

No.: 16/2008/QD-BTNMT

Ha Noi, December 31, 2008

DECISION

PROMULGATION OF NATIONAL TECHNICAL REGULATION ON ENVIRONMENT

MINISTER OF NATURAL RESOURCES AND ENVIRONMENT

Pursuant to the Law on Standards and Technical Regulations dated June 29, 2006;

Pursuant to Decree No. 127/2007/ND-CP dated August 1, 2007 of the Government detailing the implementation of a number of articles of the Law on Standards and Technical Regulation;

Pursuant to Decree No. 25/2008/ND-CP dated March 4, 2008 of the Government defining the functions, tasks, powers and organizational structure of the Ministry of Natural Resources and Environment;

Theo đề nghị của Tổng cục trưởng Tổng cục Môi trường và Vụ trưởng Vụ Pháp chế,

At the proposal of the General Director of the General Department of the Environment and Director of the Legal Department,

DECIDES

Article 1. Issuing together with this Decision 08 national technical Regulation on the environment as following:

1. QCVN 08:2008 / BTNMT - National technical Regulation on surface water quality;
2. QCVN 09:2008/BTNMT - National technical Regulation on underground water quality;
3. QCVN 10:2008/BTNMT - National Technical Regulation on coastal water quality;
4. QCVN 11:2008/BTNMT - National technical Regulation on effluent of aquatic product processing industry;
5. QCVN 12:2008/BTNMT - National technical regulation on the effluent of pulp and paper mills
6. QCVN 13:2008/BTNMT - National technical regulation on the effluent of textile industry.
7. QCVN 14:2008/BTNMT - National technical regulation on domestic wastewater
8. QCVN 15:2008/BTNMT - National Technical Regulation on pesticide residues in the soil.

Article 2. This Decision takes effect 15 days from the date of publication in the Official Gazette

Ministers, Heads of ministerial-level agencies, the heads of the agencies directly under the Government, Chairmen of the People's Committees of centrally-affiliated provinces and cities and other relevant organizations and individuals rare liable to execute this Decision.

**PP. MINISTER
DEPUTY MINISTER**

Tran Hong Ha

QCVN 08 : 2008/BTNMT NATIONAL TECHNICAL REGULATION ON SURFACE WATER QUALITY

Introduction

QCVN 08:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QD-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON SURFACE WATER QUALITY

1. GENERAL PROVISIONS

1.1. Scope of application

1.1.1. This regulation specifies the limit value of surface water quality parameters.

1.1.2. This regulation applies to assess and control the quality of surface water source, as a basis for the protection and use of water appropriately.

1.2. Explanation of terms

Surface water referred to in this Regulation is water flowing through or stagnate on the ground, streams, canals, ditches, gullies, arroyos, lakes, ponds, swamps, ...

2. TECHNICAL REGULATIONS

Limit values of the surface water quality parameters are specified in Table 1.

Table 1. Limit values of the surface water quality parameters

No.	Parameters	Unit	Limit values			
			A		B	
			A1	A2	B1	B2
1	pH		6-8,5	6-8,5	5,5-9	5,5-9
2	Dissolved oxygen (DO)	mg/l	≥ 6	≥ 5	≥ 4	≥ 2
3	Total suspended solidss (TSS)	mg/l	20	30	50	100
4	COD	mg/l	10	15	30	50
5	BOD ₅ (20°C)	mg/l	4	6	15	25
6	Ammonium (NH ₄ ⁺) (as N)	mg/l	0,1	0,2	0,5	1
7	Clorua Chloride (Cl ⁻)	mg/l	250	400	600	-
8	Florua Fluoride (F ⁻)	mg/l	1	1,5	1,5	2
9	Nitrite (NO ₂ ⁻) (as N)	mg/l	0,01	0,02	0,04	0,05
10	Nitrate (NO ₃ ⁻) (as N)	mg/l	2	5	10	15
11	Phosphate (PO ₄ ³⁻) (as P)	mg/l	0,1	0,2	0,3	0,5
12	Xianua Cyanide (CN ⁻)	mg/l	0,005	0,01	0,02	0,02
13	Asen (As)	mg/l	0,01	0,02	0,05	0,1
14	Cadimi (Cd)	mg/l	0,005	0,005	0,01	0,01
15	Lead (Pb)	mg/l	0,02	0,02	0,05	0,05
16	Chrom III (Cr ³⁺)	mg/l	0,05	0,1	0,5	1
17	Chrom VI (Cr ⁶⁺)	mg/l	0,01	0,02	0,04	0,05
18	Copper (Cu)	mg/l	0,1	0,2	0,5	1
19	Zinc (Zn)	mg/l	0,5	1,0	1,5	2
20	Nickel (Ni)	mg/l	0,1	0,1	0,1	0,1
21	Iron (Fe)	mg/l	0,5	1	1,5	2
22	Mercury (Hg)	mg/l	0,001	0,001	0,001	0,002
23	Surface-active substances	mg/l	0,1	0,2	0,4	0,5
24	Total oil & grease	mg/l	0,01	0,02	0,1	0,3
25	Phenon (Total)	mg/l	0,005	0,005	0,01	0,02
26	Organic chlorine pesticide Aldrin + Dieldrin	µg/l	0,002	0,004	0,008	0,01

	Endrin	µg/l	0,01	0,012	0,014	0,02
	BHC	µg/l	0,05	0,1	0,13	0,015
	DDT	µg/l	0,001	0,002	0,004	0,005
	Endosulfan(Thiodan)	µg/l	0,005	0,01	0,01	0,02
	Lindan	µg/l	0,3	0,35	0,38	0,4
	Chlordane	µg/l	0,01	0,02	0,02	0,03
	Heptachlor	µg/l	0,01	0,02	0,02	0,05
27	Organic phosphorus pesticide					
	Parathion	µg/l	0,1	0,2	0,4	0,5
	Malathion	µg/l	0,1	0,32	0,32	0,4
28	Herbicide					
	2,4D	µg/l	100	200	450	500
	2,4,5T	µg/l	80	100	160	200
	Paraquat	µg/l	900	1200	1800	2000
29	Total radioactivity α	Bq/l	0,1	0,1	0,1	0,1
30	Total radioactivity β	Bq/l	1,0	1,0	1,0	1,0
31	E.coli	MPN/ 100ml	20	50	100	200
32	Coliform	MPN/ 100ml	2500	5000	7500	10000

Note: The classification of surface water to assess and control the quality of water for various purposes of water use:

A1 - Good use for the purpose of domestic water supply and other purposes, such as type A2, B1 and B2.

A2 – Used for the purpose of domestic water supply but applying the appropriate treatment technology; aquatic plant and animal conservation, or purposes of use as type B1 and B2.

B1 - Use for irrigation and drainage purpose or other purposes with similar water quality requirements or other purposes of use such as type B2.

B2 – Water transportation and other purposes with low water quality requirements.

3. METHOD FOR DETERMINATION

3.1. Sampling for surface water quality monitoring conducted under the guidance of national standards:

- TCVN 5992:1995 (ISO 5667-2: 1991) - Water quality - Sampling. Guidance on sampling techniques.
- TCVN 5993:1995 (ISO 5667-3: 1985) - Water quality - Sampling. Guidance on storage and handling of samples.
- TCVN 5994:1995 (ISO 5667-4: 1987) - Water quality - Sampling. Guidance on sampling in natural and artificial lakes and ponds.
- TCVN 5996:1995 (ISO 5667-6: 1990) - Water quality - Sampling. Guidance on sampling in rivers and streams.

