Reading Task: The Use of Bleach

**Suggested Level: S3-4**

**Task Description**

You will read an article about the use of bleach for general household cleaning and answer the related questions.

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| **The Use of Bleach**[1] Bleach is a strong and effective disinfectant. Its active ingredient, sodium hypochlorite, destroys proteins 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 the environment.[2] As bleach irritates mucous membranes, the skin and the airway, decomposes under heat and light and reacts readily with other chemicals, it should be used with caution. Improper use of bleach may reduce its effectiveness in disinfection and can injure users. Overuse of bleach could pollute the environment and disturb the ecological balance. **Tools and Equipment** [3] Get all necessary tools and equipment ready, such as household bleach, measuring tools, containers and personal protective equipment (e.g. masks, gloves, safety goggles, plastic aprons).**Preparing / Using Diluted Bleach** [4] (a) Dilute and use bleach in a well-ventilated area that allows fresh air to enter. [5] (b) Put on appropriate personal protective equipment when diluting or using bleach as it irritates mucous membranes, the skin and the airway. [6] (c) Mix bleach with cold water as hot water decomposes the active ingredient of bleach and renders it ineffective. [7] (d) Bleach contains 5.25% sodium hypochlorite. Dilute the bleach properly 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. [8] (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 = 5.25 concentration of sodium hypochlorite in bleach (ii) For example, when diluting bleach containing only 5% sodium hypochlorite, the multiplier is 5.25 / 5=1.05. That means 10ml x 1.05 =10.5ml of bleach should be used when preparing a bleach solution. [9] (f) Use a tablespoon or measuring cup for accurate measurement of the amount of bleach needed.[10] (g) Wash hands thoroughly after the procedure.**Precautions for the use of bleach** [11] (a) Avoid using bleach on metals, wool, nylon, silk, dyed fabric and painted surfaces. [12] (b) Avoid touching the eyes. If bleach gets into the eyes, immediately rinse with water for at least 15 minutes and consult a doctor. [13] (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. [14] (d) Undiluted bleach liberates a toxic gas when exposed to sunlight. Thus, it should be stored in a cool, shaded place and kept out of reach of children. [15] (e) Sodium hypochlorite decomposes with time. To ensure its effectiveness, purchase recently produced bleach and avoid over-stocking. [16] (f) For effective disinfection, use diluted bleach within 24 hours after preparation as decomposition increases with time if left unused.[17] (g) Organic materials inactivate bleach; clean surfaces so that they are clear of organic materials before disinfection with bleach.  | 5101520253035404550 |

(Adapted from an article on the website of the Centre for Health Protection, Department of Health: <https://www.chp.gov.hk/files/pdf/the_use_of_bleach.pdf>)

**Refer to the text and answer the following questions.**

1. According to Paragraph 1, why can bleach kill germs effectively?

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1. It is mentioned in Paragraph 2 that bleach should be used with caution. List any two reasons and possible harms. You may need to use information from other paragraphs.

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3. What could happen if we use too much bleach?

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4. Find words with similar meanings from the specified paragraphs. Use **ONE** word only for each answer.

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| --- | --- |
| **Meaning** | **Word in the text** |
| a) suggested |  | Paragraph 1 |
| b) makes |  | Paragraph 6 |
| c) polluted |  | Paragraph 7 |
| d) carefully and completely |  | Paragraph 10 |
| e) keeping a larger amount of something than is needed |  | Paragraph 15 |

5. Which of the following concentrations of bleach solution should be used for general household

 cleaning and disinfection?

A. 1:4

B. 1:19

C. 1:49

D. 1:99

6. According to Paragraphs 11-17, are the following statements True (T), False (F) or Not Given (NG)? Put a tick (✓) in the correct boxes:

|  |  |  |  |
| --- | --- | --- | --- |
|  | T | F | NG |
| i) Bleach can be used on any materials or surfaces in the household. |  |  |  |
| ii) Undiluted bleach releases a toxic gas when exposed to sunlight. |  |  |  |
| iii) Household bleach use is linked to respiratory infections in children. |  |  |  |
| iv) For effective disinfection, diluted bleach should be left unused for 24 hours after preparation. |  |  |  |

7. Complete the following summary based on information from Paragraphs 4-6,13 and 14. Fill in **ONE** word for each blank. The words may or may not appear in the reading text.

***How to Use Bleach to Clean Safely***

* *Keep windows and doors* (a)*\_\_\_\_\_\_\_\_\_ to allow fresh air to enter when diluting or using bleach indoors*
* (b) *\_\_\_\_\_\_\_\_\_ protective gear such as masks, rubber gloves, plastic aprons and goggles*
* *Never* (c)*\_\_\_\_\_\_\_\_\_ bleach together with other household detergents*
* *Use* (d) *\_\_\_\_\_\_\_\_\_ water for diluting bleach. Mix 10ml of bleach with 1 litre of water for general household cleaning*
* *Drinking or touching bleach can cause serious injury. Like any cleaning product, store it safely away from anyone who should not get­­­­­­­* (e) *\_\_\_\_\_\_\_\_\_ to it, especially* (f) *\_\_\_\_\_\_\_\_\_*

8. What type of text is the passage?

A. Notice

B. Proposal

C. Guidelines

D. Speech

**Writing Task**

You have seen the following topic on an online forum. Write a response in about 150 words.

I know bleach is an effective and inexpensive disinfectant. But it has a distinctive odour that is strong and unpleasant, and it seems quite scary to use. One time I tried to use bleach to clean the floor. My eyes watered and the skin of my hands peeled off. Please share your experience of using bleach for household cleaning and some practical usage tips with me!

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**Answer key**

1. Bleach contains an active ingredient, sodium hypochlorite, which destroys proteins in micro-organisms.

2.Bleach irritates mucous membranes, the skin and the airway. (Para. 2)

 Bleach reacts readily with other chemicals and causes dangerous chemical reactions. (Para. 13)

Undiluted bleach liberates a toxic gas when exposed to sunlight. (Para. 14)

(Any 2)

3. We could pollute the environment and disturb the ecological balance.

4. (a) recommended

(b) renders

(c) contaminated

(d) thoroughly

(e) over-stocking

5. D

6. (i) F

 (ii) T

 (iii) NG

 (iv) F

7. (a) open

(b) Wear

(c) use

(d) cold

(e) access

(f) children

8. C