Facility Name: Center for Isotope Geochemistry

Facility Location: Devlin Hall 301 suite, 313, 316.

Contact Information: Steph Walker (walkerfj@bc.edu; 617-407-5208)

Facility Overview:

There are three 'arms' of the Center for isotope geochemistry (CIG): The Thermal Ionisation Mass Spectrometer (TIMS) and clean lab suite for radiogenic isotopic analysis, the Isotope Ratio Mass Spectrometer (IRMS) for stable isotopic analysis, and the Scanning Electron Microscope (SEM) for characterization of geological materials. There is also a mineral preparation lab for the physical separation of materials prior to isotopic analysis. Under normal circumstances, the CIG runs in an open and collaborative way, where all students, postdocs, faculty, and external visitors are given training and continual guidance so by the end of their time in the lab, they are comfortable and confident in all aspects of the work and able to enact procedures and run instruments independently.

Ramp-Up Plan

Part 1: Physical Space Considerations

a. Plans regarding space, capacity, throughput, access, or sample drop-off, including potential for temporary physical barriers or other changes

Clean Labs and TIMS

If ramp-up of research activities start before the Fall, there will probably be three researchers that need access to the clean lab suite and TIMS. In this case, it will be safest to implement a one-in-one-out system of use for the labs. Here, careful scheduling will allow for only **one** user in each of the main spaces at a time, as the fume hood is within 6-feet of the door to the lab. For example, one person in the clean lab, and **one** person running the TIMS, and **one** using the filament prep room etc. To implement this, a google calendar will be made and curated by the Director. In the main clean lab space, if more than one person needs to use the space, it will be possible to maintain physical distancing as long as the fume hood nearest the door is not actively being used, and at least one cubby space is left between the users. It would be possible to have a maximum of 3 people in the large clean lab space at once, but only 1 person in the smaller clean lab space and in the filament prep room.

Physical barriers aren't possible in the clean lab spaces as this may disrupt air-flow.

In-person training may be possible on the TIMS, with the use of Teamviewer for remote access by the trainer.

IRMS

Use of the current IRMS is not extensive at the moment and so physical distancing will be viable for the summer (at least). We are expecting delivery of a new elemental analyzer in the coming months, and the install of that will require a visit from a Thermo engineer, which probably won't be possible while social distances procedures are in place.

N.B. One person can be using the TIMS **or** the IRMS, not both at the same time. These two instruments are in too close proximity to allow appropriate physical distancing.

SEM
Only one person should be in the SEM lab at a time, it is too small for multiple people and them be able to maintain social distancing. It's therefore likely that only experienced users can use the SEM at the moment, with in-person training on hold for the time being.

Mineral Separation Lab
Due to the small size of this lab, only one user may use it at a time, and a calendar will be circulated amongst users to they can book time in the lab.

b. Potential movement of furniture or instruments

This won't be necessary for any of the spaces in the Center for Isotope Geochemistry.

c. Initial cleaning plan

Before opening for use
From an isotopic contamination perspective, a deep and thorough clean of the labs will be necessary, and will be particularly important for the Clean Lab suite.
All surfaces, from the tops of the hoods/cubbies downwards to the floor will be thoroughly cleaned using first water and then 2-propanol (laboratory grade, available from Fisher Scientific), and floors will be cleaned in the usual manner.

Extra 'every day' precautions due to Covid-19
When a user finishes in the lab, it is their responsibility to clean the surfaces of the lab thoroughly with 2-propanol (lab grade). Before a user starts in the lab, they should wipe down all surfaces in the lab with 2-propanol (lab grade). This will include all door handles and switches. Gloves are already mandatory PPE in the clean labs.

Part 2: Instrument Considerations

a. Plan for instrument re-start
For the **TIMS**, several standards (2-3 each) of the main elements we routinely analyze in the lab (Sm, Nd, and Sr) will be run before samples are analysed. This will act as both quality control and calibration of the instrument.

The **IRMS** had not been used for several months prior to lab shut-down as we are waiting for the new Elemental analyser to be installed, and an engineer visit. Restarting, calibrations, and QC will be undertaken with the engineer and Prof Tony Wang.

The **SEM** will be restarted, undergo QC and calibrations with Prof Seth Kruckenberg.

b. Plan for calibration and quality control
See above

c. Plan for cleaning surfaces and instruments
Cleaning of instruments and surfaces will be undertaken by users both before and after use. In the mass spec room, where the TIMS and IRMS are, we would ideally have disinfectant wipes

available for the computer areas. Gloves are used in all other areas when touching instrumentation.

d. Consumables, reagents, and supply needs
    - We will need more isopropanol before the labs are open to wider (i.e. student and postdoc) use, so cleaning can be done as frequently as needed.
    - Hand sanitizer for the lobby area of the main lab suite, for the mineral separation lab, and for the SEM lab for when entering the labs.
    - Disinfectant wipes for surfaces in the TIMS/IRMS lab, SEM, and mineral separation lab.
    - A waterproof/wipe-able keyboard for each of the SEM, IRMS, and TIMS.
    - Face-masks for when more than one person has to be inside the labs, for example during training or emergencies.

Part 3: Initial Operations

a. Plan for facility staff operation of instruments
Initial start-up of clean labs and IRMS/TIMS lab will be performed by the Director, including deep-clean before commencing research and operation of instrumentation. The Director will also perform initial QC on the TIMS, and once satisfied, will allow experienced users to use the labs and instruments, with appropriate social distancing measures, and electronic scheduling.

b. Plan for user sample drop-off, including any new SOPs
There are no plans for sample drop-off in the CIG at the moment, as use is normally conditional of the work being done by the individual. However, in a scenario where only facility staff are allowed in the labs, then samples can be processed from the clean-lab stage (i.e. after mineral separation has been undertaken) by the Director for students and staff who need data urgently.

SOPs will not change significantly, with the exception of physical distancing (only one person in each space at a time) and more rigorous and often cleaning.

c. Plan for user operation of instruments
Until the Fall semester starts, the only users who will be in the labs are those that are already self-sufficient, and these procedures won't change, with the exception of social distancing and more cleaning. When guidance or assistance is needed from facility staff, then either e-mail, phone/skype chats will be possible. Similarly, remote access to the TIMS can facilitate more hands-on assistance.

d. Plan for new user training
There are no plans for any new users in the lab until the Fall semester, and even then, it will not be imperative that they get into the lab straight away (they will be incoming graduate students and will have classes etc). Nevertheless, it will be possible to do some basic training in lab safety and the use of the clean lab suite, if appropriate physical distancing is maintained (6-feet apart with full PPE including face masks). Similarly, some basic training on the TIMS will be possible using Skype and/or remote access to the TIMS.

Any other concerns or considerations:

N/A