3.2. Analytical methods to determine the parameters of surface water quality shall comply with the guidance of the national standards or corresponding analytical standards of international organizations:

- TCVN 6492-1999 (ISO 10523-1994) - Water quality - Determination of pH.
- TCVN 5499-1995. Water quality - Determination of dissolved oxygen - Winkler method.
- TCVN 6625-2000 (ISO 11923-1997) - Determination of suspended solids by filtration through glass-fibre filters
- TCVN 6001-1995 (ISO 5815-1989) - Water quality - Determination of biochemical oxygen demand after 5 days (BOD 5) - Dilution and seeding method.
- TCVN 6491-1999 (ISO 6060-1989) - Water quality - Determination of the chemical oxygen demand.

- TCVN 6494-1999 - Water quality - Determination of ions of fluoride, chloride, nitrite, Orthophosphat, bromide, nitrate and soluble sulphate in liquid ion chromatography.
- TCVN 6194-1996 (ISO 9297-1989) - Water quality - Determination of chloride. The method of titration of nitrate silver with chromate indicator (MO method).
- TCVN 6195-1996 (ISO 10359-1-1992) - Water quality - Determination of fluoride -Electrochemical probe method for potable and lightly polluted water
- TCVN 6178-1996 (ISO 6777-1984) - Water quality - Determination of nitrite. Molecular absorption spectrometric method.
- TCVN 6180-1996 (ISO 7890-3-1988) - Water quality - Spectrometric method using sulfosalicylic acid
- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium - Distillation and titration method.
- TCVN 6181-1996 (ISO 6703-1-1984) - Water quality - Determination of total cyanide.
- TCVN 6336-1998 (ASTM D 2330-1988) - Test method for Methylene Blue Active Substances
- TCVN 5991-1995 (ISO 5666-3-1984) - Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Method after digestion with bromine
- TCVN 6002-1995 (ISO 6333-1986) - Water quality - Determination of manganese - Formaldoxime spectrometric method
- TCVN 6053-1995 (ISO 9696-1992) - Water quality - Measurement of gross alpha activity in non-saline water - Thick source method
- TCVN 6177-1996 (ISO 6332-1988) - Water quality - Determination of iron - Spectrometric method using 1,10 - phenanthroline
- TCVN 6193-1996 (ISO 8288-1986) - Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods
- TCVN 6197-1996 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometry
- TCVN 6222-1996 (ISO 9174-1990) - Water quality. Methods for the determination of total chromium by atomic absorption spectrometry
- TCVN 6626-2000 (ISO 11969-1996) - Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)
- 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 products
- 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.
- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method

The parameters specified in this Regulation not having national standards guiding the analytical method shall apply the corresponding analytical standards of the international organizations

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5942:1995 - Water quality - surface water quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QĐ-BKHCMNT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 09 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON UNDERGROUND WATER QUALITY

Introduction

QCVN 09:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QĐ-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON UNDERGROUND WATER QUALITY

1. GENERAL PROVISIONS

1.1. Scope of application

1.1.1. This regulation specifies the limit value of underground water quality parameters.

1.1.2. This regulation applies to assess and control the quality of underground water source, as a basis for the orientation of various purposes of use.

1.2. Explanation of terms

Underground water in this Regulation is the water in the soil and rocks underground.

2. TECHNICAL REGULATIONS

Limit values of the underground water quality parameters are specified in Table 1.

Table 1: Limit values of the underground water quality parameters

No.	Parameters	Unit	Limit values
1	pH	-	5,5 - 8,5
2	Hardness (as CaCO ₃)	mg/l	500
3	Total solids	mg/l	1500
4	COD (KMnO ₄)	mg/l	4
5	Ammonium (as N)	mg/l	0,1
6	Chloride (Cl ⁻)	mg/l	250
7	Fluoride (F ⁻)	mg/l	1,0
8	Nitrite (NO ₂ ⁻) (as N)	mg/l	1,0
9	Nitrate (NO ₃ ⁻) (as N)	mg/l	15
10	Sulphate (SO ₄ ²⁻)	mg/l	400
11	Cyanide (CN ⁻)	mg/l	0,01
12	Phenol	mg/l	0,001
13	Arsenic (As)	mg/l	0,05
14	Cadmium (Cd)	mg/l	0,005
15	Lead (Pb)	mg/l	0,01
16	Chromium VI (Cr ⁶⁺)	mg/l	0,05
17	Copper (Cu)	mg/l	1,0
18	Zinc (Zn)	mg/l	3,0
19	Manganese (Mn)	mg/l	0,5
20	Mercury (Hg)	mg/l	0,001
21	Iron (Fe)	mg/l	5
22	Selenium (Se)	mg/l	0,01
23	Total radioactivity α	Bq/l	0,1
24	Total radioactivity β	Bq/l	1,0
25	E.Coli	MPN/100ml	Not found
26	Coliform	MPN/100ml	3

3. METHOD FOR DETERMINATION

3.1. Sampling for underground water quality monitoring conducted under the guidance of national standards:

- TCVN 5992:1995 (ISO 5667-2: 1991) - Water quality - Sampling - Guidance on sampling techniques
- TCVN 5993:1995 (ISO 5667-3: 1985) - Water quality -sampling -Guidance on the preservation and handling of samples
- TCVN 6000:1995 (ISO 5667-11: 1992) - Water quality -sampling -Guidance on the sampling of groundwaters

3.2. Analytical methods to determine the parameters of underground water quality shall comply with the guidance of the national standards or corresponding analytical standards of international organizations:

- TCVN 6492-1999 (ISO 10523-1994) - Water quality - Determination of pH
- TCVN 2672-78 – Potable water – Method for determining the general hardness
- TCVN 6178-1996 (ISO 6777-1984) - Water quality -Determination of nitrite - Molecular absorption spectrometric method
- TCVN 6180-1996 (ISO 7890-3-1988) - Water quality - Determination of nitrate - Spectrometric method using sulfosalicylic acid
- TCVN 6200-1996 (ISO 9280-1990) - Water quality - Determination of sulphate - Gravimetric method using barium chloride
- TCVN 6181-1996 (ISO 6703-1-1984) Water quality - Determination of total cyanide
- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium -Distillation and titration method
- TCVN 6194-1996 (ISO 9297-1989) Water quality -Determination of chloride - Silver nitrate titration with chromate indicator (Mohr's method)
- TCVN 6195-1996 (ISO 10359-1-1992) - Water quality - Determination of fluoride - Part 1: Electrochemical probe method for potable and lightly polluted water
- TCVN 6216-1996 (ISO 6439-1990) - Water quality - Determination of phenol index -4- Aminoantipyrine spectrometric methods after distillation
- TCVN 6626-2000 (ISO 11969-1996) - Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)
- TCVN 6193-1996 (ISO 8288-1986) - Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods
- TCVN 6197-1996 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometry
- TCVN 6002-1995 (ISO 6333-1986) - Water quality - Determination of manganese - Formaldoxime spectrometric method
- TCVN 6177-1996 (ISO 6332-1988) - Water quality - Determination of iron - Spectrometric method using 1,10 - phenanthroline
- TCVN 6183-1996 (ISO 9965-1993) -Water quality - Determination of selenium - Atomic absorption spectrometric method (hydride technique)
- TCVN 59910-1995 (ISO 5666-3-1984) Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Method after digestion with bromine
- TCVN 6222-1996 (ISO 9174-1990) - Water quality -Determination of chromium - Atomic absorption spectrometric methods
- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method

The parameters specified in this Regulation not having national standards guiding the analytical method shall apply the corresponding analytical standards of the international organizations

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5944:1995- Water quality - underground water quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QĐ-BKHCHNT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new document

QCVN 10 : 2008/BTNMT
NATIONAL TECHNICAL REGULATION
ON COASTAL WATER QUALITY

Introduction

QCVN 10:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QĐ-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION
ON COASTAL WATER QUALITY

1. GENERAL PROVISIONS

1.1. Scope of adjustment

1.1.1. This regulation specifies the limit value of coastal water quality parameters.

1.1.2. This regulation applies to assess and control the quality of coastal water source for the purposes of water sports and entertainment, aquaculture and other purposes.

