namely fertilizers), and Textile industry.

Together with consultants hired during the project, main issues were identified, and some best practices were recommended. The most important task was including the chemicals management system as the main point in the environmental management of the IED installations, including the inventory of hazardous substances. And other tasks based on that – selection of safer use of chemicals, storage, and handling of chemicals, and technical solutions like closed-loop systems and management of hazardous waste at WWTPs.

Guidance tools for industries were prepared, practices of implementing legal obligations were identified and some recommendations were provided. One of the purposes was providing the input to the upcoming BREF reviews. More information: <https://projects.interreg-baltic.eu/projects/hazbref-95.html>

Recommendations for chemicals management - the Chemical Management System (CMS) should be adapted to each sector, and this should be a part of **Environmental Management System (EMS) and BREFs**. CMS should include chemical inventory, general management practices, checking of safer chemicals and alternative processes.

- The Chemical inventory is the basis for further chemical management activities such as proper selection of chemicals, unloading, storage and handling and end-of-pipe techniques. One database for all chemicals used in the installation and there is an opportunity to search for individual substances and filter chemicals lists. Safety data sheets (SDS) and partly technical instruction sheets are main sources of information for operators and authorities. However, the information regarding the chemical composition of marketed substance-mixture (completeness regarding HS) can be incomplete and information on impurities missing. Although, SDS are updated on a regular basis, complicated communication may occur, as chemical suppliers may come from outside the EU. Sufficient chemical expertise in installations and authorities is necessary to make best use of SDS.
- Addressing substitution for specific chemicals is requested by IED (use of less HS). BAT on substitution should be included. Information on alternatives should be easily accessible; regrettable substitution should be avoided, as it sometimes happened with this approach. The point is not to generate double legislation but to improve implementation of REACH.

Updates on BREFs and permits: The permitting process is country-specific, depending on opportunities and practices of authorities and national law. The connection between environmental and chemical legislation is still very weak. Operators must submit chemicals list to the competent authority, after which the competent authority can identify chemical products containing HS and heavily or non-biodegradable substances, define specific permit conditions, set requirements to substitute certain chemical products or at least to reduce their consumption, and, set requirements concerning the use of abatement techniques. Findings on permitting process indicate a challenge in access to information and expertise in HS. Having an easy access to (extended) SDS with complete data on environmental fate and behavior is recommended. Moreover, strengthening of chemical expertise among environmental authorities is necessary.

Key findings on **Circular Economy and BREFs:** So far, a limited rationality of including aspects of circular economy in BREF documents and integration of requirements of various policy and legal instruments in this field has been at place. The project will evaluate opportunities for use and tackle limitations of recycling and reuse of waste in relation to substances considered as hazardous in materials during the production process, better approach to promoting the life cycle of non-hazardous materials, and better track the substance use for the development of BREFs as well as for the issuing and control of integrated permits.

In conclusion, it is important to have clear legal requirements and procedures to follow. Hopefully, the project HAZBREF has already improved the communication towards zero pollution plan and the chemical strategy.

Malgorzata Macniak, Polish Forum ISO 14000, “Including management of chemicals into environmental management systems (ISO 14001/EMAS)”:

The most widely known standard on which environmental management system is based on is the international standard ISO 14001, established in 1996. The latest version of the standard was published in 2015. Other environmental management instrument is EMAS (eco-management and audit scheme) developed in 1993. EMAS is the EU system and operates based on the EU regulation. EMAS is also applicable worldwide, same as ISO 14001. Annex 2 of EMAS regulation “consumes” ISO 14001 requirements, core requirements for environmental management are the same.

The Environmental Management System (EMS) is a framework that helps organizations achieve their environmental goals, to consistently review, evaluate and improve their environmental performance. The EMS and documents that set the requirement for that (ISO or EMAS), do not dictate a level of environmental performance that must be achieved. Each organization’s EMS is tailored to its own individual objectives and targets. Environmental performance criteria are not found on the EMAS or ISO. Both, ISO 14001 and EMAS are voluntary instruments, open to any type of organization. The core requirements of EMS are the continuous improvement of the environmental performance, legal compliance, involvement on all levels of organizational structure. This must include the involvement of top management and focus on internal controls.

The management of chemicals will be most effective if it is integrated in the overall management system because it enables comprehensive problem solving related to the use of chemicals. Currently none of the standards addresses management of chemicals as such. So far, inclusion of this topic in the EMS depends on the awareness level of organization and its willingness to deal with the topic.

NonHazCity project integrating chemicals and environmental management

A guide was developed on management of chemicals as a part of EMS. The task was to integrate the management of chemicals and environmental management. The guide provides the information on the opportunities for the organization to use EMS to address issues related to chemicals: for organizations who think to introduce EMS, for organizations that already maintained EMS, but so far have little coverage of chemicals' management, and for those organizations that see no need to maintain formal EMS (certified under EMAS regulation) but seek inspiration for better management of chemicals. Other target groups for the guide are organizations that use chemicals in daily activities, industrial/non-industrial users. This guide can be used by auditors acting on behalf of certification bodies, EMAS verifiers, who seek knowledge of good practices applied in various areas related to environmental management.

The guide is based on the structure of the requirements of ISO 14001 - all requirements are discussed in the guide, for each of them the elements related to chemicals' management are indicated. The structure of each section is the same. At first there is a reference to each ISO 14001 requirement and then this requirement is followed by the explanation on general level, addressing the chemicals' management, then followed by examples, if appropriate, and for some requirements references to legislation are also provided. The ENG version of the guide is available at the website (https://pfiso14000.org.pl/wp-content/uploads/2021/06/Management-of-chemicals-as-a-part-of-EMS_ENG.pdf). Comments about the guide can be sent to this email address: sekretariat@pfiso14000.org.pl.

The management of chemicals, as defined in the guide, is *“the systematic approach to the identification and assessment of used hazardous chemicals as well as decision making and implementation of actions to ensure they are used safely along their lifecycle and to prevent any potential negative effects from these hazards”*.

Panel 2: Management instruments versus water purification – new tools for industries? How can we get HS out of the cycle BEFORE they enter the pipes?

