THE SOCIALIST REPUBLIC OF VIETNAM

QCVN 24: 2009/BTNMT

National Technical Regulation on industrial wastewater

(This translation is for reference only)

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Foreword

QCVN 24 :2009/BTNMT was prepared by the Committee of National Technical Regulations on atmosphere quality, submitted for approval by the General Department of Environment and the Legal Department and promulgated under the Circular No.25/2009/TT-BTNMT dated on November 16th, 2009 of the Minister of Natural Resources and Environment.

National Technical Regulation on Industrial Wastewater

1. GENERAL REGULATIONS

1.1 Scope of regulation

This Technical regulation specifies maximum allowable value of pollution parameters in industrial wastewater being discharged into the receiving source.

1.2. Subject of application

1.2.1 This Technical regulation is applicable to organizations and individuals related to the operation of industrial wastewater discharge into the receiving source.

1.2.2. The wastewater of some industries and areas of particular activities is specified separately.

1.3. Explanation of terms

In this Regulation, the following terms can be expressed as follows:

1.3.1. Industrial waste water is solution discharged from the production facilities, processing, sales and industrial service into wastewater receiving source.

1.3.2. Kq is the flow/ capacity coefficient of the wastewater receiving source with the flow of rivers, streams, canals, ditches, slit, slit or capacity of the lakes, ponds and marshes.

1.3.3. Kf is the coefficient of waste source flow to the flow total of wastewater of production facilities, processing, trading and industrial service discharging into the wastewater receiving source.

1.3.4. Wastewater receiving source is surface water source or coastal waters, which uses identified where industrial wastewater is discharged into.

2.TECHNICAL REGULATIONS

2.1. Maximum allowable values of pollution parameters in industrial wastewater are caculated as follows:

$$C_{max} = C \times K_q \times K_f$$

In which:

- C_{max} is maximum allowable value of pollution parameters in industrial wasterwater , is caculated by miligrams per litter (mg/l);

- C is value of pollution parameter in industrial wastewater defined in section 2.3 ;

- K_q is the flow/ capacity coefficient of wastewater receiving source defined in section 2.4;

- K_f is the flow coefficient of waste source defined in section 2.4;

2.2 Apply maximum allowable value C_{max} = C (not apply coefficient K_q and K_f) for the parameters: temperature, pH, odor, color, coliform, gross alpha activity, gross beta activity

2.3. C values of the pollution parameters in industrial wastewater are specified in Table 1

Table 1: C values of the pollution parameters in industrial wastewater

Serial number	Parameter	Unit	Value of C	
			A	B
1	Temperature	^{0}C	40	40
2	pH	-	6-9	5.5-9
3	Odor	-	Not upset	Not upset
4	Color (Co-Pt at pH = 7)	-	20	70
5	BOD_5 (20^0C)	mg/l	30	50
6	COD	mg/l	50	100
7	Suspended solid	mg/l	50	100
8	Arsenic	mg/l	0.05	0.1
9	Mercury	mg/l	0.005	0.01
10	Lead	mg/l	0.1	0,5
11	Cadimi	mg/l	0.005	0.01
12	Chrome (VI)	mg/l	0.05	0.1
13	Chrome (III)	mg/l	0.2	1
14	Copper	mg/l	2	2
15	Zinc	mg/l	3	3
16	Nickel	mg/l	0.2	0.5
17	Mangan	mg/l	0.5	1
18	Iron	mg/l	1	5
19	Tin	mg/l	0.2	1
20	Cyanide	mg/l	0.07	0.1
21	Phenol	mg/l	0.1	0.5
22	Mineral oil	mg/l	5	5
23	Animal vegetable oil	mg/l	10	20
24	Residual chloride	mg/l	1	2
25	PCB	mg/l	0.003	0.01
26	Organophosphate Pesticide	mg/l	0.3	1

