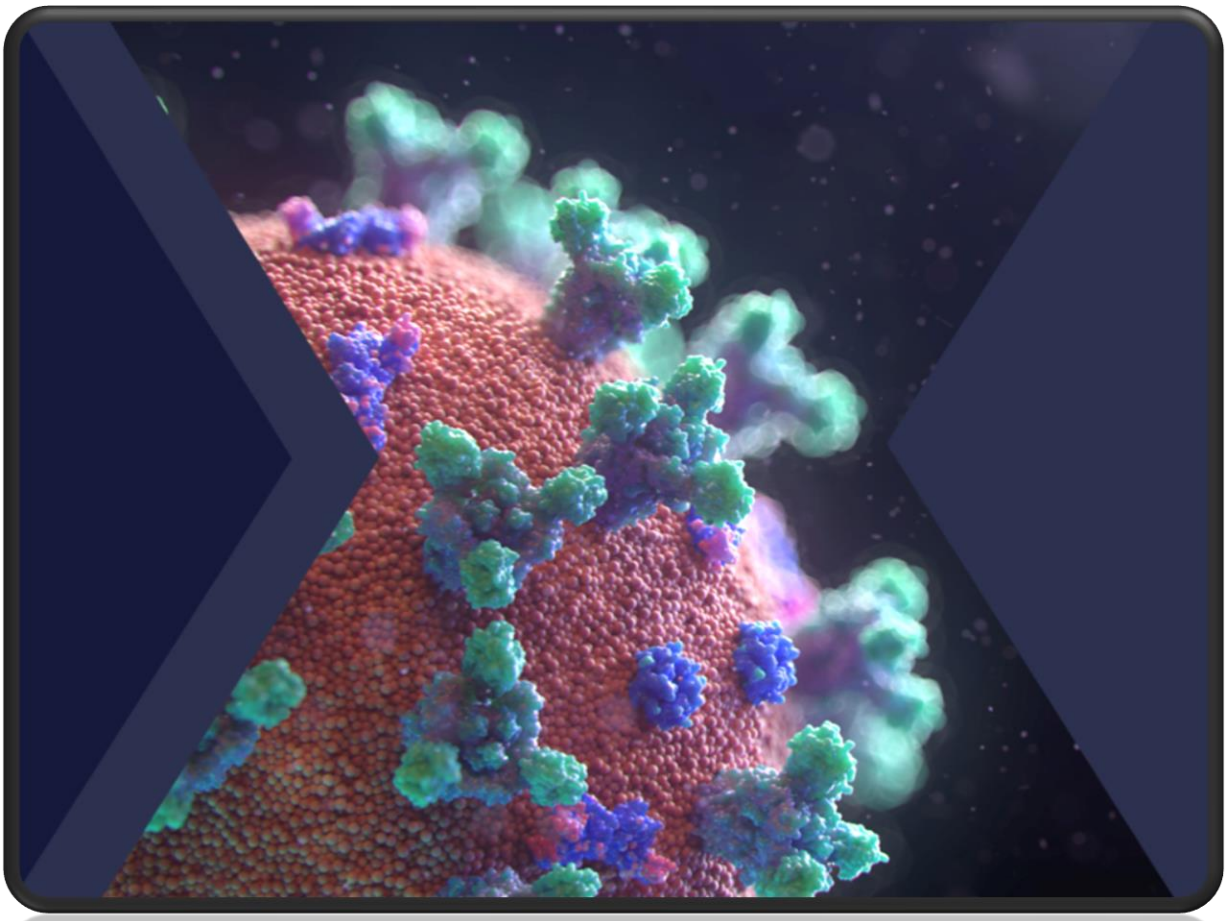
Hydro-X

QP23 – COVID-19 Disinfection in Non-Healthcare Settings

Issue 1, March 2020

QP 23 – COVID-19: Disinfection in Non-Healthcare Settings

Issue 2, Last Reviewed 3rd April 2020



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The Hydro-X Group of Companies: Compliance House, Manor Drive, Dinnington, S25 3QU
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Disinfection Process and Methodology