Audrone Alijosiute-Paulauskiene, BEF Lithuania;

Malgorzata Macniak, Polish Forum ISO 14000;

Janusz Krupanek, researcher in IETU Institute for Ecology of Industrial Areas, HAZBREF project;

Kajsa Rosqvist, Senior Environmental Adviser in the City of Helsinki, the Project BEST Manager;

Arne Jamtrot, Chemicals Centre, Environment and health department of the City of Stockholm.

Reflecting on deficiencies in chemicals management in industry as non-proper inventories, poor quality of SDS, incomplete uptake of chemicals management in permits, lack of communication in wastewater connection to the municipal sewer, the need for solutions to improve the current practices has been put forward. Panelists elaborated on possibilities for **engagement of industrial companies towards non-toxic approaches and going beyond the legislative requirements:**

- Corporate responsibility reporting will be imposed for large industries (from 2024) meaning that environmental disclosures will be obligatory. However, there is unclarity about enclosure of chemicals in these requirements (e.g., climate footprint reporting became obligatory, and this is a soft push to the industry to become more responsible).

- There are clear regulations and industries are changing because a momentum was reached in some sectors. For example, when the BATs were discussed for the textile sector, the consultants already provided evidence that this sector is far more into environmental solutions than the BREF document. In some sectors companies are pushing ahead on the environmental front. But it is not always possible to make a big change, because even thinking about one hazardous substance, the whole installation should be changed.
- Hazardous chemicals or chemicals in general are covered by EMAS already, but there are different drivers for actions on hazardous chemicals which stimulate to include this topic into the EMS. Everything depends on these drivers. If we would like organizations to go deeper into the management of chemicals, a good driver would be stakeholders' expectations; identifying chemicals related risk, but in relation to legal requirements.
- Stakeholders (NGOs, research) shall push the issue of responsibility towards chemicals to companies. Consumers can become as a very powerful force to impact industries behaviour. Being stronger with our requirements, industries will feel growing pressure from consumer organizations about the information that they provide, the reliability of that information.

In the discussion on how to build on **communication and multistakeholder dialogue**, and how to **stimulate drivers for a change**, the panelists have pointed-out these aspects:

- Efforts to make lobbying for the issue by showing clear evidence and addressing multiple stakeholders in local circumstances (e.g., national authorities, professional associations, municipalities and WWTPs, and industrial companies) can result in putting more resources for solving the industrial wastewater related problems.
- Many platforms on the national level are developed and operational, but stakeholders need a push to take more active part in communication. Activation of stakeholders can be achieved by a multistakeholder dialogue platform as well as in bilateral communication activities between actors on specific aspects (e.g., technological solutions, funding availability).

Session III: What can Municipalities do?

Ivar Annus, professor in Tallinn University of Technology, NOAH project manager, TalTech, “Holistic planning combining stormwater management and spatial planning”:

A new concept for mitigating flood risks already in the urban planning process, and not only to deal with the consequences, employs the planning support system called “extreme weather layer”, which is used to create dynamic interlinkage between land developments, existing storm water system and flood risks in densely populated areas. The support system was built on the digital twin of the existing storm water system and allows modelling of hydraulic processes considering the land use and soil types to stimulate the response of the storm water system and the catchments to different rainfall events. This package supports the analysis of risk areas in the city and selection of further activities.

Project NOAH in a nutshell:

The project “Protecting Baltic Sea from untreated wastewater spillages during flood events in urban areas” (NOAH) deals with better planning and risk mitigation, with taking control and ensuring prevention, and with

creating a “Cleaner Baltic Sea”, to build the capacity and show others what was achieved and how to replicate solutions developed by the team. Main stakeholders or end-users of the product are cities and water companies that can benefit from the project.

The methods of storm water management, spatial planning and real-time control of urban drainage systems are tested as a holistic entity in selected NOAH pilot areas (8 municipalities across the Baltic Sea Region; results will be validated and further improved during the next 6 months): <https://sub.samk.fi/projects/noah/>

Nika Kotoviča, City of Riga, BSR WATER project expert, “Sustainable stormwater management in Riga City municipality: Best practices and Recent innovations”:

The city of Riga has a high share of urban greening and waterbodies – 39% from the total city administrative territory. Managing stormwater run-off and its quality is a growing challenge for municipality. The task is how to plan the stormwater management in a proper way instead of dealing with the consequences afterwards. Conventional stormwater drainage practice in pipes is not considered as a sustainable solution.

Focus on the stormwater quality in Riga City municipality

The problem occurs because urban areas are densifying, and land increasingly is covered with sealed imperviable surfaces resulting in reduced infiltration, less evaporation and considerably higher stormwater runoff volumes. Urban planners and stormwater experts are faced with these pressures to develop different holistic and cost-efficient strategies to reduce unwanted effects from stormwater. Results of stormwater analysis in the city have shown that there are hazardous substances present. The stormwater quality is a very important issue, and therefore the sustainable development strategy includes priorities of the green and blue development in the city. Such planning principles are implemented in the urban planning framework at all levels – by the Sustainable Development Strategy of Riga until 2030, and other planning documents, e.g., territorial planning.

Examples of an integrated stormwater management, which combines alternative solutions, make stakeholders to work together, and create “case-by-case” multidisciplinary solutions implemented in Riga and other central Baltic cities:

- Different city structures are working together in developing multi-disciplinary cross-sectoral solutions for integrated stormwater management. By this approach, a municipality can achieve the goals of the water quality and flood mitigation to protect the nature and wild environment.
- The Riga City municipality has developed a stormwater planning tool, that is used to improve the quantity and quality of urban green infrastructures. The Riga City has adopted its own green factor tool for the purpose to enlarge the number of green areas in the city. Currently, this tool is recommended for urban planners. In future it is planned to integrate these principles in regulations and compulsory use of the tool.
- A unitary design was developed for all urban and mobility infrastructures in the city, for example, greening the parking lots. In Riga City it is a parking lot next to Spice Home shopping centre <https://www.balticwaterhub.net/solutions/bioswale-parking-lot>. This solution is cheaper than pipes, but the maintenance is more expensive, and it requires specific knowledge.

In conclusion, it is of paramount importance to apply the holistic approach for planning the stormwater management in an integrated manner and to use the planning tools for the quality and quantity of stormwater, thus ensuring that the city is becoming more sustainable and resilient to a climate change.

