

## Gas Cylinder Handling Procedures for FRNY Building

This document is to clarify the handling procedures for gas cylinders and liquid nitrogen tanks and the use of the gas cylinder storage area located outside of FRNY.

The compressed gas cylinders are segregated according to the signs in the storage area into three categories as shown in Figure 1:

1. Flammables gases.
2. Empty cylinders.
3. Non-flammables gases

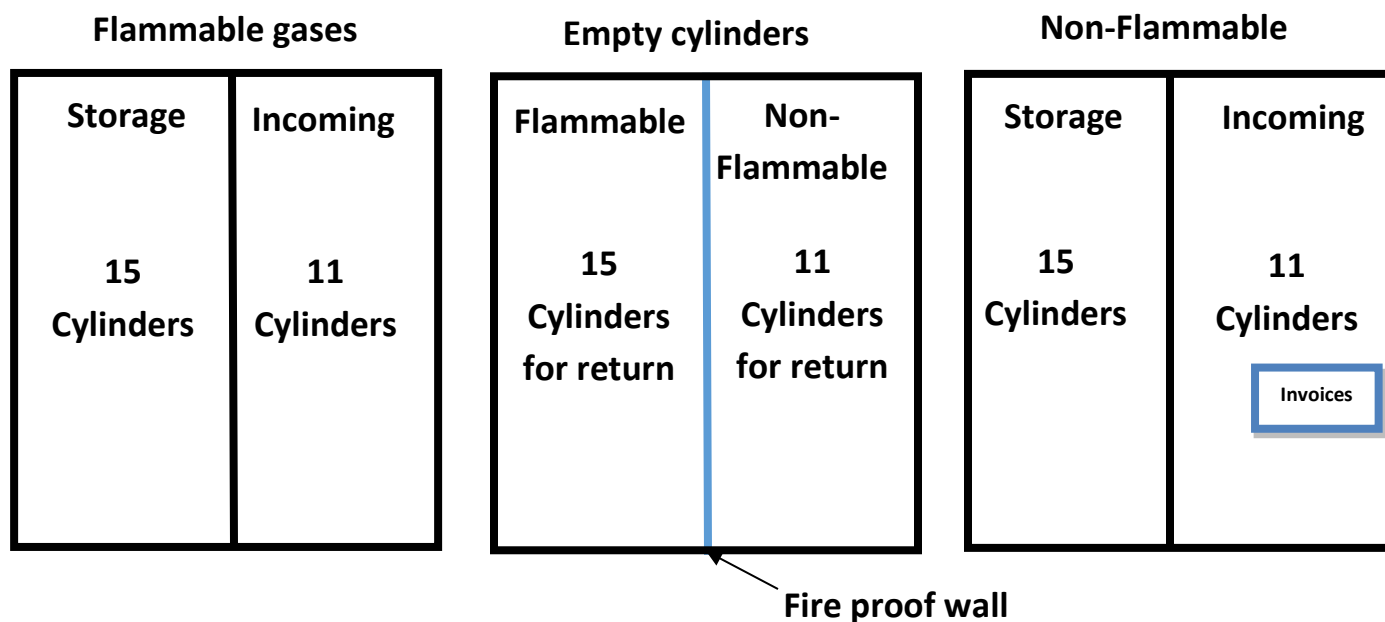


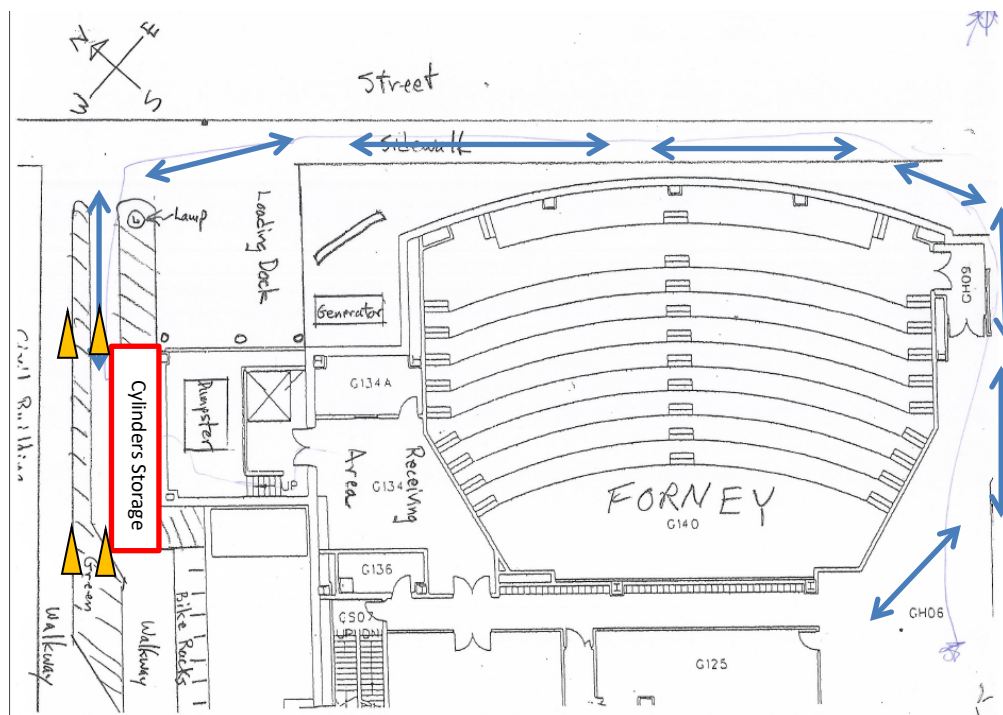
Figure 1. Segregation of cylinders in different cages according to the signs

