



Work instruction for handling of pressurized gases



Pressurized gas always poses a risk to people and property, regardless of the type of gas. Gas cylinders must therefore be handled safely in accordance with the rules described in [HSE-gateway](#).

Generally

- Gas cylinders should ALWAYS be secured against falling and fixed to a wall. The laboratory should be marked with appropriate labelling, gas under pressure.
- Use only approved equipment when connecting to gas.
- All transport of cylinders must be carried out with a bottle trolley and the cylinder cap must be fitted.
- A gas cylinder should not be heated above 45°C.
- If new needs for gas arises in the laboratory, please contact the person responsible for gas at BIO.

Most common non-flammable gases at BIO

Nitrogen, argon, helium and carbon dioxide

Health hazards

- Nitrogen, carbon dioxide, argon and helium are neither toxic or flammable gases, but they pose a health risk due to the risk of suffocation by displacing air. Asphyxiation can occur suddenly and without any warning signs.
- Carbon dioxide pose a grater risk for suffocation compared to other inert gases. At 4-5 %, you will experience symptoms of poisoning such as headache and dizziness. Concentration of 6-8 % can cause unconsciousness with life-threatening paralysis.



Most common flammable gases at BIO

Methane and oxygen are the most common flammable gases at BIO. We also have small containers with propane located in several laboratories at BIO (camping gas).

Oxygen is not in itself a dangerous gas and does not have a suffocating effect. Oxygen increases the flammability of flammable gases and can also intensify a fire. On the other hand, methane is a highly flammable gas and can displace air and have a suffocation effect. Any leakage of methane is easily



detected due to the addition of H₂S gas at the central gas storage at BIO. Methane is available in the A- and B-block, and also on the 3rd floor at BIO-building.

First aid measures

Persons who have been exposed to high concentrations of asphyxiant gases that experience breathing difficulties should be brought out into fresh air immediately. If necessary, administer artificial respiration and call an ambulance.

Emergency room, Legevakten: 117116
Ambulance: 113

Ordering of gas cylinders

Contact your lab responsible person for ordering of new gas cylinders, or contact the [gas responsible person](#) at BIO.

Kommentert [AKF1]: Sett inn link til kontaktlisten

Connection of gas regulator to a new cylinder

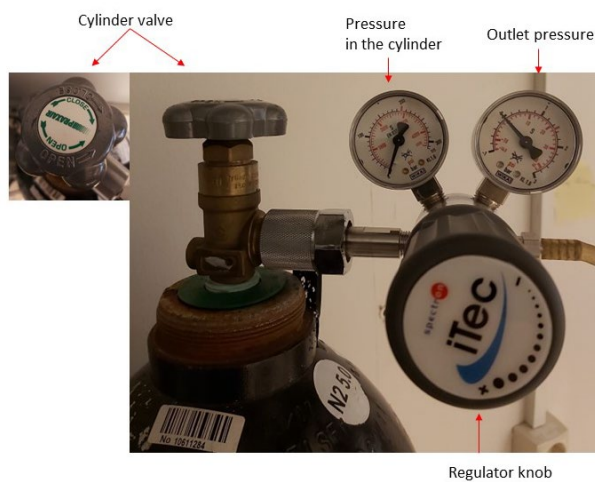
Always use a gas regulator that is adapted to the type of gas to be used. There is no gas regulator that is suitable for all types of gas.

Wear safety glasses and hearing protection when connecting gas cylinders.

- 1) Check the gasket and change the gasket if necessary. Contact your gas manager or your lab responsible person for new gaskets.
- 2) Connect the regulator to the cylinder. The regulator should be attached to the cylinder without forcing the threads. Use a wrench or a torque wrench (50-60Nm).
- 3) Apply leak spray at the connection point between the cylinder and the gas regulator,
- 4) Slowly open the gas cylinder in a counterclockwise direction and read the inlet pressure on the manometer. Check for any leakage. If you see bubbles around the connection point you have a leakage. Close the gas cylinder valve and re-tighten the regulator, and check for leakage again.



How to use the gas regulator



Turning on the gas flow

- 1) Open the cylinder valve counterclockwise completely. The manometer will show the gas pressure in the cylinder.
- 2) Slowly open the regulator knob clockwise to raise the delivery pressure to desirable value.

Shutting down the gas flow:

- 1) Shut off the gas cylinder valve completely. Meaning close the cylinder valve clockwise.
- 2) Open the regulator (turn clockwise) and the outlet valve to drain the contents of the regulator through the system in use. Both manometers should descend to zero.
- 3) Close the regulator knob by turning the hand knob counterclockwise, should be loose. If regulator outlet valve is installed, close it by rotating the valve clockwise.

Disconnecting the regulator from the gas cylinder

- a) Close the gas cylinder by turning the valve in clockwise direction (indicated by the arrows on top)
- b) Reduce the pressure in the manometer by opening the regulator knob clockwise direction until the pressure is zero.
- c) Close the regulator hand knob in a counterclockwise direction. Should be loose.
- d) Disconnect the regulator from the cylinder by using a wrench and put the safety cap on.