Arne Jamtrot, Chemicals Centre, Environment and health department of the City of Stockholm, “Chemical Action Plans as tools for prioritization. The NonHazCity vision”:

The Environmental program of the City of Stockholm in 2012 contained two interim targets talking about how the contents of substances that are dangerous to health and the environment will be reduced in produced goods; and how the emissions of dangerous substances from buildings and facilities will be reduced. The objectives were known for years, but then the interest to these objectives was finally raised. Although, a lot of questions from municipal entities and administration departments were received stating the importance of the issue, showing their willingness to be a part of this, and asking about practicalities for implementation. At the time, politicians have received a message to go beyond the already existing program and that an action plan is needed to specify activities to achieve the targets.

Focus on Chemicals Action Plans (CAPs) at the City of Stockholm

The start of the action plan was the vision of the non-toxic Stockholm. It was a local adaptation of a national environmental objective for the non-toxic environment. The first Chemicals Action Plan (2014-2019) was created by the background of development on a national level and targets incorporated in the environment program at the municipality. A set of previous projects at the municipality have developed the knowledge about hazardous substances in Stockholm.

The second Chemicals Action Plan (2020-2023) focuses on the environmental objective – a non-toxic environment that has been developing through the years and was used as an inspiration in developing the CAP. There have been several projects to enhance the understanding of important substances locally: the major sources for release of these substances into the environment, and the mitigation options of these emissions.

Approach by the City of Stockholm was the background to the NonHazCity project: the aims were to share experience from Stockholm and to develop CAPs in other municipalities at the Baltic region:

- The key principle was the individual approach to municipalities and no default CAP was made to fit all in terms of strategies and activities in these plans.
- Each participating municipality has developed its own CAP based respective environmental status, organization, activities, etc. While long-term strategies were considered, the CAPs have specified concrete activities to implement in shorter time.
- Scope of CAPs include municipality’s own entities or activities, and on-top there are awareness-raising campaigns among local enterprises and actors envisaged.

The CAP implementation phase is in focus for the NonHazCity2 project (as a NonHazCity continuation project). Implemented/ongoing activities extend to various directions:

- Collaboration between departments in each municipality and coordinating activities within the organizations.

- Some municipalities have developed the organization for guidance of municipal entities: an assignment of roles to different entities, allocation of staff and economic resources for implementation of activities.
- Events for education of procurement officers and other employees involved in the process for purchases of products and services at municipalities.
- Substitution of chemical products for renovation, construction, and cleaning was tackled: many municipalities have had a special focus on pre-schools, because children are the most vulnerable and exposed group.

In conclusion, building an understanding among stakeholders about the importance of the matter has resulted in a politically accepted and adopted document – CAP, and everyone knows that this is the political will of the city management. A long-term vision and objectives are incorporated, and concrete actions for implementation in a shorter time are identified. Continuous support and coordination are needed for implementation of the CAP as an efficient tool. Communication with different actors at the municipality, with other municipalities, with suppliers, with national authorities, with EU will support the implementation.

Heidrun Fammler, BEF Germany, presentation prepared by Hannamaria Yliruusi, project manager Turku University of Applied sciences, “GPP and chemical smart public procurement in Finland – A case from the City of Turku”:

Green Public Procurement (GPP) is a major issue for the public sector and for municipalities. Work in the NonHazCity project is backed-up by the knowledge on remarkable level of purchases; and if these are environmentally friendly, sustainable, and chemically smart, it would be a big step and make a big difference.

Public procurement in Finland

The Finnish public procurement is subject to national procurement legislation that comes directly from the European Community Directive on public procurement (2014/24/EU). Under these rules public procurement must follow transparent open procedures ensuring fair and non-discriminatory conditions of competition for suppliers. The Directive sets out a range of options for taking social and environmental aspects into account: e.g., environmental requirements including requirements concerning HS are equal with other requirements; there is no maximum limit on the value given to environmental properties in relation to the costs or price. According to statistics of the European Commission, in Finland, 18% of the GDP (34 million EUR) is spent by public entities (government, municipalities, and congregations) on the procurement of goods, services, and public works. Sustainability goals and GPP criteria is used approximately in 30% of Finnish public procurements. The biggest sustainability goal in procurement projects is energy efficiency.

Municipalities are involved in activities regarding the management of hazardous substances through a “Joint Baltic Sea Action Plan of cities Helsinki and Turku 2019-2023”, the so-called “Baltic Sea Challenge”. Goals were set to promote circular economy and to get the chemicalization of the environment under control:

- Helsinki: defining the harmful so-called priority substances;
- Turku: encouraging the use of the already defined list of priority substances in procurements;
- Turku: rolling out the Guide of chemical-wise procuring;
- Identifying sources of harmful substances and their leaching into the aquatic environment and occurrence in the waters;

- Arranging supplementary training on HS for eco-supporters;
- Turku: Identifying sources of the high nonyl phenol concentrations discharged to the WWTP.

The NonHazCity project has supported the City of Turku in attempts to include HS in the procurement agenda by training of procurers, prioritization of target groups (children and adolescents), prioritization of substances, selection of pilot procurements (furniture, paints, painting equipment), and integrating the issue into the city's strategy.

Example on procurement of furniture in the City of Turku

The market dialogue and chemical criteria in the City of Turku was used for the procurement of furniture for kindergartens and schools. During this very long process the team did the mapping of the existing GPP criteria (the EU criteria, Swedish National Agency for PP criteria, ecolabel criteria), and used them for the preparation of the questionnaire for the industries. The questionnaire was sent out to furniture suppliers. Then, a workshop about questionnaire results and use of criteria was organized, and the results were then presented publicly. The agreement was made among the procurement offices and municipality about the suitable level of requirements for the kindergarten furniture, and in 2019 the first tender for furniture including chemical criteria was launched. The process took 1.5 years, and it is safe to say that not every municipality would want to undertake such task for every procurement.

Ekaterina Stepanova, EcoUnion, "Green Public Procurement Guidelines and Recommendations for Russia":

The subject of GPP is just starting to gain recognition in Russia. In 2019-2020, several materials on the topic of GPP were published in Russian.