### ***Receiving procedures:***

1. The individual who ordered the cylinder will be notified by email when the cylinder arrives.
2. Each research group will be issued one key. This key should be used to gain access to the cylinder receiving area, and should be kept in a secure place accessible to all the group members.
3. Cylinder carts are available for checking out in FRNY G134.
4. Make sure you have the appropriate PPE – safety glasses, sturdy closed toed shoes, long pants.
5. For correct use of gas cylinder carts follow the instructions clearly posted on the cart.
6. The walking way to the outside gas cylinder storage area is shown in Figure 2.
7. Sign on the invoice that is associated with the cylinders that you pick up. All the invoices are located in the non-flammable incoming cage.
8. Before leaving, make sure that the cage is locked and the padding lock is closed in place.
9. After securing the cylinder in your lab, return the cart to G134.

### **Returning empty cylinders procedures:**

1. Make sure you have the appropriate PPE – safety glasses, closed toed shoes and long pants
2. Check out the cart from FRNY G134. For correct use of gas cylinder carts, follow the instructions clearly posted on the cart.
3. Get the cylinders that you need to return from your lab.
4. Place your empty cylinder in the “Empty Cylinders” storage area according to the signs, and secure it with the chains provided.
5. Before leaving, make sure that the cage is locked and the padding lock is closed in place.
6. Return the cart to FRNY G134.



**Figure 2. Walking way to and from the new cylinder storage area**

### **General notes:**

- ❖ A cylinder should be picked up or moved from the incoming cage within 2 days of notification.
- ❖ If you received a cylinder that will not be used immediately, you should move it from the incoming cage to the storage cage and sign on the associated invoice located in the non-flammable incoming cage.
- ❖ Use two hands to PUSH the gas cylinder cart. Do not pull gas cylinder carts.
- ❖ As soon as you unlock any cylinder cage, place 4 orange safety cones on the bike track from both sides of cylinder storage area, to warn bikers of obstructions (see Fig. 2). Safety cones are available inside one of the cages.
- ❖ Oxidizing gases are considered non-flammable. Do not store/return oxidizing gases along with flammable gases!

- ❖ If your cylinder is obstructed by other cylinders, gain access to it by moving these cylinders and securing them with chains available in each cage. Do not leave any cylinders unsecured at any time.
- ❖ Be careful not to pinch your fingers while moving cylinders within the cage. Move the cylinders by gripping them near the upper tapering section. NEVER grip the cylinder by its cap.
- ❖ Be aware of inclement weather conditions that could affect the easy movement of gas cylinders. E.g.: do not attempt to move cylinders when there is a snow storm or when the walkways are not cleared. If the cage locks are frozen, use the deicer available in FRNY G134 during normal working hours. If necessary, use the lifting platform at the receiving area to bring your full gas cylinder into the building (during normal working hours).
- ❖ Plan ahead for bad weather, holidays or weekends for use of cylinder storage area.
- ❖ Before attempting to move/transport any gas cylinders or liquid nitrogen tanks, visually inspect the cart for mechanical integrity, and make sure the cylinder is safely secured to the cart. Do not use defective carts!
- ❖ Always check the pressure and release excess pressure when moving liquid nitrogen tanks or Dewars, empty or full. Carry cryogenic gloves with you to be able to release the excess pressure safely.
- ❖ Use the lifting platform at the receiving area to bring full liquid nitrogen tanks into the building. Due to the heavy weight of a full liquid nitrogen tank, it is not safe to bring it inside the building via the ramp on the NE of FRNY.
- ❖ It is recommended that other people don't use the elevators while gas cylinders and Dewars are being transported in them. Make sure you communicate this, when necessary.
- ❖ Liquid nitrogen tanks should always be handled by two people during transportation.
- ❖ If you don't feel comfortable handling the gas cylinder cart, or the liquid nitrogen cart, STOP and ask your supervisor or colleagues for assistance.
- ❖ When using the elevator to transport liquid nitrogen tanks or gas cylinders with flammable/toxic gases, follow the procedure:
  1. Send the tank/gas cylinder cart unaccompanied to the upper/lower floors.
  2. One person is loading the tank/gas cylinder cart in the elevator, while the second person is waiting for it at the destination floor.
  3. The big elevator in the new wing and the elevator in the old wing are fitted with magnetic belt barriers, to prevent people from boarding the elevator (should it stop at intermediate floors). The person loading the tank/gas cylinder cart in the elevator secures the belt barrier in place, exits the elevator and sends the load to its destination floor.
  4. Upon arrival, the person waiting on the destination floor releases the belt barrier and removes the tank/gas cylinder cart from the elevator.
  5. Transport the tank/gas cylinder to your lab (both persons needed).
- ❖ Make sure the liquid nitrogen tank and gas cylinders come to room temperature before using them. Very cold/hot weather outside will cause pressure changes in the cylinder.