MINISTRY OF ECOLOGY, ENVIRONMENTAL PROTECTION AND CLIMATE CHANGE OF THE REPUBLIC OF UZBEKISTAN

CENTER FOR STATE ECOLOGICAL EXAMINATION REPUBLIC OF UZBEKISTAN

Review of current wastewater standards in the Republic of Uzbekistan

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Review of current legislation in Uzbekistan

National legal framework

1	Development and approval of discharge standards	Resolution of the Cabinet of Ministers (CCM) of the Republic of Uzbekistan No. 14 dated January 21, 2014: On approval of the regulations on the procedure for developing and approving draft environmental standards.
2	Water quality standards in water bodies	SanPiN RUz No. 0318-15 – Hygienic and anti-epidemic requirements for the protection of water in reservoirs on the territory of the Republic of Uzbekistan.
3	Standards for discharges into the sewer network	Resolution of the Cabinet of Ministers (CCM) of the Republic of Uzbekistan No. 11 dated 02/03/2010: On additional measures to improve environmental protection activities in the public utilities system.

Regulation of discharges of pollutants into the environment

Regulation

Resolution of the Cabinet of Ministers (PCM) of the Republic of Uzbekistan No. 14 dated January 21, 2014: On approval of the regulations on the procedure for developing and approving draft environmental standards:

Regulation of discharges of pollutants into the environment is carried out by establishing maximum permissible discharges (MPD) into water bodies.

value is determined as the product of the average daily hourly wastewater flow rate and the permissible concentration of the pollutant for discharge (C_{add}):

$MAP = Q * C_{extra}$ (g / hour)

MAP standards are established by calculation or based on design data based on an analysis of the organization's water-material balance, taking into account the composition of the source water and the components used in the technology used, taking into account background concentrations.

In all cases, the MAC is set no higher than the background quality level of natural water used for wastewater discharge, and no lower than the maximum permissible concentrations

Consequences impact on the environment

No.	Indicators	categories (SanPiN RUz No. 0318-15)		
		Euro standard	1 category	2 categories
1	BOD_5	25	-	-
2	BOD_{20}	-	3	6
3	COD	125	15	40
4	BB	35	15	thirty
5	Total phosphorus (P)	2	-	-
	Phosphates	-	0.3	1
6	Total nitrogen	15	-	-
	Ammonium nitrogen	-	0.5	2
	Nitrate nitrogen	-	9.1	25
	Nitrite nitrogen	-1	0.02	0.5

Indicators	Euro standard	Degree pollution water (SanPiN RUz No. 0318-15)			
		Acceptable	Moderate	High	Extremely high
BOD_5	25	-	-	-	-
BOD_{20} total, mg O_2 / dm^3 (reservoirs of category 1)	-	<3.0	3.1-5.0	5.1-7.0	>7.0
BOD_{20} total, mg O_2 / dm^3 (reservoirs of category 2)		<6.0	6.1-8.0	8.1-10.0	>10.0
COD mg O_2 / dm^3 (reservoirs of category 1)	125	<15.0	15.1-30.0	30.1-40.0	>40.0
COD mg O_2 / dm^3 ((reservoirs of category 2))		<15.0	15.1-30.0	30.1-40.0	>40.0

Note: unpolluted groundwater has a COD of 4 ml/l O_2, lake water from 5 to 8 ml/l O_2, river waters from 1 to 60 ml/l O_2, swamp waters up to 400 ml/l O_2.
A sharp (sudden) increase in COD **indicates contamination of the source with domestic wastewater** and requires the use of appropriate measures for its purification.

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COMPARATIVE INDICATORS OF WASTEWATER STANDARDS

Directive 91/271/EEC of 26 October 2022

biochemical oxygen demand (BOD)

chemical oxygen demand (COD)

suspended solids

Total nitrogen (N)

Regular phosphorus (P)

SanPiN RUZ No. 0318-15

Sanitary rules of the Republic of Uzbekistan, hygienic standards .
Hygienic and anti-epidemic requirements for water protection in water bodies on the territory of the Republic of Uzbekistan.