Public procurement in Russia – results from the research in NHC2 project

The legislation and technical regulations were studied, surveys were conducted to obtain the background information on public procurement in Russia. The goal was to understand the possibilities to introduce GPP and environmental criteria. Findings: The legislation allows to apply ecological criteria, however, even though environmental criteria are mentioned in the legislation, they are not described and precisely defined. There are some local initiatives (e.g., Government Decree of the City of Moscow No.332 with criteria for 10 product groups), but they are not in force yet. There is some interest in GPP in business sector, which is more progressive and environmentally conscious. There is a government plan to implement a draft list of procurement products for which the environmental requirements and criteria will be determined.)

A survey was conducted with procurers and municipal authorities on what is their knowledge on the subject, what do they think, what is their motivation. Some challenges were identified:

- Lack of clear definition of environmental criteria and well-known sources of ecological criteria, as well as low political will and legislative support.
- Low rate of motivation and awareness among procurers (for environmental, ecological criteria) as so far focus is on the level of recyclable materials, energy saving.
- The procurement departments were the most conservative, non-cooperative and reluctant for experiments. Many procurers were concerned, that if they introduce other criteria except for price, they will be fined, or prosecuted by the antimonopoly service (the Federal Antimonopoly Service) for not being fair to other suppliers.

Challenges and positive feedback from the NHC2 research were addressed and guidelines for Incorporating Environmental Criteria in Public Procurement developed (based on the Guide for Chemical Smart Public Procurement by Turku University of Applied Sciences). The **Guide “City without hazardous substances”**:

- highlights the GPP as an effective environmental instrument that also brings social, economic, and political benefits,
- increases awareness on HS and other environmental issues of commonly used goods and services,
- addresses public procurers, suppliers, and other stakeholders to make their procurement more environmentally friendly,
- proposes guidelines and recommendations on environmental criteria in the public procurement system,
- considers practical examples on application of criteria and provides lists of criteria for 2 product groups (detergents and computers).

The team plans to continue the work on the GPP subject in Russia - distribute the Guide to the target groups, continue communication and participation in projects. A pilot project with interested municipal entity (the congress and exhibition bureau of the St. Petersburg) is being developed.

Audrone Alijošiute-Paulauskiene, BEF Lithuania, “Chemical smart procurement. Training program for municipal employees”:

At the start of the NHC2 project indications were that main challenges in the chemical smart procurement are the lack of knowledge, competencies, and information on the use of the GPP criteria (as confirmed by results

from a survey in Lithuania in 2020). Moreover, available information sources – publications are rather voluminous (e.g., since 2016, on chemicals are available 17 publications with each of 20-60 pages).

Aims of the NHC2 Training program were (i) to systematize information from existing materials developed from projects about chemical smart management, procurements, chemicals in general, (ii) to provide an integrated view on the chemicals risk management, and (iii) to emphasize that public bodies, i.e., municipal administrations and entities must pay attention to chemicals smart procurement by applying GPP criteria.

NHC2 Training program in a nutshell

Information was systematized and assembled into different modules to help users to uptake the information and gain the knowledge. The aim is to ensure the long-term use of the outcome, and its integration into existing qualification programs. The target group of the Training program is staff at the municipal administration and municipal entities who are provided with Estonian, Latvian, and Lithuanian language course, as well as all materials in English (available in PDF format).

The Training program consists of 5 modules that include 10 topics:

- How chemicals escape from products and their effects to our bodies and the environment,
- SVHC in articles,
- HS in plastics,
- HS in our life,
- HS legislation,
- HS management,
- Reduction measures in the municipal setting,
- Introduction to GPP,
- Chemical smart public procurement tools,
- How to avoid hazardous chemicals in GPP, examples of product categories.

Each module ends with a test quiz to check and verify the knowledge gained. Upon completing of all modules and successfully (score of 60% or more) passing all tests, a personalised certificate will be obtained.

The training program is available (after registration) via this link: <https://training.nonhazcity.eu/>

In December 2020, the Training program has been tested in on-line events in Estonia, Latvia, and Lithuania, as well as in St. Petersburg State University of Aerospace Instrumentation.

The dissemination strategy includes targeting all local associations of municipalities, advertising the program, approaching national regulating procurement bodies. The information provided by the NHC2 Training program might be useful for everyone to get into the chemical smart procurement.

Panel 3: Municipalities as key actors for hazardous substance management – how to empower them?

Arne Jamtrot, Chemicals Centre, Environment and health department of the City of Stockholm;

Nika Kotovica, City of Riga, BSR WATER project expert;

Audrone Alijosiute, BEF Lithuania;

Heidrun Fammler, BEF Germany;

Ekaterina Stepanova, EcoUnion.

To unfold the efficiency of various tools that are available for municipalities several enabling factors for successful development and implementation of these tools must be operational. The panellists have elaborated on **key factors that apply to allow municipalities to use all powers of these tools:**

- **Political, and managerial support:** Municipal officers need the signal from the management, from the political side and their superiors on support for application of tools (e.g., public procurement). Another option would relate to the transfer from recommendatory approach to a binding obligation for use at municipality (e.g., application of planning approaches and tools).
- **Expert support:** We have succeeded in showcasing that there are problems associated with current situation with HS, but this is not enough, because there is a lack of knowledge on how to make chemical smart procurement. There is a need for a person in the organization who will be fully involved and knowledgeable in this topic.
- **Education:** It is important to educate municipal officers, so that they have better knowledge about approaches and tools, and they can implement them in their daily activities.
- **Capacity:** Small municipalities have only one or very few people responsible for the environment. Larger cities are more privileged, they have chemical departments. But in small municipalities there is only one person responsible for water, waste, nature, and if chemicals are added to the list, it will be too much for them. Different countries and different municipal settings will have to find their own ways how to integrate different topics, and municipalities themselves must set priorities.
- **Guidance and instructions:** Doing more than legislation requires at a municipality is often hindered by lack of mental and time resource capacity. Municipalities may need guidance and instructions to support their activities.

In the discussion on how to **support municipalities and promote the change management** in public entities at municipalities, the panellists have pointed out these aspects:

- It is important to spread the message and make people motivated, as it may only request one enthusiastic person to make a change and bring the message to policy makers and decision-makers at the municipality.
- It is important to seek that everybody in the organization, from the political management to the people who are doing the work, is convinced to **do anything they can, not only what they must**. However, in some municipalities the balance of requirements by (local) regulation (“the must”) and a decision-making power for innovative solutions (“the can”) is not easily recognizable yet, and it will need more time to change.
- According to views of panellists “we are in the future, but we are using yesterday’s management models” at municipalities. But it was anticipated that once started, the changes will happen very quickly, although, finding ways to facilitate changes may not be an easy task.
- Education and information can be a key. Activities on chemical management at municipality predominantly reach people who want to act, and they are the ones who are interested. To reach the

others, the common understanding first must be built that there are hazardous substances, and we are responsible for them.

