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### Background

The 36th HELCOM Annual Meeting adopted the Regional Action Plan on Marine Litter ([HELCOM Recommendation 36/1](#)). The Plan includes regional actions addressing different sources of marine litter which are to be taken forward by a country lead approach. Poland is lead country for action RL8 “Assess the importance of the contribution of upstream waste flows to the marine environment and, if needed, identify suitable actions.”

This document contains the summary report and the annex to this report with the list of responses to the questionnaire, which were send to all Contracting Parties in 2016.

This document has been also submitted to the Workshop on implementation of the Regional Action Plan on Marine Litter ([document 4](#) and [attachment](#)) which will precede the Meeting. The Workshop is invited to exchange views on the state of the accomplishment of the action in the Baltic Sea countries. outcomes of the discussion will be provided to the Meeting.

### Action requested

The Meeting is invited to take note of the information.

## Analysis of the degree of the marine environment pollution by wastes flowing down the rivers to the sea, including sanitary waste - Summary

### INTRODUCTION

This expertise was carried out to collect and analyze data on sanitary waste present in the Polish rivers flowing into the sea, assess the scale of the problem and propose adequate measures to prevent pollution.

The basic guidelines for it is HELCOM Recommendation 36/1. The expertise fulfills the recommendations RL8 contained therein, on diagnosis and prevention of issues resulting from sanitary waste entering to the marine environment from the land, understood according to the definitions presented in the footnote 3 of Annex I to the guidelines.

The result of the work, except of the main conclusions, is also a questionnaire survey, addressed to the states bordering the Baltic Sea drainage basin, which have a potential impact on the amount of waste transported to the Baltic Sea by the rivers.

As a part of the work it was necessary to establish definition of the investigated wastes and determine the place of the term "sanitary waste" in Polish legislation, according to meaning of HELCOM recommendation, where the sanitary waste is understood as household sanitary waste, i.a. sanitary pads and/or tampons, diapers, razors, cotton bud sticks. It required to find their elements in the Polish classification of waste and nominate proper categories of waste under Polish law.

In the context of identification the "sanitary waste" two key legal acts regulating waste management in Poland were taken into account:

- Act of 14 December 2012. On waste (Dz.U. 2013 poz. 21 t.j. zm.: Dz. U. z 2013 r. poz. 888 i poz. 1238, z 2014 r. poz. 695, poz. 1101 i poz. 1322 oraz z 2015 r. poz. 87, poz. 122, poz. 933, poz. 1045, poz. 1688 i poz. 2281.), and
- Regulation of the Minister of the Environment of 9 December 2014. On waste catalog (Dz.U. 2014 poz. 1923).

Classification of the investigated subject - a profile of sanitary waste in the aquatic environment is based on data regarding the ways of waste management and the risk of waste entering the water streams from groups 19 and 20 of Polish waste catalog. This is due to the amount and the scope of the data collected during the analysis.

Final classification and definition of waste covered by the expertise was presented in the following Table:

Code	Waste type
19 08 01	sewage screenings
19 12 04	plastics and rubber
20 03 01	unsorted (mixed) municipal waste
20 03 04	Sludge from holding tanks for storing sewage
20 03 06	Waste from sewage cleaning

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## METHODS AND RESULTS

The study was carried out in three stages:

1. Review of the current state of knowledge on a subject and gathering and evaluation of the collected input material.
2. Analysis of the partial issues independently by each of the experts involved.
3. Verification of conclusions and formulation of the final thesis.

The division of the study on specific components was based on the designation of areas directly related to the subject, i.e. water management, waste management, environmental protection, maritime management.

The data gathered and evaluated in these areas were used to draw the conclusions. In the case of data absence preventing an objective assessment, the experts were using so-called "expert method".

During the analysis of the importance of individual areas the experts were focused on their:

- scaling, i.e. an analysis of the occurrence and intensity of the phenomenon,
- impact analysis and potential threat to the environment components,
- ranking, i.e. setting the hierarchy of the identified negative impacts starting from the most threatening the inland and marine waters.

Referring to the scope and nature of the studied phenomena impact on the environment and humans, presented parallel causes of the risks and current activities and organizational and legal conditions, which formed the basis for formulating further recommendations regarding the prevention of entering waste into the aquatic environment.

It was considered that the assessment of the scale and significance of the waste occurrence in the marine environment, transmitted with the streams of inland waters, will be the result of two groups of factors:

**First group of factors (sea water):**

- amount and type of waste found in the marine environment,
- negative impact of sanitary waste on the marine environment,
- marine pollution, and economic losses incurred as a result of the presence of waste in the sea,

**Second group of factors (inland waters):**

- sources of waste found in the stream of rivers,
- the location of urban areas,
- the degree of sewerage infrastructure development
- technical equipment of installations for waste water treatment,
- presence of structures permanently shutting off sections of rivers, sanitary polices of urban and rural areas,

Based on the analysis of the impact of sanitary waste on the marine environment, in the context of the factors of group I, the following conclusions were made:

- At the moment for the Polish maritime areas there is no current data on the sanitary waste (neither qualitative nor quantitative analysis for beaches nor the area of coastal waters).
- Archival data suggest a small percentage of sanitary waste in the total amount of waste observed on the Polish beaches.
- The sanitary waste are direct and indirect threat to the marine environment, for its abiotic and biotic elements. It is caused by the constant emission of waste to the marine environment, as well as through crumbling existing particles of them already contained there.

