

QCVN 39:2011/BTNMT

NATIONAL TECHNICAL REGULATION ON WATER QUALITY FOR IRRIGATION

Preamble:

QCVN 39:2011/BTNMT has been composed by the Drafting Board of national technical regulations on water quality, approved and submitted by the Vietnam Environment Administration, the Department of Science and Technology, the Department of Legal Affairs and promulgated together with the Minister of Natural Resources and Environment's Circular No. [43/2011/TT-BTNMT](#) of December 12, 2011.

NATIONAL TECHNICAL REGULATION ON WATER QUALITY FOR IRRIGATION

1. GENERAL PROVISIONS

Scope of regulation

This Regulation provides for the limit values of parameters of water used for irrigation.

This Regulation is applied to assess and control the quality of water used for irrigation.

2. TECHNICAL REGULATIONS

Limit values for parameters of water quality used for irrigation shall be provided in Table 1.

Table 1: Limit values for parameters of water used for irrigation

TT	Parameters	Unit	Limit values
1	pH		5,5-9
2	Dissolved oxygen (DO)		≥ 2
3	Total dissolved solids	mg/l	2000
4	Sodium absorption ratio (SAR)		9
5	Chlorine (Cl ⁻)	mg/l	350
6	Sulfate (SO ₄ ²⁻)	mg/l	600
7	Bo (B)	mg/l	3
8	Arsenic (As)	mg/l	0,05
9	Cadmium (Cd)	mg/l	0,01
10	chromium (Cr)	mg/l	0,1
11	Mercury (Hg)	mg/l	0,001
12	Copper (Cu)	mg/l	0,5
13	Lead (Pb)	mg/l	0,05
14	Zinc(Zn)	mg/l	2,0
15	Fecal, Coli (only for vegetable irrigating water and fresh serve vegetables)	Quantity of bacteria /100ml	200

3. METHOD OF DETERMINATION

3.1. Sampling for determination of parameters of water used for protection of irrigation shall be done under following regulations:

- TCVN 6663-1:2011 (ISO 5667-1:2006) - Water quality - Sampling. Part 1: Guidance on the design of sampling programs and sampling techniques

- TCVN 6663-3:2008 (ISO 5667-3:2003) - Water quality - Sampling. Guidance on preservation and handling of samples.

- TCVN 5994:1995 (ISO 5667-4:1987) - Water quality – Guidance on sampling from natural and artificial lakes/ponds.

- TCVN 6663-6:2008 (ISO 5667-6:2005) - Water quality - Sampling. Guidance on sampling from rivers and streams.

3.2. Method of determination of parameters of water quality shall be done in accordance with the following national standards:

- TCVN 6492-2011 (ISO 10523-2008) - Water quality – Determination of pH.

- TCVN 5499-1995. Water quality - Determination of dissolved oxygen – Winkler method.

- TCVN 7324-2004 (ISO 5813-1983). Water quality –Determination of dissolved oxygen - Lodometric method.

- TCVN 6196-1:1996 (ISO 9964-1993) - Water quality. Determination of sodium and potassium. Part 1: Determination of atomic absorption spectrometry.

- TCVN 6201:1995 (ISO 7980-1986) - Water quality. Determination of calcium and magnesium. Atomic absorption spectrophotometric method.

- TCVN 6660:2000 (ISO 14911-1988) - Determination of dissolved Li⁺, Na⁺, NH₄⁺, K⁺, Mn²⁺, Ca²⁺, Mg²⁺, Sr²⁺ and Ba²⁺ using ion chromatography - Method for water and sewage

- TCVN 6194-1996 (ISO 9297-1989) - Water quality - Determination of chloride. Silver nitrate titration with chromate indicator (Mohr's method)

- TCVN 7724:2007 (ISO 17825:2006) - Water quality – Determination of mercury - Atomic fluorescence spectrometry

- 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 method.

- TCVN 6197-2011 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometric method.

- TCVN 6222-2008 (ISO 9174-1998). Water quality - Determination of total chromium - Atomic absorption spectrometric method

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

- TCVN 6665:2011 (ISO 11885:2007) - Water quality – Determination of selected elements by inductively coupled plasma optical emission spectrometry.

- TCVN 6187-1:2009 (ISO 9308-1:2000), Water quality - Detection and enumeration of coliform bacteria, coliform bacteria and Escherichia coli heat assumptions. Part 1: Membrane filtration method.

- TCVN 6187-2:1996 (ISO 9308/2:1990), Water quality - Water quality - Detection and enumeration of coliform bacteria, heat-proof coliform bacteria and Escherichia coli assumptions – Part 2: Multi-tube method (highest probability number).

- Sodium absorption ratio SAR is calculate as follows:

$$SAR = \frac{Na^+}{\sqrt{\frac{Ca^{2+} + Mg^{2+}}{2}}}$$

In case the determination of the parameters provided in this Regulation has not been guided in any national regulations, similar analysis regulations from international organizations shall apply.

3.3. Methods of analysis with similar or higher accuracy than regulations than that referred in Section 3.2 may be accepted.

4. IMPLEMENTATION ORGNIZATION

This Regulation replaces TCVN 6773:2000 -Water quality- Water quality standards for irrigation in the List of Vietnamese environmental standards promulgated together with the Minister of Natural Resources and Environment's Decision No. [35/2002/QĐ-BKHCHNMT](#) of June 25, 2002.

State environment administration agencies for environment are responsible for guiding, examining and supervising the implementation of this Regulation

In case national standards referred in this Regulation are amended or supplemented or replaced, such amendments, supplements or replacements shall apply.