1.2. Explanation of terms

Coastal seawater and in the bays, harbors, and places within 03 nautical miles away from shore (about 5.5 km).

2. TECHNICAL REGULATIONS

Limit values of the coastal seawater quality parameters are specified in Table 1.

Table 1: Limit values of the coastal seawater quality parameters

No.	Parameters	Unit	Limit values		
			Aquacultural and aquatic conservation area	Beach and water sports	Other places
1	Temperature	°C	30	30	-
2	pH		6,5-8,5	6,5-8,5	6,5-8,5
3	Total suspended solidss (TSS)	mg/l	50	50	-
4	Dissolved oxygen (DO)	mg/l	≥ 5	≥ 4	-
5	COD (KMnO ₄)	mg/l	3	4	-
6	Ammonium (NH ₄ ⁺) (N)	mg/l	0,1	0,5	0,5
7	Fluoride (F ⁻)	mg/l	1,5	1,5	1,5
8	Sulfide (S ₂ ⁻)	mg/l	0,005	0,01	0,01
9	Cyanide (CN ⁻)	mg/l	0,005	0,005	0,01
10	Asenic (As)	mg/l	0,01	0,04	0,05
11	Cadmium (Cd)	mg/l	0,005	0,005	0,005
12	Lead (Pb)	mg/l	0,05	0,02	0,1
13	Chromium III (Cr ³⁺)	mg/l	0,1	0,1	0,2
14	Chromium VI (Cr ⁶⁺)	mg/l	0,02	0,05	0,05
15	Copper (Cu)	mg/l	0,03	0,5	1
16	Zinc (Zn)	mg/l	0,05	1,0	2,0

17	Manganese (Mn)	mg/l	0,1	0,1	0,1
18	Iron (Fe)	mg/l	0,1	0,1	0,3
19	Mercury (Hg)	mg/l	0,001	0,002	0,005
20	Oil and grease scum	mg/l	None	None	-
21	Mineral oil and grease	mg/l	Not found	0,1	0,2
22	Total phenol	mg/l	0,001	0,001	0,002
23	Organic chlorine pesticide				
	Aldrin + Dieldrin	µg/l	0,008	0,008	-
	Endrin	µg/l	0,014	0,014	-
	B.H.C	µg/l	0,13	0,13	-
	DDT	µg/l	0,004	0,004	-
	Endosulfan	µg/l	0,01	0,01	-
	Lindan	µg/l	0,38	0,38	-
	Clordan	µg/l	0,02	0,02	-
	Heptachlor	µg/l	0,06	0,06	-
24	Organic phosphorus pesticide				
	Parathion	µg/l	0,40	0,40	-
	Malathion	µg/l	0,32	0,32	-
25	Herbicide				
	2,4D	mg/l	0,45	0,45	-
	2,4,5T	mg/l	0,16	0,16	-
	Paraquat	mg/l	1,80	1,80	-
26	Total radioactivity α	Bq/l	0,1	0,1	0,1
27	Total radioactivity β	Bq/l	1,0	1,0	1,0
28	Coliform	MPN/ 100ml	1000	1000	1000

Note: The sign (-) is not specified.

3. METHOD FOR DETERMINATION

3.1. Sampling for coastal water quality monitoring conducted under the guidance of national standards:

- TCVN 5992:1995 (ISO 5667-2: 1991) - Water quality - Sampling - Guidance on sampling techniques
- TCVN 5993:1995 (ISO 5667-3: 1985) - Water quality - Sampling - Guidance on the preservation and handling of samples
- TCVN 5998:1995 (ISO 5667-9: 1987) - Water quality - Sampling - Guidance on the sampling of seawater.

3.2. Analytical methods to determine the parameters of coastal seawater quality shall comply with the guidance of the national standards or corresponding analytical standards of international organizations:

- TCVN 4557-1988 – Water quality – Method for determination of temperature
- TCVN 6492-1999 (ISO 10523-1994) - Water quality – Determination of pH.
- TCVN 5499-1995. Water quality - Determination of dissolved oxygen - Winkler method.
- TCVN 6625-2000 (ISO 11923-1997) - Water quality - Determination of suspended solid by filtration through glass fiber filter.
- TCVN 6491-1999 (ISO 6060-1989) - Water quality - Determination of the chemical oxygen demand.
- TCVN 6494-1999 - Water quality - Determination of ions of fluoride, chloride, nitrite, Orthophosphat, bromide, nitrate and dissolved sulphate by ion liquid chromatography.

- TCVN 6195-1996 (ISO 10359-1-1992) - Water quality - Determination of fluoride - Electrochemical probe method for potable and lightly polluted water

- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium - Distillation and titration method.

- TCVN 6181-1996 (ISO 6703-1-1984) - Water quality - Determination of total cyanide.

- TCVN 5991-1995 (ISO 5666-3-1984) - Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Method after digestion with bromine

- TCVN 6002-1995 (ISO 6333-1986) - Water quality - Determination of manganese - Formaldoxime spectrometric method

TCVN 6177-1996 (ISO 6332-1988) - Water quality - Determination of iron - Spectrometric method using 1,10 - phenanthroline

- TCVN 6193-1996 (ISO 8288-1986) - Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods

- TCVN 6197-1996 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometry.

- TCVN 6222-1996 (ISO 9174-1990) - Water quality. Methods for the determination of total chromium by atomic absorption spectrometry

- TCVN 6626-2000 (ISO 11969-1996) - Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)

- 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 products- 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.

- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli -Part 1: Membrane filtration method

The parameters specified in this Regulation not having national standards guiding the analytical method shall apply the corresponding analytical standards of the international organizations.

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5943:1995 - Water quality - coastal water quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QĐ-BKHCMNT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 11 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON THE EFFLUENT OF AQUATIC PRODUCT PROCESSING INDUSTRY

Introduction

QCVN 11:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QĐ-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON THE EFFLUENT OF AQUATIC PRODUCT PROCESSING INDUSTRY

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This regulation specifies the permissible maximum value of the pollution parameters in the effluent of aquatic product processing industry as being discharged into the environment.

1.2. Subjects of application

This Regulation applies to the organizations and individuals related to the discharge of effluent of aquatic product processing industry to the environment.

1.3. Explanation of terms

In this regulation, the terms below shall be construed as follows:

1.3.1. Effluent of aquatic product processing industry is liquid discharged from factories and establishments using technological processes to produce aquatic products such as: frozen, canned, dried, fish sauce, fish meal, agar ...

1.3.2. K_q coefficient of flow / capacity of water resources receiving effluent is the coefficient taken into the possibility of dilution of the water resources receiving the effluent, corresponding to the flow of rivers, streams, canals, ditches, gullies, arroyos and capacity of the lakes, ponds and swamps.

1.3.3. The K_f coefficient of effluent resource flow is the coefficient taking into account the total effluent of aquatic product processing establishment, corresponding to the flow of effluent being discharged into the water resources receiving effluent.

1.3.4. The water resources receiving effluent is surface water or coastal water, with specified purpose of use and is the place where the effluent of aquatic product processing establishment is discharged into.

1.4. Reference standards

- TCVN 5945:2005 - Water quality - industrial effluent - discharge standards.
- TCVN 7648:2007 - Water quality - effluent standard of aquatic product processing industry.

