# Risk assessment form for biological agents and toxins (BARA) at MBW, SU

*Please note that this form cannot be used for genetically modified micro-organisms.*

*According to AFS 2001:1 on Systematic Work Environment Management, the employer should perform a risk assessment to investigate the working conditions and indicate which risks are present on an activity and whether or not they are serious. The word risk as used in the Provisions AFS 2001:1, refers to the likelihood of ill-health or accidents at work occurring and the consequences of such occurrences.*

*The aim of this risk assessment is to prevent ill-health and accidents and to achieve a satisfactory working environment. The gravity of the risk has to be decided in each particular instance, and measures are taken when needed. Risk assessments shall be documented and followed-up, and the local safety representative need to approve and sign the document (4§ AFS 2001:1).*

*This form should be used for characterization (A) and risk assessment (B) of known micro-organisms.*
*The micro-organism/cell line(s) should be characterized in Part A). Each type of method involving micro-organism/cell line(s) should be evaluated on one risk assessment form B). Note that more than one risk assessment might be needed for different activities with the same organism.*

*When finished, print and place this form in the lab so that each researcher can consult it before conducting experiments*

| **Risk assessment name:**<br>*(Describing name given by the risk assessment participants)* | |
|---|---|
| **Date:**<br><br>**Premises:** | **Participants:**<br>Group leader:<br><br>Employee(s):<br><br>Safety representative:<br><br>Others: |

## A) Characterization of the organism(s)

| | |
|---|---|
| Department: MBW | Group leader: |
| Room number(s): | |
| Lab responsible person (if applicable): | |
| ☐ Virus ☐ Bacteria ☐ Toxin1 ☐ Cell line ☐ Fungi ☐ Protozoa ☐ Other | |
| Name of group, organism, subgroup, type, strain designation(s), etc | |
| ☐ Risk group 1 ☐ Risk group 2 ☐ Risk group 3 ☐ Not applicable | |
| ☐ not genetically modified<br>☐ Genetically modified- This form cannot be used for this purpose, unless it is a spontaneous modification. Please read the supplemental information. | |
| Source of the micro-organism (eg. created in lab, gift, bought): | |

| | |
|---|---|
| Special properties of the particular strain(s): | ☐ antibiotic resistance? elaborate:<br>☐ virulence factors? elaborate:<br>☐ resistance against drying? elaborate:<br>☐ resistance against heat? elaborate:<br>☐ resistance against disinfectants? elaborate:<br>☐ risk for allergic reactions? elaborate:<br>☐ risk for pregnant employees? elaborate:<br>☐ Other; please elaborate: |
| Survival of the organism in the environment: | |
| Symptoms if infected (e.g. disease spectrum): | |
| ☐ Low infectious dose ☐ High infectious dose. Please comment, eg numbers of particles | |
| Natural route of infection: | ☐ aerosol ☐ skin contact ☐ mucous membrane contact ☐ injection (skin puncture)<br>☐ dust ☐ ingestion ☐ other |
| Possible routes of transmission in the lab: | ☐ aerosol ☐ skin contact ☐ mucous membrane contact ☐ injection (skin puncture)<br>☐ dust ☐ ingestion ☐ other |
| Available treatment:<br>(e.g. first choice antibiotics, if applicable) | |
| Available immuno-prophylactic measures: | |

| **B) Risk assessment- laboratory work**<br>(NB. if work should be done in ECF you *must* consult ECF regarding the risks for ECF personnel). | Reference number /version (optional): |
|---|---|
| General description of the work | |
| Method description(s) including type of work (cultivation etc): Please elaborate | |
| Which part(s) of the handling possesses the highest risk of infection? e.g. propagation, sonication, centrifugation, use of needles. | |
| Safety procedures to minimize the risk of laboratory infections: e.g. minimize volumes, evaluate if a less pathogenic strain can be used, how to avoid aerosols and sharp objects. | |
| Handling procedures for the organism:<br>☐ Work in a biological safety cabinet<br>☐ Class 1 ☐ During the whole method. ☐ During parts of the method, which?<br>☐ Class 2 ☐ During the whole method. ☐ During parts of the method, which?<br>☐ Protective gloves ☐ During the whole method. ☐ During parts of the method, which?<br>☐ Protective clothing. Please specify: Lab coat used in the P2 laboratory only, change of coat when leaving the area.<br>Other, please elaborate: | |
| Does the method involve hazardous chemicals (including isotopes)?4 | ☐ No<br>☐ Yes, which? which risk statements? Does the handling of dangerous chemicals need a separate risk assessment? If yes; name of the risk assessment: |
| How is liquid waste handled? Does it contain mixed sources eg antibiotics/chemicals that need special considerations?4 | |
| How is solid waste handled?4 | |