Session IV: Plastic as an emerging issue for discussion: microplastics, hazardous substances in articles & products, and how to make them more visible

Malgorzata Drewnowska, Gdansk Water, “FanLESStic-sea project. Initiatives to remove microplastics before they enter the sea”:

FanLESStic-Sea project in a nutshell:

The main objective of the FanLESStic-Sea project is to reduce the microplastic pollution in the Baltic Sea. To do this, the project wants to know **the sources**, to increase knowledge of where microplastics come from and their transport pathways. The **technology** must be evaluated, and the **knowledge** and commitment of decision-makers must be increased through suggestions on how to implement cost-effective methods to reduce microplastics. More information about the project or company initiatives available via the link: <https://www.fanplesstic.com>

FanLESStic-Sea project reviewed the existing research activities and policies on microplastics. The output report **FanLESStic-Sea 2019. Review of existing policies and research related to microplastics** is available, where national information was acquired through a questionnaire, and a comprehensive literature review was conducted for compiling information at global, regional and EU levels (summary for Policy Makers: <https://helcom.fi/wp-content/uploads/2020/02/fanLESStic-microplastics-summary-report.pdf>; and Full version: <https://helcom.fi/media/publications/FanLESStic-sea-Microplastics-Policy-and-Research-Review.pdf>).

Research of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP, <http://www.gesamp.org/>) and the International Union for Conservation of Nature (IUCN, <https://www.iucn.org/>) are the most important. There are primary and secondary sources of microplastics, however, different distinction is found in these studies: GESAMP - defines primary microplastics as only those manufactured to a small size (<5mm), while IUCN studies also consider car tires and washing textiles as primary microplastics.

Glimpse at a Global-level sources of microplastics

Washing of synthetic textiles (35%) and tires in city dust (28%) are the main sources of microplastics released into environment. To compare, cosmetics contribute to only 2% of overall microplastics pollution (<https://www.europarl.europa.eu/news/en/headlines/society/20181116STO19217/microplastics-sources-effects-and-solutions>). When microplastics are directed to the WWTP through the sanitary system, it can be very efficiently removed, up to 90%. But the load of microplastics that come each year to the WWTP is so high, that nearly 200 tons of microplastic go to the Baltic Sea.

When it comes to the global ocean release, the road runoff and wastewater are the main microplastics pathways. However, road runoff is also the source of the land soil pollution, that makes 50% of the global microplastics release to the environment.

Major findings about the sources of microplastics:

- Fragmentation and degradation play an essential role in the formation of the secondary microplastics, but the processes are poorly understood.
- There is evidence that microplastics are littered into the environment at all steps in the lifecycle of a plastic product from manufacture to waste management.
- Microplastics can enter the marine environment via riverine systems, coastlines, directly at sea from vessels and platforms or by wind-induced transport in the atmosphere.
- Methods of defining microplastics, sampling and measurement vary considerably among studies, source sectors and geographical region making it difficult to synthesize data across studies.

At the EU level, the microplastics are separated into intentionally and non-intentionally added, last being the main source. In 2019, ECHA proposed the restriction of the intentionally added microplastics in products at the EU level. It will be adopted in 2021-2022, if agreed by the European Commission and member states. However, this restriction concerns only primary microplastics (<https://echa.europa.eu/lv/-/echa-proposes-to-restrict-intentionally-added-microplastics>). Work of the European Commission aims to tackle non-intentionally added microplastics (<https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12823-Measures-to-reduce-microplastic-pollution>).

Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences, “Hazardous substances in Plastics. Making the invisible visible”:

It is estimated that 8 300 million tons of plastic have been produced up to this moment, and possibly, 4 900 million tons have been discarded. This large amount of plastic contains a lot of chemicals that have potentially undesirable properties. Additives in plastic can amount to >70% of the weight of an article, they can leach out, either by design, or unintentionally.

We don't see HS as a visible part of the plastic pollution, because it is not as noticeable as the amount of plastics found in bellies of dead animals. Often, when dolphins die and get washed out to the shore, they cannot simply be buried, they have to be disposed as hazardous waste because of the amount of contaminants in their bodies, and these contaminants have insidious and long-lasting effects. Some of them are extremely toxic and have endocrine disrupting properties.

The EDCs (Endocrine disrupting chemicals) are the exogenous (non-natural) chemical, or mixture of chemicals, that interfere with any aspect of hormone action. Hormones are responsible for nearly every function of human body, like development, growth, metabolism, reproduction, stress, and immune responses. What is especially concerning about EDCs, is that they can have a harmful effect on the developing, unborn organisms. This problem is currently underestimated, but vital. EDC can influence the unborn fetus, thus harming the second generation. However, the effects of the unborn fetus involve effects on the reproductive cells of this fetus, in fact, effecting the third generation, too.

The EDC exposure comes from drinking water, FCMs (Food Contact Material), furniture, and other household articles. One area where changes can be made immediately by everyone is FCMs. The Bisphenol A, one of the EDCs, is highly soluble in oil, so if FCMs are not used properly, if they are used with oil or fatty foods, the likelihood of the EDCs exposure is very high.

Steps that everyone can make to protect themselves from high exposure are:

1. Get informed! There are good documents describing hazardous associated with EDCs;
2. Take action! Get involved in campaigns. Make right decisions when purchasing. Take more concrete actions, e.g., using LIFE AskREACH App Scan4Chem, which sends the message to the chemical industry that people are interested and want to get answers.

If this issue is made a little more visible, it can help create a more sustainable world for us and our children!

Kai Klein, BEF Estonia, “How do people react? The #NonHazPlasticDiet goes around Europe, NonHazCity & AskREACH”:

The Plastic Diet campaign was implemented from the beginning of May and up to the 12th of June. This campaign was held in 14 countries with support of the project partners and international organizations (e.g., Coalition Clean Baltic). Altogether 58 different channels were used – Facebook, Instagram, V Kontakte, Twitter, LinkedIn, YouTube, and homepages, where posts, articles and interviews have been presented. Indications are that more than 504 000 people were reached (by the date of the presentation).

