



Cleaning and Disinfection in Laboratories

Returning to the Lab

New procedures are required to minimize the risk of spreading the novel coronavirus (SARS-CoV-2) that causes coronavirus disease 2019 (COVID-19). This guide focuses on the cleaning and disinfection of high touch surfaces. Laboratories have certain hazards not present in office/household settings which require special consideration.

Cleaning and Disinfecting at UMD

Facilities Management (FM)

Housekeeping staff in Facilities Management are working to keep common areas, restrooms, and high touch surfaces in public areas clean and disinfected. FM uses cleaning products approved by the EPA for use on SARS-CoV-2.

To protect both the FM staff and research materials/equipment, housekeeping staff do not clean high touch surfaces within laboratories. Note, annual floor cleaning by FM is permitted, requested by the lab through a work order. The lab must be appropriately prepared for this work (see [Safe to Clean Procedures](#) and [Checklist](#)).

Lab Personnel

Lab personnel should continue to clean and disinfect as required for conducting research operations following normal standard operating procedures. In addition to those normal procedures, personnel within the lab are now responsible for cleaning and disinfecting high touch surfaces in the spaces they work in. A high touch surface is one that may be frequently touched without gloved hands.

Common high touch surfaces in a lab include:

- Door, drawer, faucet, and cabinet handles
- Equipment handles, grips, and latches
- Fume hood and biosafety cabinet sashes
- Equipment controls and touchpads
- Pipettes and other shared tools
- Baskets, bins, and storage items
- Chair backs and arm rests
- Shared equipment and supplies including pens, whiteboard markers, etc.

Personnel should be trained by the principal investigator on appropriate cleaning procedures for research equipment and provided adequate supply of the appropriate products to conduct cleaning and disinfection.

Surfaces that have visible dirt or gross chemical, biological material, or radioactive material residues need to be decontaminated using normal standard operating procedures before any disinfectants are applied. For labs that use radioactive materials, adding the high touch locations to the “after-use” laboratory wipe test survey, is an efficient way to document these areas are free of contamination and ready for the COVID-19 cleaning and disinfection.

Personnel should clean and disinfect as they go about their work, as they are most aware of the locations they touch without gloves. These areas should be disinfected before and after touching, if possible.

A final cleaning and disinfection of high touch surfaces and assessment of disinfectant and handwashing materials inventories should occur daily before leaving the lab for the day.

NOTE: Even frequent surface cleaning and disinfection is not a guarantee of a sterile workplace. It is vital to wash hands thoroughly and frequently, and refrain from touching the face.

Disinfectant Information

Selecting the Right Disinfectant

Use a commercial disinfectant that has an EPA registration number to be effective against the COVID-19 coronavirus. The registration number is located on the product label. Do not use products that do not have an EPA registration number for use with SARS-CoV-2.

Alternatively, the CDC indicates that diluted household bleach solutions (at least 1000 ppm sodium hypochlorite) can be used, if appropriate for the surface, as bleach solutions are corrosive. Never

mix household bleach with ammonia or any other cleaner. Bleach solutions will only be effective for disinfection up to 24 hours – prepare fresh solutions daily.

Prepare a bleach solution by mixing:

- 5 tablespoons (74 mL) bleach per gallon (3.8 L) of water
- OR**
- 4 teaspoons (20 mL) bleach per quart (0.95 L) of water

Alternative Disinfectants

The efficacy of alternative disinfection methods, such as ultrasonic waves, high intensity UV radiation, and LED blue light against COVID-19 virus is not known. The EPA does not routinely review the safety or efficacy of pesticidal devices, such as UV lights, LED lights, or ultrasonic devices. Therefore, EPA cannot confirm whether, or under what circumstances, such products might be effective against the spread of COVID-19.

The CDC only recommends use of the EPA List N Disinfectants against the virus that causes COVID-19.

Contact Time

The overwhelming majority of disinfectants need time to work. Most require 5 to 10 minutes, but some can be as high as 30 minutes. Simply spraying and immediately wiping is not sufficient to completely disinfect surfaces. For most disinfectants, spray until the surface is thoroughly wet, then wait the designated contact time before wiping. It is important to read and follow the manufacturer's instructions, or the listed EPA contact times, on how long to leave the disinfectant on a surface before wiping.

Personal Protective Equipment (PPE) for Disinfection

Use manufacturer guidance for PPE when using a specific product. Most disinfectants can irritate or damage skin or eye tissue. Recommended PPE includes nitrile gloves, eye protection, and possibly a barrier to protect clothing (e.g., lab coat).