Quality of treated wastewater

Watershed of the Chirchik River used for fishing purposes

Design to these standards in accordance with national pollutant regulations :
BOD - 3.3 times ;
COD - 3.3 times ;
P (General) - Leads to an increase **of 30 times**

Indicator	unit	Proposed indicators in accordance with the Directive No. 91/271/ YeEC	" EU - PLUS " proposed indicators after objections from ministries	SanPiN RUZ No. 0318-15 Indications
COD	mg/liter	125	50	15
BOD_5	mg/liter	25	10	3
Suspended solids	mg/liter	35	10	15
Total nitrogen	mg/liter	10	10	9.1
Regular phosphorus	mg/liter	1	1	0.3

State name	BOD_5	COD	Nitrate	Nitrite	Hanging substances
" EU - PLUS "	10	50			10
No. 91/271/ YeEC directive	25	125	10		35
Uzbekistan	3	15	9.1	0.0 2	15
Kazakhstan	3	thirty	45	3.3	thirty
Germany	25	125	15		35
France	25	125	15		35
Moldova	5	7	3	0.06	35
Korea	5	20			10
Russia	3	thirty	9	0.2	10
Belarus	3.1 - 4	thirty	40	0.08	thirty

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RESULTS OF WATER QUALITY MONITORING IN THE CHIRCHIK RIVER

Results of water quality monitoring in the Chirchik River

1) Below the bridge next to the Chorvok reservoir
2) Treated wastewater from a wastewater treatment plant Chirchik is located below the discharge point (next to the New Uzbekistan park).
3) The level of flood waters at the wastewater treatment plant of the city of Yangiel is below the discharge point
4) Downstream from the city of Chinaz (not far from where the Chirchik River flows into the Syr Darya

State of pollution above normal

Suspended substances - 1.6-5.6 times, biochemical oxygen demand
BOD – 1.1-4.5 times, chemical oxygen demand
COD – 1.6-5.6 times,
Ammonium nitrogen – 3.5 – 23.8 times,
Nitrate nitrogen a – b 18.0 – 65 times,
Petroleum products – in 1.2 – 3.2 times,
Phosphates – in 1.6 – 1.7 times,
Chrome - in 18.0 – 65 times

No.	Chemical elements and indicators	Chemical composition of water at the points where water samples were taken					Meyer,
		Below the Chorvok reservoir	Below the Chirchik reservoir	Near the city of Tashkent	Under the city Yangiyul	Under the city Chinaz	MPC
1	Water temperature, ^{0}C	14	15	15.2	15	15.2	-
2	Index pH	6.98	7.76	8.2	7.84	8.14	6.5-8.5
3	Suspended solids, mg/dm ^{3}	eleven	84		24	27	15
4	COD, mgO/dm ^{3}	9.6	84		34	25	15
5	BOD $_5$, mgO/dm ^{3}	2.2	13.6		7.3	3.5	3
6	Ammonium nitrogen, mg/dm ^{3}	unspecified	9.375	0.8	1.406	1.406	0.39
7	Nitrogen nitrate, mg/dm ^{3}	0.25	1.3	0.06	0.36	0.51	0.02
8	Nitrogen nitrite, mg/dm ^{3}	unspecified	0.368		0.228	0.09	9.1
9	Oxygen dissolved in water, mgO/dm ^{3}	10.7	4.8		9.1	9.4	4
10	Chlorides, mg/dm ^{3}	5.2	120.4	50.2	32.7	39.6	300
eleven	Sulfates, mg/dm ^{3}	21.4	92.3	52.8	51.7	52.3	100
12	Mineralization, mg/dm ^{3}	119	729	516	334	372	1000
13	Water hardness, mg-ekv/dm3	2.5	5.15	4.8	6.95	9.4	7
14	Petroleum products, mg/dm ^{3}	0.0013	0.162		0.0629	0.027	0.05
15	Phosphates, mg/dm ^{3}	unspecified	0.5		0.5	0.53	0.3
16	Phenols, mg/dm ^{3}	unspecified	0.007		0.002	0.0015	0.001
17	Copper (C u), mg/dm ^{3}	0.00122	0.00265	0.0012	0.00313	0.00251	0.001
18	Chromium (+6), mg/dm ^{3}	0.001	0.0019		0.002	0.004	0.001
19	Iron (+3), mg/dm ^{3}	0.04	0.4	0.4	0.396	0.183	0.05

