



Infection Control Branch

The Use of Bleach

Bleach is a strong and effective disinfectant. Its active ingredient, sodium hypochlorite, denatures protein in micro-organisms and is therefore effective in killing bacteria, fungi and viruses. Household bleach works quickly and is widely available at a low cost. Diluted household bleach is thus recommended for the disinfection of environment.

2. As bleach irritates mucous membranes, the skin and the airway, decomposes under heat and light and reacts readily with other chemicals, bleach should be used with caution. Improper use of bleach may reduce its effectiveness in disinfection and can injure users. Overuse of bleach will pollute the environment and disturb ecological balance.

Tools and Equipment

3. Get all necessary tools and equipment ready, such as household bleach, measuring tools, containers and Personal Protective Equipment.

Preparing / Using Diluted Bleach

(a) Dilute and use bleach in a well-ventilated area.



- (b) Put on appropriate Personal Protective Equipment (e.g. mask, gloves, safety goggles and plastic apron) when diluting or using bleach as it irritates mucous membranes, the skin and the airway.
- (c) Mix bleach with cold water as hot water decomposes the active ingredient of bleach and renders it ineffective.
- (d) Bleach containing 5.25% sodium hypochlorite. Properly dilute the bleach to achieve appropriate concentration as follows:
 - (i) 1:99 diluted household bleach (mixing 1 part of 5.25% bleach with 99 parts of water) is used for general household cleaning and disinfection.
 - (ii) 1:49 diluted household bleach (mixing 1 part of 5.25% bleach with 49 parts of water) is used for surfaces or articles contaminated with vomitus, excreta and secretions.
 - (iii) 1:4 diluted household bleach (mixing 1 part of 5.25% bleach with 4 parts of water) is used for surfaces or articles contaminated with blood spillage.
- (e) Make adjustments to the amount of bleach added if its concentration of sodium hypochlorite is above or below 5.25%.
 - (i) Calculation: Multiplier of the amount of bleach added = $\frac{5.25}{\text{concentration of sodium hypochlorite in bleach}}$
 - (ii) For example, when diluting a bleach containing only 5% sodium hypochlorite, the multiplier is $\frac{5.25}{5} = 1.05$. That means $10\text{ml} \times 1.05 = 10.5\text{ml}$ of bleach should be used when preparing a bleach solution.
- (f) Use a tablespoon or measuring cup for accurate measurement of the amount of bleach added.
- (g) Wash hands thoroughly after the procedure.

Precautions for the use of bleach

- (a) Avoid using bleach on metals, wool, nylon, silk, dyed fabric and painted

surfaces.

- (b) Avoid touching the eyes. If bleach gets into the eyes, immediately rinse with water for at least 15 minutes and consult a doctor.
- (c) Do not use bleach together with other household detergents as this reduces its effectiveness in disinfection and causes dangerous chemical reactions. For example, a toxic gas is produced when bleach is mixed with acidic detergents such as those used for toilet cleaning. This can result in accidents and injuries. If necessary, use detergents first and rinse thoroughly with water before using bleach for disinfection.
- (d) Undiluted bleach liberates a toxic gas when exposed to sunlight, thus store in a cool, shaded place and out of reach of children.
- (e) Sodium hypochlorite decomposes with time. To ensure its effectiveness, purchase recently produced bleach and avoid over-stocking.
- (f) For effective disinfection, use diluted bleach within 24 hours after preparation as decomposition increases with time if left unused.
- (g) Organic materials inactivate bleach; clean surfaces so that they are clear of organic materials before disinfection with bleach.

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