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Operating Instructions

According to the
Betriebssicherheitsverordnung

UNIVERSITÄT
DUISBURG
ESSEN

Offen im Denken

Faculty of Chemistry

Institute: AAC

Work place: AAC Labs

Activity: Laboratory work

EQUIPMENT

Gas intermediate storage (inside / outside)

DANGERS FOR HUMANS AND ENVIRONMENT



- Gas cylinders contain normally Gases in the compressed state (air, oxygen, nitrogen, hydrogen, ...), or in the liquid state (ammonia, chlorine, carbon dioxide, propane, butane), or as gas in / with a carrier medium (acetylene with acetone). In the case of a liquid carrier medium, the gas bottle must never be opened or operated lying down. It should be noted that even small bottles can release large quantities of gas.
- Some gases are odorless and tasteless.
- Gases with a molecular weight > 32 congregate near the floor.
- **Danger of suffocation:** With spontaneous release, gases may displace air. As a result, unnoticed dangerously low levels of oxygen in the air may be the result.
- In the case of oxygen, it can lead to spontaneous fires in connection with organic substances. High oxygen concentrations can also be dangerous for humans.
- Compressed gases can also have dangerous substance properties:
 - acutely toxic
 - special health hazards (**CMR** [carcinogenic, germ cell mutagen, reproductive toxicity], **STOT** [specific target organ toxicity], sensitizing ...)
 - caustic (or irritant)
 - flammable or pyrophoric
 - oxidising
- **Explosion hazard:** If combustible gases escape, explosive gas / air mixtures are often produced.
- **Danger of poisoning** during the escape and inhalation of toxic gases.
- **Risk of chemical burns:** Escaping corrosive gases may cause severe damage if inhaled or in contact with the eyes and skin.

PROTECTIVE MEASURES AND RULES OF CONDUCT



Organizational

- Placing into stock an withdrawal only according to the direction for use of and the storage instructions.

Personal

- Wear safety glasses.
- Use protective leather gloves.
- If necessary, wear a respiratory mask (see use or storage instructions)

Technically

- Only use suitable means of transport (bottle cart).
- Secure all gas cylinders with chains from falling over.
- Protect containers from heat.
- Immediately leave the gas cylinder storage facility when gases escape.
- Protect injured persons under adequate self-protection (note material properties and possibly lack of oxygen) and remove them from the danger zone.
- If the outlet is just starting, try to close the main valve, paying attention to your own safety.

Caution: Respirator with suitable filter only at pollutant concentrations up to 1% usable!

- Inform the personnel of the Central Chemical Storage immediately. From there, call the fire brigade and inform them about the endangered gas cylinders.
- Request endangered persons in the surrounding work areas (waste storage, workshop ...) to leave the danger area.

Contact with clothes

Take off affected clothing immediately and allow to air.

Skin contact

Treat according to the material properties, i. e. usually wash with plenty of water. → if necessary turn to a doctor

Eye contact

Treat according to the properties of the material., i. e. usually:
Wash eyes with water for at least 15 minutes. → Immediately consult the ophthalmologist.

Inhalation

High concentrations of chemically *inert* gases can cause suffocation.

Symptoms: loss of mobility and consciousness. The affected person does not notice the suffocation. Remove injured persons to fresh air using a self-contained breathing apparatus. Keep warm and calm. In respiratory arrest, artificial respiration. Call a doctor!

Low water-soluble (corrosive or irritating) gases can cause pulmonary edema. Apply Auxilosonspray immediately. Call a doctor!

If possible, administer oxygen after inhalation of toxic or harmful gases. Call the emergency doctor!

RESPONSE TO MALFUNCTIONS



Shut down device immediately, faults must be reported to:

- Maria Madani, if not present O. Schmitz, M. Sulkowski, F.Uteschil, S. Meckelmann.

BEHAVIOR IN CASE OF ACCIDENT / FIRST AID



- Keep calm.
- Call first responders.
- Emergency call: 0112
- Report accident.

MAINTENANCE / DISPOSAL

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| | <ul style="list-style-type: none">• Maintenance only by authorized, competent persons.• Switch off the device and disconnect it from the mains.• Regular inspection of wearing parts. |
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