2. TECHNICAL REGULATIONS

2.1. Permissible maximum value of pollution parameters in effluent of aquatic product processing industry.

Permissible maximum value of pollution parameters in effluent of aquatic product processing industry as being discharged into the water resource receiving effluent must not exceed C_{max} value calculated as follows:

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

In which:

C_{max} is the permissible maximum concentration of pollution parameter in effluent of aquatic product processing industry when being discharged into the water resource receiving effluent calculated by milligram per liter of wastewater (mg / l);

C is the concentration values of pollution parameters specified in Section 2.2.

K_q is the coefficient of flow / capacity of water resource receiving effluent specified in Section 2.3.

K_f is the coefficient of effluent resource flow specified in Section 2.4.

Do not apply the formula for calculating the permissible maximum concentration in effluent for parameter pH and total coliforms.

2.2. C value of pollution parameters as a basis for calculating the permissible maximum value

C Value of pollution parameters as a basis for calculating the permissible maximum C_{max} value in effluent of aquatic product processing industry when being discharged into the water resources receiving effluent specified in Table 1.

Table 1: Value of pollution parameters as a basis for calculating the permissible maximum value

No.	Parameters	Unit	C value	
			A	B
1	pH	-	6 - 9	5,5 - 9
2	BOD ₅ at 20°C	mg/l	30	50
3	COD	mg/l	50	80
4	Total suspended solids(TSS)	mg/l	50	100
5	Ammonium (as N)	mg/l	10	20

6	Total Nitrogen	mg/l	30	60
7	Total animal grease and vegetable oil	mg/l	10	20
8	Residual chlorine	mg/l	1	2
9	Total coliforms	MPN/ 100ml	3.000	5.000

In which:

- Column A specifies C value of pollution parameter as a basis for calculation of the permissible maximum value in effluent of aquatic product processing industry when being discharged into the water resources used for the purposes of domestic water supply (with water quality corresponding to column A1 and A2 of the national technical Regulation on surface water quality).

- Column B specifies C value of parameters as a basis for calculation of permissible maximum value in effluent of aquatic product processing industry when being discharged into water resources not used for domestic water supply (with quality corresponding to column B1 and B2 of the national technical Regulation on surface water or coastal seawater quality)

In addition to 09 parameters specified in Table 1, depending on the requirements and purposes of pollution control, the C value of other pollution parameters applied as provided for in column A or column B of Table 1 of National Standard TCVN 5945:2005 - Water quality - industrial effluent - discharge standards.

2.3. Value of Kq coefficient of flow / capacity of water resource receiving effluent

2.3.1. Value of Kq coefficient for the water resource receiving effluent of aquatic product processing industry is rivers, streams, canals, ditches, gullies, arroyos is specified in Table 2 below:

Table 2. Value of Kq coefficient corresponding to the current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent

Current flow of water resource receiving effluent (Q) Unit: cubic meter/second (m ³ /s)	Kq coefficient value
Q ≤ 50	0,9
50 < Q ≤ 200	1,0
200 < Q ≤ 1000	1,1
Q > 1000	1,2

Q is calculated based on the average value of current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent of the 03 driest months in 03 consecutive years (data of the National Hydrometeorology). In case the rivers, streams, canals, ditches, gullies, arroyos do not have data of the current flow, apply the Kq coefficient = 0,9 or the Service of Natural Resources and Environment shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of Kq coefficient.

2.3.2. The value of Kq coefficient for water resource receiving effluent as lakes, ponds, swamps is specified in Table 3 below.

Table 3. Value of Kq coefficient corresponding to capacity of lakes, ponds and swamps receiving effluent

Capacity of water resource receiving effluent (V) Unit: cubic meter (m ³)	Value of Kq coefficient
V ≤ 10 x 10 ⁶	0,6
10 x 10 ⁶ < V ≤ 100 x 10 ⁶	0,8
V > 100 x 10 ⁶	1,0

V is calculated by the average value of capacity of lakes, ponds and swamps receiving effluent of 03 driest months in 03 consecutive years (data of the National Hydrometeorology). In case the rivers, streams, canals, ditches, gullies, arroyos do not have data of the current flow, apply the value of Kq coefficient = 0,6 or the Service of Natural Resources and Environment shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of Kq coefficient.

2.3.3. For the resource receiving effluent as being the coastal waters, the value of Kq coefficient = 1,3. For the resource receiving effluent as being the coastal waters used for the purpose of aquatic life, water sports and entertainment, the value of Kq coefficient = 1

2.4. Value of K_f coefficient of effluent resource flow

Value of K_f coefficient of effluent resource flow is specified in Table 4 below

Table 4: Value of K_f coefficient corresponding to flow of effluent

Flow of effluent (F) Unit: Cubic meter/day ($m^3/24\text{ h}$)	Value of K_f coefficient
$F \leq 50$	1,2
$50 < F \leq 500$	1,1
$500 < F \leq 5000$	1,0
$F > 5000$	0,9

3. METHOD FOR DETERMINATION

The method for determination of pollution parameters in effluent of aquatic product processing industry shall comply with guidance of national standards or corresponding analytical standards of international organizations:

- TCVN 6492:1999 - Water quality - Determination of pH.
- TCVN 6001:1995 (ISO 5815:1989) - Water quality -Determination of biochemical oxygen demand after 5 days (BOD 5) - Dilution and seeding method
- TCVN 6491:1999 (ISO 6060:1989) - Water quality - Determination of the chemical oxygen demand
- TCVN 6625:2000 (ISO 11923:1997) Water quality - Determination of suspended solids by filtration through glass-fibre filters
- TCVN 6179-1:1996 (ISO 7150-1:1984) Water quality - Determination of ammonium - Part 1: Manual spectrometric method
- TCVN 6179-2:1996 (ISO 7150-2:1986) Water quality - Determination of ammonium - Part 2: Automated spectrometric method
- TCVN 6187-1:1996 (ISO 9308-1:1990) Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method
- TCVN 6187-2:1996 (ISO 9308-2:1990) Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 2: Multiple tube (most probable number) method
- TCVN 6225:1996 (ISO 7393:1986) Water quality - Determination of free chlorine and total chlorine
- TCVN 6638:2000 (ISO 10048:1991) Water quality - Determination of nitrogen - Catalytic digestion after reduction with Devarda's alloy

Method for determination of total grease and oil complies with U.S. EPA Method 1664 Extraction and gravimetry (Oil and Grease and total petroleum hydrocarbons).

When needing to control other parameters, the method for determination under the current national standards or corresponding analytical methods of international organizations.

4. IMPLEMENTATION ORGANIZATION

Organizations and individuals related to the operation of the aquatic product processing establishments, investment projects of aquatic product processing shall comply with the provisions of this Regulation.

State management agencies on environment are responsible for guidance, control and monitoring of the implementation of this Regulation.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 12 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON THE EFFLUENT OF PULP AND PAPER MILLS

Introduction

QCVN 12:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QĐ-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON THE EFFLUENT OF PULP AND PAPER MILLS

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This regulation specifies the permissible maximum value of the pollution parameters in the effluent of pulp and paper mills as being discharged into the environment.

1.2. Subjects of application

This Regulation applies to the organizations and individuals related to the discharge of effluent of pulp and paper mills to the environment.

1.3. Explanation of terms

In this regulation, the terms below shall be construed as follows:

1.3.1. The effluent of pulp and paper mills is the liquid discharged from mills and establishments using technological process to produce paper products and pulp.

1.3.2. K_q coefficient of flow / capacity of water resources receiving effluent is the coefficient taken into the possibility of dilution of the water resources receiving the effluent, corresponding to the flow of rivers, streams, canals, ditches, gullies, arroyos and capacity of the lakes, ponds and swamps.

1.3.3. K_f coefficient of effluent resource flow is the coefficient taking into account the total effluent of pulp and paper mills, corresponding to the flow of effluent being discharged into the water resources receiving effluent.

