SRSCOVID-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.

Standard hours of return: Phase I occupancy 7 AM to 6 PM Monday to Friday.

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

<table>
<thead>
<tr>
<th>Department</th>
<th>Materials Engineering</th>
</tr>
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<tbody>
<tr>
<td>Faculty</td>
<td>Applied Science</td>
</tr>
<tr>
<td>Building(s)</td>
<td>Brimacombe</td>
</tr>
<tr>
<td>Lab(s)/workspace(s)</td>
<td>363</td>
</tr>
</tbody>
</table>

Introduction to Your Lab

This is an applied electrochemistry lab – it is a wet lab. We do corrosion and hydrometallurgy research. The lab is overseen by 1 PI. The lab is approximately 1200 ft² and the main control against COVID-19 will be ensuring no more than 2 people in the general open lab, 1 per half-lab, at any one time. There are sinks and fume hoods in each half of the lab. Normally there are 8 active users (1 postdoc, 6 graduate students), and may include 1 more user from another research group to use the shared ICP equipment that is located in a separate, small room in the Northeast corner of the lab. Only 1 person will be allowed in the ICP room at any one time and this person will walk in and out via an empty aisle. So the maximum occupancy will be 3 people at one time, i.e., 2 in the general open lab and 1 in the ICP room.

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.

List the users of the lab space and the approximate number of hours per week in the table.

Room BRIM 363 – 2 people at any time. This is 2/8 of normal.
ICP room inside BRIM 363 – 1 person at any time. This is 1/8 of normal.

We have informed all workers that “Private transportation is encouraged. If you are sick or feel stressed about coming to the lab, then stay at home.” We have not requested that anyone return to work. Attendance at work is completely voluntary. As above:

- 7 out of 8 lab users are confirmed to return to work on campus. This includes all graduate students who want to complete their studies, which is why they want to return to work.
- 1 graduate student will work remotely
- The approximate working hours per week per person is 12-15.
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)

- Research-related: this lab includes the general chemical hazards (e.g. acids) and non-toxic compressed gases (e.g. oxygen, nitrogen) for which we have implemented controls for many years. For this phase of research, the most common chemicals to be used will be sulfuric acid, sodium hydroxide, sodium sulfate, sodium chloride, compressed oxygen and nitrogen. For acids and bases, these are stored according to the SRS guidelines, with related MSDS documents kept in the lab. Spill kits are also available in the lab. For compressed gases, the gas cylinders are secured properly and safety caps are kept on cylinders when not in use. All researchers have been properly trained on the use of lab chemicals and on the use of compressed gases (including regulators).
- COVID-19 related: there is no research equipment that requires > 1 person to operate. We have designed the back to work process so that the lab is split in two and each student has access to their own sink and fume hood. There is therefore no requirement for close interaction.

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/

This plan (and the associated documentation in Appendix) has been circulated and approved by the Materials Head and the Chair of the LST. The PI and a group research engineer have put significant time and effort into identifying risks, setting up safety protocols as part of this plan and presenting this to all students for discussion. The plan has been agreed to by all students and it is a very conservative occupancy plan (see details in this document).

- Final plans will be posted to UBC’s COVID-19 Safety Plan website.
- A paper copy will be posted on the door along with a statement of the maximum occupancy.

Section #3 – Hazard Elimination or Physical Distancing

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.

It is imperative that all returning personnel understand that they may be in the building ONLY during days and times when they have been scheduled to be there as determined by the supervisor. There is absolutely no admittance to the building outside of the scheduled times.

We will use an online sign up for our schedule (Appendix A): [https://docs.google.com/spreadsheets/d/1VbPVffX3ns1kWfYsiQrc0NBNsprfqeMUg1dnYoODI/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1VbPVffX3ns1kWfYsiQrc0NBNsprfqeMUg1dnYoODI/edit?usp=sharing)

There are several guiding principles, which include:

- The working hours will be limited to 7am to 6pm, Monday to Friday. 4 time slots (7–10am; 10:30am–12:30pm; 1-3pm; 3:30-6pm) will be assigned.
- Each time slot is separated by 30 minutes to ensure no overlap. Each person should complete a daily checklist (Appendix B) at the start and end of a shift, which will be posted on the lab door.
- Choosing consecutive time slots is encouraged to reduce the shifts and building entrances (e.g. entire morning, entire afternoon, one full day)
- There are 7 users in QMI363, each one can select no more than six 2-3 hour time slots/week
- For people who normally work in the same half of the lab, the same time slots cannot be chosen
- To minimize the potential for social interactions, we will limit the density to one person per half-lab in the general open lab for a maximum of 2 people, plus no more than 1 person from Wenying Liu’s group who will remain in the ICP room and will not otherwise work in QMI 363. This equates to a density of 1 per 400 square feet with no opportunity for breaching social distancing protocols.
- **ICP access procedure**: ICP scheduling is managed by Ronny Winarko, a 3rd year PhD student supervised by Wenying Liu. Use of this equipment is booked in the online booking system at least a week in advance and the schedule is posted on the lab door. The room is a controlled access. Only the equipment manager (Ronny) has the key to this room. Prior to use by a user, Ronny unlocks the room, disinfects the computer and the bench, turns on the equipment, purges argon gas for 30 mins, make the equipment ready for the user, and leaves before the user arrives. After the user completes the analysis, they disinfect, and leave the lab, Ronny will come back to check and make sure that the equipment and the gas are turned off properly, and lock the room. Specific guidelines for covid-19 include: (1) user to disinfect the work area before and after use while wearing gloves; (2) the manager to disinfect the area before and after use while wearing gloves; (3) no time overlap in the ICP room between the user and the manager; (4) scheduling and contact information of all users are stored in the computer.

Our **working alone procedures**

- At this time off-hour shift-work is not permitted
- Working alone will be very rare as the lab may only have 2 occupants at a time so we expect the 2-person schedule to be full and attendance to be high.
- Considering this lab is in an area that is not isolated and during regular hours (7am – 6pm), for low risk research activities, the lab manager (Dr. Mina Xu) will have a check-in with the lab user.
by phone at the beginning and completion of his/her scheduled work. People with research activities that are medium to high risk will not be allowed to work alone. We also have a daily log in and self-assessment form to be completed by each lab user (Appendix B).

- There is a sign in/out process using a paper sign-up sheet on the lab door
- Any deviation from the posted schedule will require supervisor to be informed

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

Below is the floor plan for lab QMI363: people with designated bench space in the same half lab will not work at the same time. For example, Hossein and Sheida will not work during the same shift, Hongxing and Amin will not work during the same shift, etc. An acceptable schedule would be Hossein and Cathy occupying the lab. Occupancy is 2/8ths of normal in the general open lab.

Incoming and outgoing workers are separated via the schedule and a 30-minute buffer between each time slot.

The lab manager, Dr. Min Xu, will make periodic and random phone calls, during normal working hours, for scheduled occupants to make sure they are following protocols. The PI, Dr. Asselin, will also make periodic calls to check that protocols are being followed. The daily inspection checklist (Appendix C) will be completed by staff who are scheduled for work on that day. This will ensure compliance with occupancy, distancing, PPE and general safety. To monitor the situations, the PI will make random once-per-week trips to physically verify that protocols are being followed, including the various sign-in, checklist and assessment sheets.

One room with the ICP equipment is shared with Dr. Wenying Liu’s group. One person will be allowed to access the room at a time. Students from Wenying’s group need to contact the lab manager (Dr. Mina Xu) for scheduling a time to access the room.

The maximum occupancy within QMI 363 will be 3 people at one time, i.e., 2 in the open lab and 1 in the ICP room (which is 1/3 of room 363A in the Figure (a) below).
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.
• The PI has worked closely in the past with the head of infection control at VGH, Dr. Liz Bryce. Dr. Bryce has stipulated in an email that the virus is “not very hardy” and that a 5-10% bleach solution is more than enough to kill it.
• The lab users will only work at their own designated benches and avoid touching others’ bench areas and equipment. All equipment and bench spaces will be cleaned at the beginning and end of their shifts with a 5% bleach solution (sodium hypochlorite). This solution will be provided in spray bottles (2 per half lab). The spray bottles will be refilled by the staff as they approach 1/3 of their capacity. The procedure will be to make the 5% bleach solution using bleach that will be purchased from central Materials Engineering Stores. Currently, the lab has 8 L of concentrated bleach. This will last at least two months.
• Fume hood sashes and sinks will be cleaned at the beginning and end of each shift.
• Door handle cleaning (alcohol spray or 5% bleach solution): done by each individual upon leaving the laboratory. A plastic bag-lined bin will be placed near the door handle to ensure proper disposal of used cleaning supplies for the door.
• A specific trash bin for used cleaning supplies will be available in each half lab and the office. These will be emptied at the end of each day by the last occupants of the lab.
• One hand sanitizer will be provided for each entrance and exit.

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)

• “Ready to use” or “needs cleaning” signs will be placed for the shared ICP equipment in the small room in the Northwest corner of the lab.
• There are no “general” shared items in the lab

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.

As we will divide our lab into two half-lab areas, and no people will work in the same half lab, there is no need for safety infrastructure to be installed. Researchers in the lab are not localized at workstations and need to be able to move around in their areas.

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.

