University of Cape Town

Faculty of Engineering and the Built Environment (EBE)

STANDARD OPERATING PROCEDURE

Infection Control Guidelines for laboratory workers during the COVID-19 Pandemic

(This SOP only applies to laboratory work that does not involve viral growth/propagation)

SOP Category: Occupational Health and Safety	**Review Date:** May 2023 or as required
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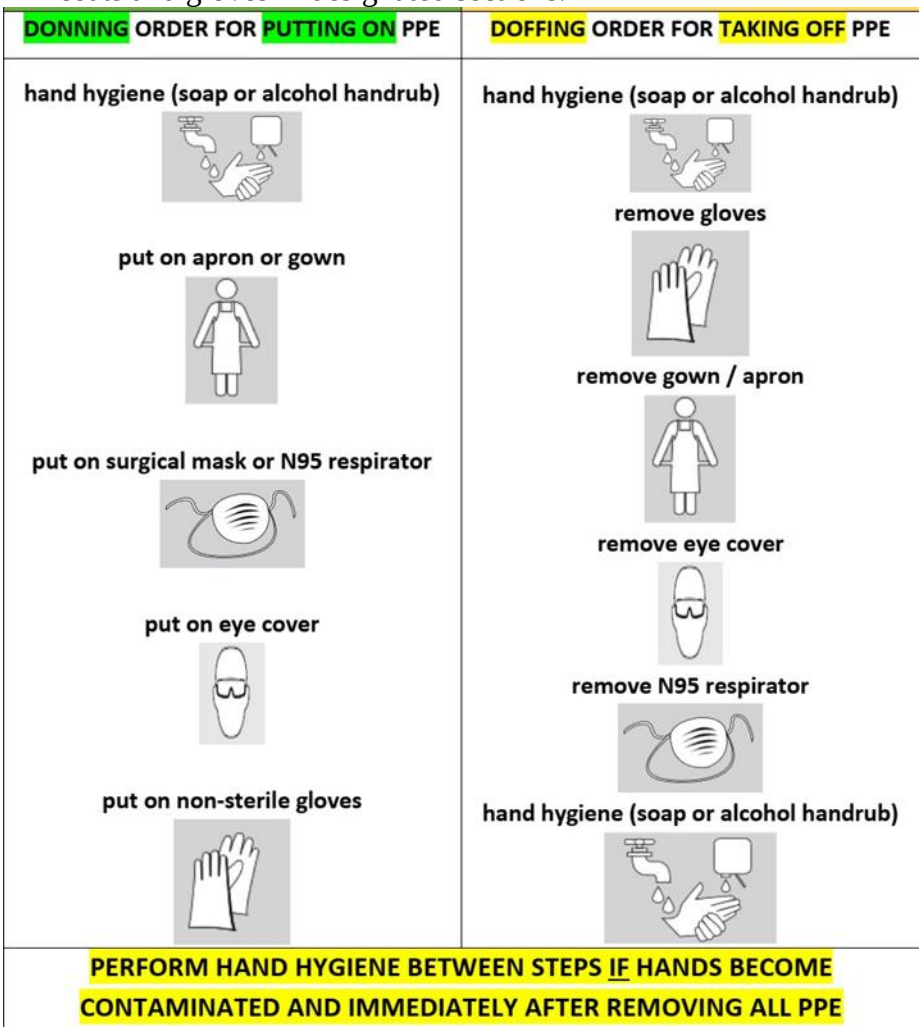
Target Group: Laboratory Workers not involved in viral growth/propagation	**Date and Version**: 16 June 2020 (EBE Version 1)

1. Scope and Purpose	• This SOP applies to laboratory work that does not involve viral growth/propagation. • Laboratory workers in EBE may be at risk from infected co-workers. • It is therefore important to ensure that every effort is made to implement measures to limit transmission between staff members in the workplace, which is the focus of this guideline. You may refer to the following documents for additional information: **a)** World Health Organisation Interim guidance: Cleaning and disinfection of environmental surfaces in the context of COVID-19 (15 May 2020). **b)** World Health Organisation Interim guidance: Laboratory biosafety guidance related to coronavirus disease (COVID-19) (13 May 2020).
2. Preventative measures for Covid-19 infection	**Hand hygiene and environmental cleaning (i.e. behaviour changes) are critical measures for the prevention of COVID-19 infection.** • Measures must be put in place to reduce the risk of transmission in the workplace. These include: • Regular hand hygiene with soap and water or alcohol-based hand rub (ABHR), • Adequate provision of ABHR, • Wearing cloth or dust mask when working in proximity (<1.5m) with others, doing laboratory work,

