Baltic Marine Environment Protection Commission

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Background

In 2015, HELCOM and Policy Area Hazards launched a joint process to develop a "Status report on pharmaceuticals in the Baltic Sea". With the support of the WG's of Pressure and State & Conservation, and CP's national experts, the status report was finalized in August 2016.

HOD 50-2016 approved the publication of the Status report and noted that it needs to be followed by the elaboration of measures addressing reduction of input of pharmaceuticals to the environment. PRESSURE 4-2016 decided to establish an expert group with the objective to suggest further actions on pharmaceuticals in the Baltic Sea region[1].

PA Hazards is currently developing a new flagship on pharmaceuticals in the Baltic Sea environment. The flagship aims to offer an umbrella for the implementation of projects and activities aiming to reduce pharmaceuticals in the Baltic environment, as well as to support regional policy development and stakeholder cooperation.

A continuation of the joint process between HELCOM and PA Hazards in the field of pharmaceuticals in the Baltic environment is foreseen, with the aim to reinforce and complement our respective actions as well as develop joint activities.

Action requested

The Meeting is invited

- to take note of the outcomes of the Status report;
- to take note of the foreseen continuation of the joint process of HELCOM and PA Hazards;
- to provide feedback guiding future work.

[1] cf. PRESSURE 5-2016 Document 7-2 Draft Terms of Reference for the Expert Group on Pharmaceuticals

Pharmaceuticals in the Baltic Sea – joint process of HELCOM and PA Hazards

Background

In 2015, HELCOM and Policy Area (PA) Hazards launched a joint process to develop a "Status report on pharmaceuticals in the Baltic Sea". The action was based on the generally growing concern over potential environmental impacts of pharmaceutical substances, the policy movements within HELCOM, the EU and internationally, and an expressed interest in more knowledge and coordinated action by several Baltic Sea countries. In both 2010 and 2013's HELCOM Ministerial Declarations, Contracting Parties agreed to collect information and assess the status of contamination of pharmaceuticals and their degradation products in the marine environment. The information would also provide valuable information to HOLAS II. PA Hazards decided to make the topic of pharmaceuticals in the Baltic environment a focus area in the years 2015-2017 to support regional policy development and stimulate to the development and implementation of projects.

Outcome of the Status report on pharmaceuticals in the Baltic Sea

With the support of the WG's of Pressure and State & Conservation, and CP's national experts, the status report was finalized in August 2016.

Results are based on available data provided by the Contracting Parties of HELCOM. The report compiles regional information on:

- the occurrence of pharmaceuticals in the Baltic Sea environment,
- identifies sources and pathways,
- estimates of sales and consumption of drugs, as well as
- information on handling of pharmaceutical waste in some of the Baltic Sea countries.

Data covers the period 2003-2014 and includes 47,600 data points on sources and pathways of pharmaceuticals (i.e. wastewater influent and effluents, sludge and river water) and 4,600 individual data points on concentrations of pharmaceuticals in the coastal, open sea and transitional areas of the Baltic Sea marine environment. The report includes data on 167 pharmaceutical substances measured in the marine environment and 156 pharmaceutical substances and 2 metabolites sampled at municipal wastewater treatment plants (MWWTPs).

The main sources of pharmaceuticals to the Baltic environment are most likely the excretion of active substances consumed by humans and animals through urine and faeces as well as the incorrect disposal of unused medical products. The main pathway of pharmaceuticals into the aquatic environment, according to the collected data, is via MWWTPs, which according to a rough estimate, release into the environment about 1.8 thousand tons of pharmaceuticals per year. Only nine out of 118 assessed pharmaceuticals were efficiently (> 95%) removed from wastewater during the treatment process and nearly half of the compounds were removed by < 50%.

According to the available data on concentrations of pharmaceuticals in the Baltic Sea environment, the most frequently detected pharmaceutical substances belong to the therapeutic groups of metabolic and gastrointestinal agents, e.g. clofibric acid (83 of 128 samples), and central nervous system agents, e.g. primidone (51 of 51) and carbamazepine (136 of 266). In biota, the largest number of different pharmaceutical substances and the highest concentrations were found in blue mussels.