Detail how you will ensure that all employees successfully complete the Preventing COVID-19 Infection in the Workplace online training and orientation to your specific safety plan
As mentioned in section 2, all lab users have been informed that “Private transportation is encouraged. If you are sick or feel stressed about coming to the lab, then stay at home.”

**Preventing COVID-19 Infection in the Workplace** online training and orientation will be provided to all the lab users. Each user will have to submit a completion certificate to the PI (E. Asselin), the LST and the Department Head.

### 10. Signage
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 [WorksafeBC](https://www.worksafebc.ca) for signage guidelines and templates.

Given the low density that will be used in this lab, there is little need for directional signage. The risk is mitigated by the fact that only 2 users will be in different halves of the lab at once. Moreover, people who work in half 1 will only use door 1 to enter/exit the lab, and people who work in half 2 will only use door 2 to enter/exit the lab. This will ensure that there is no risk of congestion at the doors. A “COVID-SAETY-POSTER” downloaded from the UBC SRS website will be posted on the lab doors to show the top tips to reduce the risk of infection.

### 11. Emergency Procedures & Reporting
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.


The Brimacombe BERP will be available in the new lobby and will be posted on the website.

We will follow the SRS guidelines.

### 12. Monitoring
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).

- One lab manager (Mina Xu) will coordinate within the group to monitor the workplace safety and update plans as needed. Random phone calls (once per day) to scheduled lab occupants will be made to verify that procedures are being followed and to remind the occupant of the protocols.
- The PI and lab manager will check-in on the lab at least once per week, verify that the assessment sheets are up to date and that they are being correctly filled out.
- All the lab users can raise safety concerns to the lab manager, the supervisor (E. Asselin), the department Head (D. Maijer) or the MTRL LST Chair, Be Wassink. This can be done via email.
- The Department Head and MTRL LST Chair will approve this plan.
Section #6 – Personal Protective Equipment (PPE)

13. Personal Protective Equipment

UBC has a [central process for purchasing PPE](https://example.com). 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>1</td>
<td>Goggles</td>
<td>Provide the best protection against chemical splash and reduces risk of virus getting into eyes. We already have goggles for most staff.</td>
</tr>
<tr>
<td>2</td>
<td>Nitrile Gloves</td>
<td>Handling hazardous materials and reducing COVID transmission</td>
</tr>
<tr>
<td>3</td>
<td>Neoprene gloves</td>
<td>For handling strong acids (e.g. conc. HCl, HNO₃, H₂SO₄), we will need 8 boxes (1 large/1 small x 4)</td>
</tr>
<tr>
<td>3</td>
<td>Face shields</td>
<td>Provides superior chemical and COVID protection. This lab will require 8.</td>
</tr>
<tr>
<td>4</td>
<td>Hand Sanitizer</td>
<td>For hand cleaning when entering and leaving the lab (one provided for each entrance and exit)</td>
</tr>
</tbody>
</table>

Requests for cleaning supplies (disinfectant and wipes) as well as gloves and face shields have been made through the central process.

Disposable supplies like gloves and napkins/wipes will be placed in dedicated plastic-lined bins. Lab coats will be placed on the individual staff bench after each shift so as not to touch any space or equipment that may be common.

**Researcher Agreement**
SAFE-RETURN-TO-WORK AGREEMENT
THE BRIMACOMBE BUILDING

Signature line for researcher (faculty, student, research staff, post-doc etc.) and administrative staff acknowledgment

I, Edouard Asselin, have read and understand the additional precautions being taken during this time, as outlined in the Brimacombe Phase I Safety Plan, my lab’s Workspace Safety Plan. I have read and agree to abide by the safety plans, and to undergo training that will be required by UBC once it is put in effect (we anticipate video training that all those entering the building will be required to complete):

RESEARCHER/ SIGNATURE ______________________________
or STAFF

DATE ______________________________

SUPERVISOR/ SIGNATURE ______________________________
or DIRECTOR in case of PIs

DATE 2020/06/03

Signed

Supervisor is to keep a copy of this document in the lab and/or accessible electronically from the lab, in case of Local Safety Committee, SRS or WorkSafe BC audit.
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. For shared labs, please add the number of signature lines needed to cover all PIs who intend to have researchers use the space, e.g. including for students who will visit for a short period of time to use an instrument.