	• Reducing the number of workers in the workplace where possible (e.g. shifts, work from home), • Improving ventilation by opening windows in shared spaces if possible, • Staggering lunch and tea times, • Coughing / sneezing into the elbow, • Regular cleaning and disinfection of high touch surfaces and equipment.
3. Risk of acquiring infection in laboratory workers	Laboratory workers are at risk of acquiring infection following: • Interpersonal transmission within the work environment, • Direct inoculation onto mucosal membranes (eyes, mouth or nose) following contact from contaminated surfaces. It is therefore important to ensure that every effort is made to implement measures to limit transmission between staff members.
4. General principles	1. When arriving at work- • Decontaminate your hands using alcohol-based hand rub (ABHR), • Wear the appropriate personal protective equipment (PPE) for the work you will be doing, if applicable. 2. When working- • Keep a safe distance (at least >1 meter, ideally >2 meters) between yourself and your colleagues while working if possible, • Wear a face mask when working in an area where others are present, • If you work alone in an office, you may elect not to wear the mask, • Meetings/mass gatherings during this time are strongly discouraged. Electronic meeting platforms are encouraged. If meetings are conducted, all present must wear face masks and maintain at least 1 metre separation. 3. When taking a tea or lunch break- • In this situation the PPE should be removed (you cannot eat or drink with a mask on) and hands decontaminated, • Tea room is a medium risk area as long as social distancing is maintained and ventilation is adequate, o Open all windows, o Stagger the number of persons taking a break at the same time, o Maintain a safe distance while eating and drinking, o Keep conversation and interaction to a minimum, o Wash or decontaminate your hands before entering the tea room and upon leaving, o Put on your PPE upon returning to the laboratory after decontaminating your hands. 4. Before leaving for home • Decontaminate your hands • All staff and students are encouraged to leave the campus once laboratory-work is completed for the day.

	5. Other: • Avoid touching your face, mouth or nose, • Avoid persons who are sick and display respiratory symptoms, • Stay at home if you are sick (see later), • Tasks that can be done at home should be done at home, • Take note of the laboratory signages and observe infection control notices, • Cover your cough or sneeze with a flexed elbow or a tissue, throw the tissue in the bin. Immediately wash your hands with soap and water for at least 20 seconds, • Other potential interventions include - o shift work if feasible, o conduct duties from home, in line with UCT HR guidance and policies, o Utilisation of staff from other sections of the laboratory to facilitate shift work.
5. Hand hygiene	• Employees should practise effective hand hygiene by washing hands with soap and water for at least twenty seconds, • 70-80% alcohol-based hand rub (ABHR) may be used frequently as an alternative, • There should be ABHR dispensers at the entrance and exit areas which must be used by all staff, • A designated person must be responsible for ensuring the ABHR is replaced regularly, • ABHR must also be easily accessible and available in laboratory working areas. ABHR is only applied to bare hands as it is an antiseptic which works on skin, • All staff must decontaminate their hands upon entering the laboratory before wearing personal protective equipment (PPE such as gloves or masks which follow a strict sequential routine as detailed below), • Carry out hand hygiene before and after bathroom, kitchen and tearoom entry using ABHR, • Before leaving the laboratory, after discarding gloves in dedicated waste bins, decontaminate hands using ABHR. • Although practiced in the clinical setting in individual cases, it is recommended that alcohol is not applied to gloved hands in the laboratory setting over prolonged periods, as it might damage disposable gloves and increase the risk of contamination.
6. Types of face masks	The current recommendation in the laboratory environment is: **1. N95 respirators:** • To be worn only under very specific circumstances, • N95 masks are not routinely recommended for laboratory staff working on procedures that are performed in a biosafety cabinet (BSC), • Some N95 masks are fitted with a valve to facilitate exhalation – while this makes the mask more comfortable to wear, it reduces the efficiency of the mask in preventing transmission from the wearer.