Disinfection process is as per the guidance provided by Public Health England (PHE):

https://www.gov.uk/government/publications/covid-19-decontamination-in-non-healthcare-settings/covid-19-decontamination-in-non-healthcare-settings

What you need to know

- disinfecting an area with disinfectant after someone with suspected coronavirus (COVID-19) has left will reduce the risk of passing the infection on to other people
- wear disposable or washing-up gloves and aprons for disinfection. These should be double-bagged, then stored securely for 72 hours then thrown away in the regular rubbish after disinfection is finished
- using a disposable cloth, first disinfect hard surfaces with warm soapy water. Then disinfect these surfaces with the disinfection products you normally use. Pay particular attention to frequently touched areas and surfaces, such as bathrooms, grab-rails in corridors and stairwells and door handles
- if an area has been heavily contaminated, such as with visible bodily fluids, from a person with coronavirus (COVID-19), consider using protection for the eyes, mouth and nose, as well as wearing gloves and an apron
- wash hands regularly with soap and water for 20 seconds, and after removing gloves, aprons and other protection used while disinfection

Background

Experience of new coronaviruses (SARS-CoV and MERS-CoV) has been used to inform this guidance. The risk of infection depends on many factors, including:

- the type of surfaces contaminated
- the amount of virus shed from the individual
- the time the individual spent in the setting
- the time since the individual was last in the setting

The infection risk from coronavirus (COVID-19) following contamination of the environment decreases over time. It is not yet clear at what point there is no risk. However, studies of other viruses in the same family suggest that, in most circumstances, the risk is likely to be reduced significantly after 72 hours.

Principles of disinfection after the case has left the setting or area

Personal protective equipment (PPE)

The minimum PPE to be worn for disinfection an area where a person with possible or confirmed coronavirus (COVID-19) is disposable gloves and an apron. Hands should be washed with soap and water for 20 seconds after all PPE has been removed.

If a risk assessment of the setting indicates that a higher level of virus may be present (for example, where unwell individuals have slept such as a hotel room or boarding school

dormitory) or there is visible contamination with body fluids, then the need for additional PPE to protect the eyes, mouth and nose might be necessary. The local Public Health England (PHE) Health Protection Team (HPT) can advise on this.

Disinfection

Public areas where a symptomatic individual has passed through and spent minimal time, such as corridors, but which are not visibly contaminated with body fluids can be disinfected thoroughly as normal.

All surfaces that the symptomatic person has come into contact with must be disinfected, including:

- objects which are visibly contaminated with body fluids
- all potentially contaminated high-contact areas such as bathrooms, door handles, telephones, grab-rails in corridors and stairwells

Use disposable cloths or paper roll and disposable mop heads, to disinfect all hard surfaces, floors, chairs, door handles and sanitary fittings, following one of the options below:

- use either a combined detergent disinfectant solution at a dilution of 1,000 parts per million available chlorine

<u>or</u>

- a household detergent followed by disinfection (1000 ppm av.cl.). Follow manufacturer's instructions for dilution, application and contact times for all detergents and disinfectants

<u>or</u>

- if an alternative disinfectant is used within the organisation, this should be checked and ensure that it is effective against enveloped viruses

Avoid creating splashes and spray when disinfecting.

Any cloths and mop heads used must be disposed of and should be put into waste bags as outlined below.

When items cannot be disinfected using detergents or laundered, for example, upholstered furniture and mattresses, steam disinfection should be used.

Any items that are heavily contaminated with body fluids and cannot be disinfected by washing should be disposed of.

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Laundry
Wash items in accordance with the manufacturer's instructions. Use the warmest water setting and dry items completely. Dirty laundry that has been in contact with an unwell person can be washed with other people's items.

Do not shake dirty laundry, this minimises the possibility of dispersing virus through the air.

Disinfect anything used for transporting laundry with your usual products, in line with the disinfection guidance above.

Waste

Waste from possible cases and disinfection of areas where possible cases have been (including disposable cloths and tissues):

1. Should be put in a plastic rubbish bag and tied when full.
2. The plastic bag should then be placed in a second bin bag and tied.
3. It should be put in a suitable and secure place and marked for storage until the individual's test results are known.

