



水務署
Water Supplies Department

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Distribution : To all Licensed Plumbers and Authorised Persons

Dear Sirs,

WSD Circular Letter No. 2/2012
Cleansing and Disinfection of Fresh Water Inside Service

I attach a copy of the guidelines on cleansing and disinfection of fresh water inside service for your reference.

Should you have any enquiries, please contact our Engineer Mr. Angus FAN at tel. no. 2829 4726.

This Circular Letter is to supersede Circular Letter No. 6/2002 issued on 26 August 2002.

Yours faithfully,

Original signed

(CHIN Chu Sum)
for Water Authority

Encl.

(with Chinese translation)

c.c. Housing Department
Buildings Department
Architectural Services Department
Fire Services Department
The Hong Kong Housing Society
The Hong Kong Institute of Architects
The Hong Kong Institution of Engineers
The Hong Kong Institute of Surveyors
Hong Kong Federation of Plumbing & Drainage Ltd.
The Institute of Plumbing and Heating Engineering – Hong Kong Council
Hong Kong Plumbing and Sanitary Ware Trade Association Ltd.
Hong Kong Licensed Plumbers Association Ltd.
Hong Kong Plumbing General Union
Hong Kong Water Works Professional Association Ltd.
The Hong Kong Institution of Plumbing and Drainage Ltd.
The Association of Registered Fire Service Installation Contractors of Hong Kong Limited
Real Estate Development Association of Hong Kong
WSD 3318/15/81
WSD 3608/9/27/95
WSD 1612/4/7

Guidelines on Cleansing and Disinfection of Fresh Water Inside Service

Under the provision of Waterworks Regulation 7, a consumer or the agent shall be responsible for keeping an inside service clean. To this end, the consumer or agent concerned shall clean and disinfect a newly installed fresh water inside service before it is given a supply from the Water Supplies Department. Besides, after repair or maintenance of fresh water inside service, if there is a possibility that extraneous materials can get into the inside service, the inside service shall be cleaned and disinfected before water supply is resumed. The guidelines below on how to clean and disinfect the fresh water inside service are set out for general reference:-

(A) Newly Installed Fresh Water Inside Service

The newly installed fresh water inside service shall be cleaned and disinfected to the satisfaction of the Water Authority in accordance with the following procedures.

(I) Newly Installed Underground Fresh Water Mains

- (1) Remove all extraneous materials inside the water mains. Fill the fresh water mains slowly with water and carry out the required water pressure testing. If the result of the test is satisfactory, clean the fresh water mains internally and flush them with potable water. For fresh water mains of sizes less than 600 mm in diameter, swab to remove the dirt and materials inadvertently left in the water mains and flush them with potable water.
- (2) Fill the water mains completely with a homogeneous solution of chloride of lime for disinfection. The concentration of the solution has to meet the requirement that when the water mains are filled up with water, the free chlorine in the water will be at least 30 ppm. Keep the water mains under disinfection for at least 24 hours. After disinfection, flush the water mains thoroughly with potable water.
- (3) Arrange with the Water Authority to collect samples at representative sampling point(s) as agreed by the Water Authority for bacteriological and chemical analysis. The test parameters and the related acceptance

criteria are listed in the Annex.

Any contamination in underground mains may lead to pollution of the government supply. To ensure quality control and minimize the risk of pollution to the government supply, the Water Authority will carry out sampling and analysis for this part of inside service.

The contact persons of the Water Authority for such arrangements are:-

Areas	Contact Person	Telephone No.
Hong Kong and Outlying Islands	Waterworks Chemist/Treatment (1)	2891 9276
Kowloon and New Territories East	Waterworks Chemist/Treatment (2)	2691 7689
New Territories West	Waterworks Chemist/Treatment (3)	2450 6121

The Water Authority will inform the Licensed Plumber concerned of the result of analysis. If the results are satisfactory, the fresh water mains can be put into operation. If not, the above disinfection and testing procedures shall be carried out again.

- (4) To avoid possible contamination, the fresh water mains concerned shall be put into operation within 7 days from the successful disinfection. In this respect, Licensed Plumbers are advised to allow sufficient time for the Waterworks Chemists to carry out sampling and analysis and to avoid arranging disinfection immediately before long public holidays.

(II) Newly Installed Fresh Water Inside Service other than Those covered in (A)(I) above

- (1) Flush the inside service concerned thoroughly with potable water.
- (2) After flushing, follow one of the three procedures stated below to disinfect the inside service concerned.

