

## **(1) BLEACH .1 % 1000 PARTS PER MILLION SODIUM HYPOCHLORITE THE WORLDS MOST OFTEN RECOMMENDED VIRUCIDAL DISINFECTANT.**

**European Centre for Disease Prevention and Control. Interim guidance for environmental cleaning in non-healthcare facilities exposed to SARS-CoV-2. ECDC: Stockholm; 2020.**

This document aims to provide guidance about the environmental cleaning in non-healthcare facilities (e.g. rooms, public offices, transports, schools, etc.) where confirmed COVID-19 cases have been before being admitted to hospital.

This guidance is based on the current knowledge about SARS-CoV-2 and evidence originating from studies on other corona viruses

### **Environmental cleaning options**

Due to the potential survival of the virus in the environment for several days, the premises and areas potentially contaminated with SARS-CoV-2 should be cleaned before their re-use, using products containing antimicrobial agents known to be effective against coronaviruses. Although there is lack of specific evidence for their effectiveness against SARS-CoV-2, cleaning with water and household detergents and use of common disinfectant products should be sufficient for general precautionary cleaning.

Several antimicrobial agents have been tested against different coronaviruses (Table 1). Some of the active ingredients, e.g. sodium hypochlorite (contained in the household bleach) and ethanol are widely available in non-healthcare and non-laboratory settings..

### **Cleaning approaches**

The use of 0.1% sodium hypochlorite (dilution 1:50 if household bleach at an initial concentration of 5% is used) after cleaning with a neutral detergent is suggested for decontamination purposes, although no data on the effectiveness against the SARS-CoV-2 are available. For surfaces that could be damaged by sodium hypochlorite, 70% concentration of ethanol is needed for decontamination after cleaning with a neutral detergent.

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## **(2)GOV.UK**

1. Home (<https://www.gov.uk/>)
2. COVID-19: infection prevention and control (<https://www.gov.uk/government/publications/wuhan-novelcoronavirus-infection-prevention-and-control>)
1. Public Health England (<https://www.gov.uk/government/organisations/public-health-england>) Guidance

## **COVID-19: infection prevention and control guidance**

Updated 19 February 2020

### **Environmental decontamination**

After cleaning with neutral detergent, a chlorine-based disinfectant should be used, in the form of a solution at a minimum strength of 1,000 ppm available chlorine. If an alternative disinfectant is used within the organisation, the local IPCT should be consulted on this to ensure that this is effective against enveloped viruses.

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## **(3) A Singapore Government Agency Website**

Interim Guidelines for Environmental Cleaning and Disinfection of Areas Exposed to Confirmed Case(s) of COVID-19 in Non-Health-care Premises First Released on 25 January 2020 • Revised on 28 February 2020

### **A. Cleaning agents and disinfectants**

1. As the virus can survive on surfaces of different materials for at least 2 to 3 days, surfaces potentially contaminated with novel coronavirus should be sanitised.
2. An appropriate disinfectant with indication of effectiveness against coronaviruses can be used. Disinfectants should be prepared and applied in accordance with the manufacturer's recommendation. Ensure that appropriate contact time is given before removing any disinfected materials. Please refer to the "Interim List of Household Products and Active Ingredients for Disinfection of COVID-19 Virus" for a list of disinfectants that can be used.

3. Bleach can be used as a disinfectant for cleaning and disinfection (dilute 1 part bleach in 49 parts water, 1000 ppm or according to manufacturer's instructions). Bleach solutions should be prepared fresh. Leaving the bleach solution for a contact time of at least 10 minutes is recommended.
4. Alcohol can be used to wipe down surfaces where the use of bleach is not suitable, e.g. metal.

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#### **(4) Guidelines on Prevention of COVID-19 for the General Public**

The Department of Health advises the general public to take the following precautionary measures to minimise the risk of contracting and spreading COVID-19. Disease information <https://www.chp.gov.hk/en/healthtopics/content/24/102466.html>

Maintain good environmental hygiene o Maintain good indoor ventilation. o Home should be cleaned thoroughly at least once per week with 1 in 99 diluted household bleach (mixing 10 ml of bleach containing 5.25% sodium hypochlorite with 990 ml of water), leave for 15-30 minutes and then rinse with water. For metallic surface, disinfect with 70% alcohol.

If places are contaminated by respiratory secretions, vomitus or excreta, use strong absorbent disposable towels to clean up the visible matter. Then disinfect the surface and the neighbouring area with appropriate disinfectant. For non-metallic surface, disinfect with 1 in 49 diluted household bleach (mixture of 10ml of household bleach containing 5.25% hypochlorite solution with 490ml of water), leave for 15 - 30 minutes, and then rinse with water. For metallic surface, disinfect with 70% alcohol

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#### **(5) Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents**

