



Epidemiology Unit

Ministry of Health & Mass Media

231, De Saram Place, Colombo 10, Sri Lanka

Tele: (+94 11) 2695112, 2681548 Fax: (+94 11) 2696583 E-mail: chepid@sltnet.lk, epidunit@sltnet.lk Web: www.epid.gov.lk

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Regional Directors of Health Services

Testing for Residual Chlorine in Drinking Water

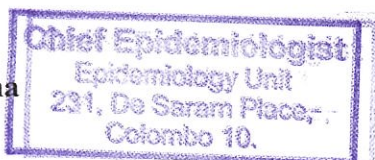
Residual chlorine is an indicator of the microbiological safety and adequacy of chlorination of drinking water. Testing for residual chlorine in drinking water is done by Public Health Inspectors (PHIs) within their areas using Lovibond apparatus.

In order to facilitate this process, we are distributing Lovibond apparatus with 100 reagent tablets to each PHI in all MOH areas under your RDHS as detailed in Annexure 1. The guideline for Residual Chlorine Testing of Drinking Water using the Lovibond apparatus is annexed (Annexure 2).

We request you to continue the supply of reagent tablets using the provincial funds to ensure continuity of this process.

Dr Palitha Karunapema

Dr Palitha Karunapema
Chief Epidemiologist



Copies:

Regional Epidemiologist / Medical Officer - Epidemiology

Annexure 01 - Distribution List of Lovibond apparatus and Reagent tablets to RDHS

RDHS	No of PHI areas/ No of Lovibond apparatus and 100 reagent tablets to be distributed	Remarks
Kandy	98	
Matale	44	
Nuwara Eliya	57	
Ampara	28	
Batticaloa	62	
Kalmunai	49	
Trincomalee	42	
Anuradhapura	72	
Polonnaruwa	40	
Kurunegala	130	
Puttalam	57	
Mannar	18	
Jaffna	80	
Kilinochchi	15	
Mullaitivu	20	
Vavuniya	17	
Kegalle	72	
Ratnapura	100	
Galle	108	
Hambantota	63	
Matara	80	Already distributed
Badulla	75	
Monaragala	47	
CMC	47	
Colombo	157	
Gampaha	180	
Kalutara	85	
NIHS	23	
Total	1866	

Annexure 2

Guideline for Residual Chlorine Testing of Drinking Water

a. Introduction

Residual chlorine is an indicator of the microbiological safety and adequacy of chlorination of drinking water. Presence of adequate residual chlorine indicates that water has undergone effective disinfection and remains protected against microbial contamination during storage and distribution. Monitoring the residual chlorine levels is essential to maintain safe drinking water standards and to prevent waterborne diseases.

Testing for residual chlorine in drinking water is done by Public Health Inspectors (PHIs) within their areas. This guideline covers the procedure of testing drinking water for residual chlorine content using Lovibond apparatus.

b. Water Testing Procedure for Residual Chlorine levels

Testing frequency

- At least one residual chlorine test per month from each chlorinated water project/source in the MOH area.

Selection of sampling sites

- Take the sample preferably from the furthest point in the supply.
- Change the point of collection of samples from each water project monthly.
- Give priority to sites like places of public assembly, educational facilities and commercial workplaces.
- Take follow up samples from water projects with unsatisfactory residual chlorine levels.

Equipment used – Lovibond apparatus

Reagent Used - DPD 1 (Diethyl-p-phenylene diamine) reagent tablet

The DPD 1 reagent reacts with free chlorine producing a pink colour proportional to chlorine concentration.

Steps of residual chlorine testing using Lovibond apparatus

1. Open the rubber lid of the apparatus.
2. Fill all the chambers of the apparatus completely with water from the source.
3. Add one DPD 1 tablet directly from the pack to the Chlorine testing chamber in the right side of the apparatus, **without touching the tablet**.
4. Close the rubber lid of the apparatus properly covering all three chambers.
5. Swing the apparatus up and down to facilitate the dissolving of the tablets and **do not shake vigorously**.

6. A pink colour develops if free chlorine is present.
7. Compare colour against standard colour displayed in the scales of the apparatus.
8. Read and record the residual chlorine level in mg/L.
9. Wash both the apparatus and lid properly using tap water and store it dry until next assessment.

