

## FlowKon Biosafety Guidelines

Samples from various sources are brought into the FlowKon laboratories for analysis and sorting. Working in such a “shared” environment in which a large variety of biological samples are introduced requires a reasonable set of ‘best practices’ to ensure the safety of all individuals who access the shared facility.

The intent of the “FlowKon Biosafety Guidelines” is to provide a safe working environment and to delineate responsibility for achieving it. The manual outlines requirements and biosafety standards for working with biological toxins, pathogenic microorganisms and genetically modified organisms (GMOs) within the FlowKon laboratories and apply to all activities involving the use, transportation and disposal of infectious materials in the facility.

Further information is available online via <https://www.biologie.uni-konstanz.de/flow-cytometry-centre/booking/biosafety/>.

### Registration and Approval of S2 organisms

Any research involving genetically modified organisms (GMOs) or biological toxins and microorganisms with a risk classification in biohazard group 2 (BSL-2) requires registration with the regional council of Freiburg (Regierungspräsidium Freiburg). The responsibility for registration lies with the respective PI. In cases where authorization has already been granted by the regional council of Freiburg, a request for amendment can be submitted, which allows the permit holder to work within the FlowKon laboratories. Principal investigators can request this amendment via the FlowKon core manager.

Furthermore, all infectious and/or biologically hazardous agents being used in the FlowKon laboratories require the approval of the FlowKon. For this purpose, a “Biosafety Information Sheet” on the biohazard material has to be completed by the PI prior to the start of any new experiment involving this material. The information provided in this form is a critical component for evaluation and implementation of adequate safety procedures and equipment by the FlowKon personnel.

## Roles and Responsibilities

### Principal Investigator (PI)

is responsible for:

- Ensuring that all research with biohazardous agents is reviewed and approved by the regional council of Freiburg, and that all ongoing work remains compliant.
- Informing FlowKon of any infectious and/or biologically hazardous agents associated with their work by completing and submitting the “Biosafety Information Sheet”. This sheet has to be submitted for each new project that involves analysis or sorting of hazardous agents before work with biological agents is initiated.
- Ensuring that staff members and students of her/his working group receive appropriate training for the potential hazards associated with the work involved, the necessary precautions to prevent exposures, and the exposure evaluation procedures. The PI is further responsible that personnel of her/his working group receive annual updates or additional training when procedural or policy changes occur.

### Student/ Employee

is required to:

- Be trained in laboratory safety procedures and instruction for the potential hazards associated with the work involved prior to use or handling infectious and/or biologically hazardous agents in the FlowKon laboratories.
- Comply with the biosafety procedures outlined in this manual according to the document they signed.
- Work only with infectious and/or biologically hazardous agents that have initially been approved by FlowKon.

## Room Signs and Booking

- The laboratories of the FlowKon are authorized for BSL-2 work, but are routinely operated on BSL-1 safety level.
- Whenever microorganisms of risk group 2 are handled, a BSL-2 biohazard warning sign is posted at the entrance to the laboratory. This BSL-2 sign is affixed to entry doors of each laboratory and has to be posted on top of the standard “BSL-1” sign by each user who brings BSL-2 material into the laboratory.
- Further information including the name of the agent(s) in use, the supervisor's name (or other responsible personnel) and telephone number is provided in the form linked to the session in

the PPMS booking system and is accessible to all users. More information about the pathogens and related operation manuals are available via <https://www.biologie.uni-konstanz.de/flow-cytometry-centre/booking/biosafety/>.

- Laboratory doors should be kept closed at all times while BSL-2 biohazardous agents are in use. When work is completed, agents have been secured, and surfaces have been decontaminated, the Biohazard warning sign may be turned over.

## Procedures

- Eating, drinking, smoking, handling contact lenses, and applying cosmetics are not permitted in the work areas.
- Wearing gloves is obligatory for all experiments needing a direct handling of BSL-2 material. Gloves must be removed properly and disposed into the BSL-2 solid waste bin. It is forbidden to touch keyboards, computer mouse, doors and telephones with gloves.
- All technical procedures should be performed in a way that minimizes the formation of aerosols and droplets.

NOTE: In case of shaking, mixing or vortexing unfixed BSL-2 samples, it is advisable to use capped sample tubes in order to prevent the release of aerosols and accidental splashes. Caps which are removed from the tubes for measuring of the samples should be placed on a towel which has to be disposed into the BSL-2 solid waste bin.

- All spills, accidents and overt or potential exposures to infectious materials must be reported to the FlowKon personnel.

## Laboratory Working Areas

- The laboratory should be kept neat, clean and free of materials that are not pertinent to the work.
- Work surfaces and laboratory equipment must be decontaminated with disinfectants after any spill of potentially dangerous material and at the end of the working day.
- Fluid pathways of the flow cytometric analyzers have to be decontaminated by running the cleaning procedures of each instrument.

## Waste Management

- Biohazardous solid waste must be placed in the appropriate biohazardous waste containers provided in each laboratory. The lid should be kept closed on the container whenever waste is not being actively added to the bag. The waste will be decontaminated and disposed by FlowKon staff.

NOTE: Stained, formaldehyde-fixed samples are not considered biohazardous waste and should never be autoclaved; autoclaving formaldehyde-containing samples may release toxic formaldehyde gas and thus lead to exposure of personnel.

- Liquid biohazardous waste should be taken back by the user, decontaminated and disposed in her/his own laboratory.
- Non-hazardous (i.e. not contaminated with any known biohazard or hazardous substance) laboratory-related waste (such as used gloves, pipette tips and tubes) can be placed in the waste bins provided on the table.
- Waste fluid from the flow cytometers is collected into waste containers that contain fresh concentrated bleach, in sufficient quantity to achieve a final concentration of 10% when the container is full. Full waste containers on the fluidics cart of the LSRFortessa have to be replaced with empty containers containing bleach (FACSClean), which are provided by FlowKon. Full waste containers can be left for disposal by the FlowKon staff. Full waste containers of the FACSVerse and FACSLyric have to be emptied by discarding the liquid waste content into the sink. Users have to refill the tanks with 1l bleach (FACSClean) to achieve a final concentration of 10% in order to decontaminate the waste.

## Documentation

- For every session on a flow cytometric analyzer or sorter which involves BSL-2 biohazardous agents, users have to provide information about the agent(s) in use in the form linked to the session in the PPMS booking system, before work with biological agents is initiated.
- For every autonomous session on a flow cytometric analyzer users have to note date, time, user name, GMO and safety level in a logbook, which is available in each laboratory.

I have read above guidelines carefully and agree to it.

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Date

Signature