For every week during the campaign there was a different thematic focus group:

- Textile – The risk on our skin!
- Sport utensils & bathing tools – Play safe!
- Home accessories and decorations – Surrounded by plastics
- Toys – Invisible danger to our smallest
- Food Contact Material – Detox your kitchen!
- Bioplastic – Solution or Greenwashing

Feedback option throughout the implementation of the Plastic Diet campaign allowed to highlight the key aspects of interest and further discussions, and reflect on reactions from people involved in the activity:

- Consumers were concerned about the burden they possibly bear - hazardous products should not reach the shelves in the first place, legal requirements shall be at place, and producers should not manufacture such products.
- Important issue was raised on finding alternatives and reusing already existing plastic items, as well as finding strategy for utilization of existing plastic items – would throwing away all plastic items at once be a solution, due to drastic increase in waste stream and possible burden for consumers to replace such products.
- Smaller companies were concerned about the Scan4Chem requests, if they can take on the burden of answering and inserting the data into the database of the app (especially if they are only the retailers and producer is far away).
- Topic of concern was a bioplastic issue to clarify on what are the benefits of bioplastic or biobased plastic, and how it has happened that greenwashing problem is associated with this type of plastics.

- The outreach of the campaign extended to those people who already wanted to act and had an interest in the topic. The issue to consider would be on how to attract wider range of people to raise their interest and involvement.

Panel IV: Plastic material used and consumed by everyone and everywhere – how can we raise awareness, especially about “invisible”?

Malgorzata Drewnowska, Gdansk Water;

Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences;

Kai Klein, BEF Estonia;

Marina Vogel, BEF Germany;

Monika Piotrowska-Szypryt, Gdansk Water Utilities;

Arne Jamtrot, Chemicals Centre, Environment and health department of the City of Stockholm.

Considering wide use of plastic items in our daily life and “invisible nature” of hazardous additives in these products, panelists elaborated on **effective measures to raise awareness of consumers** on this problem:

- Shocking news can sometimes attract attention of consumers, raise their awareness, and motivate to change consumption habits. Along the lines, it is important to explain the risks related to HS, to give basic understanding about possible ways of HS leaching from the product. However, it is important not to scare and not to make people feel that they cannot use anything anymore and must replace all items at home.
- Pointing out to examples that can help visualisation of the process will support better understanding of the concerns e.g., when buying a new item and taking it out of the packaging, people can feel a chemical smell and recognize a possible presence of HS.
- Taking step-by-step measures should be promoted. Influencers focusing on sustainability aspects try to communicate that “no one must be perfect, but it’s good to be on the way”. Important is to start the activity and take a stepwise approach.
- Even if eliminating plastics totally from our lives is not possible, measures to reduce their use and amounts can be taken. For example, installation of drinking a tap water can replace use of plastic drinking bottles and garbage bags. Another approach can be to purchase stainless steel bottles for drinking water, instead of plastic ones. It must be acknowledged that changes in people mind take time. Plastic kitchen items are usually easy to detect and replace, but it is more difficult to change habit of using plastic take-away food containers.

Panelists pointed out the problem related to plastics in textiles because 70% of the textiles worldwide are produced from plastic. The discussion was focusing on raising consumer awareness on **environmental and health issues related to textiles**:

- People are not aware on extent of plastics in their clothing produced from artificial fabrics. Even natural textiles e.g., cotton may be treated with pesticides during growing, processing and manufacturing. Reduction of the number of items purchased in general should be considered.
- Unfortunately, there are no good alternatives now. Awareness of the relationship between hazardousness and convenience would be the first step. Consumers need to accept less convenience to avoid the hazard and consider higher cost. Appropriate arguments should be selected to convince people to change.

Discussion was continued to reflect the need for consumers to become very knowledgeable on purchases they make. Panellists admitted **challenges to foster changes** in consumption behaviour:

- If producers are not pressured by legislation to produce more environmentally friendly products, consumers do not make changes as well. Developing of legislation is lagging the information about certain HS identified by laboratory research. Tomorrow's legislation will be based on today's knowledge.
- Information from manufacturers on presence of HS may be not complete for consumers and existing labels do not provide such information as well.

Closing of the Conference by Martyn Futter, Professor (Associate) of the Swedish University of Agricultural Sciences, and Heidrun Fammler, BEF-Germany:

*We need to **continue our work in communication and raising awareness**. The issue that was raised a lot of times during the Plastic Campaign was: shouldn't the government protect us and should companies not be selling these items? The answer is yes, they should. But a consumer must know what is bad for them and decide to avoid it. The regulation follows knowledge, but very slowly.*

***One solution does not fit all.** GPP is not going to solve all the issues. We need to work on multiple fronts. Maybe, this must be added to the education system. The changes that are needed are not always straightforward to identify or to implement. Infrastructures are vital and complicated. A lot of them are old, but they serve a useful purpose, which is why it is vital that we leave some old ways of doing things. It is easy to say "why don't you change it?" when you are not involved in the activities. Within the GPP, the regular procurement policies are very critical to the functioning of the organization. They are vital to the way we do things and having people who know how to do them is a real asset.*

***Policy and regulation should change**, and we need to push and lobby for that. But we need to recognize the complexity of doing it, we might have underappreciated it in previous projects. There is the idea that regulation is black or white, but it is not. As regulations are enforced, we have an opportunity to push for more effective enforcement, and more appropriate interpretation of regulation.*

*We need to have **more discussion about the responsibility**. We need to realize that one size doesn't fit all. A policy and regulatory infrastructure need change, it will be hard, but we have an ability to influence and make those changes.*

*We are having **very HS-related projects**. It is important that we collect key-points from them, and channel them further via PAHazard to policy making level at the EU and national levels. It is important that we talk more among the projects and look at the different experiences. I think HS project platform would be good tool to "cook" it further.*

