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.

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>AMPEL</th>
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<tbody>
<tr>
<td>Faculty</td>
<td>Applied Science</td>
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<tr>
<td>Building(s)</td>
<td>Brimacombe</td>
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<tr>
<td>Lab(s)/workspace(s)</td>
<td>AMPEL 143A</td>
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Introduction to Your Lab

The Shared Soft Lithography Facility is a shared laboratory for researchers working on soft lithographic devices.

- The work done at the laboratory consist on processing and mixing of silicone based polymeric materials for flexible devices. Mixing sessions take approx. 2 hours.

- Surface activation and cleaning using a plasma chamber, bonding of silicon-based parts to for devices. This process takes approx. 20 min.

- Coating of surfaces with dielectric surfaces e.g. using spin coating method. It requires a mixing of the compounds to be used for the coating before the coating process. It may take from 1 hour to 3 depending on the number of samples to be coated.
- Processing of components for batteries. This process may take session of 3 to 5 hours due to the novelty of the process.
- Curing of polymeric materials in a lab oven temperature (around 60°C). This process usually requires the user to mix their components, cast a mold and place in the oven. This may take about an hour and several more for curing in the oven but the user won’t need to be present in the laboratory.
- Inspection of samples using optical microscopy. This usually takes 10 to 20 minutes.

Usually the facility hosts up to 4 users. Most commonly, two users occupy the space at the same time. The space and instrumentation are fully shared facility hosting students and staff from six different P.I.s. For phase 1 it is expected that users from only three P.I.s will be allowed, and only a fraction of these users. The three other PIs have chosen to await phase II.

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.

The PIs who use the facility have confirmed the researcher’s comfort level with returning to work. The following students and post-docs have indicated the number of hours for which they expect to return.

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)

Operations are relatively safe, but not without risk.
Research related
- Risk of poisoning due to work with chemical compounds (mainly involving solvents such as ethanol, methanol, acetone).
- Risk of burn due to the operation of hot plates and laboratory oven (60°C).
- Risk of burn due to the operation of hydraulic press (heating plate option).
- Risk of physical injury while operating the hydraulic press. This is low since the press operates very slowly and under manual control.
- Risk of physical injury while working with thin glassware while operating the spin coater.
• Risk of electric shock if electric components of instrumentation get in touch with water.
• Risk of fire if sensitive material in direct contact with the exhaust (back-top) of the oven.

Covid-19 related
• Risk of infection if an infected user is at close proximity with another during simultaneous occupancy of the laboratory.
• Risk of infection if the required full PPE is not used for special activities in which two users have to be at close proximity.
• Risk of infection if an infected user contaminates surfaces of equipment, furniture and fume hood. In particular the following sensitive surfaces:
  • Door handles
  • Tables
  • Hand washing knobs and surfaces
  • Cabinets doors handles
  • Cabinets drawers handles
  • Knobs of sink
  • Fume hood sash
  • Fume hood table and front external surfaces
  • Fume hood controls
  • Stools
  • Tweezers
  • Tools
  • Glassware
  • Plasma cleaner:
    o Switches
    o Knobs
    o Chamber door (outside)
    o Gas valves
  • Mixer:
    o Buttons
    o Main lid
    o Cups, cup’s lids
    o Surfaces inside the mixing chamber
  • Spin coater:
    o Buttons (spin coater and vacuum pump)
    o Main lid
  • Oven:
    o Door handles
    o Door external surfaces
    o Controller buttons
    o Switches
  • Heat press:
    o Controller’s buttons
    o Knobs
    o Level for hydraulic pump
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/](https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/)

- The plan has been set by the lab manager and reviewed by the P.I.s using the facility, which also has involved their staff members in the review. The plan has been also subjected for revision by the local safety team representative and the director of the institute.
- The approved final plans will be sent by email to all the employees and will be posted on the outside part of the entrance door and on the communication board in AMPEL 143A.
- The plan and the instructions to access the online scheduling system will be communicated by email to all employees.
- The maximum occupancy of people will be posted for each room in large bold and clearly visible font.
- The plans will be posted at [www.ampel.ubc.ca](http://www.ampel.ubc.ca), with phone numbers redacted.
- Final plans will be posted to UBC’s COVID-19 Safety Plan website.

**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.
- All work will be done within regular opening hours of the building.
- To coordinate access and maintain usage records, all initially authorized users will be requested to book the laboratory in advance using an electronic calendar (Google Calendar). Users will be instructed to leave a 30 minute buffer between reservations to allow the previous user to vacate and avoid interaction.
  - A maximum of 5 hour booking slots will be allowed for users per day.
- The facility manager will monitor the facility every three hours during standard operating hours, check the sanitization checklist, and monitor the users who are doing sanitization for the first time. He will watch from behind the window in the entry door.
- Text messaging with users is considered as an alternative when physical monitoring is not possible (e.g. facility manager away). The procedure will be as follow: The facility manager will confirm and verify the status of the user every 3 hours. The user will have to reply within 5 minutes of the first text message. If no communication is received, the facility manager will proceed to make a direct phone call. If no successful communication is established, the facility manager will contact the building manager or one of the floor wardens who are on site to check status. If these are not available, he will call Campus Security at 604-822-2222 for an in-person check.