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RESULTS OF MONITORING WATER QUALITY OF THE SYRDARYA RIVER

Results of monitoring the water quality of the Syrdarya River

1) Syrdarya region Syrdarya district on the territory of the Water Consumers Association Sobir Rakhimov (next to the Chinoz road bridge)
2) Syrdarya district of Syrdarya region on the territory of the Sholikor Water Consumers Association (next to the railway bridge)

State of pollution above normal

Suspended substances – in 8.0 – 9.6 times,
biochemical oxygen demand
BOD – 1.5 – 2.4 times, chemical oxygen demand
COD – 1.2 – 5.6 times,
Ammonium nitrogen – in 1.7 – 2.0 times,
Nitrate nitrogen - in 70.0 – 97 times,
Petroleum products – in 2.1 – 2.7 times,
Iron - in 2.2 – 2.8 times,
Chrome - in 1.6 – 2.2 times

No.	Chemical elements and indicators	Chemical composition of water at the points where water samples were taken		
		On the territory of the Association of Water Consumers " Sobir Rakhimov"	On the territory of the Sholikor Water Consumers Association	Norm, maximum permissible concentration
1	Water temperature, ^{0}C	17	17	-
2	Index pH	7.54	8.29	6.5-8.5
3	Suspended solids, mg/dm ^{3}	120	146.0	15
4	COD, mgO/dm ^{3}	19.0	21.0	15
5	BOD $_5$, mgO/dm ^{3}	4.7	7.4	3
6	Ammonium nitrogen, mg/dm ^{3}	0.805	0.703	0.39
7	Nitrogen nitrate, mg/dm ^{3}	1.94	1.4	0.02
8	Nitrogen nitrite, mg/dm ^{3}	0.01	0.012	9.1
9	Oxygen dissolved in water, mgO/dm ^{3}	7.5	7.9	4
10	Chlorides, mg/dm ^{3}	88.6	124.1	300
eleven	Sulfates, mg/dm ^{3}	112.8	118.2	100
12	Mineralization, mg/dm ^{3}	119	729	1000
13	Water hardness, mg-ekv/dm3	2.5	5.15	7
14	Petroleum products, mg/dm ^{3}	0.107	0.135	0.05
15	Phosphates, mg/dm ^{3}	unspecified	0.04	0.3
16	Phenols, mg/dm ^{3}	0.0010	0.0014	0.001
17	Copper (C u), mg/dm ^{3}	0.0012	0.0017	0.001
18	Chromium (+6), mg/dm ^{3}	0.0016	0.0022	0.001
19	Iron (+3), mg/dm ^{3}	0.11	0.14	0.05

ENVIRONMENTAL PROBLEMS ASSOCIATED WITH THE IMPLEMENTATION OF PUBLIC-PRIVATE PARTNERSHIP PROJECTS IN TASHKENT AND NAMANGAN FOR MUNICIPAL WASTEWATER TREATMENT BASED ON EURO+ STANDARDS

Chirchik River (Data for 1984 - 2022)

- average water consumption – **231** m3/s ,
- intermediate water resource – **7,285** km3
- maximum water consumption – **1020** m3/s,
- minimum water consumption - **32.1** m3/s

In dry years, water flows can be 32.1 m3 / s or 2.7 million m^3 per day, which is **55 %** flow of the Chirchik River when discharging treated wastewater in a volume of 1.5 million m^3 per day.

Syrdarya River (Data for 1984 - 2022)

- average water consumption – **568** m3/s ,
- intermediate water resource – **36.6** km3
- maximum water consumption – **3340** m3/s,
- minimum water consumption - **150** m3/ s

Water consumption in dry years can be 150 m^3 /s, which is discharged into the Syrdarya River in a state where 57,000 are discharged per day m^3 treated wastewater.

The Republics of Uzbekistan and Kazakhstan became parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (March 17, 1992, Helsinki).

According to the convention, Uzbekistan undertakes to take all appropriate measures to prevent, control and reduce transboundary impacts.

The President of the Republic of Uzbekistan, during his visit to the Republic of Kazakhstan on March 22-23, 2017 , within the framework of the Economic Cooperation Strategy for 2017 - 2019 , signed between the governments of the Republic of Uzbekistan and the Republic of Kazakhstan, created an Interdepartmental Committee for continuous monitoring of the quality of water intake from the Syrdarya River

Analysis of the proposed EU Directive 91/271 EES

According to Article 5 of EU Directive 91/271/EES :

EU states are designated to identify vulnerable areas in accordance with the criteria given in Annex 2 of the directive.