Waste should be stored safely and kept away from children. You should not put your waste in communal waste areas until negative test results are known or the waste has been stored for at least 72 hours.

- if the individual tests negative, this can be put in with the normal waste
- if the individual tests positive, then store it for at least 72 hours and put in with the normal waste

If storage for at least 72 hours is not appropriate, arrange for collection as a Category B infectious waste either by your local waste collection authority if they currently collect your waste or otherwise by a specialist clinical waste contractor. They will supply you with orange clinical waste bags for you to place your bags into so the waste can be sent for appropriate treatment.

Areas & Task List
Receptions
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Sanitise wipe disinfect entrance doors and frames
Sanitise wipe disinfect desk
Empty wastepaper bin and replenish bin liner
Disinfect and sanitise telephone
Sanitise wipe all doors & frames
Sanitise wipe fixtures and fittings
Mop any hard floor areas

Sanitise wipe over keyboard, mouse and around monitor
All Office, Meeting & Board Room Areas
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Empty wastepaper bin and replenish bin liner
Sanitise wipe all surfaces of all furniture (where accessible)
Sanitise wipe all fixtures and fittings at reachable height
Sanitise wipe all ledges and skirtings
Sanitise wipe all doors and frames including handles
sanitise wipe over phones, keyboards, mice and around monitor screen
Sanitise wipe desks where accessible
Passenger Lifts & Goods Lift
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Sanitise wipe all doors
Sanitise Wipe disinfect lift cart walls
Sanitise wipe all glazed surfaces
Sanitise wipe indicator panels
Mop hard flooring to lifts
Lobbies & Corridors
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Sanitise wipe all fixtures and fittings at a reachable height
Sanitise wipe all ledges and skirting
Sanitise wipe glass vision panels to doors
Mop all hard floor areas
Staircases
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Sanitise wipe all handrails
Sanitise wipe ledges, fixtures & fittings
Mop hard floors
Staff Kitchens/Resource Areas
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Empty wastepaper bin and replenish bin liner- wipe disinfect bin surfaces
Wipe disinfect & sanitise all work surfaces
Sanitise wipe sink, taps and draining board
Sanitise wipe disinfect fascia of units and cupboards
Sanitise wipe disinfect external surfaces of fridges and all equipment
Sanitise wipe disinfect all fixtures and fittings

Sanitise wipe disinfect all ledges and skirting
Mop hard floor areas
Wash up cups and cutlery either by hand or via dishwasher if available
Sanitise wipe inside microwave
Sanitise wipe inside of Fridge
Toilets/Showers & Washrooms Areas
Use cloths or paper roll with 1000ppm Hydrocid 337F **or** Disinfectant Spray hard surface areas using backpack sprayer using H202 @ 1% dilution **or** Hydro-Fog Area (see separate methodology - Method Statement for Fogging Areas Using Hydrogen Peroxide)
Empty wastepaper bin and replenish bin liner- wipe disinfect bin surfaces
Sanitise wipe disinfect all sinks and surrounds
Sanitise wipe disinfect all taps
Sanitise wipe disinfect & sanitize all vanity units
Sanitise wipe disinfect all tile splash backs
Sanitise wipe disinfect all towel cabinets/hand dryers
Sanitise wipe disinfect and polish all mirrors
Sanitise wipe down all cubicle walls & doors
Disinfect & sanitize all surfaces to toilets bowls, including handles
Sanitise wipe disinfect cisterns, and low-level pipe work
Sanitise wipe disinfect all fixtures and fittings
Sanitise wipe disinfect all ledges and skirting
Mop hard floor areas
Replenish all consumable items as necessary
Sanitise wipe disinfect showers

Hydrogen Peroxide 3% Efficacy

Mode of Action

Hydrogen peroxide works by producing destructive hydroxyl free radicals that can attack membrane lipids, DNA, and other essential cell components. Catalase, produced by aerobic organisms and facultative anaerobes that possess cytochrome systems, can protect cells from metabolically produced hydrogen peroxide by degrading hydrogen peroxide to water and oxygen. This defence is overwhelmed by the concentrations used for disinfection.

