

HELCOM RECOMMENDATION 23/11 *)

Adopted 6 March 2002
having regard to Article 20, Paragraph 1 b)
of the Helsinki Convention

REQUIREMENTS FOR DISCHARGING OF WASTE WATER FROM THE CHEMICAL INDUSTRY ¹⁾

THE COMMISSION,

RECALLING Paragraph 1 of Article 6 of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki Convention), in which the Contracting Parties undertake to prevent and eliminate pollution of the Baltic Sea Area from land -based sources by using , inter alia, Best Environmental Practice for all sources and Best Available Technology for point sources,

HAVING REGARD also to Article 3 of the Helsinki Convention, in which the Contracting Parties shall individually or jointly take all appropriate legislative, administrative or other relevant measures to prevent and abate pollution in order to promote the ecological restoration of the Baltic Sea Area,

RECALLING ALSO Annex I, Part 1 of the Convention, according to which the Contracting Parties shall, in their preventive measures, give priority to the groups of substances listed in Annex I, Part 1 which are generally recognised as harmful substances,

RECALLING FURTHER the Ministerial Communiqué 1998, calling to implement the HELCOM Recommendation 19/5 on the HELCOM Objective with regard to Hazardous Substances, which is to prevent pollution of the Convention Area by continuously reducing discharges, emissions and losses of hazardous substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring substances and close to zero for man-made synthetic substances, until 2020,

RECALLING FURTHER that the Ministerial Declaration 1988, of the ninth meeting of the Helsinki Commission calls for a considerable reduction of land-based pollution,

RECOGNIZING that the chemical industry is responsible for an important part of the discharges of hazardous substances into the Baltic Sea,

DESIRING to limit the discharges from this industry in line with best available techniques,

RECOMMENDS to the Governments of the Contracting Parties that they apply the precautionary principle, the principle of the Best Available techniques and the substitution principle, by which is meant substitution of the use of hazardous substances by less hazardous substances or preferably non-hazardous substances where such alternatives are available,

*) Superseding HELCOM Recommendation 20E/6
1) NACE 24, except for 2415 and 242, according to the European standard classification system NACE

RECOMMENDS to the Governments of the Contracting Parties that they apply the following requirements to chemical industries producing waste water which is discharged into waters or municipal sewerage systems

1. General requirements

Waste water should only be discharged if the waste water volume and pollutant load are minimised by the use of best available technologies, inter alia:

- a) separation of process water from cooling water;
- b) separate pre-treatment of waste water containing substances which due to their specific properties should preferably be removed prior to the final treatment;
- c) combined treatment of different waste waters containing hazardous substances only if an adequate reduction of the pollutant load is achieved compared to the purification of every single waste water stream;
- d) use of water-saving techniques in washing and cleaning processes such as water circulation and counter-current washing;
- e) multiple use of process water;
- f) indirect cooling systems and condensation of vapours and organic liquids instead of direct cooling systems;
- g) processes for generating vacuum, which do not produce waste water, should be used if there is the possibility that hazardous substances get into the water;
- h) processing of mother-liquors, e.g. for recovery of materials or energy;
- i) substitution of the use of hazardous substances by less hazardous substances or preferably non-hazardous substances where such alternatives are available,
- j) adequate equipment for monitoring of effluent parameters should be used, e.g. flow, pH and oxygen concentration.

2. Requirements for the reduction of waste water discharges

The mixing or diluting of different waste waters (i.e. mixing of treated process water with cooling water) for the purpose of compliance with the limit values established for the effluent should not be allowed. This means that all limit values mentioned below refer to the process waste water. The total load of the parameters COD or TOC, nutrients, AOX and heavy metals should be minimised first according to the main principles mentioned above and to measures specified in Paragraph 1 (General requirements).

The below mentioned requirements are based on 2- to 24-hour values.

2.1 Chemical Oxygen Demand (COD) or Total Organic Carbon (TOC)

For plants discharging into water bodies the reduction of COD- or TOC-load in pre- and final waste water treatment facilities should be at least 80%. This requirement should also be regarded as fulfilled when BAT has been applied and the concentration in the effluent of the plant of COD is lower than 250 mg/l or the concentration of TOC is lower than 80 mg/l.

2.2 Phosphorous and Nitrogen

For plants discharging into water bodies the concentration of total-Phosphorus in effluent should not exceed 2.0 mg/l and for total-Nitrogen ²⁾ should not exceed 50 mg/l. The requirement for Nitrogen is fulfilled if the concentration does not exceed 75 mg/l and the reduction rate is at least 75%.

2.3 Adsorbable Organic Halogen (AOX)

For plants discharging into water bodies or connected to municipal sewerage system the concentration of AOX should not exceed 1.0 mg/l. This requirement should also be regarded as fulfilled if the reduction of the AOX-load in the pre- and final waste water treatment facilities is at least 80%.