Interpretation of results

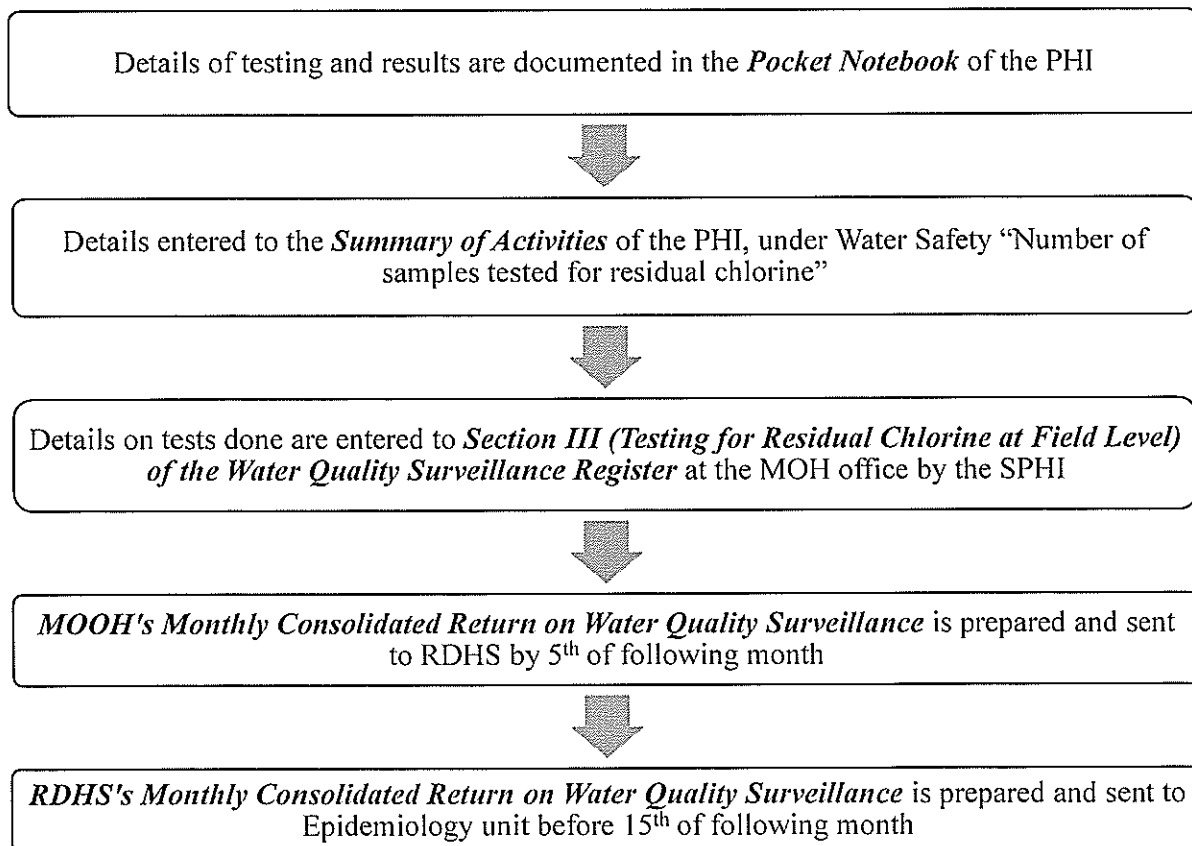
< 0.2 mg/L = Inadequate chlorination

0.2 – 0.5 mg/L = Satisfactory

Precautions to ensure accurate test results

1. Check the expiry date of DPD 1 tablets before use.
2. Protect DPD 1 tablets from moisture and sunlight.
3. Ensure chambers of the apparatus are clean and scratch-free.
4. Perform testing immediately after sampling.
5. Avoid touching the DPD 1 tablets with your fingers.
6. Very high levels of free chlorine (>10 mg/L) can cause bleaching off the pink colour leading to false low reading.

c. Reporting and Documentation



- If sample is taken from the common sources of drinking water in the area, data should be entered in the *Common Sources of Drinking Water Register* at the PHI office.
- PHI shall maintain a sheet/book for the details of residual chlorine tests done mentioning the source, location, date of sampling, residual chlorine level, interpretation and remarks for each test.

d. Actions to be done following unsatisfactory results

Where residual chlorine level is below recommended level:

- Inform the SPHI and Medical Officer of Health (MOH).
- Inform relevant water supply institution/local authority/NWS&DB through MOH, recommending proper chlorination.
- Arrange repeat sampling and monitor, by proper follow up of the unsatisfactory sources.