Microbicidal Activity

Hydrogen peroxide is active against a wide range of microorganisms, including bacteria, yeasts, fungi, viruses, and spores.

The use of 0.5% Hydrogen Peroxide has been shown to provide >4log reduction in HCoV Strain 229E (CCV) between within 1 minute.[1]

The effect of H2O2 on adenovirus types 3 and 6, adeno-associated virus type 4, rhinoviruses 1A, 1B, and type 7, myxo-viruses, influenza A and B, respiratory syncytial virus, strain Long, and coronavirus strain 229E was studied in vitro, using different H2O2 concentration and time of exposure. H2O2 in a 3 percent concentration inactivated all the viruses under study within 1--30 min. Coronavirus and influenza viruses were found to be most sensitive. Reoviruses, adenoviruses and adeno-associated virus were relatively stable. H2O2 is a convenient means for virus inactivation. [2]

Enveloped viruses such as Coronaviruses are the least resistant to inactivation by disinfection. The structure of these viruses includes a lipid envelope, which is easily compromised by most disinfectants. Once the lipid envelope is damaged, the integrity of the virus is compromised, thereby neutralizing its infectivity.

Stability

Under normal conditions, hydrogen peroxide is extremely stable when properly stored (e.g., in dark containers). The decomposition or loss of potency in small containers is less than 2% per year at ambient temperatures.

Uses

Commercially available 3% hydrogen peroxide is a stable and effective disinfectant when used on inanimate surfaces.

[1] G. Kampf, D. Todt, S. Pfaender, E. Steinmann. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents - 2020
[2] Vopr Virusol. 1977 Nov-Dec;(6):731-3 - Virus inactivation by hydrogen peroxide.

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Hydrocid 1F (1000ppm Sodium Hypochlorite with Surfactant) Efficacy

Mode of Action

The use of 0.1% sodium hypochlorite after disinfection with a neutral detergent is suggested for decontamination purposes, although no data on the effectiveness against the SARS-CoV-2 are available due to the new nature of the virus. However, there is evidence of efficacy against other novel Corona viruses as per Table 1 below.

Table 1. Antimicrobial agents effective against different coronaviruses: human coronavirus 229E (HCoV-229E), mouse hepatitis virus (MHV-2 and MHV-N), canine coronavirus (CCV), transmissible gastroenteritis virus (TGEV), and severe acute respiratory syndrome coronavirus (SARS-CoV)[1]

Antimicrobial agent	Concentration	Coronaviruses tested	References
Ethanol	70%	HCoV-229E, MHV-2, MHV-N, CCV, TGEV	[4,6,7]
Sodium hypochlorite	0.1–0.5% 0.05–0.1%	HCoV-229E SARS-CoV	[6] [5]
Povidone-iodine	10% (1% iodine)	HCoV-229E	[6]
Glutaraldehyde	2%	HCoV-229E	[6]
Isopropanol	50%	MHV-2, MHV-N, CCV	[7]
Benzalkonium chloride	0.05%	MHV-2, MHV-N, CCV	[7]
Sodium chlorite	0.23%	MHV-2, MHV-N, CCV	[7]
Formaldehyde	0.7%	MHV-2, MHV-N, CCV	[7]

The use of 0.01-0.21% Sodium Hypochlorite has been shown to provide between 2.3 to >4 log reduction in Canine Corona Virus (CCV) between 30 seconds and 10 minutes.[8]

Microbicidal Activity

Enveloped viruses such as Coronaviruses are the least resistant to inactivation by disinfection. The structure of these viruses includes a lipid envelope, which is easily compromised by most disinfectants. Once the lipid envelope is damaged, the integrity of the virus is compromised, thereby neutralizing its infectivity.