- The overall reduction of sanitary waste emission from the mainland will not transfer into immediate effect of improving the quality of the marine environment, due to the approx. 500 year time of polymers decay, which usually the sanitary waste consist of. Until their final decomposition, which will take hundreds of years, they will have a negative impact on both the individual components, as well as the functioning of the ecosystem of the Baltic Sea.
- At this stage, preventing the emission of the sanitary waste into the marine environment is crucial, therefore it is necessary to control land-based sources of them.
- Appropriate steps should be taken to not only reduce the amount of waste entering marine waters, but also to remove the waste already contained in the Baltic Sea waters.

The analysis of the second group of factors leads to the following conclusions:

- The analysis of quality and quantity of the collected data indicated that the wastewater management is a major factor causing the risk of inland surface waters pollution by the sanitary waste.
- The cause of sanitary waste entering the wastewater is mostly of technical nature, i.e. an old sewage systems merged with storm water discharge, which is about 8% of the entire length of all sewerage systems in the country. The factors causing the sanitary waste entering receivers are connected i. a. with the climate change - the increasing frequency of heavy rains, causing uncontrolled storm water overflows.
- Another factor determining the correct operation of sewerage systems is the human factor, manifested by improper behavior of people in the households, in public buildings, within the tourist areas. Users can use the network of sewage i.a. the discharge of municipal waste, including sanitary waste. This causes a decrease in the efficiency of the purification devices or their total failure, which causes waste sanitary penetration directly into the stream courses.
- At the moment, there is a lack of detailed data on the amount of sanitary waste, which can penetrate into the aquatic environment. The proposed method of calculating the estimated amount of waste (based on PE or discharges from storm overflows) is used to a presentation of the phenomenon scale. Comparing the ratio of the amount of waste (of the RLM) to the surface of the built-up areas basin, can be pre-applied on the intensity of the phenomenon of penetration of sanitary waste water from sewage system. For the Odra river basin, this ratio is higher than for the Vistula river basin, which means that the phenomenon of diffusion of sanitary waste sewage system should be more visible in the Odra river basin. The reason for this may be a larger share of sewage system in the whole sewerage system of Odra river basin.
- For sanitary waste, transported sewerage network, apart from the recorded with naked eye (screenings), may include fractions of micro and nano. They consist mostly of the conjunction. Non-biodegradable, and the decomposition process represent mechanical sanitary waste or were originally a component of cosmetics. Currently, there is a lack of technical solutions that could be implemented for the treatment of wastewater from the microparticles.
- unordered wastewater may promote the emergence of the problem of illegal waste disposal, also within the river valleys.
- At present, there is a lack of reliable statistics on the number of illegal landfills in the country or the majority of municipalities. There is also carried out an analysis of their composition, based on which one could estimate the real threat of pollution of watercourses waste sanitation.
- The only credible, although disorderly, data that justify the classification of illegal dumping or abandoning of municipal waste in the sanitary sewage directly into the trough is data on the amount of collected waste from the action, information campaigns, direct long-term follow-up services.
- Preliminary analysis of the behavior of different types of sanitary waste permits transport of waste littering the bottom and floating on the surface of the stream, despite the presence of dam buildings.
- Medical waste economy, despite the addition of a catalog of waste 18 01 04, is still an issue requiring monitoring to rule out the potential negative impact on the water.

Stating the needs, that could potentially improve the level of knowledge on topic of marine water contamination and are able to prevent or dispose sanitary waste (presently or in the future), there were

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actions separated in the fields of: legal and administrative regulations, control, monitoring, education, finances, technology, such as:

- Legal changes, that stand for creating a definition of sanitary waste, which in consequence should translate on an administrative actions in scope of municipal waste composition monitoring
- Intensification of control actions conducted by appropriate authorities to distill any negative phenomena, such as: illegal storage or dropping, together with sewage, municipal waste, that is a threat to water environment, including a distinction of sanitary waste,
- Enlargement of surface waters monitoring methods e.g. with reference to estimation of surface waters state within the meaning of Water Frame Directive, with issues of state waste contamination, including sanitary waste, in scope similar to planned for marine waters monitoring,
- Systematical conduction of informative-educational campaigns, dedicated to problem of sanitary waste occurrence in inland surface waters and Polish Marine Area, together with supplement of topic on so far conducted informative campaigns e.g. connected with flood and drought risk, issues related to sanitary waste, as an element, which causes increased risk of those threats,
- creation of appropriate financial and legal conditions for development of projects promoting innovations in scope of: wastewater treatment, disposal of waste found in water environment, research on material composition of sanitary waste or cosmetics that is safe for water ecosystems.

Foregoing outline of needs was juxtaposed with so far conducted actions and conditions. On this basis, the desirable course of changes was estimated.

## CONCLUSIONS

As a result of conducted analysis together with knowledge of effectiveness of sanitary waste problem solutions, used in EU countries, the most effective actions establish prevention, throughout monitoring and detailed registration of phenomenon of such type of unprocessed waste.

Based on valid examples from another countries of EU it is postulated to supplement a catalog of waste in Poland with definition of sanitary waste. It will initiate, in perspective, further actions for collecting of data, that is still incomplete. Deep research of subject of sanitary waste occurrence in water environment can lead to stating propositions of further specific solutions in this field.

There is also direction of change recommended, based on educational actions, which are most promising, due to authors, for positive results to neutralize the increasement of sanitary waste load in surface waters that flow into the sea. A skillful connection of education and economical factor can directly cause a stream of sanitary waste, which undesirably emerge in sewerage system, to stop.

The third direction of actions, that in perspective can cause a decrease of sanitary waste amount in water environment are investments in sector of Research & Development (R+D), which are an assumption of latest project of a Strategy for Responsible Development, elaborated by a Ministry of Development (2016). Promoted research should cover a subject of innovative methods for wastewater treatment, that are able to e.g. detain yet unfiltered micro and nano particles.