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
As the diagram shows, the space allows for two users to occupy the space at the same time (laboratory area) while maintaining physical distancing (red cycles). The narrow space in the laboratory will require the user closer to the door to vacate or position themselves in front of the sink (pink star) if the user further away from the exit needs to leave the laboratory (following the pink arrow path). This exchange will be done by verbal communications. Typically, the further in user is
employing the fume hood and doing relatively long experiments (e.g. battery development), while the user closest to the door is mixing, spin coating or plasma treating – all relatively short operations.

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.

To have access and perform activities, the laboratory will be divided in two areas: preparation area and the laboratory area.

- Preparation area

A preparation area will be delimited with tape (Figure 1, orange area). This area is intended for users to wash their hands with soap and water at the washing station (Figure 1, blue area) and don or doff the indicated PPE. The area will be delimited with tape on the floor and message board with the relevant information regarding the safety laboratory procedures in the current situation. The user will be able to find the following consumables in the preparation area:

- Spray bottle with disinfectant solution.
- Nitrile gloves.
- Containers for personal goods.
- Paper towels.
- Personal goggles with individual storage slots.
- Disposable non-medical facemasks and sterilizable face shields (exclusively for activities requiring two people at close proximity).

- Laboratory area

Regular operations are expected to take place in the laboratory area. The users will be able to find the following consumables on the back and front area of the laboratory:

- Spray bottle with disinfectant solution.
- Squirt bottle with isopropanol.
- Nitrile gloves.
- Paper towels.

The facility manager will be responsible for:

- Maintaining the supply of consumables for users.
- Maintaining updated the information in the communication board of the preparation area.
○ Correcting cleaning practices.

The procedure to perform activities in the laboratory will be as follows.

1. Wash their hands upon arrival to the facility in the preparation area.
2. Wear nitrile gloves (provided) and safety glasses (belonging to the user) in the preparation area.
3. Use the spray bottle with disinfectant solution to spray over the following areas and wipe them with paper towels:
   a. Washing station knobs
   b. Faucet
   c. Sink area
   d. Spray bottles
   e. Temporary storage container for personal belongings
   f. Work surfaces to be used
   g. Cabinet handles.
4. Dispose all used paper towels in the garbage bin.
5. Proceed to the laboratory area and clean with isopropanol and a paper towel:
   a. Surfaces, buttons, knobs, of the instruments and tools which will be used by the user. A list of critical parts to be cleaned will be posted above each instrument (the information will be the same as shown in section 2).
6. Dispose all used paper towels in the garbage bin.
7. Proceed to clean with disinfectant solution and a paper towels the following surfaces:
   a. Spray bottles surface
   b. Fume hood sash, and work area
   c. Tables to be used
   d. Knobs of sink
   e. Cabinet handles
8. Dispose all paper towels in the garbage bin.
9. After finishing activities proceed to clean with isopropanol and a paper towels the following areas contacted by the user:
   a. Surfaces, buttons, knobs, of the instruments and tools which will be used by the user. A list of critical parts to be cleaned will be posted above each instrument (the information will be the same as shown in section 2).
10. Dispose all used paper towels in the garbage bin.
11. Clean with disinfectant solution and a paper towels the items contacted:
   a. Washing station knobs
   b. Faucet
   c. Sink area
   d. Spray bottles
   e. Temporary storage container for personal belongings
   f. Work surfaces to be used
   g. Cabinet handles.
12. Dispose all used paper towels in the garbage bin.
13. In the preparation area the user will use the spray bottle with disinfectant solution to spray
over the following areas and wipe them with paper towels:
   a. Washing station knobs
   b. Faucet
   c. Spray bottles
   d. Temporary storage container for personal belongings.
14. Dispose all used paper towels in the garbage bin.
15. Remove personal belongings or any personal PPE.
16. Proceed to remove and dispose gloves in the garbage bin.

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)

Due to the low usage and potential high risk of transmission through the eyes, the optical microscope
will be removed from the laboratory.

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.

No infrastructure requirement is expected to be requested.

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

- An email list will be used to communicate directly to the users regarding latest information
  regarding COVID-19 at the workplace or potential new risks in the laboratory. The users will
  be able to contact directly (email or by phone) the facility manager to raise any question or
  concerns. The facility manager will record such concerns in a written form and proceed to:
    o Provide guidance and support to tackle the problems.
    o Raise the topic with the researcher’s supervisor.
    o Raise the topic to the Local Safety Team.
- The facility manager will request supervisors to verify that their users have successfully
  completed the Preventing COVID-19 Infection in the Workplace online training (when
  available), in addition to the required laboratory chemical safety training.
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 for signage guidelines and templates.

