Annex 10:

Use of a Class 2 Biosafety Cabinet (BSC)

This document is based on: **http://www.bg-chemie.de/files/90/MSW.doc**

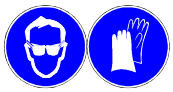
1) General information

Class 2 safety cabinets ensure that people, product and the environment are protected. About 70% of the air is recirculated in the compartment; 30% of the air is discharged into the surrounding air through high-performance filters (HEPA). Accordingly, this volume of 30% is constantly extracted from the laboratory, thereby contributing to occupational safety and the protection of health.
Good microbiological practices (GMP) are essential even in the safety cabinet, since such cabinets protect only against aerosol contamination and not against contact contamination. Accordingly, the employee's hand must remain within the safety cabinet during work and must not be brought up to the face.

2) Hazards for people and the environment

Danger of release of biological substances from the cabinet as a result of incorrect working procedures.

3) Precautions and rules of conduct



- Avoid draughts in the working area; to this end, keep windows and doors closed during work in the safety cabinet. Do not position the cabinet too close to doors.
- Switch on the equipment approx. 10 (to 30) minutes before the start of work.
- Use personal protective equipment: at least laboratory coat.
- When working with particularly problematic chemical or biological agents, also use eye protection and disposable gloves (latex or nitrile). (Refer to the specific operating instructions required for this purpose).
- Prevent aerosol formation as far as possible even under the safety cabinet.
- Prevent disturbances to the laminar air flow as far as possible:
  - no rapid or violent movements.
  - only bring bulky items of equipment into the safety cabinet if absolutely essential and remove them immediately after use.
  - do not store any unnecessary items in the safety cabinet – only introduce material and equipment to the extent absolutely necessary for the work.
  - do not use Bunsen burners over extended periods – only ignite as required, using a sensor or foot switch.
  - do not cover air holes.
- All equipment brought into the safety cabinet must be cleaned and disinfected beforehand. Items of equipment removed from the safety cabinet must first be disinfected and, if necessary, then cleaned (in this sequence).
- The working surface of the safety cabinet must be cleaned and disinfected at the end of the work. Waste must be disposed of, Pasteur pipettes on hoses must be removed and vacuum hoses must be disinfected (see operating instructions on hygiene and waste disposal). If flammable disinfectants are stipulated, disinfect only by wiping with quantities of less than 20 ml in order to prevent any explosion.

- If work is not being carried out on the safety cabinet, it can be switched to stand-by in order to save energy. This prevents contamination of the workroom from the laboratory air.
- If work involving potentially hazardous biological substances has been carried out, the equipment must be switched off only by an authorized person. The sterility of the inside should be monitored from time to time by placing open Petri dishes lined with nutrients there. If microorganism growth occurs on the nutrients, the Laboratory Manager and the responsible person must be informed in accordance with the service plan.

4) Malfunctions and dangers 

Safe operation is only possible if the green light is showing and the front sash is down. Never ignore alarm signals.
The cabinet does not offer any protection against harmful gases and vapours.

- In the event of a complete functional failure during work with potentially dangerous biological substances work must be stopped (in a controlled manner). The laboratory manager and the BSO of the group / institute must be informed immediately.
- In the event of a visual and acoustic alarm, the cause of the malfunction must be established – if necessary, with the help of the operating instructions – and, if possible, corrected by the relevant person himself (e.g. by positioning the front sash correctly). If it is not possible to correct the malfunction or if attempts are unsuccessful, the responsible person must be notified in accordance with the service plan.
- If there is an indication that the preliminary filter or the HEPA filter needs to be replaced (alarm signal without warning tone), work must be continued and the responsible person notified in accordance with the service plan, so that new filters can be ordered.
- If there is a similar signal with a warning tone, the work must be ended in a controlled manner and the responsible person must be notified in accordance with the service plan.

5) Tests, maintenance and disposal

Servicing and repair work must only be carried out with the permission of the Laboratory Manager and must normally be performed by the manufacturer.
The safety cabinet must be checked annually by a specialist (see service plan).
For maintenance, only replacement parts matching the original parts in terms of material and design may be used.

6) Accidents and first aid 

Rinse an open wound, allow it to bleed if possible and spray it immediately with disinfectant. Apply more disinfectant if necessary and allow it to act according to the instructions, though at least for 30 minutes.
If necessary, alert the ETH first-aid team (internal phone number: 888) or the ambulance (0-144). Pay attention to *Emergency planning: action in the event of incidents in the laboratory*. Complete Report sheet for laboratory incidents and inform laboratory managers and BSO.

7) Activities which have to be carried out in a BSC:

- Culture of mammalian cells
- Handling of human samples
- Culture of viruses (Coronavirus 229E)
- Handling of virus-contaminated material

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