Methods Using Chlorine as a disinfectant

- (i) Fill the inside service concerned with a homogeneous solution of chloride of lime for disinfection. The concentration of the solution has

to meet the requirement that when the inside service is filled up with water, the free chlorine in the water will be at least 30 ppm. After keeping the inside service under disinfection for at least 24 hours, the inside service shall be immediately drained and thoroughly flushed with potable water.

or

(ii) Fill the inside service concerned with chlorinated water at an initial concentration of 50 ppm for a contact period of one hour. If the free residual chlorine measured at the end of the contact period is less than 30 ppm, the disinfection process shall be repeated. After successful disinfection, the inside service shall be immediately drained and thoroughly flushed with potable water.

or

Methods Using Disinfectants other than Chlorine

(iii) Fill the inside service concerned with the disinfectant solution other than chlorine at the initial concentration and for the contact time specified by the manufacturer of the disinfectant. If the residual of the disinfectant at the end of the contact time is less than the manufacturer's recommendation, the disinfection procedure shall be repeated. After successful disinfection, the inside service shall be immediately drained and thoroughly flushed with potable water. Flushing shall continue in accordance with the disinfectant manufacturer's instructions/recommendations or until there is no evidence of the disinfectant chemical being present, or it is at a level that is no higher than that present in the potable water supplied.

- (3) After disinfection, arrange with either the Water Authority or an accredited laboratory¹ to collect samples at representative sampling point(s) as agreed by the Water Authority for bacteriological and chemical analysis. The test parameters and the related acceptance criteria are listed in the Annex.

If the results are satisfactory, the fresh water inside service can be put

¹ The accredited laboratory shall be accredited for all the individual parameters listed in the Annex.

into operation. If not, the above disinfection and testing procedures shall be carried out again.

The contact persons of the Water Authority for such arrangements are:-

Areas	Contact Person	Telephone No.
Hong Kong and Outlying Islands	Waterworks Chemist/Treatment (1)	2891 9276
Kowloon and New Territories East	Waterworks Chemist/Treatment (2)	2691 7689
New Territories West	Waterworks Chemist/Treatment (3)	2450 6121

If the sampling and analysis is carried out by the Water Authority, the Water Authority will inform the Licensed Plumber concerned of the result of analysis. If an accredited laboratory is arranged to carry out the sampling and analysis, the result of analysis shall be submitted to the Water Authority.

- (4) To avoid possible contamination, the fresh water inside service concerned shall be put into operation within 7 days from the successful disinfection. In this respect, Licensed Plumbers are advised to allow sufficient time for the Waterworks Chemists or the accredited laboratory to carry out sampling and analysis and to avoid arranging disinfection immediately before long public holidays.

(B) Repair or Maintenance of Fresh Water Inside Service

(I) Repair or Maintenance of Underground Fresh Water Mains

- (1) Keep the excavation surfaces of trench clear from the pipe body and remove all extraneous materials in the fresh water mains. If the trench is flooded, pump water out of the trench.
- (2) Clean the internal surface of the exposed pipe ends and the replacement pipe with a solution of chloride of lime. The concentration of free chlorine in the solution shall be at least 30 ppm.
- (3) Fill the section of the water mains that has been shut down for repair or

maintenance with a homogeneous solution of chloride of lime for disinfection. The concentration of the solution has to meet the requirement that when the water mains are completely filled with water, the free chlorine in the water will be at least 30 ppm. Fill the water mains with water and isolate them when filling is completed. Keep the water mains under disinfection for at least 30 minutes. After disinfection, flush the water mains thoroughly with potable water through a fire hydrant, washout or, if no such facilities are available, through a submain temporarily put out of service.

(II) Repair or Maintenance of Fresh Water Inside Service other than Those covered in (B)(I) above

After completion of repair or maintenance works, fill the concerned inside service that has been shut down for repair or maintenance with a homogeneous solution of chloride of lime for disinfection. The concentration of the solution has to meet the requirement that when the inside service is completely filled with water, the free chlorine in the water will be at least 30 ppm. Isolate the inside service when filling is completed and keep the inside service under disinfection for at least 30 minutes. After disinfection, flush the inside service thoroughly with potable water.

(C) Proper Operation of Inside Service

Stagnant water provides a favourable breeding environment for bacteria. To minimize the possibility of bacteria growth after putting an inside service into operation, water outlets which are infrequently used or are connected to stagnant water supply pipeworks shall be flushed at full flow for a minimum period of one minute at least on a weekly basis and before use.

Annex

The test parameters shall include but not limited to the following:-

Test parameter	Acceptance Criteria
Turbidity (NTU)	≤ 3.0
Colour (HU)	≤ 5
pH at 25°C	6.5-9.2
Free residual Chlorine (mg/L)	> 0 and ≤ 1.5
Conductivity at 25°C ($\mu\text{S}/\text{cm}$)	≤ 300
Total coliforms (cfu/100mL)	0
<i>E.coli</i> (cfu/100mL)	0
Heterotrophic Plate Count (cfu/mL)	≤ 20

Additional parameters may be tested if there is any sign of suspected contamination.