



TOWARDS IMPROVED MANAGEMENT OF INDUSTRIAL WASTEWATERS

Policy brief by Project BEST

INDUSTRIAL WASTEWATER differs in its content, volume and discharge fluctuation from domestic wastewater and can cause severe problems for municipal treatment plant operations, such as capacity deficiency, inhibition of biological treatment and problems for sewers such as blockages and corrosion. At worst, there is a risk of harmful discharges of nutrients and hazardous substances into local watercourses and the Baltic Sea, as well as endangering staff safety and sludge quality.

The two main existing mechanisms for controlling industrial wastewater discharges into municipal wastewater treatment plants include environmental permits for industrial operators and contracts between the industrial operator and the municipal wastewater treatment plant. However, the roles of these mechanisms are unfortunately not always clear.

Based on analyses of the current situation and good practices already in use, the project BEST – Better Efficiency for Industrial Sewage Treatment – gives the following recommendations towards the improved management of industrial wastewaters at municipal wastewater treatment plants (WWTPs) in the Baltic Sea Region (BSR):



Recommendations for INDUSTRIAL OPERATORS

Industrial operators are responsible for monitoring the quality of their wastewater and for meeting set limit values

The quality and quantity of industrial wastewater that can be conveyed to the sewer is defined by limit values in legislation, in environmental permits or in industrial wastewater contracts between an industrial operator and a water utility. The industrial operators are responsible for meeting these limit values and for being aware of possible environmental impacts and risks of their operations. Knowledge of wastewater quality can be obtained by monitoring and by consulting relevant information sources such as chemical lists, national wastewater guidelines, water utilities, and environmental authorities.

On-site pretreatment is necessary if the industrial operator is unable to meet limit values and restrictions. If hazardous substances cannot sufficiently be removed, the wastewater should be delivered to a hazardous waste treatment plant

The quality of industrial wastewater can be improved by preventive measures like optimising production processes, minimising the use of chemicals and substituting chemicals with less hazardous chemicals. On-site pretreatment of industrial wastewater is necessary if the operator is unable to meet limit values and restrictions set for polluting substances despite preventive measures. If industrial wastewater contains hazardous substances (e.g. heavy metals, solvents, AOX, cyanide, etc.) that cannot sufficiently be removed on-site, this waste fraction should be collected and delivered to a hazardous waste treatment plant.

Increased industrial wastewater fees cover increased treatment costs for water utilities caused by industrial wastewaters

The industrial operators are responsible for covering the costs caused by their operations. The increased wastewater treatment costs ensuing from industrial wastewater can be determined by using the formula of increased wastewater fees. This ensures the implementation of the polluter pays principle and a fair and justified division of increased investment and operation costs of the WWTP. It is important that households do not pay through their wastewater fees for increased treatment costs caused by industrial wastewaters as this violates state aid rules.

By an increased wastewater fee, an industrial operator is also motivated to improve pretreatment of its industrial wastewaters and to reduce pollution loading to the WWTP in order to lower the fee.

Industrial operators must immediately inform the water utility on exceptional emissions into the sewer

Accidental leaks and load peaks must be prevented by risk management planning of industrial operators. In case of a process disruption, the industrial operator must immediately inform the water utility of exceptional emissions and any other unusual situations affecting the quality or quantity of wastewater. The water utility may then act by e.g. isolating the activated sludge process before the emission reaches the WWTP.

Recommendations for ENVIRONMENTAL AUTHORITIES

Environmental permitting should be free from economic and political interests

Large scale industries are usually required to have an environmental permit for their operations. The permits should be granted on a sufficiently high (preferably national or regional) level where there is enough technical knowledge to give relevant limit values and restrictions for industrial wastewater quality, as well as independence from local interests and politics.

Water utilities should be heard in the permitting of industries

Water utilities and wastewater treatment plants should be involved in the permitting process for those industrial operators that convey wastewater to public sewers and wastewater treatment plants. Their expertise and points of view regards permit conditions should be taken into account by requesting their comments during the permitting process.

Environmental permits should include relevant requirements for industrial wastewaters

Legislation needs to support setting necessary restrictions and limit values to industrial wastewaters. Legislation should also enforce the principles that industrial operators are responsible for covering the costs caused by their operations (the polluter pays principle) and that industrial operators are responsible for being aware of possible environmental impacts and the risks of their operations.



Recommendations for ENVIRONMENTAL AUTHORITIES AND WASTEWATER TREATMENT PLANTS

The dilution strategy is not an acceptable method of dealing with pollution

Equal limit values and restrictions on the quality or the amount of industrial wastewater should be given to operators within the same industry sector. Limit values and other conditions can be given in environmental permits and in industrial wastewater contracts.

Limit values are needed for substances that can cause harm or disturbances in the sewer, at the WWTP or to the environment, and for substances for which the treatment capacity is limited.

