

EN1A: Set standards for quality of effluent discharges arising from wastewater services

REGULATORY FUNCTION: ENVIRONMENT		EN1A																																				
OBJECTIVE EN1 Regulatory requirements for water abstraction and management of faecal sludge, effluent or wastewater are in place	ACTION CARD EN1A <h2 style="margin: 0;">SET STANDARDS FOR QUALITY OF EFFLUENT DISCHARGES ARISING FROM WASTEWATER SERVICES</h2>																																					
COST: Medium FREQUENCY: Regular TARGET GROUPS: Regulators, service operators, environmental authorities, civil society organizations, industrial and agricultural consumers																																						
DESCRIPTION Environment regulators translate national environmental standards and norms into established regulatory frameworks for water and sanitation services within their mandate. They therefore transpose national environmental directives into policies, guidelines, and frameworks, with the objective of protecting the environment from noxious substances discharged through wastewater services. Most commonly, regulators outline a list of substances, along with permissible limits, allowed for municipal, industrial, or agricultural wastewater disposal.																																						
EXPECTED OUTCOMES <ul style="list-style-type: none"> • Environmental norms are properly integrated within water and sanitation sectors. • Service operators' contracts adequately reflect their environmental duties. • Environmental protection is ensured through clearly defined effluent quality standards. 																																						
EXAMPLE 1: TANZANIA In Tanzania , wastewater effluent quality discharges should comply with the latest national standard (TZS 860:2006) on limits for municipal and industrial wastewaters. The standard prescribes permissible limits for municipal and industrial effluents discharged directly into water bodies, and its use promotes a consistent approach towards prevention of water pollution.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Table 2a: Physical Components</th> </tr> <tr> <th style="text-align: center;">Parameter</th> <th style="text-align: center;">Limit</th> <th style="text-align: center;">Test Method</th> </tr> </thead> <tbody> <tr> <td>BOD₅ at 20 °C</td> <td style="text-align: center;">30 mg/L</td> <td>EMDC1 1173: Part 3 ± Five-day BOD Method</td> </tr> <tr> <td>COD</td> <td style="text-align: center;">60 mg/L</td> <td>EMDC1 1173: Part 4 ± Dichromate Digestion Method</td> </tr> <tr> <td>Color</td> <td style="text-align: center;">300 TCU</td> <td>ISO 7887: 1994, Water quality ± Examination and determination of color ± Section 3: Determination of true color using optical instruments</td> </tr> <tr> <td>pH range</td> <td style="text-align: center;">6.5-8.5</td> <td>EMDC1 1173: Part 2 ± Electrometric Method</td> </tr> <tr> <td>Temperature range</td> <td style="text-align: center;">20-35°C</td> <td>See Annex A</td> </tr> <tr> <td>Total Suspended Solids</td> <td style="text-align: center;">100 mg/L</td> <td>EMDC1 1173: Part 1 ± Gravimetric Method</td> </tr> <tr> <td>Turbidity</td> <td style="text-align: center;">300 NTU</td> <td>APHA Standard Methods:2130 B. Nephelometric Method</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Table 2d: Microbiological Components</th> </tr> <tr> <th style="text-align: center;">Parameter</th> <th style="text-align: center;">Limit</th> <th style="text-align: center;">Test Method</th> </tr> </thead> <tbody> <tr> <td>Total Coliform Organisms</td> <td style="text-align: center;">10,000counts/100mL</td> <td>ISO 6222:1999, Microbiological methods</td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;">Sample of permissible limits for municipal and industrial wastewaters (TZS 860:2006).</p>		Table 2a: Physical Components			Parameter	Limit	Test Method	BOD ₅ at 20 °C	30 mg/L	EMDC1 1173: Part 3 ± Five-day BOD Method	COD	60 mg/L	EMDC1 1173: Part 4 ± Dichromate Digestion Method	Color	300 TCU	ISO 7887: 1994, Water quality ± Examination and determination of color ± Section 3: Determination of true color using optical instruments	pH range	6.5-8.5	EMDC1 1173: Part 2 ± Electrometric Method	Temperature range	20-35°C	See Annex A	Total Suspended Solids	100 mg/L	EMDC1 1173: Part 1 ± Gravimetric Method	Turbidity	300 NTU	APHA Standard Methods:2130 B. Nephelometric Method	Table 2d: Microbiological Components			Parameter	Limit	Test Method	Total Coliform Organisms	10,000counts/100mL	ISO 6222:1999, Microbiological methods
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EXAMPLE 2: UNITED KINGDOM

In the **UK**, the EU Urban Wastewater Treatment Directive was transposed in 1991 into UK law through the Urban Wastewater Treatment Regulations (1994). They detail the following standards for discharges from wastewater treatment plants.

