COVID-19 Workspace Safety Plan – Lab Specific

This workspace safety plan will assist Principal Investigators who wish to continue or resume research activities in their lab. This plan will include a review of activities to be undertaken in the lab to ensure effective controls are in place to prevent the spread of COVID-19. Principal Investigators are responsible for ensuring this document reflects current government guidance and notices which can be found, along with information about UBC’s response to the pandemic at https://covid19.ubc.ca/.

This plan must be reviewed by your Local Safety Team, and signed by your Unit Head/Director. Once complete, the plan can be submitted with your online application to return to research.

Resources to Consult
The following guidance documents and resources were used in the development of this plan:

- Preventing Exposure
- Personal Protective Equipment
- Physical Distancing Guidelines
- Reporting COVID-19 Exposure
- Communications Resources
- UBC Research Resumption webpage
- WorksafeBC

Section #1: Lab information

Department: Electrical and Computer Engineering
Faculty: Applied Science
Building(s): BRIMACOMBE
Lab(s)/workspace(s): Room 111

Introduction to Your Lab
Our lab: Room 111 of the Brimacombe building. It is composed of 4 physically separate bays housing 3 low temperature quantum physics experiments, and 1 empty bay. We also use the Nanofabrication facility in AMPLEL (self-governed, will their own COVID safety process). My group: The current size of my group is 6 people: myself, 1 postdoc, 2 PhD, 2 MSc.

Section #2 – Risk Assessment

1. Lab/workspace Occupancy (under proposed COVID-19 operations)
List the number of people that will be present in your lab/workspace at the same time. List this by every room/lab/workspace you occupy.

Confirm that you have discussed each employee’s comfort level with returning to work and have addressed any concerns, or will require further assistance in doing so. Any worker (staff, students, faculty, post docs, research associates, technicians and other research personnel) who has concerns about returning to work on campus can request an exemption to his/her supervisor.
Brim 111 is a large lab that can normally accommodate up to 8 people working comfortably spread across 4 bays. At any given time, a normal occupancy would be 6 people, since there are 3 cryostats, and a typical experiment is run by a team of 2.

Laboratory access in Brimacombe is required to load the device/circuit into the cryostat for the experiment, optimize the experimental setup, and cool the device/circuit down. While the experiment is running, it is controlled remotely through a computer on the network from home. An experiment on the LD or XLD would have a typical duration of one week. We will refill nitrogen traps every few days during the experiment. Laboratory access is required to warm up the system.

We propose to host a maximum of 2 people in the lab during phase 1, so 1/3 of typical occupancy. We are requesting access for the full team, since this is what is required for everyone to make progress on their research. Most of the time this will be my team of 5, (1 postdoc, 2 PhD, 2 MASc), but occasionally I will require access.

Please see the appendix which includes a drawing and photograph of the bays.

Please section #7 for list of requested users.

I confirm that I have discussed the plan with the team and solicited their concerns. The main concerns were regarding PPE, especially during installation of the XLD shields, when people are approximately 1.5 m apart, and which would occur at most once per week. My group together developed our PPE plan contained herein (see section #6).

2. Hazard Identification
Describe what hazards exist in your lab/workspace; both research-related (chemicals, heavy machinery) and COVID-19-related (areas that require closer personal interaction, equipment/instruments that cannot maintain social distancing i.e. that require >1 person to operate)

Hazards (non-COVID-19):
(1) installation of heavy cryogenic shields, (2) small quantities of isopropyl alcohol (IPA) for cleaning parts, (3) liquid nitrogen cryogens, handled using special-purpose cryogenic insulating gloves while wearing a lab coat and wearing safety goggles (one labelled set of gloves per person).

Hazards (COVID-19):
(1) Work surfaces, (2) Handling of tools, (3) buttons and knobs on equipment, (4) Physical distancing: The one situation in which lab members may need to be within 2m of each other is if the XLD system is to be cooled down, in which case two people are required, approximately 1.5m apart, to lift heavy shields onto the system.

Entering and exiting the lab will be coordinated. If there is a conflict and someone exiting the room encounters someone coming in, the exiting person will go first.