Limit values can be given as concentration (mg/l) or loading limits (kg/d). Loading limits (kg/d or g/d) are recommended for organic matter and nutrients in addition to concentration limits, so that there is no incentive for the diluting of industrial wastewaters to avoid exceeding concentration limits.

Monitoring should be planned case-specifically according to the amount and quality of wastewater, and pollutants and hazardous substances potentially ending up in the wastewater

The responsibility for monitoring the quality of industrial wastewaters lies with the industrial operator but authorities and water utilities should define conditions for monitoring programmes that include e.g. frequency of sampling and parameters to be analysed.

More frequent sampling should be required if the quality of wastewater varies a lot. Automatic composite sampling and online and real-time monitoring are valuable in detecting exceptional emissions.

Monitoring samples should be taken and analysed by an external certified and independent party (i.e. a laboratory).

Authorities and water utilities should be able to carry out inspections and take additional wastewater samples without prior notice

The aim of a monitoring programme is to identify typical wastewater quality of an industrial operator during normal operations and loading/pollution peaks. Thus, the monitoring programme is crucial for supervising compliance with a permit or a contract and for the protection of the sewer, the WWTP and the environment.

Authorities and water utilities should be able to carry out inspections and take additional wastewater samples without prior notice, especially if there is a suspicion that samples included in the monitoring programme are not representative, or in case disturbances in the sewer or at the wastewater treatment plant are noticed. The right for water utility inspections must be stated in industrial wastewater contracts.

Recommendations for WASTEWATER TREATMENT PLANTS

WWTPs must prepare for possible problems caused by industrial wastewaters and plan and rehearse needed actions beforehand

Successful and optimised co-treatment requires that the WWTP has sufficient capacity and that the personnel is aware of the specific operational measures needed. WWTPs must prepare for possible problems caused by industrial wastewaters and plan and rehearse needed actions beforehand, such as isolating and by-passing parts of the treatment process. Industrial wastewater contracts are a vital part of the risk management of WWTPs and water utilities.

Water utilities should be aware of the source, amount and type of industrial wastewaters and conclude contracts with industrial customers with the highest loads and risks

Water utilities should systematically map out the sources of industrial wastewaters and conclude contracts with industrial operators based on the wastewater pollution load and potential risks caused by their industrial wastewater.

In contract negotiations, the industrial operator gets more information about the possible harmful effects of its wastewaters and the water utility gets information on what risks the industrial wastewaters might have for the sewer network, pumping stations or the WWTP.

Water utilities should set up yearly meetings with industrial operators and environmental authorities

Contract negotiations lay the foundations for future cooperation between the water utility and the industrial operator. Water utilities and WWTPs should aim for good cooperation with industrial operators by holding annual meetings and exchanging information on planned changes to operations as well as process disturbances.

Regular meetings between the water utility and the environmental authorities are also strongly recommended.

Water utilities should keep contracts up-to-date

Industrial wastewater contracts are a tool for managing industrial wastewaters. In many cases, however, outdated contracts cause harm to the sewer or the WWTP. It is advisable to keep contracts up-to-date. New contracts should be valid only for a limited period of time and/or include specific terms for changing the contract terms and for terminating the contract. A penalty clause is strongly recommended for all contracts.

In addition to industrial wastewater contracts, permits with limit values are necessary for industries discharging considerable loads or causing risks

In some Baltic Sea Region countries, notably Estonia, Latvia and Lithuania, permitting follows the “end-of-pipe approach”, regulating only wastewater treatment plants, but not industrial operators, for effluent quality when industrial wastewater is discharged into municipal wastewater treatment plants. This leaves the water utility responsible for determining limits for industrial wastewater quality and quantity, even for very large (IED¹ category) polluters in industrial wastewater contracts. Without the support of environmental authorities, small water utilities can especially have significant struggles in getting the operator to follow the polluter pays principle through an industrial wastewater contract.

In these cases, legislation and permitting practices should be reviewed so that industries potentially producing considerable wastewater load or causing risks through specific properties of their industrial wastewater would need a permit with limit values and a monitoring programme supervised by authorities for pollutants.

Economic and industrial policies should not be made at the cost of water utilities, WWTPs and the environment

Economic and industrial policy tends to be entangled especially when it comes to industrial wastewaters and limiting wastewater loading from industrial plants, as they bring tax revenue and employment to the region or municipality. In some cases, industrial operators have been given lower water and wastewater fees and permission to convey wastewaters to the sewer without pretreatment or with insufficient pretreatment. This may be considered as unlawful state aid.

Economic and industrial policies should not be made at the cost of water utilities, WWTPs and the environment. Transition to more independent regional water utility companies or centralised wastewater treatment is one possible solution for preventing local economic and industrial policy from affecting the management of industrial wastewaters.