27	Organochlorine Pesticide	mg/l	0.1	0.1
28	Sulfide	mg/l	0.2	0.5
29	Fluoride	mg/l	5	10
30	Chloride	mg/l	500	600
31	Ammonium (determined by nitrogen)	mg/l	5	10
32	Nitrogen total	mg/l	15	30
33	Phosphorous total	mg/l	4	6
34	Coliform	MPN/100ml	3000	5000
35	Gross alpha activity	Bq/l	0.1	0.1
36	Gross beta activity	Bq/l	1.0	1.0

In which:

Column A specifies C value of the pollution parameter in the industrial wastewater being discharged into the receiving water source which used for domestic water supply purposes;

Column B specifies C value of the pollution parameter in the industrial wastewater being discharged into the receiving water source which not used for domestic water supply purposes

- Chloride parameter isn't applied to the receiving source is salty and brackish water.

2.4. The flow / capacity coefficient of wastewater receiving sources of Kq is defined as follows:

2.4.1. Kq coefficient corresponding to the flow of the wastewater receiving source is rivers, streams, canals, ditches, slit, defined in Table 2 below:

Table 2: Kq Coefficient of wastewater receiving sources are rivers, streams, canals, ditches, slit

Stream Flow of the wastewater receiving source (Q) **Unit: cubic meter/ second (m^3/s)**	**Kq Coefficient**
$Q \leq 50$	0.9
$50 < Q \leq 200$	1
$200 < Q \leq 1000$	1.1
$Q > 1000$	1.2

Q is calculated as the average value of the flow of rivers, streams, canals, ditches, slit, receiving the wastewater in the 03 driest months in 03 consecutive years (data of Hydrometeorology agency). In cases, the rivers, streams, canals, ditches, slit without data on the flow rate, the applied value Kq = 0.9 or

the Department of Natural Resources and Environment designate suitability unit to determine the average flow of the 03 driest months is a basis to select coefficient of Kq.

2.4.2. Kq coefficient corresponding to capacity of the wastewater receiving source is water in lakes, ponds, marshes are defined in Table 3 below:

Table 3: Kq coefficient of lakes, ponds, marshes

Capacity of wastewater receiving source (V) **Unit: cubic meter (m^3)**	**Kq coefficient**
$V \leq 10 \times 10^6$	0.6
$10 \times 10^6 < V \leq 100 \times 10^6$	0.8
$V > 100 \times 10^6$	1.0

V is calculated as the average capacity of lakes, ponds, marshes receiving the wastewater in the 03 driest months in 03 consecutive years (data of Hydrometeorology agency). In cases, the rivers, streams, canals, ditches, slit without data on the flow rate, the applied value of Kq = 0.6 or the Department of Natural Resources and Environment designate suitability unit to determine the average flow of the 03 driest months is a basis to select Kq coefficient.

2.4.3. For wastewater receiving sources are coastal waters not used for the purpose of protection of aquatic, sports or underwater recreation, Kq coefficient = 1.3. For the wastewater receiving sources are coastal waters for the purpose of protection of aquatic, sports and underwater recreation, Kq coefficient = 1.

2.5. Kf flow coefficient of waste source is defined in Table 4 below:

Table 4: Kf flow coefficient of waste source

Waste source flow (F) **Unit: cubic meter/day (m^3/24h)**	**K_f Coeffient**
$F \leq 50$	1.2
$50 < F \leq 500$	1.1
$500 < F \leq 5000$	1.0
$F > 5000$	0.9

2.6. In cases, waste water is contained in waste water lake in the campus of wastewater generated facilities for irrigation purposes, the water in the lake must comply with national standards TCVN 6773:2000 - Water quality. Water quality guidelines for irrigation

3. DETERMINATION METHOD

3.1. Metermination methods for the value of pollution parameters in the industrial wastewater comply with national standards as follow:

- TCVN 4557-88, Waste water. Determination of temperature.
- TCVN 6492:1999 (ISO 10523:1994), Water quality. Determination of pH
- TCVN 6185:2008 (ISO 7887:1994), Water quality. Examination and determination of colour
- TCVN 6001-1:2008 (ISO 5815-1:2003), Water quality. Determination of biochemical oxygen demand after n days (BODn). Part 1: Dilution and seeding method with allylthiourea addition
- TCVN 6491:1999 (ISO 6060:1989), Water quality. Determination of the chemical oxigen demand
- TCVN 6625:2000 (ISO 11923:1997), Water quality. Determination suspended solids by filtration through glass-fibre filters
- TCVN 6626:2000 (ISO 11969:1996), Water quality. Determination arsenic. Atomic absorption spectrometric method (hydride technique)
- TCVN 7877:2008 (ISO 5666:1999), Water quality. Determination of mercury.
- TCVN 6193:1996 (ISO 8288:1986), Water quality. Determination of cobalt nickel, copper, zinc, cadmium, and lead. Flame atomic absorption spectrometric methods
- TCVN 6002:1995 (ISO 6333-1986) Water quality. Determination of manganese. Formaldoxime spectrometric method
- TCVN 6222:2008 (ISO 9174:1998), Water quality. Determination of chromium. Atomic absorption spectrometric methods
- TCVN 6177:1996 (ISO 6332-1988) Water quality. Determination of iron. Spectrometric method using 1,10-phenantrolin
- TCVN 6181:1996 (ISO 6703/1:1984), Water quality. Determination of total cyanide
- TCVN 6216:1996 (ISO 6439-1990) Water quality. Determination of phenol index. 4-aminoantipyrine spectrometric methods after distillation
- TCVN 5070:1995 Water quality. Weight method for determination of oil and oil product
- Determination method total of vegetable oil made by US EPA Method 1664 Extraction and gravimetry (Oil and grease and total petroleum hydrocarbons)
- TCVN 6225-3:1996 Water quality. Determination of free chlorine and total chlorine. Part 3: Iodometric titration method for the determination of total chlorine
- TCVN 4567:1988 Waste water. Determination of sulfide and sulfate contents
- TCVN 6494:1999 (ISO 10304-1:1992), Water quality. Determination of dissolved fluoride,

chloride, nitrite, orthophosphate, bromide, nitrate and sul fate ions, using liquid chromatography of ions. Part 1: Method for water with low contamination

- TCVN 5988:1995 Water quality. Determination of aminonium. Distillation and titration method
- TCVN 6638:2000 Water quality. Determination of nitrogen. Catalytic digestion after reduction with devarda's alloy
- TCVN 6187-1:2009 (ISO 9308-1:2000), Water quality. Detection and enumeration of Escherichia coli and coliform bacteria. Part 1: Membrane filtration method
- TCVN 6053:1995 (ISO 9696:1992), Water quality. Measurement of gross alpha activity in non-saline water. Thick source method
- TCVN 6219:1995 (ISO 9697:1992), Water quality. Measurement of gross beta activity in non-saline water
- TCVN 6658:2000 (ISO 11083:1994), Water quality. Determination of chromium (VI). Spectrometric method using 1,5-diphenylcarbazide.

3.2. When there is no national standard for determining the values of pollution parameters in industrial wastewater specified in this regulation, applying to international standards with accuracy equal to or higher.

4. ORGANIZATION OF IMPLEMENTATION

4.1. This regulation is replaced the application of Vietnam National Standard TCVN 5945:2005 - Industrial waste water - Discharge standards which is issued enclosed with Decision No. 22/2006 /QD-BTNMT dated December 18th, 2006 of the Minister of Natural Resources and Environment on the obligatory application of Vietnam standards on environment

4.2. State management agency on environment shall take responsibility to guide, inspect and supervise the implementation of this regulation.

4.3 In cases, the national standards for determining methods cited in Section 3.1 of this regulation are amended, supplemented or replaced, then apply the new standard.