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Summary: Currently, the emergence of a novel human coronavirus, SARS-CoV-2, has become a global health concern causing severe respiratory tract infections in humans. Human-to-human transmissions have been described with incubation times between 2-10 days, facilitating its spread via droplets, contaminated hands or surfaces. We therefore reviewed the literature on all available information about the persistence of human and veterinary coronaviruses on inanimate surfaces as well as inactivation strategies with biocidal agents used for chemical disinfection, e.g. in healthcare facilities. The analysis of 22 studies reveals that human coronaviruses such as Severe Acute Respiratory Syndrome (SARS) coronavirus, Middle East Respiratory Syndrome (MERS) coronavirus or endemic human coronaviruses (HCoV) can persist on inanimate surfaces like metal, glass or plastic for up to 9 days, but can be efficiently inactivated by surface disinfection procedures with 62e71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute. Other biocidal agents such as 0.05e0.2% benzalkonium chloride or 0.02% chlorhexidine digluconate are less effective. As no specific therapies are available for SARS-CoV-2, early containment and prevention of further spread will be crucial to stop the ongoing outbreak and to control this novel infectious thread.

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Conclusions: Human coronaviruses can remain infectious on inanimate surfaces for up to 9 days. Surface disinfection with 0.1% sodium hypochlorite or 62 to 71% ethanol significantly reduces coronavirus infectivity on surfaces within 1 min exposure time. We expect a similar effect against the SARS-CoV-2.

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#### **(6) Survival of Severe Acute Respiratory Syndrome Coronavirus**

Mary Y. Y. Lai, Peter K. C. Cheng, and Wilina W. L. Lim

Virology Division, Public Health Laboratory Services Branch, Centre for Health Protection, Department of Health, Hong Kong, China Background. The primary modes of transmission of severe acute respiratory syndrome (SARS) coronavirus (SARS-CoV) appear to be direct mucus membrane contact with infectious droplets and through exposure to fomites. Knowledge of the survival characteristics of the virus is essential for formulating appropriate infection control measures.

Conclusions.

Fecal and respiratory samples can remain infectious for a long period of time at room temperature. The risk of infection via contact with droplet-contaminated paper is small. Absorbent material, such as cotton, is preferred to non absorptive material for personal protective clothing for routine patient care where risk of large spillage is unlikely. The virus is easily inactivated by commonly used disinfectants.

Study confirmed 500 and 1000 ppm of sodium hypochlorite and common household detergents can be effective decontaminating agents for use in the laboratory and hospital.

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## **(7) Chemical disinfection of non-porous inanimate surfaces experimentally contaminated with four human pathogenic viruses.**

S. A. Sattar, V. S. Springthorpe, Y. Karim, and P. Loro

“The different types of chlorine-based disinfectants tested all reliably inactivated the enveloped viruses at 1000 p.p.m. free chlorine.”

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## **(8) Ontario Public Health**

At a glance Disinfectant tables. Level of Disinfection: Intermediate Destroys vegetative bacteria, mycobacteria, most viruses, and most fungi but not bacterial spores. When to Use: Use on non-critical items that require intermediate-level disinfection.

1 and 50 parts bleach solution .1 % 1000 parts per million.

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## **(9) Vancouver Coastal Health – Public Health, Gastroenteritis Outbreak Control Policy**

The Public Health Surveillance unit monitors a range of indicators of gastrointestinal illness in the community. When the seasonal trend in gastrointestinal illness activity in the community increases, suggesting a high risk of outbreaks in health care facilities, facilities should implement disinfection of surfaces in emergency departments with 1:50 (1000PPM) dilution of bleach, in addition to routine cleaning. This measure is intended to reduce the risk of introduction of gastrointestinal pathogens, most likely Norovirus, from the community.

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## **(10) Government of Canada**

Public Health Notice — Outbreak of norovirus and gastrointestinal illnesses linked to raw oysters. Thoroughly clean contaminated surfaces, and disinfect using chlorine bleach, especially after an episode of illness.

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## **(11) Governor Gumo Of New York .March the 2nd 2020**

The governor said that the state would begin new cleaning protocols in schools and public transportation systems, using bleach as a disinfectant.

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## **(12) World Health Organization**

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected  
Interim guidance 25 January 2020

It is important to ensure that environmental cleaning and disinfection procedures are followed consistently and correctly. Thoroughly cleaning environmental surfaces with water and detergent and applying commonly used hospital-level disinfectants (such as sodium hypochlorite) are effective and sufficient procedures.

Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19)  
Interim guidance. 29 February 2020

Environmental controls: Environmental cleaning and disinfection procedures must be followed consistently and correctly. Cleaning personnel need to be educated and protected from COVID-19 infection and ensure that environmental surfaces are regularly and thoroughly cleaned throughout the quarantine period: - Clean and disinfect frequently touched surfaces such as bedside tables, bedframes, and other bedroom furniture daily with regular household disinfectant containing a diluted bleach solution (1-part bleach to 99 parts water). For surfaces that do not tolerate bleach, 70% ethanol can be used; - Clean and disinfect bathroom and toilet surfaces at least once daily with regular household disinfectant containing a diluted bleach solution (1-part bleach to 99 parts water);

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## **(13) CDC Vital Signs**

Preventing Norovirus Outbreaks

Regularly clean and sanitize kitchen surfaces and frequently touched objects, using a chlorine based product or other sanitizer approved by the Environmental Protection Agency for use against norovirus.

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