Although the reported data provide an overview of the magnitude of inputs of several pharmaceutical substances to the Baltic Sea, as well as their concentrations in the marine environment, there are

shortcomings in the data that need to be addressed in order to get a more complete picture of the extent of contamination by pharmaceuticals. More data from the whole region are needed on:

- sales and consumption of pharmaceuticals
- concentrations of pharmaceuticals in MWWTPs influent and effluent as well as in rivers
- emissions of pharmaceuticals to the environment
- the occurrence and fate of metabolites
- concentrations of pharmaceuticals in sewage sludge and soil
- sales and consumption, sources, pathways and loads of veterinary pharmaceuticals to soils and the aquatic environment (including aquaculture)
- sensitivity of analytical methods used for measuring concentrations

The results on concentrations of pharmaceuticals in the environment might be underestimated since the analytical methods used by many laboratories were at times not sensitive enough to detect substances at the level of the environmental quality standards for good status. There is therefore a need to improve the analytical methods used for measuring concentrations of pharmaceuticals in the environment. There is also lack of information on concentrations in biota, as well as on the biological effects of pharmaceuticals.

In order to reduce the inputs of pharmaceuticals to the environment, measures should be taken at all stages of the product lifecycle, from manufacturing to consumption to waste management. More data are needed to address specific sources and pathways and to help identify priority measures.

Future work and joint process of HELCOM and PA Hazards

HOD 50-2016 approved the publication of the Status report and noted that it needs to be followed by the elaboration of measures addressing reduction of input of pharmaceuticals to the environment. PRESSURE 4-2016 decided to establish an expert group with the objective to suggest further actions on pharmaceuticals in the Baltic Sea region.

According to the draft Terms of Reference, the objectives of the Expert Group on Pharmaceuticals (EG PHARMA) are to:

- provide a scientific background for the regional environmental policy regarding pharmaceuticals in
- the environment;
- develop suggestions on the regional actions to minimise environmental impact by release of
- pharmaceutical substances;
- serve, in cooperation with PA Hazards of EUSBSR, as a platform for regional dialog on the various environmental aspects of the use of pharmaceutical substances and treatment of the wastes and other matters containing pharmaceuticals in the Baltic Sea region.

PA Hazards of the EU Strategy for the Baltic Sea Region (EUSBSR) acts as a platform for cooperation within the Baltic region to reduce the use and impact of hazardous substances. The role is to contribute to regional policy development and provide a link between policy and implementation. PA Hazards is currently developing a new flagship on pharmaceuticals in the Baltic Sea environment. The flagship aims to offer an umbrella for the implementation of projects and activities aiming to reduce pharmaceuticals in the Baltic environment, as well as to support regional policy development and stakeholder cooperation.

The aims of the PA Hazards flagship on pharmaceuticals are:

- to contribute to the identification, development and implementation of (transnational) projects and activities within the area of pharmaceuticals in the environment, as well as foster synergies between them ;
- to catalyse exchange of information and best practices in the region;
- to promote stakeholder cooperation and awareness in the Baltic region, and

- to support the development of regional policy in the area of pharmaceuticals in the environment

The flagship is targeting both human and veterinary medicines.

A continuation of the joint process between HELCOM and PA Hazards in the field of pharmaceuticals in the Baltic environment is foreseen. The aim of the cooperation is to reinforce and complement the respective objectives and planned actions, exchange information and interlink stakeholder networks, as well as develop joint activities to ultimately decrease the input and effects of pharmaceuticals in the Baltic environment.

More information:

HELCOM: http://www.helcom.fi/baltic-sea-trends/hazardous-substances/pharmaceuticals/

PA Hazards: http://www.swedishepa.se/Environmental-objectives-and-cooperation/Cooperation-internationally-and-in-the-EU/International-cooperation/Multilateral-cooperation/Baltic-Sea-Region-EUSBSR/Policy-Area-Hazards/BSR-pharmaceuticals-PIE-platform--Flagship-under-development-/