

Appendix B: Process for temporarily shutting down a research lab, due to COVID-19

This document is intended as a guide to help faculty and staff suspend their research operations in a safe manner. The goal is to ensure the ongoing safety and security of personnel and materials as well as ensuring a faster restart of research once this period has ended.

Consider the following:

- Update your emergency contact lists for your labs, research groups, and for any other specialized equipment/facilities. Distribute accordingly.
- Ensure all equipment is fully powered down, all chemical reactions are properly ended, laboratories are cleaned, and ALL materials are stored properly (including chemicals, biologicals, radiologicals, etc.).
- Ensure labs are left in a secured state (materials, doors, windows, computers, etc.).
- Any equipment, experiments, processes, storage areas, etc. that require additional care over this period to prevent damage or other safety concerns (i.e. requires periodic maintenance or operation, calibration requirements, etc.) during the closure must be identified. If this applies, written Standard Operating Procedures must be developed; procedures must identify not only how this will occur in a safe manner, but which personnel are authorized to do so.
 - In the event of such requirements, procedures must keep minimum staffing to ensure personnel safety, while observing the most current public health advice. Written procedures must be regularly updated to meet the current guidance from Public Health Officials (both Federal and Provincial).
 - These critical procedures will be permitted only in the most exceptional of circumstances, to ensure the prevention of damage or to prevent other safety concerns, and are not for the general continuation of research activities once the lab is shut down.
- The **Dalhousie Temporary Laboratory Shutdown Checklist**, below, can be used to record the process and must be shared with the respective head of your academic unit (i.e. department head, director, or dean).

Dalhousie Temporary Laboratory Shutdown Checklist
 - version -19 March 2020

1.0 - General Laboratory Information:	
Laboratory Name	
Building Name	
Room Number	
PI Name	
PI Department	

2.0 – Emergency Lab Contacts:			
	Name	Email	Cell Phone
Main Contact (PI)			
Alternate			
2nd Alternate			

3.0 – General Administrative		
Action Item	Date Completed (Or N/A)	Notes
Ensure laboratory contact list (including home or cell numbers) is up-to-date, and that information is shared with laboratory users and department		
Ensure that you can access all critical data remotely (OneDrive, portable hard drives, etc.)		
Prepare the lab team for working remotely (Skype, Microsoft Teams, etc.)		
Identify any equipment that absolutely requires periodic operation or inspection during prolonged shutdown to prevent damage. Special care must be taken while completing this work to follow all public health guidance, as well as safe laboratory/shop practices.		
Develop written procedures for critical work: identify tasks to be done, by whom, and how they are to be done safely.		
Prepare an in-depth account of: a) ongoing activities at the time of shut down, and b) a to-do list for research recovery.		

Remove any perishable/open food items from offices/break rooms/lockers.		
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4.0 – Shipping/Receiving		
Action Item	Date Completed (Or N/A)	Notes
Do not order any new research materials except those items needed to support critical functions.		
Consider finding alternative suppliers for materials that are required to support critical research or infrastructure.		
Cancel orders for non-essential research materials if they have not yet shipped.		
Contact loading dock/mail services personnel to notify them of any expected incoming shipments that cannot be stopped.		
DO NOT place any packages containing dry ice in walk-in cold rooms/freezers.		

5.0 – General Lab		
Action Item	Date Completed (Or N/A)	Notes
Ensure hazard identification signage is current (including current contact information), and clearly posted on entry door to lab.		
Close and lock all windows/doors in lab/office spaces, to prevent potential damage from weather or other security concerns.		
If safe to do so, fully power down and unplug/disconnect all equipment (including computers and printers).		
Turn off any process gasses/liquids, and water supplies in the lab.		
Turn off any propane/natural gas supplies (at main if possible)		
Fully secure any compressed gas tanks in their appropriate orientations; turn off valve at tank, remove regulator and replace tank's protective cap.		
Fully stop all ongoing chemical reactions that are safe to do so.		

Remove all glassware from benchtops and store.		
Properly package and store all laboratory chemicals (do NOT store in fumehoods).		
Fully close all fumehood sashes.		
Confirm that laboratory fridges/freezers are fully closed (secure with tape if possible, to prevent opening).		
Confirm back-up systems (gas, cryogenic, electrical, etc.) are in good working order.		
Ensure all stored items/chemicals/stocks are appropriately labelled with hazards and researcher's name/contact info.		
Secure physical hazards, such as sharps.		
If possible, elevate critical material off floor to prevent damage in the event of a flood.		
If practical, cover and secure highly vulnerable equipment with plastic, to prevent damage in the event of water leak.		
Secure all class 3B and 4 Lasers.		

