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Introduction and Purpose: This SOP details the procedure and safety considerations for moving equipment and glassware into the glove box in preparation for reaction under an air-free condition

Kind of SOP: Technique

Last Revision: 01/20/2014

Uses: Reactions that require a completely air free system and work under nitrogen gas.

General Procedure (large chamber):

1. Prior to the start of the movement, list down and gather all the necessary containers, equipment and reagents necessary for the reaction setup.
2. On the glove box setup screen, press the "**Functions**" button at the lower right corner.
3. After the screen change, press the "**Next**" button at the center of the new screen with the pink background.
4. Read off the pressure gauge of the antechamber 1. If the gauge points to the lower left corner the chamber is under vacuum. Proceed to step 5. If the gauge points to the lower right corner, the chamber is under nitrogen. Skip steps 5-6 and proceed to step 7.
5. After the screen change, press the "**Antechamber 1 Refill**" button at the center of the new screen. The pressure gauge of the antechamber 1 should start to indicate the flowing in of N₂ gas and the button background should turn green.

6. After 3 minutes or so, the pressure should reach a maximum when the gauge is no longer moving. Press the **“Antechamber 1 Refill”** button again to shut off the refill. The button background should turn red.
7. Open up the antechamber 1 by twisting the handle at the right and slide the door upwards. Pull out the loading tray and load the equipment. Slightly uncap any empty container to allow subsequent vacuuming to siphon off any residual air.
8. Close the antechamber 1.
9. Press the **“Antechamber 1 Refill Evacuate/Start Autom”** button on the screen. The pressure gauge should start to indicate a decreasing internal pressure and the button background should turn green.
10. After 3 minutes or so, the pressure should reach a minimum when the gauge is no longer moving. Press the **“Antechamber 1 Refill Evacuate/Start Autom”** button again to shut off the vacuum. The button background should turn red.
11. Press the **“Antechamber 1 Refill”** button at the center of the new screen. The pressure gauge of the antechamber 1 should start to indicate the flowing in of N₂ gas and the button background should turn green.
12. After 3 minutes or so, the pressure should reach a maximum when the gauge is no longer moving. Press the **“Antechamber 1 Refill”** button again to shut off the refill. The button background should turn red.
13. Repeat the nitrogen flush sequence (steps 9 -12) for two more times.
14. Insert arms into the glove box with the set of gloves nearest to the right.
15. Open the door of the antechamber inside the box and slide out the tray. Unload the equipment.
16. Close the door of the antechamber.
17. Pull out your arms from the glove box. Press the cyan **“End”** button at the top right corner of the setup screen to return to the starting panel.

General Procedure (small chamber):

1. Make a list of the objects you want to place in the glovebox. You should always do this when preparing to do an experiment in the glove box.
2. Check that the pressure gauge of the small antechamber reads that it is filled and the gauge handle is at the **“Closed”** position, which should be completely vertical.
3. Place the items in the glove box by opening the small antechamber from the its right side.
4. Close the antechamber
5. Evacuate the small chamber by turning the handle to the **“evacuate”** position. When the air has been completely evacuated from the chamber, refill it by turning the handle to the **“refill”** position. Repeat this process three times. When you refill it for the third time, make sure to turn the handle vertical so that the gas line is cut off.
6. Now you can enter the glove box and retrieve your materials from the small antechamber.

Safety Considerations and Precautions:

1. Take off ALL jewelry, watches, or anything that may tear the glovebox gloves. You should have nothing on your arms/hands other than gloves while working in the glovebox.
2. When handling any sharp object in the glovebox (e.g. needle), make sure that the sharp end is pointing AWAY from the gloves. Again, this is to avoid tearing the gloves, which would not be good.
3. When entering the glovebox, put on only one glove at a time slowly. This will prevent the pressure in the glovebox from getting too high – if the pressure in the glovebox gets too high it will shut down.