Authorities should have sufficient resources and power to intervene with misconducts and non-compliance. Legislation should not prevent sampling of industrial wastewaters without prior notice

A major problem in many BSR countries is that enforcing the compliance with environmental permit conditions or industrial wastewater contract terms is hindered by a lack of resources or knowledge or even due to legislative obstacles. In practice, this means that industrial wastewaters are not monitored extensively enough to identify violations of quality requirements.

Authorities should have sufficient resources and power to intervene in cases where an industrial operator neglects its permit conditions or exceeds limit values set in industrial wastewater contracts for wastewater quality. If misconduct is repeated and the operator does not comply with permit conditions after a given term, authorities should impose administrative fines, initiate a crime investigation or even order the immediate closure of the facility. In several countries, these procedures are relatively slow and infrequently used.

Legislation should not prevent authorities or water utilities from sampling industrial wastewaters at relevant locations without prior notice. Sampling without prior notice is, however, forbidden by law e.g. in Latvia, Lithuania and Russia.

The main purpose of controlling industrial wastewaters should not be in achieving financial benefit, but preventing pollution

The purpose of setting increased wastewater fees, penalty clauses and other fees is to ensure the effective operation of sewers and WWTPs and to reduce the environmental load.

Unfortunately, in some BSR countries, it can be seen that the current principles of setting limit values and monitoring programmes aim at collecting maximal fees, whereby more efficient on-site pretreatment might even be considered to be a negative trend.

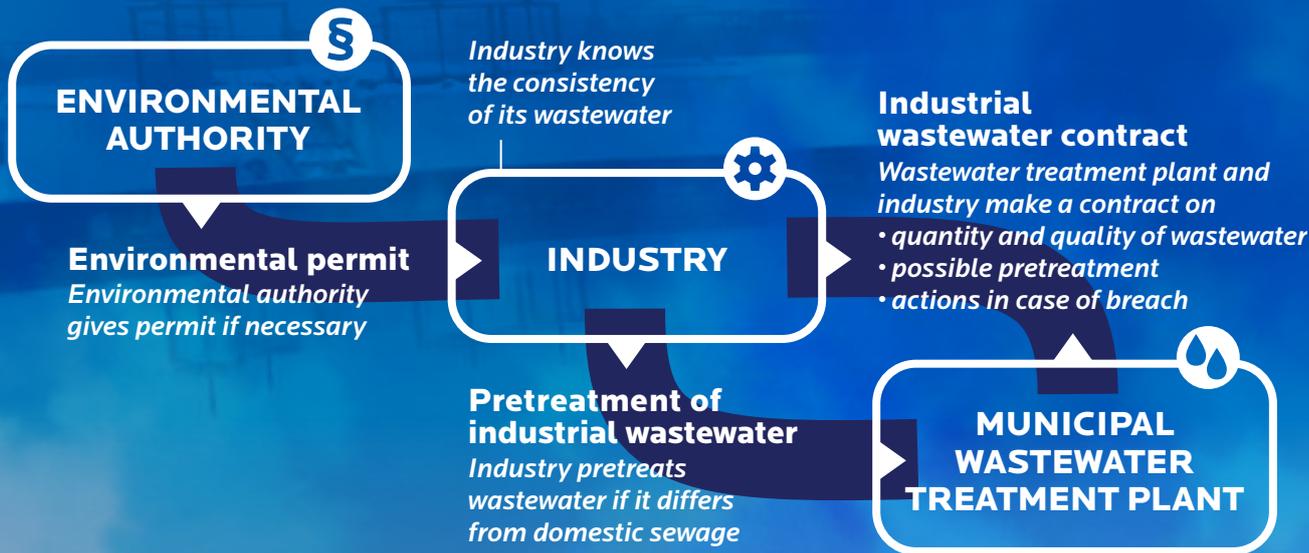
The main purpose of controlling industrial wastewaters must not be in achieving financial benefit for the water utility, environmental authorities or municipalities, but in preventing pollution of the environment.

To support the utilisation of the best available knowledge in the regulation of industrial wastewaters, limit values and terms of sanctioning should be harmonised nationwide

In many BSR countries, there is a concern that local water utilities and authorities lack knowledge about the management of industrial wastewaters leading to insufficient terms and conditions in industrial wastewater contracts and environmental permits. Thus, water utilities and authorities should get more support particularly from national legislation and the national water utility association, and e.g. limit values and terms of sanctioning should be harmonised nationwide. This could be achieved in different ways:

- One option is to establish limit values in **national legislation**. This ensures the limit values are followed throughout the country.
- Another option is to publish **national guidelines** containing recommendations for limit values, monitoring programmes, industrial wastewater fees and the contents of industrial wastewater contracts.

FOR BEST RESULTS OF INDUSTRIAL WASTEWATER MANAGEMENT, cooperation is needed between industry, environmental authorities, and water utilities, sewer owners and WWTPs.



This Policy brief has been prepared by John Nurminen Foundation and AFRY Finland Oy. For the full report “Guidelines for the Management of Industrial Wastewaters”, see <https://bestbalticproject.eu/outputs>

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