3. Employee (HQP, research staff, other) input/involvement
Detail how you have involved frontline workers (HQP and research staff) and Joint Occupational Health and Safety Committees (JOHSC) and/or Local Safety Teams (LST) in identifying risks and protocols as part of this plan.

Describe how you will publish your plan (online, hardcopy) and otherwise communicate workplace health measures to employees. Guidelines from SRS are available here: https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/

As a means to educate myself on the hazards and risks I read all of the COVID-19 related guidelines published on the UBC website. This was supplemented by attending the town hall meetings on research curtailment and resumption. To identify hazards, risks, and strategies to mitigate risks I consulted with other professors to identify hazards and consulted every member of my research team. I didn’t work directly with frontline workers.

After approval by our head, our plan will be published according to UBC directives, e.g. online on UBC’s COVID-19 safety plan website, and www.ampel.ubc.ca. It will also be posted on my group’s internal website. I will also go through the plan with my team in person.

Section #3 – Hazard Elimination or Physical Distancing

The following general practices shall be applied for all UBC buildings and workspaces:

- Where possible, workers (HQP, research staff, others) are instructed to work from home.
- Anybody who has travelled internationally, been in contact with a clinically confirmed case of COVID-19 or is experiencing “flu like” symptoms must stay at home.
- All employees are aware that they must maintain a physical distance of at least 2 meters from each other at all times
- Do not touch your eyes/nose/mouth with unwashed hands
- When you sneeze or cough, cover your mouth and nose with a disposable tissue or the crease of your elbow, and then wash your hands
- All employees are aware of proper handwashing and sanitizing procedures for their workspace
- Supervisors must ensure large events/gatherings (> 50 people in a single space) are avoided
- Supervisors must ensure that all workers have access to dedicated onsite supervision at all times; via their own presence, members of safety committees, campus security or other. When working alone, HQP and staff must be aware of working alone procedures and how these have been adapted for COVID-19.
- All staff wearing non-medical masks are aware of the risks and limitations of the face covering they have chosen to wear or have been provided to protect against the transmission of COVID-19. See SRS website for further information.
- Note transportation/vehicle guidelines if applicable: 1 Person per vehicle, unless the vehicle is large enough to maintain 2m between occupants.

Handling of liquid cryogens: Although our cryostat is cryo-free (does not require liquid He) there is a cold trap for removing any contaminants from closed 4He/3He circuit. Approximately 10 litres of LN2 must be
dispensed per week into the trap. This will be carried out using special purpose insulating gloves and while wearing a lab coat and safety goggles. Open shoes cannot be worn during transfer of LN2.
Brim 111 does not contain a sink. Therefore disinfectant wipes and hand sanitizer will be placed in dedicated spots. Disposal of cleaning supplies will be carried out in designated areas in the building.

Closing up the “XLD” dilution refrigerator (DR) after mounting the sample inside of it cannot be done while maintaining physical distancing. This can only be safely done by 2 people because of the weight of the cans. It would be done at most once per week, and takes less than 1 hour. Safety measures: Face shields and non-medical masks, hand washing, nitrile gloves.

All other tasks, including closing the “LD250” DR (which is easier than close the “XLD”) can be safely done by one person.

4. Scheduling
For those required or wanting to resume work at UBC, detail how you are rescheduling employees (e.g. shifted start/end times) in order to limit contact intensity at any given time at UBC.

Discuss your working alone procedures and how they will be adapted for this safety plan. Also describe how you will track those entering/leaving work i.e. sign in/sign out process

Assignment of time on workstations will always be discussed in advance. It is based on the group priorities which generally reflects readiness to embark on a meaningful experiment. First, readiness is discussed within the group and priorities are identified. Then, one group priorities are known, it will be discussed between Salfi and Folk. The main factor identified is that it takes several days to set up an experiment, overnight to cool down, and a day to warm up.

Tracking entering/exiting the workspace: Complete safety documents will be posted on the door to 111. As well, a sign-in and sign-out sheet will be filled out and signed for each entrance and exit of the room according to the schedule. Workers will sign that they followed the posted sanitization processes when they sign out, and are not experiencing any symptoms of infection when they sign in and sign out. It will be the job of the last person leaving the lab to post the day’s sign-in and sign-out sheet on a Slack channel “#”.