These requirements should neither be exceeded in the effluent after final treatment for plants discharging into water bodies nor in the effluent connected to municipal sewerage systems.

2.4 Heavy metals

For plants discharging into water bodies or connected to municipal sewerage system the concentration should not exceed the following values:

Mercury (Hg)	0.05 mg/l
Cadmium Cd)	0.2 mg/l
Copper (Cu)	0.5 mg/l
Nickel (Ni)	1.0 mg/l
Lead (Pb)	0.5 mg/l
Chromium (Cr)	0.5 mg/l
Chromium VI (Cr-VI)	0.1 mg/l
Zinc (Zn)	2.0 mg/l

These requirements should neither be exceeded in the effluent after final treatment for plants discharging into water bodies nor in the effluent connected to municipal sewerage system.

2.5 Toxicity of the effluent

For plants discharging into water bodies the toxicity effect of the waste water should be determined by two toxicity tests which could be chosen out of the following four toxicity tests:

Toxicity to Fish	TU(fish, 96 h) 2
Toxicity to Daphnia	TU(daphnia, 48 h) 8
Toxicity to Algae	TU(algae, 72h) 16
Toxicity to Bacteria	TU(Vibrio fischeri, 0,5 h) 8

- 2) Total-N means the sum of total Kjeldahl nitrogen (organic N+NH₄), nitrate (NO₃)-nitrogen and nitrite (NO₂)nitrogen

Where for this Recommendation TU (testing organism, required acute toxicity testing time) = concentration of the substance to be tested / NOEC. For a waste water testing this equation can be written as follows: $TU = 100 / \text{no effects dilution rate (\%)} \text{ of waste water}$. The “no effect dilution rate” should be observed with standard toxicity tests. The CEN, ISO or OECD acute toxicity testing standards should be used.

E.g. for daphnia criteria TU 8 means that the sewage water should be of such quality that it has to be diluted at the highest by 1:7 in order to achieve a level of no effect concentration in a standard acute toxicity test for daphnia (where the testing time is 48 h). Acute toxicity testing should be carried out at least for two of the four above presented organisms. Results from those tests have to comply with the requirements above.

2.6 Analysing methods

Internationally accepted standardised sampling, analysing and quality assurance methods (e.g. CEN-standards, ISO-standards, OECD-Guidelines) should be used whenever available,

The frequency of analysis shall be determined by the competent authorities taking into account the results obtained,

RECOMMENDS ALSO that the above requirements and limit values be implemented by 1 January 2003 and for countries in transition by 1 January 2005,

RECOMMENDS FURTHER that the Contracting Parties report to the Commission in 2006 and thereafter every three years,

RECOMMENDS FURTHER to reconsider the Recommendation in 2003.

REPORTING FORMAT FOR HELCOM RECOMMENDATION 23/11 CONCERNING REQUIREMENTS FOR DISCHARGING OF WASTE WATER FROM THE CHEMICAL INDUSTRY

Lead Country:

Country:

Year:

1. Number, name and location of plants discharging directly into surface waters or into municipal sewers (at least plants discharging directly into surface waters should be reported separately) and also description of the capacities and type of plant and production technology.
2. Summarized description of the sector including:
 - application of BAT as specified in paragraph 1 of the Recommendation;
 - efforts to reduce the use of hazardous substances;
 - actions taken to reduce discharges during the last 3 years.
3. Emission data on plants discharging directly into surface waters (> 10 m³/d), for each plant separately as far as possible, including:

3.1 - Waste water discharges

Plant (No.)	Waste water volume m ³ /a (m ³ /d) ¹⁾	Concentration (mg/l) and pollution load (t/a)									
		COD		TOC		tot-P		tot-N		AOX	

¹⁾ Process water only

Rate of reduction (%)							
Plant	COD		TOC		tot-P	tot-N	AOX

3.2 - Heavy metal concentration and total load

Concentration in mg/l and total load in kg/a																
Plant	Hg		Cd		Cu		Ni		Pb		Cr-tot		Cr-VI		Zn	
	mg/l	kg/a	mg/l	kg/a	mg/l	kg/a	mg/l	kg/a								

3.3 - Results from toxicity tests

Results from toxicity tests and of tests on overall persistence and bioaccumulation characteristics of the organic substance of the effluent, if available	
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4. Summarized data on plants discharging directly to municipal sewers and small plants (< 10m³/d) discharging directly to surface waters including:
 - data on pollutant concentration ranges
 - number or percentage of plants which comply with the different requirements of the Recommendation (Please specify e.g. which parameters / requirements cause problems for compliance).
5. Summary of evaluation of compliance with the requirements of the Recommendation including:
 - problems encountered in the implementation of the requirements and the foreseen development of the situation.
6. Specify means used when nationally putting into force the Recommendation
 - via general reference in the national legislation
 - via a specific adoption of an amendment to existing national legislation
 - via administrative or other means, please specify.

Possible problems identified when putting into force nationally the Recommendation.