1.3.4. The water resources receiving effluent is surface water or coastal water, with specified purpose of use and is the place where the effluent of pulp and paper mills is discharged into.

1.4. Reference standards

- TCVN 7732:2007 – Water quality – Standard of effluent of pulp and paper mills.
- TCVN 5945:2005 - Water quality – Industrial effluent – Effluent standards

2. TECHNICAL REGULATION

2.1. Permissible maximum value of pollution parameters in effluent of pulp and paper mills

Permissible maximum value of pollution parameters in effluent of pulp and paper mills as being discharged into the water resources receiving effluent shall not exceed C_{max} value calculated as follows:

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

In which:

C_{max} is the permissible maximum concentration of pollution parameters in effluent of pulp and paper mills when being discharge in the water resource receiving effluent calculated by milligram per liter of wastewater (mg / l);

C is the concentration value of pollution parameters specified in section 2.2

K_q is the coefficient of flow/capacity of water resources receiving effluent specified in section 2.3

K_f is the coefficient of effluent resource flow specified in section 2.4

Do not apply formula to calculate permissible maximum concentration in effluent for pH parameter.

2.2. C value of pollution parameters as a basis for calculation of permissible maximum value.

C value of pollution parameters as a basis for calculation of permissible maximum value C_{max} in effluent of pulp and paper mills as being discharged into the water resources receiving effluent specified in Table 1.

Table 1. Value of pollution parameters as a basis for calculation of permissible maximum value

No.	Parameters	Unit	C Value	
			A	B

				Paper producing establishment(B1)	Pulp producing establishment (B2)	
1	pH	-	6 - 9	5,5 - 9	5,5 - 9	
2	BOD ₅ at 20°C	mg/l	30	50	100	
3	COD	New establishment	mg/l	50	150	200
		Operating establishment	mg/l	80	200	300
4	Total suspended solids (TSS)	mg/l	50	100	100	
5	Color degree	New establishment	Pt-Co	20	50	100
		Operating establishment	Pt-Co	50	100	150
6	Absorbable Organically bound Halogens (AOX)	mg/l	7,5	15	15	

In which:

- Column A specifies C value of pollution parameters as a basis for calculating the permissible maximum value in the effluent of pulp and paper mills as being discharged into water resources used for the purposes of domestic water supply (with water quality equivalent to that in columns A1 and A2 of the national technical Regulation on surface water quality).
- Column B specifies the C value of parameters as a basis for calculation of permissible maximum value in effluent of paper producing establishment (without producing pulp) or pulp-producing establishment, combined paper and pulp production when being discharged into water resources not used for the purpose of domestic water supply (with water quality equivalent to that in columns B1 and B2 of the national technical Regulation on the quality of surface water or coastal water).
- For COD and color degree parameters, the establishments which are operating before the effective date of this Regulation shall apply higher value by the end of December 31, 2014. As of January 01, 2015, applying the specified value to all new pulp and paper production establishments.

In addition to 06 parameters specified in Table 1, depending on the requirements and goals of pollution control, the C value of other pollution parameters applied as provided for in column A or column B of Table 1 National Standard TCVN 5945:2005 - Water quality - industrial wastewater discharge standards.

2.3. Value of Kq coefficient of flow / capacity of the water resource receiving effluent

2.3.1. Value of Kq coefficient of flow / capacity of the water resource receiving effluent is rivers, streams, canals, ditches, gullies, arroyos specified in Table 2 below.

Table 2. Value of Kq coefficient corresponding to current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent.

Current flow of water resources receiving effluent (Q) Unit: cubic meter/second (m ³ /s)	Value of Kq coefficient
Q ≤ 50	0,9
50 < Q ≤ 200	1
200 < Q ≤ 1000	1,1
Q > 1000	1,2

Q is calculated by the average value of current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent of thee driest months in 03 consecutive years(data of the National Hydrometeorology). In case rivers, streams, canals, ditches, gullies, arroyos do not have data about the current flow, apply the Kq coefficient = 0,9 or the Service of Natural Resources and Environment shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of Kq coefficient.

2.3.2. The value of Kq coefficient for water resource receiving effluent as lakes, ponds, and swamps is specified in Table 3 below.

Table 3: Value of Kq coefficient corresponding to capacity of lake, ponds and swamps receiving effluent

Capacity of water resource receiving effluent (V) Unit: Cubic meter (m ³)	Value of K _q 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 by the average value of capacity of lakes, ponds and swamps receiving effluent of 03 driest months in 03 consecutive years (data of the National Hydrometeorology). In case the rivers, streams, canals, ditches, gullies, arroyos do not have data of the current flow, apply the value of K_q coefficient = 0,6 or the Service of Natural Resources and Environment shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of K_q coefficient.

2.3.3. For the resource receiving effluent as being the coastal waters, the value of K_q coefficient = 1,3. For the resource receiving effluent as being the coastal waters used for the purpose of aquatic life, water sports and entertainment, the value of K_q coefficient = 1

2.4. Value of K_r coefficient of effluent resource flow

Value of K_r coefficient of effluent resource flow is specified in Table 4 below

Table 4: Value of K_r coefficient corresponding to effluent flow

Effluent flow (F) Unit: Cubic meter/day (m ³ /24 h)	Value of K _r coefficient
$F \leq 50$	1,2
$50 < F \leq 500$	1,1
$500 < F \leq 5000$	1,0
$F > 5000$	0,9

3. METHOD FOR DETERMINATION

The method for determination of pollution parameters in effluent of pulp and paper mills shall comply with guidance of national standards or corresponding analytical standards of international organizations:

- TCVN 6492:1999 – Water quality – Determination of pH
- TCVN 6001:1995 (ISO 5815:1989) Water quality - Determination of biochemical oxygen demand after 5 days (BOD₅) - Dilution and seeding method
- TCVN 6491:1999 (ISO 6060:1989) Water quality - Determination of the chemical oxygen demand
- TCVN 6625:2000 (ISO 11923:1997) Water quality - Determination of suspended solids by filtration through glass-fibre filters
- TCVN 4558:1988 - Water quality - Determination of color and odor;
- TCVN 6493:1999 (ISO 9562:1989) - Water quality - Determination of adsorbable organic halogens (AOX)

When needing to control other parameters, the method for determination by the current national standards or the corresponding analytical method of international organizations.

4. IMPLEMENTION ORGANIZATION

Organizations and individuals related to the operation of the pulp and paper production establishments, investment projects of pulp and paper production establishments shall comply with the provisions of this Regulation.

State management agencies on environment are responsible for guidance, control and monitoring of the implementation of this Regulation.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

Introduction

QCVN 13:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QD-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON THE EFFLUENT OF TEXTILE INDUSTRY

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This regulation specifies the permissible maximum value of the pollution parameters in the effluent of textile industry as being discharged into the environment.

1.2. Subjects of application

This Regulation applies to the organizations and individuals related to the discharge of effluent of textile industry to the environment.

1.3. Explanation of terms

In this regulation, the terms below shall be construed as follows:

1.3.1. Effluent of textile industry is liquid waste from factories and establishments using the wet process technology or other technology to produce textile products.

1.3.2. K_q coefficient of flow / capacity of water resources receiving effluent is the coefficient taken into the possibility of dilution of the water resources receiving the effluent, corresponding to the flow of rivers, streams, canals, ditches, gullies, arroyos and capacity of the lakes, ponds and swamps.

1.3.3. The K_f coefficient of effluent resource flow is the coefficient taking into account the total effluent of textile industry, corresponding to the flow of effluent being discharged into the water resources receiving effluent.

1.3.4. The water resources receiving effluent is surface water or coastal water, with specified purpose of use and is the place where the effluent of textile industry is discharged into.