According to Annex 2 of EU Directive 91/271/EES, vulnerable areas are indicated by note m .

4. Alternatively, the requirements for individual treatment plants specified in paragraphs 2 and 3 above should not apply in **sensitive areas** .

The minimum percentage reduction in the total load entering all municipal wastewater treatment plants in the area must be no less than 75% for total phosphorus and no less than 75% for total nitrogen .

5. Discharges from municipal wastewater treatment plants located in the relevant catchment areas of vulnerable areas and contributing to the pollution of these areas are carried out in accordance with the rules established in paragraphs 2, 3 and 4.

In accordance with the relevant provisions of Council Directive **75/440/EES of 16 June 1975** on the quality of surface waters intended for drinking water production in Member States, increased requirements (standards) apply to vulnerable areas in the design of wastewater treatment plants if the concentration nitrates in surface fresh water exceeds structures designed for drinking water.

These requirements apply downstream , where there are water intake structures, transboundary rivers or the sea.

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II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DIRECTIVE
of 21 May 1991
concerning urban waste water treatment
(91/271/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular 130s thereof,

Having regard to the proposal from the Commission (1),

Having regard to the opinion of the European Parliament (2),

Having regard to the opinion of the Economic and Social Committee (3),

Whereas the Council Resolution of 28 June 1988 on the protection of the North Sea and of other waters in the Community (4) invited the Commission to submit proposals for measures required at Community level for the treatment of urban waste water ;

Whereas pollution due to insufficient treatment of waste water in one Member State often influences other Member States' waters ; whereas in accordance with Article 130r, action at Community level is necessary ;

Whereas to prevent the environment from being adversely affected by the disposal of insufficiently-treated urban waste water, there is a general need for secondary treatment of urban waste water ;

Whereas it is necessary in sensitive areas to require more stringent treatment ; whereas in some less sensitive areas a primary treatment could be considered appropriate ;

Whereas industrial waste water entering collecting systems as well as the discharge of waste water and disposal of sludge from urban waste water treatment plants should be subject to general rules or regulations and/or specific authorizations ;

Whereas discharges from certain industrial sectors of biodegradable industrial waste water not entering urban waste water treatment plants before discharge to receiving waters should be subject to appropriate requirements ;

Whereas the recycling of sludge arising from waste water treatment should be encouraged ; whereas the disposal of sludge to surface waters should be phased out ;

Whereas it is necessary to monitor treatment plants, receiving waters and the disposal of sludge to ensure that the environment is protected from the adverse effects of the discharge of waste waters ;

Whereas it is important to ensure that information on the disposal of waste water and sludge is made available to the public in the form of periodic reports ;

Whereas Member States should establish and present to the Commission national programmes for the implementation of this Directive ;

Whereas a Committee should be established to assist the Commission on matters relating to the implementation of this Directive and to its adaptation to technical progress,

HAS ADOPTED THIS DIRECTIVE :

Article 1

This Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors.

(1) OJ No C 1, 4. 1. 1990, p. 20 and OJ No C 287, 15. 11. 1990, p. 11.
(2) OJ No C 260, 15. 10. 1990, p. 185.
(3) OJ No C 168, 10. 7. 1990, p. 36.
(4) OJ No C 209, 9. 8. 1988, p. 3.

4. Alternatively, requirements for individual plants set out in paragraphs 2 and 3 above need not apply in sensitive areas where it can be shown that the minimum percentage of reduction of the overall load entering all urban waste water treatment plants in that area is at least 75% for total phosphorus and at least 75% for total nitrogen.

5. Discharges from urban waste water treatment plants which are located in the relevant catchment areas of sensitive areas and which contribute to the pollution of these areas shall be subject to paragraphs 2, 3 and 4.