Work alone procedure: Lab members working alone will be monitored by a virtual buddy system communicated via Slack on a “#work-alone” channel. When someone wants to work alone (e.g. the only other lab member in a room is about to leave) he or she will designate a remote buddy by phone or SMS, that connection will be confirmed via Slack on a “work-alone” channel and all communications will happen on that channel. For example, at the start of the session

Strict adherence to virtual buddy system/ We use a “work-alone” online message board implemented using a channel in the program “Slack”. The virtual buddy system has the following rules:
1. When someone wants to work alone, they organize in advance a “virtual buddy”.
2. When someone enters the lab they send an “entry notification” in the form of a message on the “work-alone” channel, including which room they are in and how long they will be there.
3. Their virtual buddy replies with “ok” in the “work-alone” channel, and notes the duration of the work alone plan.
4. When the person exits the lab, they give us an “exit notification” in the “work-alone” channel.

5. Their virtual buddy replies with “ok” in the “work-alone” channel.

6. If the worker does not notify the virtual buddy with an exit notification at the end of their shift
   a. The buddy tries to make contact with the worker by their mobile phone.
   b. The buddy tries to make contact with the worker by the laboratory telephone, but this is complicated by the fact that we don’t have a telephone in the laboratory yet.

7. If the worker does not notify the buddy within 10 minutes
   a. a phone call is placed to emergency services, 604-822-2222.

+All lab cell phone numbers will be distributed in the coming week.

5. Occupancy limits, floor space, and traffic flows
APSC recognizes that labs are dynamic environments and it may be challenging to adhere to physical distancing guidelines. Nonetheless, controls must be in place to keep personnel spaced at least 2m apart at all times. Clear communication of this to employees, monitoring of implementation, in addition to physical controls (signage) are needed.

As such: Using floor plans and/or photographs of your lab/workspace:
1) Identify and list the rooms and maximum occupancy for each workspace/area;
2) Illustrate a 2 metre radius circle around stationary workspaces/benches/instruments and common areas or equivalent approach to social distancing; and
3) Illustrate one-way directional traffic flows

Maximum occupancy: Brim 111: 2 total in the room which contains 4 bays. Only 1 person per bay, each bay being 4-5 meters apart. Please see the Appendix for a drawing of lab space and photographs of the bays.

One-way traffic flow: marked with yellow tape

Doors: The only door is the entrance/exit which will be propped open by the first person arrived, and cleaned and closed by the last person to leave. There are no doors within the room.

There is a lavatory containing two sinks directly across the hall from Brim 111, but no hand-washing sink directly inside. Therefore, people using the lab will wash their hands in the lavatory according to the building policy.

Separate incoming/outgoing workers: There is a single door to the room. If there is a conflict and one person wishes to enter while another is exiting, the person exiting gets priority.

Shared equipment: There is very little in the way of shared equipment as all bays are essentially stand-alone with a complete set of tools.

Section 4 – Engineering Controls

6. Cleaning and Hygiene
Detail the cleaning and hygiene regimen required to be completed by HQP, research staff and the PIs for common areas/surfaces (Custodial has limitations on cleaning frequency, etc.).
Outline specific cleaning processes and schedule for high-touch equipment, specialized/sensitive equipment or other unique circumstances to your lab/workspace. Detail how and what types of cleaning products and disposal options you will provide. If possible, include cleaning stations/infrastructure on your lab photos/plan.

| Tools: During use, tools will be placed in a labelled “in use” zone on the desk. Tools will only be put away into the tool drawer once they are sanitized with isopropyl alcohol. The drawer is the “ready for use” zone. |
| Workstation: Sanitized with disinfectant wipes. It will include the keyboard and mouse, the work surface, and instrument knobs and buttons. A checklist will be posted on the workstation of areas that need to be sanitized. |
| Measurement equipment high contact points: Sanitization of instrument knobs and buttons with disinfectant wipes after work is completed in the bay. |
| Cryo-equipment high contact points: Cryo equipment must be handled with clean nitrile gloves. |
| Brim 111 does not contain a sink. Therefore disinfectant wipes and hand sanitizer will be placed in dedicated spots. Disposal of cleaning supplies will be carried out in designated areas in the building. |