Annex 1

Participants of the conference, day 1

#	Country - code	Partner- No.		Name	Institution
1	LV	PP	1	Normunds Vagalis	Riga City Council
2	LV	PP	1	Polina Leskovicā	Riga City Council
3	LV			Edmunds Cepuritis	Riga City Council
4	LV	PP	2	Ingrida Bremere	Baltic Environmental Forum Latvia
5	LV	PP	2	Daina Indriksone	Baltic Environmental Forum Latvia
6	LV	pp	2	Līga Karkle	Baltic Environmental Forum Latvia
7	LT	PP	3	Audrone Alijosiute-Paulauskiene	Baltic Environmental Forum Lithuania
8	LT	PP	3	Egle Ruskute-Klimaviciene	Baltic Environmental Forum Lithuania
9	PL	PP	4	Monika Piotrowska-Szypryt	GIWK (Gdańsk Water Utilities Ltd.)
10	PL	PP	4	Katarzyna Ryszka	GIWK (Gdańsk Water Utilities Ltd.)
11	SE	PP	5	Eva Kruse	City of Västerås
12	SE	PP	5	Susanna Grystad	City of Västerås
13	SE	PP	5	Olof Bergold	City of Västerås
14	EE	PP	6	Marve Virunurm	The City of Pärnu
15	EE	PP	7	Kai Klein	Baltic Environmental Forum Estonia
16	DE	PP	8	Heidrun Fammler	Baltic Environmental Forum Germany
17	DE	PP	8	Elionor Ferrer	Baltic Environmental Forum Germany
18	DE	PP	8	Marina Vogel	Baltic Environmental Forum Germany
19	DE	PP	8	Fee Widderich	Baltic Environmental Forum Germany
20	PL	PP	10	Malgorzata Macniak	Polish Forum ISO 14000
21	RU	PP	11	Natalia Zhilnikova	Saint-Petersburg State University of Aerospace Instrumentation
22	RU	PP	11	Aleksandra Smirnova	Saint-Petersburg State University of Aerospace Instrumentation
23	RU	PP	12	Ekaterina Stepanova	Ecological Union
24	RU	PP	12	Inna Anisimova	Ecological Union
25	BY	AO	3	Alina Bushmovich	EcoPartnership
26	SE	AO	4	Martyn Futter	Swedish University of Agricultural Sciences
27	SE	AO	6	Eva Iveroth	Swedish Environmental Protection Agency, PA Hazards
28	SE	AO	8	Arne Jamtrot	The City of Stockholm
29	EE	AO	11	Harri Moora	Stockholm Environment Institute Tallinn Centre
30	LV			Ieva Putna-Nimane	Latvian Institute of Aquatic Ecology
31	LV			Laura Vizbule	State Environmental Monitoring Bureau
32	LV			Maruta Vehi	Latvian Environment, Geology and Meteorology Center; MEDWwater
33	LV			Elena Kolosova	Interreg Baltic Sea Region secretariat
34	LT			Jolita Kruopiene	Kaunas University of Technology

35	LT			Dovile Bartasiunaite	Kaunas District Municipality
36	LU			Laurene Chochois	Luxembourg Institute of Science and Technology
37	PL			Malgorzata Drewnowska	Gdansk Water, Fanplesstic
38	PL			Marcelina Szymala	University of Gdańsk
39	FI			Agnieszka Ilola	Union of the Baltic Cities Sustainable Cities Commission
40	PL			Janusz Krupanek	Institute for Ecology of Industrial Areas

Participants of the conference, day 2

#	Country - code	Partner- No.		Name	Institution
1	LV	PP	1	Normunds Vagalis	Riga City Council
2	LV	PP	1	Polina Leskovic	Riga City Council
3	LV			Janis Svinskis	Riga City Council (Water Resources and Land Reclamation Department)
4	LV			Nika Kotovica	Riga City Council, BSR Water
5	LV	PP	2	Ingrida Bremere	Baltic Environmental Forum Latvia
6	LV	PP	2	Daina Indrikson	Baltic Environmental Forum Latvia
7	LV	pp	2	Līga Kārkle	Baltic Environmental Forum Latvia
8	LT	PP	3	Audrone Alijosiute-Paulauskiene	Baltic Environmental Forum Lithuania
9	LT	PP	3	Eglė Ruskute-Klimaviciene	Baltic Environmental Forum Lithuania
10	PL	PP	4	Monika Piotrowska-Szypryt	GIWK (Gdańsk Water Utilities Ltd.)
11	PL	PP	4	Katarzyna Ryszka	GIWK (Gdańsk Water Utilities Ltd.)
12	SE	PP	5	Eva Kruse	City of Västerås
13	SE	PP	5	Susanna Grystad	City of Västerås
14	SE	PP	5	Christina Larsson	City of Västerås
15	SE	PP	5	Olof Bergold	City of Västerås
16	EE	PP	6	Marve Virunurm	The City of Pärnu
17	EE	PP	7	Heli Nommsalu	Baltic Environmental Forum Estonia
18	EE	PP	7	Kai Klein	Baltic Environmental Forum Estonia
19	DE	PP	8	Heidrun Fammler	Baltic Environmental Forum Germany
20	DE	PP	8	Marina Vogel	Baltic Environmental Forum Germany
21	DE	PP	8	Fee Widderich	Baltic Environmental Forum Germany
22	DE	PP	8	Elionor Ferrer	Baltic Environmental Forum Germany
23	RU	PP	12	Ekaterina Stepanova	Ecological Union
24	RU	PP	12	Inna Anisimova	Ecological Union
25	SE	AO	8	Arne Jamtrot	The City of Stockholm
26	BY	AO	3	Alina Bushmovich	EcoPartnership
27	SE	AO	4	Martyn Futter	Swedish University of Agricultural Sciences
28	SE	AO	6	Eva Iveroth	Swedish Environmental Protection Agency, PA Hazards
29	SE			Anna Vikstrom	Swedish Parliament

30	SE		Anne Lagerqvist	Stockholm Chemical Centre
31	LT		Dovile Bartasiunaite	Kaunas District municipality
32	LT		Jolita Kruopiene	Kaunas University of Technology
33	LT		Virginia Vingriene	Seimas (Lithuania)
34	LV		Ieva Putna-Nimane	Latvian Institute of Aquatic Ecology, MEDWwater
35	LV		Laura Vizbule	State Environmental Monitoring Bureau
36	LU		Laurene Chochois	Luxembourg Institute of Science and Technology
37	LV		Maruta Vehi	Latvian Environment, Geology and Meteorology Center
38	PL		Malgorzata Drewnowska	Gdansk Water
39	PL		Marcelina Szymała	University of Gdańsk