1.4. Reference standards

- TCVN 5945:2005 - Water quality - Industrial effluent - Discharge standards

2. TECHNICAL REGULATIONS

2.1. The permissible maximum value of pollution parameters in effluent of textile industry

Permissible maximum value of pollution parameters in effluent of textile industry as being discharged into the water resource receiving effluent must not exceed C_{max} value calculated as follows:

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

In which:

C_{max} is the permissible maximum concentration of pollution parameter in effluent of textile industry when being discharged into the water resource receiving effluent calculated by milligram per liter of wastewater (mg / l);

C is the concentration values of pollution parameters specified in Section 2.2.

K_q is the coefficient of flow / capacity of water resource receiving effluent specified in Section 2.3.

K_f is the coefficient of effluent resource flow specified in Section 2.4.

Do not apply the formula for calculating the permissible maximum concentration in effluent for parameters of temperature, pH, odor and color degree.

2.2. C value of pollution parameters as a basis for calculating the permissible maximum value

C Value of pollution parameters as a basis for calculating the permissible maximum C_{max} value in effluent of textile industry when being discharged into the water resources receiving effluent specified in Table 1.

Table 1: Value of pollution parameters as a basis for calculation of permissible maximum value

No.	Parameters	Unit	C value	
			A	B

1	Temperature	°C	40	40
2	pH	-	6-9	5,5-9
3	Odor		Not unpleasant	Not unpleasant
4	Color degree (pH = 7)	Pt-Co	New establishment: 20	150
			Operating establishment: 50	
5	BOD ₅ at 20°C	mg/l	30	50
6	COD	mg/l	50	150
7	Total suspended solids	mg/l	50	100
8	Mineral oil and grease	mg/l	5	5
9	Chromium VI (Cr6 +)	mg/l	0,05	0,10
10	Chromium III (Cr3 +)	mg/l	0,20	1
11	Iron (Fe)	mg/l	1	5
12	Copper (Cu)	mg/l	2	2
13	Residual chlorine	mg/l	1	2

In which:

- Column A specifies C value of pollution parameters as a basis for calculating the permissible maximum value in the effluent of textile industry as being discharged into water resources used for the purposes of domestic water supply (with water quality equivalent to that in columns A1 and A2 of the national technical Regulation on surface water quality).

- Column B specifies the C value of parameters as a basis for calculation of permissible maximum value in effluent of textile industry when being discharged into water resources not used for the purpose of domestic water supply (with water quality equivalent to that in columns B1 and B2 of the national technical Regulation on the quality of surface water or coastal water).

- For the color degree parameters of effluent of textile industry discharged into water resource used for domestic water supply: 20 Pt-Co value is applicable to newly-invested textile establishments; 50 Pt-Co value is applicable to operating textile establishments prior to the effective date of this Regulation to the end of December 31, 2014. As of January 01, 2015, applying the general value of 20 Pt-Co.

In addition to 13 parameters specified in Table 1, depending on the requirements and purposes of pollution control, the C value of other pollution parameters applied as provided for in column A or column B of Table 1 of National Standard TCVN 5945:2005 - Water quality - industrial effluent - discharge standards.

2.3. Value of Kq coefficient of flow / capacity of water resource receiving effluent

2.3.1. Value of Kq coefficient for the water resource receiving effluent of textile industry is rivers, streams, canals, ditches, gullies, arroyos is specified in Table 2 below:

Table 2: Value of Kq coefficient corresponding to the current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent.

Current flow of water resource receiving effluent (Q) Unit: cubic meter/second (m ³ /s)	Value of Kq coefficient
Q ≤ 50	0,9
50 < Q ≤ 200	1
200 < Q ≤ 1000	1,1
Q > 1000	1,2

Q is calculated based on the average value of current flow of rivers, streams, canals, ditches, gullies, arroyos receiving effluent of the 03 driest months in 03 consecutive years (data of the National Hydrometeorology). In case the rivers, streams, canals, ditches, gullies, arroyos do not have data of the current flow, apply the Kq coefficient = 0,9 or the Service of Natural Resources and Environment

shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of Kq coefficient.

2.3.2. The value of Kq coefficient for water resource receiving effluent as lakes, ponds, and swamps is specified in Table 3 below.

Table 3. Value of Kq coefficient corresponding to capacity of lakes, ponds and swamps receiving effluent

Capacity of water resource receiving effluent (V) Unit: cubic meter (m ³)	Value of 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 by the average value of capacity of lakes, ponds and swamps receiving effluent of 03 driest months in 03 consecutive years (data of the National Hydrometeorology). In case the rivers, streams, canals, ditches, gullies, arroyos do not have data of the current flow, apply the value of Kq coefficient = 0,6 or the Service of Natural Resources and Environment shall appoint a unit with legal status to measure the average flow of the 03 driest months in a year to determine value of Kq coefficient.

2.3.3. For the resource receiving effluent as being the coastal waters, the value of Kq coefficient = 1,3. For the resource receiving effluent as being the coastal waters used for the purpose of aquatic life, water sports and entertainment, the value of Kq coefficient = 1

2.4. Value of K_f coefficient of effluent resource flow

Value of K_f coefficient of effluent resource flow is specified in Table 4 below

Table 4: Value of K_f coefficient corresponding to flow of effluent

Flow of effluent (F) Unit: Cubic meter/day (m ³ /24 h)	Value of K _f coefficient
$F \leq 50$	1,2
$50 < F \leq 500$	1,1
$500 < F \leq 5000$	1,0
$F > 5000$	0,9

3. METHOD FOR DETERMINATION

The method for determination of pollution parameters in effluent of textile industry shall comply with guidance of national standards or corresponding analytical standards of international organizations:

- TCVN 4557:1988 - Water quality - Determination of temperature;
- TCVN 6492:1999 - Water quality - Determination of pH.
- TCVN 4558:1988 - Water quality - Determination of color and odor;
- TCVN 6001:1995 (ISO 5815:1989) - Water quality -Determination of biochemical oxygen demand after 5 days (BOD 5) - Dilution and seeding method
- TCVN 6491:1999 (ISO 6060:1989) - Water quality - Determination of the chemical oxygen demand
- TCVN 6625:2000 (ISO 11923:1997) Water quality - Determination of suspended solids by filtration through glass-fibre filters
- TCVN 6193:1996 - Water quality - Determination of cobalt, nickel, copper, zinc and lead - Method of Flame Atomic Absorption Spectrometry
- TCVN 6222:1996 - Water quality - Water Treatment - Determination of total chromium - atomic absorption spectrometric method;
- TCVN 6177:1996 (ISO 6332:1988) - Water quality - Determination of iron - Spectrometric method using 1,10-phenanthroline
- TCVN 5070:1995 - Water quality - Water quality - Weight method for determination of oil and oil products
- TCVN 4582:1988 - Water quality - Effluent - Determination of oil and oil products;
- TCVN 6225:1996 - Water quality - Determination of free chlorine and total chlorine.

When needing to control other parameters, the method for determination under the current national standards or corresponding analytical methods of international organizations.

4. IMPLEMENTION ORGANIZATION

Organizations and individuals related to the operation of the textile production establishments, investment projects of textile production establishments shall comply with the provisions of this Regulation.

State management agencies on environment are responsible for guidance, control and monitoring of the implementation of this Regulation.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 14 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON DOMESTIC WASTEWATER

Introduction

QCVN 14:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QD-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON DOMESTIC WASTEWATER

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This regulation specifies the permissible maximum value of the pollution parameters in the effluent of textile industry as being discharged into the environment.

Do not apply this Regulation for domestic wastewater discharged into the concentrated wastewater treatment system.