7. Equipment Removal/Sanitation
Detail your appropriate removal of unnecessary tools/equipment/access to areas and/or adequate sanitation for items that must be shared that may elevate risk of transmission, both research-related (i.e. instruments, tools) and general (i.e. coffee makers in break rooms)

| Instruments and tools: Brim 111 is a relatively new lab. There is not a surplus of unnecessary tools or equipment. Aside from small hand tools like tweezers that belong to individuals, equipment can also not be assigned to individuals. We therefore provide adequate sanitization for all of the equipment in the lab. That is discussed in the answer to 6 above. |
| General equipment: None in Brim 111. |

8. Safety Infrastructure Requests (Partitions, Plexiglass installation)
Describe any needs for safety infrastructure i.e. physical barriers, plexiglass installation required for your lab/workspace and if possible include them on your photos/room plan.

| The workspaces are separated by ~ 4 meters apart, so partitions and plexiglass are not required. |

Section 5 – Administrative Controls

9. Communication & Training Strategy for Employees
Describe how you (the PI) have or will communicate the risk of exposure to COVID-19 in the workplace to your HQP/research staff/other employees and the safety controls in place to reduce such risk.
**COVID-19 Safety Plan Template**

<table>
<thead>
<tr>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10. Signage</strong></td>
</tr>
<tr>
<td>Detail the type of signage you will utilize and how it will be placed (e.g. floor decals denoting one-way walkways and doors, ‘cleanliness state’ of equipment/instruments, hand-washing guidance). See <a href="https://worksafebc.ca">WorksafeBC</a> for signage guidelines and templates.</td>
</tr>
<tr>
<td><strong>Cleanliness of tools</strong>: labelled “in use” and “ready to use” zones</td>
</tr>
<tr>
<td><strong>Door</strong>: Signage with the schedule, a list of procedures for entering and exiting the room, and maximum occupancy. In particular, washing of hands before entry and after exit. Sign-in and sign-out procedures.</td>
</tr>
<tr>
<td><strong>Floor tape</strong>: Entry and exit of workspace</td>
</tr>
<tr>
<td><strong>11. Emergency Procedures &amp; Reporting</strong></td>
</tr>
<tr>
<td>PIs must ensure that all employees entering the lab should be aware of the Building Emergency Response Plan (BERP) and have access to it. If applicable, detail your strategy to amend your lab’s emergency response plan procedures during COVID-19.</td>
</tr>
<tr>
<td><strong>12. Monitoring</strong></td>
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</table>
Describe how you will monitor your workplace (supervisor, departmental safety representative, other) and update your plans as needed; detail how employees can raise safety concerns (e.g. via the JOHSC or Supervisor).

The PI is responsible for monitoring the workplace by ensuring compliance with work-alone and safe-work procedures, and for communicating with nominated members of the group who will supplement PI’s direct monitoring. The PI will monitor the photographic records of the sign-in sheet to ensure they are filled out properly and signed. The PI will monitor the work-alone Slack channel and ensure it matches the sign-in sheet. The PI will engage in discussion with team members about the efficacy of the process.

In addition to the PI, the lab members will monitor the implementation of the process. The last lab member to leave the lab must take photos of the sign-in / sign-out sheet and ensure they match the posted schedule on LabAgenda.

Process documentation: LabAgenda.com is used to book time in the bays. The sign-in and sign-out sheets and associated signatures will be photographed and posted to Slack by the last person to leave the lab. The work-alone policy is monitored on a slack channel.

Section #6 – Personal Protective Equipment (PPE)

### 13. Personal Protective Equipment

UBC has a [central process for purchasing PPE](#). Describe what PPE you will require for your lab.

<table>
<thead>
<tr>
<th>#</th>
<th>Type of PPE</th>
<th>Activity and PPE Use Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Nitrile gloves medium</td>
<td>Assuming 100 gloves per box, and what is needed until September. Handling of cryogenic parts.</td>
</tr>
<tr>
<td>6</td>
<td>Nitrile gloves large</td>
<td>Assuming 100 gloves per box, and what is needed until September. Handling of cryogenic parts.</td>
</tr>
<tr>
<td>12</td>
<td>Hand Sanitizer</td>
<td>Assuming 100 mL per bottle and 6 mL per use, and what is needed until September. Sanitization of hands</td>
</tr>
<tr>
<td>10</td>
<td>Face Shields</td>
<td>1 per person, with extract.</td>
</tr>
<tr>
<td>12</td>
<td>Disinfectant wipes</td>
<td>Assume 100 wipes per pack and what is needed until september. Sanitization of workspace, keyboard, mouse,</td>
</tr>
<tr>
<td>25</td>
<td>Non-medical masks</td>
<td>Total # masks requested is 25. Only required during assembly of shield on XLD. Two masks per week, for a total of 8 masks per month, and 24 masks until September.</td>
</tr>
</tbody>
</table>