	2. Face shields: • Face shields have efficacy ranges of 68% to 96% in reducing droplet exposure, • These may be an alternative for persons who wear glasses, • Advantages include added barrier to touching one's face, effective communication, durability and ease of cleaning. **3. Cloth masks (or disposable dust masks):** • Use of cloth masks has been recommended for reducing the risk of community transmissions in and outside of the workplace setting, • Commuters travelling in taxis and other forms of public transport, as well as people spending time in spaces where physical distancing is difficult to practise, are particularly encouraged to wear cloth face-masks, • Wearing of cloth masks is recommended when working in proximity (<1.5m) with others, doing laboratory work where historically it was not required to wear a mask, • The purpose of this mask is to reduce person to person transmission and environmental contamination of common spaces and laboratories, • These can be re-used following washing with soap and water, and ironed when dry, • Alternatively, they can be placed in boiling water for 5 minutes, allowed to cool and dry, • Cloth masks should be worn at all times when visiting public spaces such as the cafeteria.
7. Use of laboratory coats	For laboratory staff either 100% cotton, 100% polyester, or cotton/polyester laboratory coat blends are required. The following is recommended: • Lab coats with elastic cuffs to avoid contamination. • Snaps, vs buttons for easy removal. • Don't roll up or push up lab coat sleeves it is important to cover the arms to the wrist. • If a laboratory coat becomes grossly contaminated, it should be handled as hazardous waste.
8. Washing of laboratory coats	**Option 1:** Laundered by Professional Healthcare Laundry Service (e.g. Hygiene Laundering Services) **Option 2:** In-House Laundry • After wearing the laboratory coats are sprayed with 70% ETOH (recommended by DEFF auditors) and placed in a "linen bin" prior to washing. • Can use a domestic washing machine and tumble dryer. • Generally, use appropriate detergents and bleach based on the apparel manufacturer's label instructions. • Both chlorine-based bleach and oxygen-based bleach products can be effective in the wash process for inactivating viruses. • Wash on the hottest water temperature setting recommended by the garment manufacturer and avoid short/rapid cycles. • After closing the washer, clean and disinfect according to directions of your chosen disinfectant product.

	• Wipe down the machine door, handles, and buttons, as well as door knobs and other surface areas that might have been touched in the laundry room during the process. • If the bag used to bring the apparel items to laundry room is disposable, discard the bag in the appropriate waste container. If the bag is not disposable, wipe the bag handle/straps and interior with an appropriate detergent-disinfectant. • Immediately wash your hands or use an alcohol-based hand sanitizer. • After the wash cycle is completed, remove the garments from the washer and place immediately into the dryer. • Dry the load completely on the warmest cycle recommended by the garment manufacturer.
9. Correct use of masks and PPE	Practise appropriate precautions when donning and doffing a face mask and other PPE (if required), and follow the correct sequence as shown in the following figure: • Always perform hand hygiene before putting on PPE • The order for putting on PPE is laboratory coat, apron or gown (where required), face mask, eye protection (where required) and then gloves last. • The order for removing PPE is gloves first, apron or gown, eye protection and the face mask last. • Appropriate use of PPE includes ensuring use of long-sleeved lab coats and gloves in designated sections. 

<table>
<tr><td></td><td>Adhere to the following measures when using a face-mask:
The face-mask must cover the nose and mouth completely. Face-masks should not be lowered when speaking, coughing or sneezing,
Only use a mask that has been washed and ironed (if using a cloth mask),
Wash your hands before putting the mask on,
Place the mask with the correct side facing your face, and ensure that it covers both your nose and mouth properly,
Tie the strings behind your head, or if you are using elastic bands, make sure these are tight,
Make sure it fits well. Move it around to get the best fit,
Once you have put on the mask, DO NOT TOUCH YOUR FACE again until the mask has been removed,
When you take it off, undo the ties, and carefully fold the mask inside out, hold it by the strings/elastic and discard it, or place the mask in a container for washing (if using a cloth mask),
Wash your hands thoroughly and dry before doing anything else.</td></tr>
<tr><td>10. Guidance for disinfection of non-disposable items</td><td>70% Ethanol is easily available, and no alternatives are advised. ABHR may contain emollients and these would leave a residual smell. Bleach will leave a residual smell that would make breathing uncomfortable.

For disinfecting non-machine-washable items overnight (or over day for night staff), the following recommendations pertain.

Preparation:
a. Label mask with the owner’s name neatly somewhere with a permanent marker.
b. Label a brown paper bag similarly
c. 70% ethanol spray bottles

Disinfection at the end of the day (before leaving work):
a. Take mask off, put on a flat disposable surface (e.g. paper)
b. Spray liberally BOTH sides with 70% ethanol until soaked (not just damp)
c. Place mask in brown paper packet; do not press closed or seal; allow good air flow
d. Allow to dry overnight, e.g. on a clean shelf in the lab</td></tr>
<tr><td>11. Environmental cleaning</td><td>Due to the potential survival of the virus on surfaces for several days in the absence of cleaning, all premises, surfaces, and areas potentially contaminated with SARS-CoV-2, either by droplet or touching, should be cleaned thoroughly at regular intervals and disinfected each time.

Environmental cleaning with water and the following household detergents & disinfectants are known to be effective.