Using Disinfectants in the Lab

Before applying a disinfectant, determine any materials or equipment located in the lab that potentially could be incompatible with the product. Some equipment may require a secondary wipe-down with water or ethanol to remove residual

cleaning material that may be corrosive to materials or skin. Spot check surfaces before widespread use to ensure the product will not cause damage.

As some disinfectants are respiratory irritants, allow proper ventilation during and after application. Check to ensure the disinfectant product is not past its expiration date.

Dispose of cleaning materials in lab trash. Wash hands thoroughly after cleaning.

Material Specific Guides

Electronics/Sensitive Equipment

Certain equipment may be damaged by spraying (computer keyboards and mice, key-style equipment touchpads, on/off switches, power tools, etc.) and by harsher disinfectants such as bleach.

Follow the equipment manufacturer's instructions for all cleaning and disinfection products. If manufacturer guidance is not available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol (ethanol) to disinfect touch screens. Dry surfaces thoroughly to avoid pooling of liquids. Exercise caution as 70% ethanol is flammable and can be ignited. Best practice is to saturate a wipe and apply to a surface rather than directly spraying the surface if ignition sources are nearby.

An EPA registered quaternary-ammonium disinfectant or 70% ethanol wipes may be used for more delicate tasks. If disinfectant wipes are not available, wet a dry wipe or clean soft cloth in the alcohol or disinfectant until it is soaked but not quite dripping, and then use it to wipe the device being careful to avoid getting liquid into any openings. The surface should be visibly wet after you wipe it, and the disinfectant should be left to evaporate from the surface. Surfaces should remain wet for the recommended contact time.

Consider use of wipeable covers for electronics (e.g., keyboard cover, mouse cover).

Check with the equipment manufacturer for specific guidance. For example, the Olympus Corporation hosts guidance on [cleaning and disinfecting microscopes](#).

Cold Surfaces

Most disinfectants are designed to be used at room temperature. Some disinfectants may lose efficacy at low temperatures, or may freeze before the needed contact time is achieved. Disinfection of cold surfaces, like cold rooms, can be done by using a custom solution with the EPA approved disinfectant Virkon™ S by Lanxess Corporation, EPA Registration Number 39967-137. A 1:100 Virkon™ S solution is recommended and for disinfecting cold surfaces with the potential for freezing the manufacturer suggests the addition of 20% monopropylene glycol v/v in water.

This solution is effective to -12°C and has a shorter shelf life (2-3 days) than mixtures without the additional component (7 days). 1 gallon of solution being sufficient for treating up to 135 sq. ft.

Lab Coats

Laundering lab coats at home or in public laundry facilities is strictly prohibited.

Laboratories have a few options with respect to addressing lab coat cleanliness:

- Use disposable lab coats.
- Assign coats to single user, store separately (i.e., not on the same hook).
- In shared resource facilities, have users bring their own lab coats in a sealable plastic bag.
- Use departmental laundering facilities, if available (check with department).
- Use the University of Maryland procurement agreement to set up a Cintas lab coat laundering service (can be set up at department or school level, see [UMD Lab Coat Laundering Program Brochure](#)).
- Rotate the use of lab coats after staging for 7 days since the last use.

Dispose of lab coats as hazardous waste if they become grossly contaminated with chemical, biological, or radioactive materials.

Shared PPE

Laser safety glasses, face shields, and other shared PPE with hard non-porous surfaces should be disinfected before and after use with a disinfectant that will not damage the effectiveness of the PPE. Disinfection of PPE should be done while wearing a pair of clean disposable gloves. Contact PPE manufacturer if unclear.

For hard to disinfect shared PPE like chemical or thermal gloves or other porous surfaces, if possible, use a barrier (e.g., nitrile glove) during use. If you cannot, thoroughly wash any exposed skin that has come into contact with the item after use.

Positive COVID-19 Case

Buildings and/or specific rooms and areas where a COVID-19 positive person spent time will be assessed on a case-by-case basis by the University of Maryland.

CDC guidance indicates the procedure for disinfecting after a positive case is to vacate the immediate work area for 24 hours, then perform surface cleaning and disinfection wherever the individual spent time and all surfaces they may have touched with appropriate contact time.

The CDC guidance also states if it has been more than 7 days since the person with confirmed COVID-19 visited or used the facility, additional cleaning and disinfection is not necessary. Therefore, an alternative is to wait 7 days after the person was last in the lab and resume normal cleaning and disinfection activities.

Resources and References

For additional questions, contact ESSR at labsafety@umd.edu.

[CDC Cleaning and Disinfection for Community Facilities](#)

[EPA Approved List of Disinfectants for Use Against SARS-CoV-2](#)

[UMD ESSR Working Safely During COVID-19](#)

[UMD Research and COVID-19](#)

[UMD COVID-19 Updates and Resources](#)