

# 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, fungus and viruses. Household bleach works quickly and is widely available at a low cost. Diluted household bleach is thus recommended for the disinfection of facilities.

As bleach irritates mucous membranes, the skin and the airway, decomposes under heat or light and reacts readily with other chemicals, caution should be exercised in the use of it. Improper use of bleach may reduce its effectiveness in disinfection and also lead to accidents which can be harmful to health. Overuse of bleach or using a bleach solution that is too concentrated results in the production of toxic substances that pollute the environment and disturb ecological balance.

## **Tools and Equipment**

Before cleaning, get all necessary tools and equipment ready. Cleaning tools, cleansers/disinfectants, measuring tools and protective gear will be needed.

Cleaning tools:

Brush, mop, towel, spray can and bucket.

Cleansers/disinfectants:

Bleach and water.

Measuring tools:

Tablespoon and measuring cup.

Protective gear:

Mask, rubber gloves, plastic apron and goggles (recommended).

## **Procedures of Preparing/Using Diluted Bleach**

1. Keep windows open when diluting or using bleach to ensure good ventilation.
2. Put on protective gear when diluting or using bleach as it irritates mucous membranes, the skin and the airway.
3. Cold water should be used for dilution as hot water decomposes the active ingredient of bleach and renders it ineffective.
4. Bleach containing 5.25% sodium hypochlorite should be diluted as follows (demonstration short):
  - 1:99 diluted household bleach (mixing 10ml of bleach with 1litre of water) can be used for general household cleaning.
  - 1:49 diluted household bleach (mixing 10ml of bleach with 0.5litre of water) is used to disinfect surfaces or articles contaminated with vomitus, excreta, secretions or blood.
5. Make adjustments to the amount of bleach added if its concentration of sodium hypochlorite is above or below 5.25%.
  - Calculation: Multiplier of the amount of bleach added =  $\frac{5.25}{\text{concentration of sodium hypochlorite in bleach}}$
  - For example, when diluting a bleach containing only 5% sodium hypochlorite, the multiplier is  $\frac{5.25}{5}=1.05$ . That means  $10 \times 1.05 = 10.5\text{ml}$  of bleach should be used when preparing a bleach solution.
6. For accurate measurement of the amount of bleach added, a tablespoon or measuring cup can be used.

7. Rinse disinfected articles with water and wipe dry.
8. Cleaning tools should be soaked in diluted bleach for 30 minutes and then rinsed thoroughly before reuse.
9. Finally, wash hands with liquid soap, then dry hands with a clean towel or disposable towel.

## **Precautions**

- Avoid using bleach on metals, wool, nylon, silk, dyed fabric and painted surfaces.
- Avoid touching the eyes. If bleach gets into the eyes, immediately rinse with water for at least 15 minutes and consult a doctor.
- Bleach should not be used together or mixed with other household detergents as this reduces its effectiveness in disinfection and causes chemical reactions. For instance, a toxic gas is produced when bleach is mixed with acidic detergents such as those used for toilet cleaning. This could result in accidents and injuries. If necessary, use detergents first and rinse thoroughly with water before using bleach for disinfection.
- As undiluted bleach liberates a toxic gas when exposed to sunlight, it should be stored in a cool and shaded place out of reach of children.
- Sodium hypochlorite decomposes with time. To ensure its effectiveness, it is advised to purchase recently produced bleach and avoid over-stocking.
- For effective disinfection, diluted bleach should be used within 24 hours after preparation as decomposition increases with time if left unused.