NonHazCity 2 (#X006) - Final Conference
A networking event with other INTERREG projects addressing
water quality and hazardous substance management

June 15-16, 2021

Agenda

Tuesday, June 15, 2021		
9:30 – 10:00 CET/ 10:30 – 11:00 EET		Virtual arrival to the seminar
		Opening of the event
10:00 – 11:00 CET/ 11:00 – 12_00 EET	10 min	Opening of the conference Welcome by Mārtiņš Staķis, Mayor of Riga City and Edmunds Cepurītis, Riga City Council Housing and Environment Committee Chairman
	25 min	Welcome and Interactive “Tour de Table” of the participating projects (Heidrun Fammler, Baltic Environmental Forum) https://ahaslides.com/INTERREG
	25 min	Greetings from <ul style="list-style-type: none"> • Elena Kolosova, the INTERREG Baltic Sea Region Secretariat • Eva Iveroth - EU SBSR PA Hazard, Swedish Environmental Agency • Agnieszka Ilola, UBC, Secretariat of Sustainable Cities Commission
		Session I: More knowledge on occurrence of Hazardous Substances in the aquatic environment vis-a-vis the new policy frames
11:00 – 12:30 CET/ 12:00 – 13:30 EET	1.5 h 45 min 45 min	Presentations from the projects NonHazCity1, MEDwater and ChemClimCircle <ul style="list-style-type: none"> ➤ Findings from Substance Screening at NonHazCity 1, Martyn Futter, SLU, SE ➤ Pharmaceuticals in waste water, MEDwater, Ieva Putna-Nimane, LHEI, Latvia ➤ A new perspective: Interlinking chemicals, climate and circularity issues, Change(K)now & ChemClimCircle, Harri Moora, SEI-Tallinn, Estonia <p style="color: purple;">Panel 1: From substance evidence to policy – how to make chemicals issues more explicit in policy and who should act?</p> <p style="color: blue;">Panelists: <i>Arne Jamtrot, City of Stockholm, Martyn Futter, SLU, Harri Moora, SEIT, Eva Iveroth, PA Hazard, Agnieszka Ilola, UBC and Ieva Putna LHEI</i></p>
12:30 – 13:00 CET/ 13:30 – 14:00 EET		Break <i>Sorry, you have to make the coffee yourself</i>

		Session II: Industrial waste water management and chemicals risk management tools for industry
13:00 – 14:30 CET/ 14:00 – 15:30 EET	1.5 h 45 min	<p>Presentations from the projects BEST, HAZBREF and NonHazCity2</p> <ul style="list-style-type: none"> ➤ Guidelines for management of industrial wastewaters, BEST, Kajsa Rosqvist, City of Helsinki ➤ Hazardous industrial chemicals in the IED BREFs, HAZBREF, Janusz Krupanek, IETU ➤ Including chemicals risk management into environmental management systems (ISO/EMAS), NonHazCity 2, Malgorzata Macniak, ISO ForumPI <p>Panel 2: management instruments versus water purification – new tools for industries? How can we get HS out of the cycle BEFORE they enter the pipes?</p> <p><i>Panelists: Audrone Alijosiute, BEF Lithuania, Malgorzata Macniak, ISOForumPL and Janusz Krupanek, IETU PL</i></p>
14:30 – 14:45 CET/ 15:00 – 15:45 EET		Closing of the day: wrap-up and looking forward to the next day

Wednesday, June 16, 2021		
10:00 – 10:15 CET/ 11:00 – 11:15 EET		Welcome and introduction to the day
		<p>Session III: What can Municipalities do?</p> <p>Moderator: Ingrida Bremere, BEF Latvia</p>
10:15 – 12:00 CET/ 11:15 – 13:00 EET	1h 45m 60 min	<p>Session III: Cities can do more than nations</p> <p>Presentations from NonHazCity, BSR Water and NOAH projects</p> <ul style="list-style-type: none"> ➤ Holistic planning combining stormwater management and spatial planning, NOAH, Ivar Annus, TUT ➤ Holistic and Sustainable stormwater management at municipalities, BSR Water, Nika Kotovica, Riga City Council ➤ Chemicals Action Plans as tools for prioritisation, NonHazCity, Arne Jamtrot, City of Stockholm ➤ Chemicals-Smart procurement as part of GPP policy, NonHazCity, Hannamaria Yliruusi, TUAS ➤ GPP guidelines and recommendations for Russia, NonHazCity 2, Ekaterina Stepanova, Ecological Union ➤ Training programme for municipal Employees, NonHazCity 2, Audrone Alijosiute, BEF Lithuania <p>Panel 3: municipalities as key actors for hazardous substance management – how to empower them?</p> <p><i>Panelists: Arne Jamtrot, Stockholm, Nika Kotovica, Riga City Council, Audrone Alijosiute, BEF Lithuania, N.N.</i></p>
	45 min	

12:00 – 12:30 CET/ 13:00 – 13:30 EET		Break <i>Coffee or tea? Self-service...</i>
		Session IV: Plastic as emerging issue for discussion: microplastics, hazardous substances in articles & products, and how to make them more visible
12:30 – 14:00 CET/ 13:30 – 15:00 EET	1 h 30 min 45 min 45 min	<p>Presentations from FanPLEStic-sea, NonHazCity, Change(K)now!</p> <ul style="list-style-type: none"> ➤ Prevent microplastics before they enter the Baltic Sea, FanPLEStic-sea, Malgorzata Drewnowska (Presentation) & Ieva Putna-Nimane (Panel) ➤ Plastic as vector for Hazardous substances, NonHazCity, Martyn Futter, SLU ➤ How do people react? The #NonHazPlasticDiet goes around in Europe, NonHazCity & AskREACH, Kai Klein, BEF Estonia <p>Panel: plastic material used and consumed by everyone and everywhere – how can we raise awareness, especially about “invisible”?</p> <p><i>Panel 4: Ieva Putna/Nimane, LHEI, Martyn Futter, SLU, Kai Klein, BEF Estonia, Marina Vogel, BEF-Germany.</i></p>
14:00 – 14:30 CET/ 15:00 – 15:30 EET		<p>Closing of the seminar</p> <p>Summary of the event by Martyn Futter, SLU</p> <p>Feedback from the projects and the INTERREG Secretariat</p>