6. Sattar SA, Springthorpe VS, Karim Y, Loro P. Chemical disinfection of non-porous inanimate surfaces experimentally contaminated with four human pathogenic viruses. Epidemiology & Infection. 1989;102(3):493-505.
7. Saknimit M, Inatsuki I, Sugiyama Y, Yagami K. Virucidal efficacy of physico-chemical treatments againstcoronaviruses and parvoviruses of laboratory animals. Experimental animals. 1988;37(3):341-5.
8. G. Kampf, D. Todt, S. Pfaender, E. Steinmann. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents - 2020

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Personal Protective Equipment

As a minimum: operatives will wear the following PPE to ensure their safety during works;

- Steel toe capped boots
- Disposable overalls
- Disposable gloves
- Eye protection
- Disposable face mask
- Disposable over-shoes
- Face Guard

It will be ensured that all staff carrying out these services will have adequate stock of all PPE.

Client Permit Systems and Site-Specific Health and Safety

All operatives attending client sites will undertake full site inductions in line with the client requirements. The client induction will give Hydro-X colleagues guidance on:

- Manual Handling
- Working at height – *Engineers completed competency course (PASMA & IPAF).*
- Slips/trips
- Confined spaces
- Cuts and Lacerations
- Weather Condition - Engineers to record and monitor weather conditions with images.
- Asbestos
- Exposure to bacteria and viruses

Final Report

Upon completion the operatives will generate a final disinfection report with picture evidence and any additional guidance. This report will be provided on the same day to designated client email addresses. The report will cover:

- Areas disinfected and disinfectants / methodologies used
- Operatives
- Pictures
- Time and Date

Hydro-X

Hydro-Fog & Whole Room Disinfection Services

Fogging of surfaces with suitable disinfectants is proven to be effective against bacteria and viruses including Coronavirus. Our cleaning practices meet Public Health England guidance and methodologies.

A 3% solution of Hydrogen Peroxide will inactivate Bacteria and Viruses within 1-30 minutes of contact.

Hydro-X offers fogging services than can disinfect whole rooms, including hard to reach areas using disinfectant fog, spray and manual cleaning methods. Most services will be complete on the same day with full same day reporting by our MDS system.

The service uses chemical dosing skids, mobile fogging units and disinfectant sprayers that will reach all areas that wouldn't be reached by manual cleaning techniques alone. An operator wearing suitable PPE will direct the fogger or spray unit to all desired areas to ensure disinfection.

Contact us now to discuss how our fogging services can assist your business.

Hydro-Fog Benefits

- Room back in use same day
- Whole room disinfection including hard to reach areas
- Flexible service to ensure all rooms / areas can be disinfected
- Effective against bacteria and viruses including Coronavirus
- Same day disinfection reporting
- Full UK based chemical production with consistently available stock.

Hydro-X Group

- UK wide engineering and consultancy coverage.
- Full UK chemical manufacturing plant
- Serving the whole of the UK. 130 staff based across the whole county offering full in-house service / solutions
- Next day delivery of chemicals available.

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About Hydro-X Group

8 Regional Location Strategically Located throughout the UK to support our Business Partners

Over 120 Staff – Sales Technical, R&D, Products, Administration and Infield Engineers with “In House Capability”

Committed to Protect your Organisation.

Through innovative technologies and continual investment with reliable product and services that –

- Provide peace of mind concerning your compliance
- Enhance your plant longevity
- Reduce your total cost of operation
- Providing compelling Return on Investment
- Helping us both differentiate from competition

Water Treatment

Cooling Systems

Steam Boilers

Pre-Treatment

H & C Systems

Effluent Treatment

Pre-Commission Cleaning

Filtration and Chemical

Water Hygiene

ACoP L8 Compliance

Water quality

Sampling to UKAS

System Clean & Chlorination

Chlorine Dioxide

Log Books

Same Day Reporting

Risk Assessments

Legal Compliance

Legionella RA

C&G Training

Water Surveys

Reviews

Audits

Closed system Assessments

Engineering

Water Treatment Plant and Equipment

Chemical Cleaning

Tank Installation

Process and Optimisation

Water Reclaim

Pre-Treatment

Air Hygiene

Duct work Cleaning

Kitchen Extract

Fire Dampers

Indoor Air quality

Post Clean Verification

Deep Cleaning