1.2. Subjects of application

This regulation applies to public institutions, armed forces barracks, service facilities, apartment buildings and residential areas and businesses discharging domestic wastewater into the environment.

1.3. Explanation of terms

In this Regulation, the terms below are construed as follows:

1.3.1. Domestic wastewater is the wastewater discharged from human activities of people such as eating, drinking, bathing, personal hygiene.

1.3.2. The water resource receiving wastewater is the surface water resource or coastal waters with a specified purpose of use and is the place where the wastewater is discharged into.

2. TECHNICAL REGULATIONS

2.1. Permissible maximum value of pollution parameters in domestic wastewater

Permissible maximum value of pollution parameters in domestic wastewater as being discharged into the water resource receiving wastewater must not exceed C_{max} value calculated as follows:

$$C_{max} = C \times K$$

In which:

C_{max} is the permissible maximum concentration of pollution parameters in domestic wastewater as being discharged into the receiving water resource calculated by milligram per liter of wastewater (mg/l);

C is the concentration values of pollution parameters specified in Section 2.2.

K is a coefficient taking into account the size and type of services facilities, public facilities and condominium specified in Section 2.3.

Do not apply the formula for calculating the permissible maximum concentration in effluent for parameter pH and total coliforms.

2.2. C value of pollution parameters as a basis for calculating the permissible maximum value

C value of pollution parameters as a basis for calculating the permissible maximum value C_{max} in domestic wastewater as being discharged into water resources receiving wastewater as specified in Table 1.

Table 1: Value of pollution parameters as a basis for calculating the permissible maximum value in domestic wastewater

No.	Parameter	Unit	C value	
			A	B
1	pH	-	5 - 9	5 - 9
2	BOD ₅ (20°C)	mg/l	30	50
3	Total suspended solids (TSS)	mg/l	50	100
4	Total dissolved solids	mg/l	500	1000
5	Sulfide (as H ₂ S)	mg/l	1.0	4.0
6	Ammonium (as N)	mg/l	5	10
7	Nitrate (NO ₃ ⁻) (as N)	mg/l	30	50
8	Animal fat and vegetable grease	mg/l	10	20
9	Total surface-active substances	mg/l	5	10
10	Phosphat (PO ₄ ³⁻) (as P)	mg/l	6	10
11	Total coliforms	MPN/ 100ml	3.000	5.000

In which:

- Column A specifies value of pollution parameters as a basis for calculating the permissible maximum value in domestic wastewater as being discharged into water resources used for the purpose of domestic water supply (with water quality equivalent to that in column A1 and A2 of the national technical Regulation on surface water quality).

- Column B specifies C value of pollution parameters as a basis for calculating the permissible maximum value in domestic wastewater as being discharged into water resources not used for the purpose of domestic water supply (with water quality equivalent to that in column B1 and B2 of the national technical Regulation on surface water or coastal water quality).

2.3. Value of K coefficient

Depending on the type, size and area of use of service facilities, public facilities, apartment buildings and residential areas, businesses, the K value is applied under Table 2

Table 2. Value of K coefficient corresponding to type of service facilities, public facilities, apartment buildings

Type of facilities	Size and area of use of facilities	Value of K coefficient
1. Hotel, rest house	From 50 rooms or hotel rated 3 stars or higher	1
	Less than 50 rooms	1,2
2. Agencies, offices, schools, research institutions	Greater than or equal to 10.000m ²	1,0
	Less than 10.000m ²	1,2
3. Department stores, supermarkets	Greater than or equal to 5.000m ²	1,0
	Less than 5.000m ²	1,2
4. Markets	Greater than or equal to 1.500m ²	1,0
	Less than 1.500m ²	1,2
5. Restaurants, food stores	Greater than or equal to 500m ²	1,0
	Less than 500m ²	1,2

6. Production facilities, armed force barracks	From 500 people or more	1,0
	Less than 500 people	1,2
7. Condominiums, residential areas	From 50 apartments or more	1,0
	Less than 50 apartments	1,2

3. METHOD FOR DETERMINATION

The method for determination of pollution parameters in domestic wastewater shall comply with guidance of national standards or corresponding analytical standards of international organizations:

- TCVN 6492-1999 (ISO 10523-1994) – Water quality – Determination of pH.
- TCVN 6001-1995 (ISO 5815-1989) - Water quality - Determination of biochemical oxygen demand after 5 days (BOD 5) - Dilution and seeding method.
- TCVN 6625-2000 (ISO 11923-1997) - Water quality - Determination of suspended solid by filtration through glass fiber filter.
- TCVN 6053-1995 (ISO 9696-1992) - Water quality – Determination of total dissolved solids.
- TCVN 4567-1988 - Water quality - Determination of the original sulfide and sulfate
- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium - Distillation and titration method
- TCVN 6180-1996 (ISO 7890-3-1988) - Water quality - Determination of nitrate - Spectrometric method using sulfosalicylic acid
- TCVN 6336-1998 (ASTM D 2330-1988) – Test method for Methylene Blue Active Substances
- TCVN 6622-2000 - Water quality - Determination of surfactants. Part 1: Determination of anionic surfactants by measurement of the methylene blue spectrum
- TCVN 6494-1999 - Water quality - Determination of ion of fluoride, chloride, nitrite, Orthophotphat, bromide, nitrate and soluble sulphate in liquid ion chromatography.
- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method
- TCVN 6187-2:1996 (ISO 9308-2:1990) Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 2: Multiple tube (most probable number) method

Method for determination of total grease and oil complies with U.S. EPA Method 1664 Extraction and gravimetry (Oil and Grease and total petroleum hydrocarbons).

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 6772:2000 - Water quality – domestic wastewater quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QĐ-BKHCHNT dated June 25, 2002 of the Minister of Science, Technology and Environment.

Organizations and individuals related to the discharge of domestic wastewater to the environment shall comply with the provisions of this Regulation.

State management agencies on environment are responsible for guidance, control and monitoring of the implementation of this Regulation.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 15 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON THE PESTICIDE RESIDUES IN THE SOIL

Introduction

QCVN 15:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QĐ-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON THE PESTICIDE RESIDUES IN THE SOIL

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This regulation specifies the permissible maximum limit of residue of a number of pesticides in top soil.

This Regulation is used to control and assess the level of pollution of pesticides in top soil.

1.2. Subjects of application

This Regulation applies to the organizations and individuals related to the land use in the territory of Vietnam.

1.3. Explanation of terms

In this Regulation, the terms below are construed as follows:

1.3.1. Pesticide is a substance to prevent pests, including all of the substances or mixture of substances used to prevent, destroy or control pests. Pesticide in some cases also include growth stimulants, prevent fruit drop, early ripeness, leaf fall.

1.3.2. Residue of pesticide in the soil is the content of pesticide in the top soil at the time of checking and analysis.

1.3.3. Dry soil

Is the hard dry soil in compliance with TCVN 6647:2000 – Soil quality, preliminary treatment for physical and chemical analysis and TCVN 5297:1995 - Soil quality - Sampling - general requirements.

1.3.4. Top soil: is a farm soil layer in agricultural production, for the types of soil used for other purposes, taking the depth up to 30 cm.