<table>
<thead>
<tr>
<th>Date</th>
<th>2020-06-03</th>
</tr>
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<tbody>
<tr>
<td>Name</td>
<td>E. Asselin</td>
</tr>
<tr>
<td>Title</td>
<td>Professor</td>
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<tr>
<th>Date</th>
<th>2020-06-04</th>
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<tbody>
<tr>
<td>Name</td>
<td>Wenying Liu</td>
</tr>
<tr>
<td>Title</td>
<td>Assistant Professor</td>
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<table>
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<table>
<thead>
<tr>
<th>Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Daan Maijer, Dept. Head</td>
<td>June 11, 2020</td>
</tr>
<tr>
<td>Name, Title</td>
<td>Date</td>
</tr>
<tr>
<td>Signature</td>
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</table>

Departmental Approval
Appendix A

Plan for reoccupying QMI 363

1 – Transportation specifics

<table>
<thead>
<tr>
<th>Name</th>
<th>Transportation</th>
<th>Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private (Walking, cycling, car etc.)</td>
<td>On-campus</td>
</tr>
<tr>
<td></td>
<td>Car</td>
<td>Off-campus</td>
</tr>
<tr>
<td></td>
<td>Car and bicycle</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Cycling (1st choice)</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Bus (2nd choice)</td>
<td>✓</td>
</tr>
<tr>
<td>Cathy</td>
<td>Car</td>
<td>✓</td>
</tr>
<tr>
<td>Sheida</td>
<td>Car and bicycle</td>
<td>✓</td>
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<tr>
<td>Hossein</td>
<td>Cycling (1st choice)</td>
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<tr>
<td>Moal</td>
<td>Bus</td>
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</tr>
<tr>
<td>Hongxing</td>
<td>Walking</td>
<td>✓</td>
</tr>
<tr>
<td>Amin</td>
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</tr>
</tbody>
</table>

Note: Private transportation is encouraged. If you are sick or feel stressed about coming to the lab, then stay at home.

2 – Rotation schedule

We have in total 7 active users in QMI363 (as provided in Section 2). To best coordinate the experiments among us, each one will plan a 2-week schedule. On each day, 4 different time slots are available, each with a 2hr length. The basic principle is no more than 2 people for one time slot for one lab.

- For people who work in the same half of the lab, do not choose the same time slots (see Fig. 1).
- To minimize the potential for social interactions, we may only have one person per half-lab as per Fig. 1.
- 7 users in QMI363, each one can select no more than six 2-3 hr time slots/week
- Choosing consecutive time slots is encouraged to reduce the shifts (e.g. entire morning, entire afternoon, one full day)
- If extra time slots are required, please discuss with Mina. She will try to accommodate if there are free time slots available

* Please go to the shared spreadsheet (link below) to view the updated schedule considering the new restrictions. As you can see, people’s name in the same color or in italic cannot choose the same time slots. We expect to begin re-entry in early June.

https://docs.google.com/spreadsheets/d/1VbPVffX3ns1kWfvYsiQrc0NBsprfqeMUG1dnYoODI/edit?usp=sharing

We may make adjustment based on how well this method works. If you have any questions/concerns, please feel free to contact Ed and or Mina.
3 – A PPE strategy and a cleaning strategy

- Understand the risks & prevention of the Covid19 – please read the related information on BC CDC website: http://www.bccdc.ca/health-info/diseases-conditions/covid-19, and follow the guidelines.
- Must wear all standard PPE when in lab: gloves, safety goggles
- Only work at your own designated bench and avoid touching others’ bench areas and equipment. Clean all equipment and bench spaces at the beginning and end of your shift with a 5% bleach solution (sodium hypochlorite). This solution will be provided in spray bottles (2 per half lab). The spray bottles will be refilled by the staff as they approach 1/3 of their capacity.
- Fume hood sashes and sinks will be cleaned at the beginning and end of each shift.
- Door handle cleaning (alcohol spray or 5% bleach solution): done by each individual upon leaving the laboratory. A plastic bag-lined bin will be placed near the door handle to ensure proper disposal of used cleaning supplies for the door.
- A specific trash bin for used cleaning supplies (e.g. gloves, wipes etc.) will be available in each half lab and the office. These will be emptied at the end of each day by the last occupants of the lab.
- Lab coats will be placed on the individual staff bench after each shift so as not to touch any space or equipment that may be common.
- Maintain social distancing of 2m at all times.
- Personal hygiene: regular hand washing, covering coughs and sneezes
- Non-medical face masks will be provided and have been ordered by Ed. You are strongly encouraged to wear these, though it is not mandatory.

4 – A monitoring strategy to make sure people follow the rules

- Post a “COVID-SAFETY-POSTER” downloaded from UBC SRS website on the lab door to show the top tips to reduce the risk of infection.
- Post a printed cleaning record on the lab door. Individuals leaving the lab at the end of their shift will complete the form (check in a box to confirm the door handle has been cleaned) with alcohol spray.
- These procedures must be strictly followed. If a violation is found, he or she may not be allowed to enter the lab. Remind each other to follow the rules when you are in the lab at the same time slot. Ed or Mina may do random check. As this is a special time and to ensure everyone’s safety, please understand and thank you for your cooperation.