

# Cooling Tower Water Quality Examination



Cooling towers cool the warm water by direct contact between atmospheric air and the water. This process allows airborne contaminants, organic matters and particles to become deposited into the cooling water. This, combined with the contaminants in the feed water, creates an environment for microorganism growth, solid deposits and scaling. If Legionella bacteria is present in the system, there is a risk to spread the Legionnaires' disease (退伍軍人病) to human via the air conditioning system. Therefore, cooling tower water quality must be monitored in a regular basis to prevent destroying of the system and spreading of diseases to users.

In Hong Kong, *Code of Practice for Water-cooled Air Conditioning Systems* has been published by the Electrical and Mechanical Services Department (EMSD), HKSAR Government. According to the practice, the following parameters should be monitored regularly to ensure the cooling tower water meets the requirements:

Parameter	Cooling Water Quality Criteria (Fresh Water Typed Tower)	Minimum Monitoring Frequency
Heterotrophic colony count (HPC)	Less than 100,000 cfu/mL	Monthly
Legionella bacteria count	Less than 10 cfu/mL	Monthly / Quarterly
Conductivity	Less than 1500 $\mu$ S/cm	Monthly
Total dissolved solids	Less than 1500 mg/L	Monthly
Suspended solids	Less than 180 mg/L	Monthly
Calcium hardness	Less than 500 mg/L	Monthly
pH	8 – 10	Monthly
Total alkalinity	80 – 500 mg/L	Quarterly
Chloride as mg/L Cl	Less than 200 mg/L	Quarterly
Sulphate as mg/L SO <sub>4</sub>	Less than 200 mg/L	Quarterly
Total iron as mg/L Fe	Less than 1.0 mg/L	Quarterly
Total Residual Chlorine	Less than 0.3 mg/L	Monthly
Biochemical Oxygen Demand (BOD <sub>5</sub> )	Refer to EPD's Technical Memorandum on Standards for Effluent Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters	Monthly
Chemical Oxygen Demand (COD)		

*Ref: Code of Practice for Water-cooled Air Conditioning Systems Part 2: Operation and Maintenance of Cooling Towers (EMSD, HKSAR, Jan 2007)*

To ensure the accuracy of the test results, testing should be carried out by the laboratories accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS). **Enviro Labs Ltd.** is registered as a HOKLAS accredited laboratory (HOKLAS 128) in Environmental Testing and our company holds HOKLAS accreditation for ALL the tests listed as above.



*Presumptive Legionellae colonies cultured on buffered charcoal yeast extract (BCYE) media.*

To enjoy promotional offer for cooling tower water testing services, please call Mr. Kenneth Lam at 26762983 (or e-mail at [ell@envirolabs.com.hk](mailto:ell@envirolabs.com.hk)) for details.

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