

## TGN13 - PREPARATION OF CHLORINE SOLUTIONS

### Introduction

Chlorine is an effective disinfectant for most bacterial and viral pathogens. The effectiveness of prepared chlorine solutions for use in water hygiene procedures is dependent upon the concentration of the active form of chlorine (e.g.: hypochlorous acid where hypochlorite salts are used) which is influenced by age of product and storage conditions.

### Good Practice

In developing their own policies or operating procedures for the preparation of chlorine solutions, the following points should be considered:-

1. Only materials which are approved under Regulation 31 of the Water Supply (Water Quality) Regulations 2016 and their equivalents in the devolved administrations should be used.
2. The most commonly used (and approved) chlorine compounds are:-
  - i) Hypochlorite solutions with an available chlorine content of approximately 10-15% (w/v)
  - ii) Calcium hypochlorite tablets with an available chlorine content of approximately 33-35% (w/w)
  - iii) “Instachlor” tablets – isocyanurate
3. Appropriate health and safety procedures must be employed when using concentrated chlorine-based solutions, powders and tablets.
4. Chlorine-based solutions and tablets should not be used after the stated “expiry date”. Procedures should be in place to ensure that diluted chlorine solutions (for use for example in spray chlorination techniques) are also used within a stated time to ensure their effectiveness. Procedures should be in place to ensure effective stock rotation.
5. Chlorine-based solutions must only be stored in dedicated and clearly marked containers. Storage sites must have sufficient bunding to prevent accidental spills affecting a wider area. Containers previously used for the storage of any other products must not be used.
6. “Ready-reckoner” tables are useful for operational field staff in the preparation of chlorine-based solutions. The table below shows the amount (ml) of 10% (w/v) sodium hypochlorite solution required to make specific volumes of chlorine solution at various strengths (i.e.: 5L of sodium hypochlorite in 100L of water will produce a solution strength of 5mg/L free available chlorine).

Desired chlorine concentration strength (mg/l or ppm)	Solution volume (L)				
	10	100	500	1,000	5,000
0.5	Not	0.5	2.5	5	25
1	Not	1	5	10	50
5	0.5	5	25	50	250

10	1	10	50	100	500
20	2	20	100	200	1.000
50	5	50	250	500	2,500
1,000	100	1,000	5,000	10,000	50,000