2. TECHNICAL REGULATION

The permissible maximum value of residue of pesticide in the top soil is specified in Table 1

Table 1: Permissible maximum value of residue of pesticide in the soil

Unit: mg/kg of dry soil

No.	Name of active substance (chemical formula)	Common trade names	Permissible maximum limit	Main purpose of use
1	Atrazine (C ₈ H ₁₄ ClN ₅)	Atra 500 SC, Atranex 80 WP, Co-co 50 50 WP, Fezprim 500 FW, Gesaprim 80 WP/BHN, 500 FW/DD, Maizine 80 WP, Mizin 50 WP, 80 WP, Sanazine 500 SC	0,10	Herbicide
2	Benthiocarb (C ₁₆ H ₁₆ ClNOS)	Saturn 50 EC, Saturn 6 H	0,10	Herbicide
3	Cypermethrin (C ₂₂ H ₁₉ Cl ₂ NO ₃)	Antiborer 10 EC, Celcide 10 EC	0,10	Preservation of forest products
4	Cartap (C ₇ H ₁₅ N ₃ O ₂ S ₂)	Algreaseap 95 SP, Cardan 95 SP, Mapan 95 SP, 10 G, Padan 50 SP, 95 SP, 4G, 10 G, Vicarp 95 BHN, 4 H ...	0,05	Pesticide
5	Dalapon (C ₃ H ₄ Cl ₂ O ₂)	Dipoxim 80 BHN, Vilapon 80 BTN	0,10	Herbicide
6	Diazinon (C ₁₂ H ₂₁ N ₂ O ₃ PS)	Agrozinon 60 EC, Azinon 50 EC, Cazinon 10 H; 40ND; 50ND; Diazan 10 H; 40EC: 50ND; 60 EC ...	0,05	Pesticide
7	Dimethoate (C ₅ H ₁₂ NO ₃ SP ₂)	Dimethoate	0,05	Pesticide
8	Fenobucarb (C ₁₂ H ₁₇ NO ₂)	Anba 50 EC, Bassan 50 EC, Dibacide 50 EC, Forcin 50 EC,	0,05	Pesticide

		Pasha 50 EC ...		
9	Fenoxaprop - ethyl (C ₁₆ H ₁₂ ClNO ₅)	Whip'S 7.5 EW, 6.9 EC; Web 7.5 SC	0,10	Herbicide
10	Fenvalerate (C ₂₅ H ₂₂ ClNO ₃)	Cantocidin 20 EC, Encofenva 20 EC, Fantasy 20 EC, Pyvalerate 20 EC, Sumicidin 10 EC, 20 EC ..	0,05	Pesticide
11	Isoprothiolane (C ₁₂ H ₁₈ O ₄ S ₂)	Dao on Linh 40 EC, Caso one 40 EC, Fuan 40 EC, Fuji - One 40 EC, 40 WP, Fuzin 40 EC ...	0,05	Fungicide
12	Metolachlor (C ₁₅ H ₂₂ ClNO ₂)	Dual 720 EC/ND, Dual Gold ®960 ND	0,10	Herbicide
13	MPCA (C ₉ H ₉ ClO ₃)	Agroxone 80 WP	0,10	Herbicide
14	Pretilachlor (C ₁₇ H ₂₆ ClNO ₂)	Acofit 300 EC, Sofit 300 EC/ND, Bigson-fit 300EC ...	0,10	Herbicide
15	Simazine (C ₇ H ₁₂ ClN ₅)	Gesatop 80 WP/BHM, 500 FW/DD, Sipazine 80 WP, Visimaz 80 BTN ...	0,10	Herbicide
16	Trichlorfon (C ₄ H ₈ Cl ₃ O ₄ P)	Dich Bach Trung 90 SP, Sunchlorfon 90 SP	0,05	Pesticide
17	2,4-D(C ₈ H ₆ Cl ₂ O ₃)	A.K 720 DD, Amine 720 DD, Anco 720 DD, Cantosin 80 WP, Desormone 60 EC, 70 EC, Co Broad 80 WP, Sanaphen 600 SL, 720 SL ...	0,10	Herbicide
18	Aldrin (C ₁₂ H ₈ Cl ₆)	Aldrex, Aldrite	0,01	<i>Prohibited use</i>
19	Captan (C ₉ H ₈ Cl ₃ NO ₂ S)	Captane 75 WP, Merpan 75 WP ...	0,01	<i>Prohibited use</i>
20	Captafol (C ₁₀ H ₉ Cl ₄ NO ₂ S)	Difolatal 80 WP, Flocid 80 WP ...	0,01	<i>Prohibited use</i>
21	Chlordimeform (C ₁₀ H ₁₃ ClN ₂)	Chlordimeform	0,01	<i>Prohibited use</i>
22	Chlordane (C ₁₀ H ₆ Cl ₈)	Chlorotox, Octachlor, Pentachlor	0,01	<i>Prohibited use</i>
23	DDT (C ₁₄ H ₉ Cl ₅)	Neocid, Pentachlorin, Chlorophenothane...	0,01	<i>Prohibited use</i>
24	Dieldrin (C ₁₂ H ₈ Cl ₆ O)	Dieldrex, Dieldrite, Octalox	0,01	<i>Prohibited use</i>
25	Endosulfan (C ₉ H ₆ Cl ₆ O ₃ S)	Cyclodan 35EC, Endosol 35EC, Tigiodan 35ND, Thasodant 35EC, Thiodol 35ND...	0,01	<i>Prohibited use</i>
26	Endrin (C ₁₂ H ₈ Cl ₆ O)	Hexadrin...	0,01	<i>Prohibited use</i>
27	Heptachlor (C ₁₀ H ₅ Cl ₇)	Drimech, Heptamul, Heptox...	0,01	<i>Prohibited use</i>
28	Hexachlorobenzene (C ₆ Cl ₆)	Anticaric, HCB...	0,01	<i>Prohibited use</i>
29	Isobenzen (C ₉ H ₄ OC ₁₈)	Isobenzen	0,01	<i>Prohibited use</i>
30	Isodrin (C ₁₂ H ₈ Cl ₆)	Isodrin	0,01	<i>Prohibited use</i>
31	Lindane (C ₈ H ₆ Cl ₆)	Lindane	0,01	<i>Prohibited use</i>
32	Methamidophos (C ₂ H ₈ NO ₂ PS)	Monitor (Methamidophos)	0,01	<i>Prohibited use</i>
33	Monocrotophos (C ₇ H ₁₄ NO ₅ P)	Monocrotophos	0,01	<i>Prohibited use</i>

34	Methyl Parathion (C ₈ H ₁₀ NO ₅ PS)	Methyl Parathion	0,01	<i>Prohibited use</i>
35	Sodium Pentachlorophenate monohydrate C ₅ Cl ₅ ONa.H ₂ O	Copas NAP 90 G, PMD ₄ 90 powder, PBB 100 powder	0,01	<i>Prohibited use</i>
36	Parathion Ethyl (C ₇ H ₁₄ NO ₅ P)	Alkexon, Orthophos, Thiopphos ...	0,01	<i>Prohibited use</i>
37	Pentachlorophenol (C ₆ HCl ₅ O)	CMM7 liquid oil	0,01	<i>Prohibited use</i>
38	Phosphamidon (C ₁₀ H ₁₉ ClNO ₅ P)	Dimecron 50 SCW/DD...	0,01	<i>Prohibited use</i>
39	Polychlorocamphene C ₁₀ H ₁₀ Cl ₈	Toxaphene, Camphechlor, Strobane ...	0,01	<i>Prohibited use</i>

3. METHOD FOR DETERMINATION

3.1. Sampling: A sample taken to determine the residues of pesticide in the soil is taken from the top soil under TCVN 5297:1995 - Soil quality - Sampling - General requirements and TCVN 7538-2:2005 - soil quality - sampling - Part 2: Guidance on sampling techniques

3.2. Analytical method to determine residues of pesticide in the soil under the guidance of the current national standards. In case the parameters specified in the Regulation without national standards to guide the analytical methods, apply the standards corresponding analysis of international organizations or as directed by the manufacturer of pesticide permitted for use in Vietnam.

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5941:1995 – Soil quality – Permissible maximum limit of residues of pesticide in the soil in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QĐ-BKHCMNT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.