2. Discharges from urban wastewater treatment plants subject to treatment in accordance with regulation 5(1) and (2) shall, subject to paragraphs 4 and 5 of Part II of this Schedule, meet the requirements shown in Table 1.

3. Discharges from urban wastewater treatment plants to those sensitive areas which are subject to eutrophication as identified in sub-paragraph (a) of Part I of Schedule 1 shall, subject to paragraphs 4 and 5 of Part II of this Schedule, also meet the requirements in Table 2.

TABLE 1
REQUIREMENTS FOR DISCHARGES FROM URBAN WASTE WATER TREATMENT PLANTS SUBJECT TO REGULATION 5(1) AND (2)

The values for concentration or for the percentage of reduction shall apply.

Parameters	Concentration	Minimum percentage of reduction ¹	Reference method of measurement
Biochemical oxygen demand (BOD5 at 20°C without nitrification ²)	25 mg/l O ₂	70—90	Homogenized, unfiltered, undecanted sample. Determination of dissolved oxygen before and after five-day incubation at 20° ±1°C, in complete darkness. Addition of a nitrification inhibitor
Chemical oxygen demand (COD)	125 mg/l O ₂	75	Homogenized, unfiltered, undecanted sample Potassium dichromate
¹ Reduction in relation to the load of the influent.			
² The parameter can be replaced by another parameter: total organic carbon (TOC) or total oxygen demand (TOD) if a relationship can be established between BOD5 and the substitute parameter.			

TABLE 2
REQUIREMENTS FOR DISCHARGES FROM URBAN WASTE WATER TREATMENT PLANTS TO SENSITIVE AREAS WHICH ARE SUBJECT TO EUTROPHICATION AS IDENTIFIED IN SUB-PARAGRAPH (a) OF PART I OF SCHEDULE 1

One or both parameters may be applied depending on the local situation. The values for concentration or for the percentage of reduction shall apply.

Parameters	Concentration	Minimum percentage of reduction ¹	Reference method of measurement
Total phosphorus	2 mg/l P (10,000—100,000 p.e.) than 100,000 p.e.)	1 mg/l P (more 80	Molecular absorption spectrophotometry
Total nitrogen ²	15 mg/l N (10,000—100,000 p.e.) than 100,000 p.e.)	10 mg/l N (more 70—80	Molecular absorption spectrophotometry
¹ Reduction in relation to the load of the influent.			
² Total nitrogen means: the sum of total Kjeldahl-nitrogen (organic N + NH ₃), nitrate (NO ₃)-nitrogen and nitrite (NO ₂)-nitrogen.			

LINKS

Tanzania: <http://www.ewura.go.tz/wp-content/uploads/2015/03/Water-and-Wastewater-Quality-Monitoring-Guidelines-for-WSSAs-DAWASCO-and-DAWASA.pdf>

UK: <https://www.legislation.gov.uk/uksi/1994/2841/schedule/3/made>

INTERNAL CAPACITIES NEEDED AND THE ROLE OF PARTNERS

Establishing wastewater effluent quality standards requires a blend of technical and legal expertise, including an understanding of the current level of wastewater treatment, laboratory testing capacity, and the ambient water quality status of receiving water bodies and their relative ecological vulnerability. Development partners and environmental civil society groups are well placed to provide technical support governments and regulators through capacity and knowledge building workshops, and could potentially help support a national review and mapping of existing evidence of ambient water quality and ecological status, upon which regulators could designate ecologically sensitive receiving water bodies and plan further ecological surveys if needed.