

## Environmental Standards for Water Quality and Aquatic Ecosystem

### <Rivers and Streams>

- Standard for Human Health Protection (River, Streams and Lakes)

Pollutants	Standard Value (mg/L)
Cadmium (Cd)	$\leq 0.005$
Arsenic (As)	$\leq 0.05$
Cyanide (CN)	Not Detected (Limit of Detection 0.01)
Mercury (Hg)	Not Detected (Limit of Detection 0.001)
Organic Phosphorus	Not Detected (Limit of Detection 0.0005)
Polychlorinated Biphenyls (PCB)	Not Detected (Limit of Detection 0.0005)
Lead (Pb)	$\leq 0.05$
Hexachromium (Cr <sup>6+</sup> )	$\leq 0.05$
Alkyl Benzene Sulfate (ABS)	$\leq 0.5$
Carbon Tetrachloride (CCl <sub>4</sub> )	$\leq 0.004$
1,2-Dichloroethylene	$\leq 0.03$
Tetrachloroethylene (PCE)	$\leq 0.04$
Dichloromethane	$\leq 0.02$
Benzene	$\leq 0.01$
Chloroform	$\leq 0.08$
Di-Ethylhexyl Phthalate (DEHP)	$\leq 0.008$
Antimony (Sb)	$\leq 0.02$

- Standard for the Living Environment

Grade		Standard					
		pH	BOD (mg/L)	SS (mg/L)	DO (mg/L)	Coliforms (No./100 ml)	
						Total Coliforms	Fecal Coliforms
Very Good	Ia	6.5~8.5	≤1	≤25	≥7.5	≤50	≤10
Good	Ib	6.5~8.5	≤2	≤25	≥5.0	≤500	≤100
Fairly Good	II	6.5~8.5	≤3	≤25	≥5.0	≤1,000	≤200
Fair	III	6.5~8.5	≤5	≤25	≥5.0	≤5,000	≤1,000
Fairly Poor	IV	6.0~8.5	≤8	≤100	≥2.0	-	-
Poor	V	6.0~8.5	≤10	No floating matters such as garbage	≥2.0	-	-
Very Poor	VI	-	>10	-	<2.0	-	-

Remarks

1. Water Quality by Grade & State of Aquatic Ecosystems

a. Very Good : Higher concentrations of DO (Dissolved Oxygen), no pollutant, excellent condition of ecosystems, and residential use after a simple purification process (e.g., filtration and sterilization)

b. Good : High DO levels, few pollutants, good condition of ecosystems, and residential use after a general purification process (e.g., sedimentation, filtration, and sterilization)

c. Fairly Good : Good DO levels, a few pollutants, good and moderate condition of ecosystems, and residential/ swimming pool use after a general purification process (e.g., sedimentation, filtration, and sterilization)

d. Fair : Moderate concentrations of DO, general pollutants, moderate condition of ecosystems, residential use after an advanced purification process (e.g., sedimentation, filtration, carbon block filtration, and sterilization) and industrial use after a general purification process

e. Fairly Poor : Low concentrations of DO, many pollutants, an agricultural use, and an industrial purpose after an advanced purification process

f. Poor : Lower concentrations of DO, a significant amount of pollutants, an industrial use after an advanced purification process (e.g., sedimentation, filtration, carbon block filtration, sterilization, and reverse osmosis), and no effect of bad or unpleasant odor on daily life

g. Very Poor : Little DO, polluted water, and few fish to survive

h. A certain grade of water can be used for lower-grade water purpose.

i. An appropriate water treatment in line with the status of pollution by item (e.g., pH) and the method of water treatment, allows lower-grade water to be used for higher-grade water purpose.

## Water Quality by Grade & Biological Features of Aquatic Ecosystem

Grade	Biological Indicator Species		Habitats & Features
	Benthos	Fish	
Very Good-Good	Gammarus, Korean Fresh Water Crayfish, Drunella Aculea, Cincticostella Levanidovae, Plecoptera, Rhyacophila, Glossosoma KUa, Hydatophylax	Trout, Moroco SP, Fresh Water Salmon, Chinese Minnow, etc.	- Crystal clear water, and high flow velocity - Rocks and pebbles at the bottom - Very little attached algae
Good-Fair	Melanian snail, Glossiphonia, Rhoenanthus (Potamanthindus), Ephemera Orientalis, Uracanthea Rufa, Caenis Rishinoae, Psephenoides sp. 1, Macronema Radiatum McLachlan	Shiri, Dark C Sweetfish, Mandarin Fish, etc.	- Clear water, and normally high or moderate flow velocity - Rock and gravel at the bottom - A bit attached algae
Fair~Fairly Poor	Lymnaeidae, Arhynchobdellidae, Water boatman, Orthetrum Albistylum Specisum,	Dace fish, Korean Piscivorous Chub, False [Goby] Minnow, Stone Moroko, etc.	- Low water turbidity, and normally low flow velocity - Small gravel and sand at the bottom - Much attached green algae
Fairly Poor~ Very Poor	Physa Acuta, Tubifex, Red Sea Bass, Mothfly, Hover fly	Crucian [Prussian] Carp, Carp, Loach, Catfish, etc.	- High water turbidity and low flow velocity - Sand and silt at the bottom; and the color of water is black. - Much attached brown/gray algae

<Lakes>

- Standard for Human Health Protection

This standard is the same as that of rivers and streams for human health protection

- Standard for the Living Environment

Grade		Standard								
		pH	COD (mg/L)	SS (mg/L)	DO (mg/L)	T-P (mg/L)	T-N (mg/L)	Chl-a (mg/m <sup>3</sup> )	E-Coliforms (No./100mL)	
									Total	Fecal
Very Good	Ia	6.5-8.5	≤2	≤1	≥7.5	≤0.01	≤0.2	≤5	≤50	≤10
Good	Ib	6.5-8.5	≤3	≤5	≥5.0	≤0.02	≤0.3	≤9	≤500	≤100
Fairly Good	II	6.5-8.5	≤4	≤5	≥5.0	≤0.03	≤0.4	≤14	≤1,000	≤200
Fair	III	6.5-8.5	≤5	≤15	≥5.0	≤0.05	≤0.6	≤20	≤5,000	≤1,000
Fairly Poor	IV	6.0-8.5	≤8	≤15	≥2.0	≤0.10	≤1.0	≤35	-	-
Poor	V	6.0-8.5	≤10	No floating garbage	≥2.0	≤0.15	≤1.5	≤70	-	-
Very Poor	VI	-	>10	-	<2.0	>0.15	>1.5	>70	-	-

Remarks

1. When the ration of total nitrogen to total phosphorate is less than 7, the criteria of total phosphorate shall not be applied, and on the other hand, the ratio is more than 16, the criteria of total nitrogen shall not be applied.
2. Water quality by grade and the status of aquatic ecosystems is the same as the first column of A. Rivers and Streams, (2) the Standard for the Living Environment.
3. Design of characters is the same as the first column of A. Rivers and Streams, (2) the Standard for the Living Environment.