<table><tr><th>Antimicrobial Agent</th><th>Concentration</th></tr><tr><td>Ethanol</td><td>70%</td></tr><tr><td>Sodium hypchlorite</td><td>0.1 – 0.5%
0.05-0.1%</td></tr><tr><td>Povidone-iodine</td><td>10% (1% iodine)</td></tr><tr><td>Glutaraldehyde</td><td>2%</td></tr><tr><td>Isopropanol</td><td>50%</td></tr></table></td></tr>
</table>

Benzalkonium chloride	0.05%
Sodium chlorite	0.23%
Formaldehyde	0.7%

In the laboratory setting, the 2 most commonly used disinfectants are sodium hypochlorite and ethanol.

- 70% ethanol has been shown to have a stronger effect on two different coronaviruses (mouse hepatitis virus and transmissible gastroenteritis virus) after one-minute contact time on hard surfaces when compared with 0.06% sodium hypochlorite
- Tests carried out using SARS-CoV showed that sodium hypochlorite is effective at a concentration of 0.05 and 0.1% after five minutes
- An additional list of agents effective against SARS-CoV-2 is available at https://echa.europa.eu/covid-19 or https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2.

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. For surfaces that could be damaged by sodium hypochlorite, 70% ethanol is needed for decontamination after cleaning with a neutral detergent.

The following recommendations pertain:

- All frequently touched areas, such as all accessible surfaces of laboratory benchtops, door handles, the toilet and bathroom and kitchen, tea-room surfaces, should be carefully cleaned and disinfected at least twice daily (beginning and end of daytime work shift) (Some guidelines suggest three times a day during the COVID-19 pandemic),
- If dedicated cleaning staff are available then walls, floors and windows should be cleaned once a day as per current protocols and supervisors should document the operations on a log sheet (Annexure A),
  Where available, the use of invisible fluorescent pens on random surfaces to monitor cleaning by the managers should be carried out. The markers are placed on surfaces and the environment (may use a template) and detected using ultra-violet light when cleaning has been inadequate.

12. Cleaning staff

Staff engaged in environmental cleaning and waste management should:

- Wear appropriate PPE (disposable plastic apron, mask, protective glasses and domestic gloves)
- Follow correct donning and doffing of PPE (Figure in Section 7)
- Discard disposable PPE as potentially infectious material and in accordance with NHLS SOPs.
- Decontaminate non-single use PPE such as domestic gloves using the available products (e.g. 0.1% sodium hypochlorite or 70% ethanol).

13. Waste management	Waste, including technologist and administrative staff's discarded gloves, phone wipes and face masks (if applicable) should be treated as infectious clinical waste and handled in accordance with existing UCT EBE policies and local regulations.

14. Mobile Phones	• Mobile phones are extensively handled and can be a source of contact transmission.
	• The options for preventing acquisition and spread of the SARS-CoV2 virus are:
	  ○ Leave your phone in a secure place outside the laboratory and use it when you are on break after decontaminating your hands both prior to and after using the phone
	  ○ Wipe the surface of the phone with damp wipes until all marks are removed or according to manufacturer instructions
	  ▪ When dry, place in a clean Ziploc bag and close it tightly.
	  ▪ Wipe the Ziploc surface with an alcohol wipe after each use
	Direct application of alcohol or other disinfectants to the phone is not advised.

15. Computers and peripherals	• Hand hygiene with soap and water or ABHR before and after using keyboards and mice. • Ideally no gloves to be worn when using these devices. If use of gloves is unavoidable (e.g. computers in laboratory environments being used for result entry), consider marking computers as "gloves only" or "no gloves allowed". • If physical dirt/dust present, disconnect the keyboard/mouse and turn it upside down and shake gently to remove dirt. Or use a keyboard brush to remove dirt. • Wipe keyboards and mice using a wipe containing a hospital disinfectant (e.g. 70% ethanol) with a friction for 5 seconds at least once a day and when soiled. Studies have shown this has no effect on the mouse or keyboard. Do not spray/pour disinfectant onto the device or use cloths with excessive fluid as the fluid may enter the device and damage the electronics. In high risk areas, if possible use keyboard and mouse covers for devices as these have less grooves and are easier to disinfect.
16. Instruments	Instruments should be cleaned regularly according to the manufacturer's instructions.

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Annexure A:

COVID-19 Disinfection Log Sheet

Date	Time	Disinfectant Used		Areas Disinfected				Comments	Staff Initials
		70% ethanol (√/NA)	Other (Please specify/NA)	Common Areas e.g. doorknobs, etc (√/ NA)	Laboratory Areas (√/ NA)	Office Space (√/ NA)	Other: (Please specify/NA)		