ENVIRONMENTAL HEALTH & SAFETY

**Laboratory Housekeeping:**

**Expectations for Cleaning and Disinfection**

All personnel must strive to protect themselves and others from virus transmission in the laboratory (i.e. restricted areas requiring badge access). In addition to standard recommendations to stay home if symptomatic, cover coughs, dispose of paper tissues immediately after use, etc., university community members should:

1. Clean and disinfect hard surfaces of laboratory work area daily
   1. Before and after working with any biological materials, especially in the biological safety cabinet (BSC) and laboratory benches
   2. After any spills
2. Dispose of absorbent pads after one use with biohazardous materials (i.e. human blood/tissue, infectious agents, recombinant nucleic acids, viral vectors, whole animals).

* Wipe down with disinfectant twice daily commonly touched surfaces, depending upon their use, including but not limited to:
* Door handles
* Pipettors
* Centrifuge controls, lids
* Sink faucets
* Phones
* Microscopes
* Freezer/refrigerator doors, key pads, locks
* Shared equipment
* Shared computer keyboards

1. Facilities Management contractors are responsible in public areas for disinfecting high touch surfaces, such as door handles, elevator buttons, restrooms, water fountains, break rooms/kitchens, etc.
2. Hands must be washed with soap and water for 20 seconds:
   1. Immediately after removal of nitrile gloves, before leaving laboratory area
   2. After touching commonly shared surfaces without gloves
3. Gloves are considered contaminated while being worn, therefore the wearer:
   1. Must not touch their face, nose, eyes with gloved hands
   2. Must not wear gloves into non-laboratory areas such as break rooms, offices, elevators, etc.
4. Hand sanitizers containing at least 60% alcohol can be used as a temporary measure until hands can be washed with soap and water.
5. If someone in a research group or laboratory area has tested positive for the SARS-CoV-2 virus, a more rigorous, extensive cleaning and disinfection may be needed.
6. All of these recommendations are considered “best practices” for research laboratories even when there is not a possible pandemic.

**Tips about the most commonly used disinfectants used in laboratories:**

1. 70% ethanol or isopropyl alcohol:

a. Acceptable for cleaning hard surfaces and for inactivating **enveloped viruses** such as the SARS-CoV-2.

b. In Colorado’s dry climate, it is **not** **usually**  considered to be an effective disinfectant because it so quickly evaporates that it is hard to obtain a ten minute contact time. However, it is effective against enveloped viruses in just a few minutes.

c. May be used as a rinse after using an efficacious disinfectant containing bleach or quaternary ammonias

d. Dispensing bottle should be clearly labeled

2. Bleach: 10% vs 1%

a. Household bleach (5.25% sodium hypochlorite ) starts to deteriorate when the bottle is opened but maintains an acceptable level of active chlorine for one year

b. 10% dilution should be prepared weekly; 1% dilution should be prepared daily

1. Both are effective against enveloped viruses
2. Label bottle with concentration, date it was diluted, and preparer’s initials
3. Should be kept away from heat and sunlight
4. Quaternary Ammonium Compounds
   * 1. Widely used as disinfectants, “user friendly”,
     2. Broad spectrum (fungicidal, bactericidal, virucidal against lipophilic (enveloped) viruses such as

corona virus

* + 1. Fourth generation versions (such as dialkyl quaternaries (i.e. dodecyl dimethyl ammonium

bromide, dioctyl dimethyl ammonium bromide): remain active in hard water, tolerant of anionic

residues

1. EPA-registered quaternary ammonium compounds are appropriate to use for disinfecting medical equipment that contacts intact skin (e.g., blood pressure cuffs).

A complete list of EPA approved disinfectants considered effective against SARS-CoV-2 can be found at <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

Only a few brands of wipes are approved so far by the EPA. These may not be available through the university’s Marketplace purchasing system.

Take note of a product’s active ingredients. Although “Brand A” may typically be associated with bleach products, it may also market a product containing a quaternary ammonium. Ensure the product being used is efficacious against the potential pathogens with research materials and enveloped viruses being used, and that the appropriate contact time is followed.

A reminder from freshman chemistry: NEVER mix a product containing chlorine with a product containing ammonia. The resulting release of ammonia gas can cause injury.

For questions about choosing a disinfectant or procedures (i.e., decontaminating sensitive electronic equipment), contact [Biological Safety](mailto:%20biosafety.program@ucdenver.edu), 303-724-0345.

**RESOURCES:**

1. American Biological Safety Association (ABSA). SARS-CoV-2/COVID-19 Toolbox. <https://absa.org/covid19toolbox/>. March 6, 2020.
2. CDC/NIH. Biosafety in Microbiological and Biomedical Laboratories. 5th edition. 2009. <https://www.cdc.gov/labs/BMBL.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fbiosafety%2Fpublications%2Fbmbl5%2Findex.htm>
3. CDC. Interim Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with Coronavirus Disease 2019 (COVID-19). Updated August 11. <https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html>
4. CDC. Coronavirus Disease 2019 (COVID-19) Get the Facts about Coronavirus. <https://www.cdc.gov/coronavirus/2019-ncov/>
5. CDC. Cleaning and Disinfection for Households. Updated July 10, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html>
6. CDC. Cleaning and Disinfecting Your Home. Updated May 27, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/disinfecting-your-home.html>.
7. CDC. Chemical Disinfectants. 2008. <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html>
8. Environmental Protection Agency (EPA). Selected EPA-Registered Disinfectants. <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19>
9. Kampf, et. al. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. Journal of Hospital Infection 2020; 104: 246-251. <https://www.journalofhospitalinfection.com/article/S0195-6701(20)30046-3/fulltext>
10. UCHealth Today, The ins and outs of disinfecting coronavirus.

<https://www.uchealth.org/today/ins-and-outs-of-disinfecting-coronavirus/#:~:text=Isopropyl%20alcohol%20or%20rubbing%20alcohol,in%20about%2030%20seconds.>