Soiled PPE will be disposed of in designated areas of the building, once per day. There will be a bucket containing a bag to placed soiled PPE. Extra bags will be at the bottom of the bucket. The bucket can only be handled with gloves and needs to be sanitized after it is emptied each day.
Section #7 – Justification of Request and EDI

Special circumstances to go back to the lab:

1. My group is 100% experimental research group. To make progress on our research we need access to the laboratory.
2. I am also an early career researcher, a career stage where delays in research are keenly felt in grant results, access to collaborations with top research groups, and in terms of positioning relative to the leading groups in my research field. Notably, no other research group in my research field (outside China) was shut down so we are rapidly falling behind.
3. Notably, a significant amount of experimental research can be done in my group without people in the lab. If we start an experiment, and control it remotely via the lab computer. Only the start and end of experiments requires laboratory access. Everything else can be done remotely.

Justification to request access for all users at a lower occupancy (33%):

1. It is safe: Our workspace (see appendix) has fixed bays that are ~4 meters apart. In this special case, from a physical distancing point of view, access prioritization for 33% is the same as 33% occupancy. We propose sanitization of the workspaces to completely eliminate risks.
2. Importance of every team member: Currently (only 14 months since getting started), every student is contributing parts of the experimental setup, and the whole experimental setup is required for each project. Each lab member has a distinct project and scientific goals.
   a. A simple corollary of this is that if we only allow 2 students to return to the lab, nothing will get done, since we will be missing the expertise.
3. Mental health: Given the importance of every team member in all experiments, restricting access for certain students would be highly suboptimal for mental health.
4. Supervisor/Trainee relationship: Given the importance of every team member in all experiments, restricting access for certain students would undoubtedly strain the supervisor/trainee relationship

EDI: We are avoiding exclusionary practices and biases and aiming for equality of outcome among all group members.

1. By requesting access to the lab for all individuals in a way that is safe.
2. By keeping close contact with all members of the lab and encouraging their feedback.
Acknowledgement
I confirm that this Safety Plan has been shared with all workers (HQP, research personnel, etc.) who will be accessing this space both through email and will be made available as a shared document. Workers can either provide a signature or email confirmation that they have received, read and understood the contents of the plan.

<table>
<thead>
<tr>
<th>Date</th>
<th>08/06/2020</th>
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<tbody>
<tr>
<td>Name (Manager or Supervisor)</td>
<td>Joseph Salfi</td>
</tr>
<tr>
<td>Title</td>
<td>Assistant Professor</td>
</tr>
</tbody>
</table>

Department/School Head/Director Approval

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<tr>
<th>Name, Title</th>
<th>Date</th>
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<tbody>
<tr>
<td>John D Madden, AMPEL Director</td>
<td>8 June 2020</td>
</tr>
<tr>
<td>Steve Wilton, ECE Head</td>
<td>9 June 2020</td>
</tr>
</tbody>
</table>
Appendix

Please attach any maps, pictures, departmental policies or risk assessments applicable UBC Guidance documents, where necessary, and other regulatory requirements referred to in document.

APSC specifically requests photographs of your current lab layout, as well as your proposed usage layout i.e. where HQP will work, what areas will be closed off, where signage will be placed, etc. If floor plans of your lab/shared workspace is available, please append these as well.

Here is the proposed lab layout.
Bay 1: Salfi LD
Bay 2: Folk Dipstick
Bay 3: Folk XLD

Note: Desk arrangement is not as shown in the drawing below, but the bays are still arranged this way. Photos below reflect positions of desks.

Pump room 113 is part of Bay 1
Pump room 112 is part of Bay 3

Bay 1 photo, Bay 2 photo, Bay 3 photo are below
Bay 1