

Safe Handling of Gas Cylinders

1 Background

Most gasses used in the laboratory are stored in a special room away from the main working areas and are connected, via pipes, to outposts near relevant equipment. However, some gasses are used on a much smaller scale and require the gas cylinders to be brought into the lab when they are used during an experiment. Many of these gases are either poisonous or explosive and, therefore, present a danger to the health of the person using the gas as well as other people working in the lab. In some cases, accidents can also be fatal so great care must be taken when handling gas cylinders and connecting them to a rig.

2 Handling

When handling a gas cylinder, please follow these basic safety rules:

2.1 *Transportation*

- **Never** transport a gas cylinder with the gas regulator mounted.
- **Always** use a gas cylinder trolley when moving a gas cylinder. Ensure that the securing bar is fastened.

2.2 *In the Lab*

- Place the gas cylinder in the wall mount and secure the gas cylinder with the strap or chain. If there is no wall mount, keep the gas cylinder in the gas cylinder trolley and, where possible, secure the trolley with cable ties (e.g. to a leg of the rig).
- **Never** leave a gas cylinder standing without support. The impact of a fall can cause the gas cylinder to explode.

2.3 *Connecting the Cylinder*

- Before connecting the gas regulator, check the nameplate on the regulator to ensure that it is suitable for the intended application (i.e. type of gas, pressure etc.)
- Remove the plug from the exit port of the gas cylinder, if present, and mount the gas regulator to the gas cylinder using a new gasket. These can be found in the cabinet in the lab corridor, outside room C643, on the door marked “*Regulator Gaskets*”. Please ensure that the gasket is suitable for the gas that is to be used. If in doubt, refer to the folder on the inside of the cabinet door.
- The gas regulator nut should be firmly tightened using a wrench
- Connect a gas line to the gas regulator, then, turn the gas regulator adjustment knob counter clockwise to ensure that there will be no pressure when the gas cylinder is opened. Now, slowly open the main valve of the gas cylinder.

- Check of the connections from the gas regulator to the gas cylinder and gas line for leaks using a leak detector.
- If no leak is detected, open up the gas regulator valve and use the gas regulator adjustment knob to modify the pressure until the desired value is reached.
- Check again for leak, on the gas line connection to the gas regulator.

2.4 After Use

Disconnect the gas line from the gas regulator and the gas regulator from the gas cylinder as follows:

- Turn off the main valve of the gas cylinder and ensure that there is no pressure in the gas line. Once the pressure has been released, disconnect the gas line.
- Disconnect the gas regulator from the gas cylinder and connect the plug, if present, to the exit port of the gas cylinder.
- Return the gas cylinder to the gas store using the gas cylinder trolley with the securing bar fastened.
- If the gas cylinder must be left in the lab overnight, ensure that the main valve on the gas cylinder is closed and the pressure is released from the gas line. The cylinder must also remain secured with cable ties.