

## Overview

This checklist has been developed by Villanova’s Environmental Health & Safety Department (EHS). It can serve to aid in both the development of research resumption plans by Principal Investigators (PIs) for their specific laboratory operations and the approval process by which Deans, Department Heads and EHS approve resumption plans. Lab Safety Committee Members are available to assist in the development of resumption plans.

PIs are in the best position to create and implement research group-specific resumption plans. In turn, Deans and Department Heads are in the best position to review plans for their specific colleges and departments. This situation is continuously evolving so, in addition to this checklist, corresponding guidance documents and FAQs will be developed and made available as necessary.

### Introduce Best Practice to Reduce Transmission of Infection

As we re-enter our lab facilities, we must strive to minimize the spread of infection. The spread can be suppressed by doing the following:

- Minimize in-person interactions of lab workers,
- Minimize the use of shared surfaces and materials,
- Diligently disinfect high-use touch points, surfaces, and equipment (at least 3 times/day), and
- Frequently wash hands and do not touch the face.

<b>First Time Re-Entering the Lab:</b>	
<input type="checkbox"/>	Wear a face covering
<input type="checkbox"/>	Don standard lab PPE: <ul style="list-style-type: none"> <li>○ Closed toe shoes, long pants, hair tied back</li> </ul>
	○ Clean lab coat
	○ Gloves
	○ Safety glasses
<input type="checkbox"/>	Check and/or verify emergency equipment is operational and document: <ul style="list-style-type: none"> <li>○ Eyewash(s) - flush</li> </ul>
	○ Safety Shower
	○ Fire extinguisher
	○ Lab spill kit (if you have one) or departmental spill kits (by staff)
<input type="checkbox"/>	Walk the lab, cabinets, refrigerators/freezers, etc. and look for leaks and other unusual physical conditions.

<input type="checkbox"/>	Mitigate any leaks, spills, or releases.
<input type="checkbox"/>	Verify that utilities (electric, natural gas, etc.) are operational.
<input type="checkbox"/>	<p>Survey supplies:</p> <ul style="list-style-type: none"> <li>○ Chemicals – check for bulging containers (especially peroxide formers), expired, outdated, or other reagents with limited lifespan.</li> <li>○ PPE – replace used lab coats with clean ones and be sure sufficient PPE for startup is available.</li> </ul>
<input type="checkbox"/>	<p>Survey equipment:</p> <ul style="list-style-type: none"> <li>○ Verify fume hood(s)/biosafety cabinet(s) operating properly.</li> <li>○ Verify gas cylinder valves in proper position.</li> <li>○ Re-calibration required?</li> <li>○ Preventive maintenance required?</li> <li>○ Verify hand soap is available at every sink.</li> <li>○ Add water to cup sinks to reduce the risk of odors.</li> </ul>
<input type="checkbox"/>	Clean up/put away chemicals, supplies, equipment, glassware, and other items left out during the shutdown period.
<input type="checkbox"/>	Check wastes and manage appropriately.

<b>Clean/disinfect the lab before others enter:</b>	
<input type="checkbox"/>	<ul style="list-style-type: none"> <li>○ <i>Cleaning</i> refers to the removal of germs, dirt, and impurities from surfaces. Cleaning does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection.</li> <li>○ <i>Disinfecting</i> refers to using chemicals to kill germs on surfaces; this does not necessarily clean dirty surfaces or remove germs. Disinfecting a surface <u>after</u> cleaning can further lower the risk of spreading infection.</li> <li>○ <a href="#">CDC Recommendations on Cleaning and Disinfecting</a></li> <li>○ See Cleaning and Disinfecting recommendations below.</li> </ul>

<b>Establish new/revised lab protocols before others enter:</b>	
<input type="checkbox"/>	<p><b><i>Social distance</i></b>  Establish a plan and document. Options include restricted/staggered schedules, use of tape or other visual indicators to delineate 6-foot demarcations, etc.</p> <ul style="list-style-type: none"> <li>○ Shared office spaces</li> <li>○ At the bench</li> <li>○ Break areas/hallways</li> <li>○ Shared equipment/specialty lab</li> </ul>

<input type="checkbox"/>	<b><i>Cleaning/disinfection</i></b> Responsibilities for cleaning and disinfecting touch zones in common areas, shared laboratory spaces, and personal spaces have been designated.
<input type="checkbox"/>	Cleaning and disinfecting required at the beginning of, throughout, and at the conclusion of the work shift or activity.
<input type="checkbox"/>	High touch surfaces should be disinfected before and after use:
	○ Chairs
	○ Desktops/benchtops
	○ Computer keyboards and monitors
	○ Light switches, doorknobs, doors, door push plates
	○ Refrigerator/freezer handles and their doors
	○ Equipment panels/switches
	○ Biosafety cabinet and fume hood sashes and their working surfaces
	○ Bio-waste container lids and shared waste containers
○ Commonly used hand tools and small objects (pipettors)	
○ Shared PPE (laser goggles)	

	Be careful when disinfecting sensitive equipment to prevent disruption of the equipment.
<input type="checkbox"/>	Using paper towels, if possible, first clean dirty surfaces with a detergent or soap and water.
<input type="checkbox"/>	Wear PPE as directed on the disinfectant label and carefully apply disinfectant (TruShot), wiping to evenly distribute.
<input type="checkbox"/>	Discard gloves after each use and clean hands immediately.
<input type="checkbox"/>	Allow surfaces to air dry. Discard paper towels and disinfecting wipes into the regular trash.