| | |
|---|---|
| Disinfection method of lab area/biosafety cabinet. Is this a suitable method? | |
| If immunization is available, are all personnel working in this lab vaccinated? | ☐ Yes<br>☐ No. Why: |
| Emergency procedures (in case of accident, spill, theft etc) and also name and phone number of contact person: | |
| Have you considered the experiments in view of laboratory biosecurity5 and dual-use? | ☐ Yes<br>☐ No, Why:<br>☐ Not applicable. Why: |
| Who is in charge of inventory control (mandatory)? | |

Based on the answers above, the activity/organism will be handled in:
☐ Containment level 1
☐ Containment level 2
Registered? ☐ Yes ☐ No.
The lab is marked with BSL2 sign? ☐ Yes ☐ No.
☐ Containment level 3

| | |
|---|---|
| How many employees are performing the experiments (or otherwise involved)? | |
| Are there employees needing special consideration? e.g. pregnant employees, dish washing personnel, cleaners, service personnel. | |
| Handling and safety instructions available?9 | ☐ Yes, which? folder in red lab ☐ No, why? |
| Other information: | |
| Name in print. Note! it is recommended that more than one person evaluates the organism and the risks | |
| Signature; Group leader. | |
| | |

1 This form should be used for toxins only when they are expressed in the micro-organism (meaning that you also have to mark one more option in this row). Toxins, independent on if they are produced from micro-organisms or from plants/animals or of other sources should otherwise be treated as chemical agents and risk assessments for these shall be made in KLARA.
2 Lists of micro-organisms in different risk groups can be found at https://www.av.se/globalassets/filer/publikationer/foreskrifter/mikrobiologiska-arbetsmiljorisker-smitta-toxinpaverkan-overkanslighet-foreskrifter-afs2005-1.pdf Special regulations apply when working with micro-organisms at risk group 3 and the risk assessment should be more extensive than will be covered by this form.
3 note the difference between a class 1 cabinet e.g. standard flow hood and a class 2 cabinet protecting both the employer and the material, see http://www.phac-aspc.gc.ca/publicat/lbg-ldmbl-04/pdf/lbg_2004_e.pdf page 88- for more information.
4 Risk statements for dangerous chemicals can be retrieved from the MSDS (material safety data sheet) section 15 or from the bottle/container, for example Flammable, Causes burns etc. Waste management and sewage rules at SU can be found at the SU homepage http://www.su.se/miljo/s%C3%A5-g%C3%B6r-du/avfallshantering/labavfall
including rules on how to deactivate antibiotics and which chemicals can be poured out in the sewage. Note that chemicals that are hazardous to work with are not always the same as those that needs separate waste sorting.
5 Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release. Things to consider; physical protection e.g. unauthorized entry, personnel suitability/reliability e.g. biosecurity training to personnel, and pathogen accountability e.g. inventory, labeling, tracking and inactivation of cultures. Dual-use refer to research that, based on current understanding, can be reasonably anticipated to provide knowledge, products or technologies that could be directly misapplied by others to pose a threat to public health, agriculture, plants, animals, the environment or material.
6 Protective measures for each level can be found at https://www.av.se/globalassets/filer/publikationer/foreskrifter/mikrobiologiska-arbetsmiljorisker-smitta-toxinpaverkan-overkanslighet-foreskrifter-afs2005-1.pdf page 34-40.
7 The laboratory (could be the whole department) must have been registered to the Swedish Work Environment Authority (Arbetsmiljöverket) when working at containment level 2 and be clearly marked.
8 Special regulations apply at containment level 3 and the risk assessment should be more extensive than will be covered by this form.

9 Handling and safety instructions in writing must be provided for the use of infectious agents and otherwise when necessary for the prevention of ill-health or accidents. This means that written handling and safety instructions are obligatory at containment level 2 and
upwards. In addition, supplementary, specially adapted instructions may often be needed for the individual use, depending on the risks which it specifically entails.
**Supplementary information, containing further guidelines, is avaliable.**

**This form was composed by the biosafety committee at KI, and it is used by MBW Institute at Stockholm University**

**If you have further questions, please Contact Biosafety committee at SU**
**http://www.su.se/medarbetare/service/krishantering/s%C3%A4kerhet/bios%C3%A4kerhet/bios%C3%A4kerhet-vid-stockholms-universitet-1.3037**