- The preparation area will be delimited by tape on the ground.
- The cleaning guidelines and etiquette will be printed on the communication wall in the preparation area, including a twice or more daily checklist.
- A list of high-risk surfaces will be places on top of each instrument for users’ reference.
- A walkway for exit will be indicated on the floor.
- Signs on the walls indicating the user closer to the exit door to yield (vacate the laboratory or position next to the sink) to allow the user operating in the back of the laboratory this this user needs to leave the room.
- Maximum occupancy (2) will be posted on the door.

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.

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).

- The facility manager will monitor the calendar to identify appropriate utilization of the space and booking rules, as well as identifying work alone conditions.
- The facility manager will monitor the facility every 3 hours by personally visiting the facility:
  - Will verify abidance with the safety procedures.
  - Will verify users are wearing required PPE.
  - Will verify personal distance is being maintained.
  - Will verify sufficiency of consumables are available at the laboratory.
  - For the case of users working alone, will verify wellbeing of users.
- The users will be able to raise concerns with the facility manager who will proceed according to section nine of this document:
  - Sebastian Medrano
- The users can contact the Local Safety Team representative:
  - Gary Lockhart, Building Manager and Safety Committee Co-chair, gary.lockhart@ubc.ca
- Users can contact their supervisor for guidance.

Section #6 – Personal Protective Equipment (PPE)
### 13. Personal Protective Equipment

UBC has a [central process for purchasing PPE](https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/personal-protective-equipment/). Describe what PPE you will require for your lab.

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<tr>
<th>#</th>
<th>Type of PPE</th>
<th>Activity and PPE Use Rationale</th>
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<tbody>
<tr>
<td></td>
<td>Gloves</td>
<td>Activities:</td>
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<tr>
<td></td>
<td></td>
<td>• Processing and mixing of silicone based polymeric materials for flexible devices</td>
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<td>• Surface activation and cleaning using a plasma chamber</td>
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<tr>
<td></td>
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<td>• Bonding of silicon-based parts to form devices</td>
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<td>• Coating of surfaces with dielectric surfaces using spin coating method.</td>
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<td>• Manufacturing of electrodes for batteries,</td>
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<td>• Curing of polymeric materials in a lab oven.</td>
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<td></td>
<td>Lab coat</td>
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<td></td>
<td>Eye protection</td>
<td>This PPE rationale:</td>
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<tr>
<td></td>
<td></td>
<td>The mentioned PPE is the regular required for performing the previously mentioned activities. While maintaining social distancing, no additional PPE is expected to be required. This PPE can be disposed using the regular channels. Users must provide their own lab coats and safety glasses.</td>
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<tr>
<td></td>
<td>Gloves</td>
<td>Activities:</td>
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<tr>
<td></td>
<td></td>
<td>• Two users operating at the same time at close proximity in a coordinated plan.</td>
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<tr>
<td></td>
<td>Lab coat</td>
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<td></td>
<td>Eye protection</td>
<td>This PPE rationale:</td>
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<td></td>
<td>Facemask</td>
<td>The fact that there is a risk of users not being able to maintain the minimum physical distance in coordinated activities requiring two users operating in the laboratory at the same time, an increase in the PPE is compatible with the guidelines in <a href="https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/personal-protective-equipment/">https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/personal-protective-equipment/</a>. The disposable element of PPE can be disposed using the garbage. Face shields and goggles must be disinfected with ethanol solution before and after use. Lab coats must be stored in cupboards provided for the sole use of each user.</td>
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<tr>
<td></td>
<td>Face shield</td>
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**Researcher Agreement**

All those who will enter your lab during Phase I (including the PI if applicable) will sign the statement on the next page. We will keep a copy in the lab as a record.
SAFE-RETURN-TO-WORK AGREEMENT
THE BRIMACOMBE BUILDING

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

I _______________________________ Sebastian Medrano ______________________________ 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 _____________________________ ***Signed***
or STAFF

DATE _______________ June 10th, 2020

SUPERVISOR/ SIGNATURE _____________________________ ***Signed***
or DIRECTOR in case of PIs and managers

DATE _______________ 10 June 2020

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>June 10th, 2020</th>
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<tbody>
<tr>
<td><strong>Name</strong> (Manager or Supervisor)</td>
<td>Sebastian Medrano</td>
</tr>
<tr>
<td><strong>Title</strong></td>
<td>Laboratory manager</td>
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<tr>
<td>Date</td>
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<tr>
<td><strong>Name</strong> (Additional PI)</td>
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<td><strong>Title</strong></td>
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<td>Date</td>
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<td><strong>Name</strong> (Additional PI)</td>
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<td><strong>Title</strong></td>
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**Director Approval**

<table>
<thead>
<tr>
<th>John D Madden</th>
<th>10 June 2020</th>
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<tbody>
<tr>
<td>Name, Title</td>
<td>Date</td>
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</table>

Signature

***Signed***