

BIOSAFETY IN MICROBIOLOGY TEACHING LABORATORIES

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CONTEXT

**Microbiology teaching
laboratories**

**Regular scientific
research**

separate risk assessment and risk management

own technical characteristics, work practices,
biosafety equipment and PPE
+ the effect of a large group of students

CONTEXT

Teaching laboratories =
increasing risk for the community
and the environment ?

The target audience (= the student)
is often **inexperienced** and the work is not always in
conformity with the **GLP** principles.



↑ **non-compliance** ↑ **bio-incidents**

AIMS OF THE PROJECT

In the context of a preventive health policy:

1. **Identification and evaluation** of the **biosafety program** during **teaching laboratories** with biological agents.
2. **Support** to the biosafety officers and the educators by developing **biosafety guidelines**.

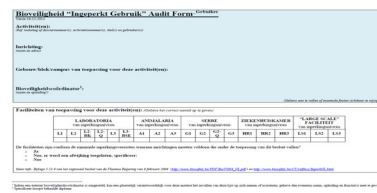
AIMS OF THE PROJECT

3. Contribution to:

- an **increased awareness** of the biological risks during teaching laboratories,
- an optimized **implementation of a strong biosafety program** to protect the public health and the environment.

METHODS

- A **preliminary study** incl. a questionnaire composed of specific biosafety points for teaching laboratories.
- A **visit and evaluation of all institutions** during the teaching laboratories.
- A **proposal of biosafety guidelines** with feedback from the



MAJOR FINDINGS

(NON-CONFORMITIES)

❖ The facility

- Unlimited access
- Open doors
- Incorrect BSL

❖ Biological agents

- Wrong scaling
- Pathogenic for human
- Agents involved in LAIs
- Obtained from laboratories or hospitals

MAJOR FINDINGS

(NON-CONFORMITIES)

❖ Risk assessment

- Not always present
- Not always performed well

} Impact on risk management and compliance

❖ Training

- The role of the biosafety officer is minimal
- The assistants are not well-informed about biosafety

❖ Personal items

- Mostly strictly limited

MAJOR FINDINGS

❖ PPE

- Mostly limited to a lab coat
- Gloves: available but not mandatory (Bunsen burner)
- Safety goggles: exceptionally required
- Masks as respiratory protection: hardly used
- BSC are a big issue
 - absence of a BSC
 - inability to allow all students
 - manipulations generating infectious aerosols are carried out in advance

MAJOR FINDINGS

❖ Inactivation of contaminated material and waste

- chemical inactivation
- thermal inactivation (autoclave) and/or incineration

devices not fully suitable

& doubtful method of validation

CONCLUSIONS

- ✓ The **biosafety program** within the institutions ranges from enough to good.
- ✓ The most identified shortcomings are the **risk assessment, risk management and compliance**.
- ✓ The **implementation of some legal requirements** regarding biosafety are often **difficult to implement** due to **logistical reasons**.

CONCLUSIONS & RECOMMENDATIONS

Based on the results and in addition to the legal obligations in context of a better risk assessment we made some **recommendations**.

- ✓ The educator repeats the **possible risks** and **precautionary measures** to be taken, preferably before every teaching laboratory.

CONCLUSIONS & RECOMMENDATIONS

- ✓ A biosafety manual and written procedures are available for the students.
- ✓ The students show their competence with non-pathogenic agents before manipulating pathogenic agents.

CONCLUSIONS & RECOMMENDATIONS

- ✓ The use of difficult to decontaminate personal items is organized in such a way that the chance of contamination is minimal.
- ✓ All cultures, subcultures and inoculations during the teaching labs and storage have to be clearly labeled.

CONCLUSIONS & RECOMMENDATIONS

- ✓ The biological agents are **well characterized** and originating from a **recognized, commercial and reliable source**.
- ✓ The importance of **reporting incidents / irregularities** with biological agents is clearly communicated.

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QUESTIONS?