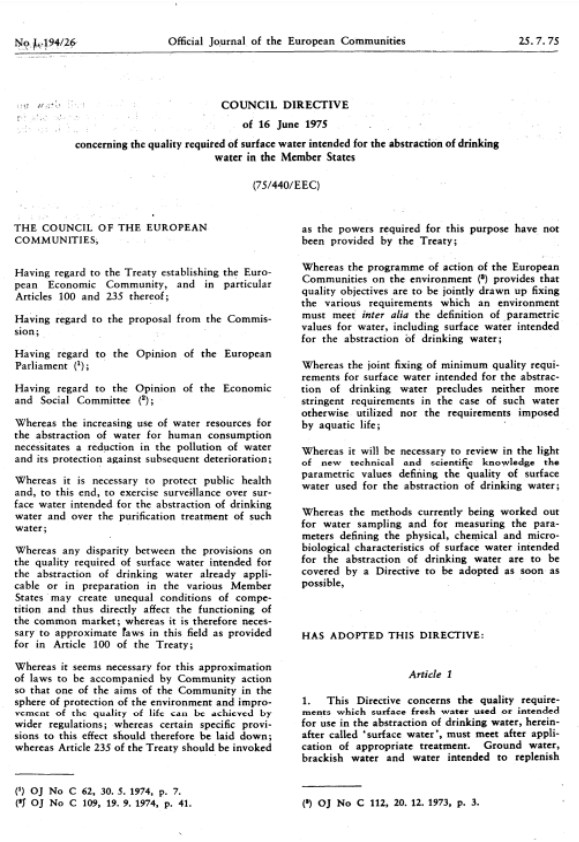
Analysis of Directive 75/440/EES Referring to EU Directive 91 /271/EEC

According to the directive, surface water supply structures intended to receive drinking water are divided into 3 categories (A1, A2, A3) according to their physical, chemical and microbiological properties. The properties of water are listed in Annex 2 to the directive.

Physical, chemical and microbiological properties correspond to category A3 , which cannot be used to obtain drinking water from surface waters that do not meet established standards

According to Appendix 2, permissible standards for regions of categories A1, A2, A3

Name of the norm	BOD_5	COD	Suspended solids
No. 91/271/ E EU (Sentence 1)	25	125	35
" EURO+ " (Offer 2)	10	50	10
Uzbekistan SankvaM 0318-15	3	15	15
No. 75/440/EEC	3	thirty	25



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COUNCIL DIRECTIVE

of 16 June 1975

concerning the quality required of surface water intended for the abstraction of drinking water in the Member States

(75/440/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Articles 100 and 235 thereof;

Having regard to the proposal from the Commission;

Having regard to the Opinion of the European Parliament (1);

Having regard to the Opinion of the Economic and Social Committee (2);

Whereas the increasing use of water resources for the abstraction of water for human consumption necessitates a reduction in the pollution of water and its protection against subsequent deterioration;

Whereas it is necessary to protect public health and, to this end, to exercise surveillance over surface water intended for the abstraction of drinking water and over the purification treatment of such water;

Whereas any disparity between the provisions on the quality required of surface water intended for the abstraction of drinking water already applicable or in preparation in the various Member States may create unequal conditions of competition and thus directly affect the functioning of the common market; whereas it is therefore necessary to approximate laws in this field as provided for in Article 100 of the Treaty;

Whereas it seems necessary for this approximation of laws to be accompanied by Community action so that one of the aims of the Community in the sphere of protection of the environment and improvement of the quality of life can be achieved by wider regulations; whereas certain specific provisions to this effect should therefore be laid down; whereas Article 235 of the Treaty should be invoked as the powers required for this purpose have not been provided by the Treaty;

Whereas the programme of action of the European Communities on the environment (3) provides that quality objectives are to be jointly drawn up fixing the various requirements which an environment must meet *inter alia* the definition of parametric values for water, including surface water intended for the abstraction of drinking water;

Whereas the joint fixing of minimum quality requirements for surface water intended for the abstraction of drinking water precludes neither more stringent requirements in the case of such water otherwise utilized nor the requirements imposed by aquatic life;

Whereas it will be necessary to review in the light of new technical and scientific knowledge the parametric values defining the quality of surface water used for the abstraction of drinking water;

Whereas the methods currently being worked out for water sampling and for measuring the parameters defining the physical, chemical and microbiological characteristics of surface water intended for the abstraction of drinking water are to be covered by a Directive to be adopted as soon as possible,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive concerns the quality requirements which surface fresh water used or intended for use in the abstraction of drinking water, hereinafter called 'surface water', must meet after application of appropriate treatment. Ground water, brackish water and water intended to replenish

(1) OJ No C 62, 30. 5. 1974, p. 7.
(2) OJ No C 109, 19. 9. 1974, p. 41.
(3) OJ No C 112, 20. 12. 1973, p. 3.