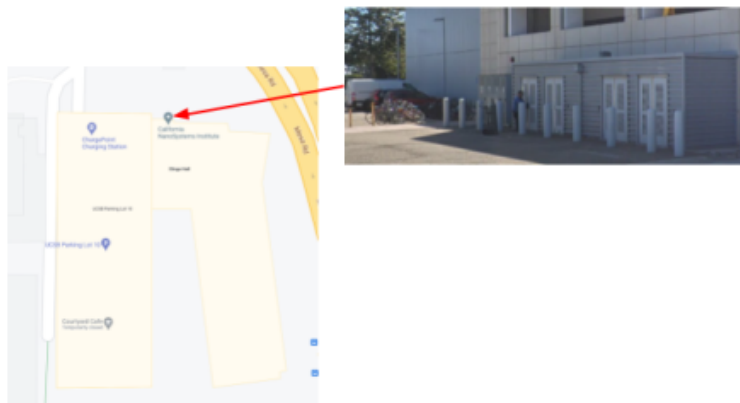


## Gas Bottle Changing SOP

CNSI Microfluidics Lab and Innovation Workshop Author: Daniel Magnuson

### Location:

- The gas tanks are located in the corner opposite the main door of 3430 Elings Hall.
- The Elings Hall gas bunker is located behind the building, on the mountain side. Exit the doors of the elevator work room and turn left.



### Safety PPE:

- Long pants
- close toed shoes
- eye protection

### Safety Considerations:

- High pressure gas canisters pose a serious threat if knocked over. Secure the canister with two separate straps/chains during storage and transport.
- Ensure the canister is in the lowest safe energy state before transporting.
- The outdoor path to the gas bunker is rough and hard on the canister cart wheels. Transport carefully and slowly
- The concrete slab that the gas bunker sits on is raised.. Take care when lifting up the canister cart so as not to tip.
- Do not ride in the elevator with full gas bottles. This can be an asphyxiation hazard.
- The dolley is wide and can damage sensitive equipment in Microfluidics. Navigate slowly and carefully to prevent damage or injury.

### Procedure

## Returning Bottles

1. Remove the empty gas canister from 3430. Use two straps to secure the canister on the dolly for transport.
2. Transport canister using service elevator to 1st floor of Elings Hall.
3. Sign out the bunker key from the wall safe. (Signout sheet and safe located on the wall of the elevator work room. Safe code received upon completing training with building manager)
4. Transport the empty canister across the asphalt to the farthest gas bunker doors. Travel carefully over rough terrain
5. Unlock the farthest doors and open them fully. They stay in place until manually closed.
6. Unchain the canister from the cart and position in one of the empty bottle racks on the right side of the bunker (Sign: Empty Bottles). Secure canister using both chains.
7. Locate the Cyl # on the orange tag of the empty canister. Open the gas bunker binder to the Return Bottles section.
8. Fill out the gas log. Input the cylinder number in the leftmost column. (Note: This is different from the procedure for checking out new bottles).

## Checking Out New Bottles

1. Prop open the leftmost set of bunker doors. Maneuver the gas dolly inside the bunker until it is in front of the full tanks.
2. Identify the new bottle to be retrieved. The Cyl # is needed to check the cylinder out (Do not take any cylinders without an orange tag).
3. Open the gas bunker binder to the Checking Out Bottles section.
4. Find your Cyl # in the leftmost column of the binder. Do not enter your information in any row besides the one corresponding to the cylinder. Research groups go through gas at vastly different rates, so it may be a few pages behind.
5. Fill out all columns in the binder. Return the binder to the storage case on the wall with the pen.
6. Retrieve cylinders from the bunker and load onto the dolly. If you move any cylinders to access yours, make sure that they are secured with both chains when done.
7. Secure the tanks on the dolly using two points of contact (chain and safety strap most likely).
8. Carefully roll out dolly over the ledge. Park the dolly away from the bunker in a low energy state, and confirm it is not rolling before doing the next step.
9. Confirm that the key is in your possession, and close both bunker doors. Confirm that they are fully closed, otherwise they will not automatically lock.
10. Return the key to the safe, close it, and lock it. Enter the return time on the key sign out sheet.
11. Call the freight elevator (press down button, and when light is shining through the small gridded window, hold Door Open until the elevator doors are fully open. The elevator cannot be called if the doors are open on another floor.
12. Wheel the dolly inside the elevator, select the third floor button, and then step outside the elevator.
13. Hold Door Close until the elevator door is fully closed, then the bottle will be sent to the third floor.
14. Take the stairs or the personal elevator up to the third floor, and hold Door Open until the freight doors are fully open.
15. Wheel the gas canisters out, and then hold Door Close as a courtesy for others using the freight elevator.
16. Carefully navigate the dolly around the equipment in Microfluidics lab. Position the dolly close to the gas racks and rotate the cylinder into place.
17. Confirm the cylinder is chained at both points before returning the dolly to its storage place.

## Ordering gas

1. Open the order form [CNSI gas ordering form](#)
2. Budget number: 447835-60730
3. Project code: MFLRCH

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