<input type="checkbox"/>	<b><i>Review existing lab safety protocols</i></b> Existing protocols may need to be revised to reflect changes in hours, social distance requirements, availability of cleaning products, etc. Review the following documents and revise and/or prepare addendums if necessary.
	○ Chemical hygiene plan (contact EHS should you feel changes are necessary)
	○ Animal care protocols
	○ Biosafety protocols

<input type="checkbox"/>	<ul style="list-style-type: none"> <li>○ Doors should be propped open (other than BSL2 labs when BSL2 work is in progress) when the lab is in use to minimize touches of knobs, doors, etc.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Lab-specific protocols and/or safety plans</li> </ul>
	<ul style="list-style-type: none"> <li>○ Equipment manuals for safe startup instructions</li> </ul>
	<ul style="list-style-type: none"> <li>○ Safe release of stored energy</li> </ul>
	<ul style="list-style-type: none"> <li>○ Use of PPE <ul style="list-style-type: none"> <li>○ If safety glasses are normally shared among lab staff, it is recommended to assign a pair to each person.</li> <li>○ Lab coats should be either exchanged after each day or kept completely separated.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>○ Post sign(s) at lab exit(s) reminding lab workers to remove gloves and wash hands before leaving lab.</li> </ul>

**Before Others Re-Enter the Lab:**

<input type="checkbox"/>	<p><b><i>Training</i></b> Review the following with lab staff members before they begin working:</p>
	<ul style="list-style-type: none"> <li>○ Emergency and evacuation procedures</li> </ul>
	<ul style="list-style-type: none"> <li>○ Schedule requirements.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Social distance protocols in the lab, common areas, building, etc.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Cleaning requirements and procedures.</li> </ul>
	<ul style="list-style-type: none"> <li>○ PPE requirements and donning/doffing/disposal practices (<a href="#">training video</a>).</li> </ul>
	<ul style="list-style-type: none"> <li>○ New/revised lab protocols.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Mutual accountability for new procedures</li> </ul>

<input type="checkbox"/>	<p><b><i>Supplies</i></b> Prepare for supply chain disruptions and limited availability</p>
	<ul style="list-style-type: none"> <li>○ Recognize that order fulfillment may be slower as the volume of requests increases.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Plan for limited availability of high demand items.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Plan for limited Personal Protective Equipment availability (including N95's, surgical masks, safety glasses, and gloves).</li> </ul>
	<ul style="list-style-type: none"> <li>○ Plan for some reagents having limited availability.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Plan for some consumables having limited availability.</li> </ul>

<input type="checkbox"/>	Plan to address lab support staff tasks (reagent prep, cleaning glassware, etc.) with limited staff available.
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<b><i>Coordination with Other Departments</i></b>	
<input type="checkbox"/>	IT for assistance with computers, computer assisted equipment, etc.
<input type="checkbox"/>	Facilities (it may take longer than usual for Facilities to respond when we first return) <ul style="list-style-type: none"> <li>○ Pour water down dry traps/floor drains in the event of sewer gas smells.</li> <li>○ Malfunctioning hoods and other equipment/facilities</li> </ul>
<input type="checkbox"/>	EHS

<b><i>Minimize Opportunities for Transmission</i></b>	
<input type="checkbox"/>	Although hand sanitizer can help prevent the spread of the virus, handwashing with soap and water for at least 20 seconds is considered more effective.
<input type="checkbox"/>	Sneeze and cough into the elbow to reduce the spread of the virus in respiratory droplets (the common transmission pathway for the virus).
<input type="checkbox"/>	Be clear that those who are sick or have a fever must not come to work.
<input type="checkbox"/>	Meetings should continue to be conducted remotely, using tools such as Zoom, Teams, etc., as much as possible.
<input type="checkbox"/>	Ensure staff have the ability to work remotely on items such as monitoring experiments (if possible), data analysis, writing, literature review, and proposal editing.
<input type="checkbox"/>	Clean and disinfect all work surfaces before and after conducting research.

<b>Be Prepared for Another Shutdown:</b>	
<input type="checkbox"/>	<p>If/When we need to shut down again:</p> <ul style="list-style-type: none"> <li>○ Check fridges/freezers for spills or leaks.</li> <li>○ Unplug hot plates and other small lab equipment.</li> <li>○ Close fume hoods.</li> <li>○ Check stored chemicals for cracked or damaged or out of date bottles.</li> <li>○ Secure all loose chemical bottles, glassware, etc.</li> <li>○ Make sure all chemical waste is in secondary containment and is labeled with identification and first date waste put in container.</li> <li>○ Turn lights off when leaving.</li> <li>○ Close windows and lock doors.</li> </ul>