6.0 – BIOLOGICAL SPECIFIC PROCEDURES (in addition to those in 'general')		
Action Item	Date Completed (Or N/A)	Notes
Freeze down any critical biological stock material for long-term storage.		
Terminate all active cultures of biological material.		
Consolidate storage of valuable perishable items within storage units that are connected to monitoring systems if available.		
Biosafety cabinets: Remove infectious materials, surface decontaminate the inside work area, close the sash and power down. Do NOT leave UV light on.		
Decontaminate areas of the lab as you would do routinely at the end of the day.		
Decontaminate and clean any reusable materials that may be contaminated with biological material or chemicals. Store appropriately.		
Check that refrigerators, freezers, and incubator doors are tightly closed.		
Collect any biological waste, including liquid waste from vacuum aspirators. Autoclave the waste and place in the normal waste area for removal.		

Consult "PANDEMIC PLAN FOR RESEARCH ANIMAL FACILITIES AT DALHOUSIE UNIVERSITY" (March 17, 2020) for current animal care recommendations.		
If DEA/MDPH Controlled Substances are needed during wind-down or animal emergencies, ensure that those performing the essential tasks know how to access.		

7.0 – RADIOLOGICAL SPECIFIC PROCEDURES (in addition to those in 'general')		
Action Item	Date Completed (Or N/A)	Notes
Remove all radioactive stock/samples from the fume hood and/or other equipment and store appropriately.		
Decontaminate areas of the lab as you would do routinely at the end of a work day/week, to include contamination meter surveys and/or wipe testing.		
Ensure all potentially contaminated equipment/items are labelled with purple dots, if they cannot be decontaminated.		
Ensure stock solutions are labelled with isotope, full name of its contents and the hazard symbol.		
Ensure all logging of all data is up to date in the EHSA.		
Ensure all inventory is accounted for.		
Secure all radioactive materials (sealed sources, open sources) by locking the primary source of storage (fridge, freezer, cabinet, lockbox).		
Waste should be sorted as per the <i>Management of Radioactive Waste</i> policy. All waste should be packaged, closed and maintained properly within the lab space.		

8.0 – CHEMICAL SPECIFIC PROCEDURES (in addition to those in 'general')		
Action Item	Date Completed (Or N/A)	Notes
Identify any material that would pose a hazard as a result of being stored over long periods of time, due to chemical		

decomposition/reaction etc. and report to Chemical Safety Manager.		
Material in glove-boxes and other inert atmospheres should be packed up and prepared for long-term storage if possible. Identify any such that absolutely cannot be packed up due to safety concerns, and develop a plan to act accordingly.		
Wastes should be packed up, but should be held in the laboratory if stored properly.		
Ensure all flammables are stored in approved flammable storage cabinets.		

9.0 – WORKSHOP ITEMS		
Action Item	Date Completed (Or N/A)	Notes
Ensure that all adhesives, coatings, solvents, etc. are closed and stored appropriately.		
Ensure that equipment is appropriately shutdown and disconnects switched off (if available).		
Any tools susceptible to rust (i.e. lathe ways, mill surfaces, etc.) should be treated to prevent such (wiped with oil, etc.).		
Tool batteries should be stored in a fully-charged state.		
Forklift propane cylinders should be fully closed.		
Hydraulic/pneumatic tools should be disconnected.		

10.0 – OTHER, LAB SPECIFIC, ITEMS NOT LISTED ABOVE (please fill in as needed)		
Action Item	Date Completed (Or N/A)	Notes

FOR SPECIFIC QUESTIONS:		
Title	Name	Email
Radiation Safety Manager	Jill Robertson	Jrobertson@dal.ca
Biological Safety Manager	Pam Gallant	Pamela.gallant@dal.ca
Chemical Safety Manager	Steve Beaton	Steve.beaton@dal.ca
Fire & Life Safety Manager	Stephen Ellis	Stephen.ellis@dal.ca
Industrial Safety Manager	Sarah Langille	Sarah.langille@dal.ca
Manager, Safety & Operations (<i>Faculty of Engineering</i>)	Craig Arthur	Craig.arthur@dal.ca