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## ***Objectives and responsibilities***

The supervisor has to assess the feasibility of the project with regard to safety before the master projects are offered to the students. Before the master project starts, risk assessment shall be carried out in **cooperation between supervisor and student**. It is the supervisor's responsibility that the risk assessment is performed. The assessment will be included as an attachment to the master agreement.

It is the **supervisor's liability** that proper concern for health and safety is taken and the **student has an independent responsibility** to contribute to this (see Norwegian Working Environment Act §2-3).

<http://www.lovdatab.no/all/tl-20050617-062-002.html#2-3>

If co-supervisors are involved in the training and supervision of the student's laboratory work, the responsible supervisor must clarify the HSE responsibilities involved and the co-supervisor(s) shall if necessary participate in the risk assessment.

Risk assessment prior to start of the master projects should clarify the responsibility that lies with both the student and supervisor (s) in order to protect health, safety and the environment. The **HSE Coordinator** can help with general training, information and advice for carrying out the risk assessment.

The risk assessment submitted together with the master agreement, forms a basis for further risk assessment during the master project. The need to update the risk assessment depends on what new items or changes are brought into the project. If changes are made so the risk assessment no longer covers the relevant risk factors and safeguards, an update must be carried out. Student and supervisor are jointly responsible for assessing the need for performing a new risk assessment.

## ***NTNU guidelines, system and forms for risk assessment***

According to the NTNU guidelines, risk assessment must be carried out for all activities that might cause harm to people, material/equipment or environment before the work starts. NTNU guidelines for risk assessment are found here: <https://innsida.ntnu.no/web/guest/wiki/-/wiki/English/Risk+assessments>

The Laboratory and workshop Handbook provides general guidance for the risk assessment process (see chap. 9): <https://innsida.ntnu.no/wiki/-/wiki/English/Laboratory+and+workshop+handbook>

At NTNU, a digital system for risk assessment (RiskManager) is used. You will find information and logon together with the [guidelines for risk assessment](#). It is desirable that this system is used for risk assessment of master theses. Alternatively, the combined forms (word or excel) for identification of hazardous activities and risk assessment linked below can be used. Use the most convenient format for you.



[Word-form for risk assessment of master projects](#)

[Excel-form for risk assessment of master projects](#)

## ***Identification of potentially hazardous activities***

**The guidance below is related to the combined form for mapping and risk assessment linked up above.** The general aspects also apply when using the digital system. User Manual for the digital system is linked up to the [guideline for risk assessment](#).

Start by listing the **planned activities** and identifying potentially hazardous activities (e.g. work that involves gas, liquid nitrogen, hazardous chemicals, infectious microorganisms). The activities may be classified into different categories of work based on the risks and safety measures involved. If it can be made an appropriate classification according to the types of work representing the different kinds of risks and safeguards, it is not

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necessary to write a long list of very specific tasks. If you use RiskManager, mapping of potentially hazardous activities can be [documented on the mapping form](#) and uploading this as an attachment.

If the work involved in the master project is purely **theoretical** and does not contain any activities that involve risks, this should be stated on the combined form for mapping and risk assessment linked up above. It is then sufficient to briefly describe the type of activities and it is not necessary to go ahead with the assessment of risks. It is the supervisor who accounts for risk assessment not being required and this is confirmed by signing the form.

Examples of «**Existing documentation**» can be: operation manuals; previous risk assessments of similar activity; instructions for work process which have been elaborated by the Institute or laboratory unit. In the column «**Existing safety measures**» all the relevant safeguards should be filled in (e.g. mandatory training before use of equipment, personal protective equipment, use of ventilation cabinets etc.). The safety measures shall reduce the probability of unwanted events and **they shall be considered as laboratory rules**.

The column «**Laws, regulations, etc.**» is in this context is primarily directed towards identifying Health, Safety and Environment (HSE) **guidelines at NTNU** that are relevant for the activities, i.e. guidelines for field work, radiation protection, work with hazardous chemicals and biological materials etc. All guidelines are presented here: <https://innsida.ntnu.no/wiki/-/wiki/English/HSE++guidelines+-+summary+page>

If the project contains special elements and risk factors not covered by NTNU guidelines, it is appropriate to refer to the relevant national regulations/guidelines (see Norwegian Labour Inspection Authority).

<http://www.arbeidstilsynet.no/>

For example, there exists a guide to Nanotechnology and work environment (in Norwegian).

<https://www.arbeidstilsynet.no/tema/kjemikalier/nanomaterialer-og-arbeidsmiljo/>

**The guidelines identified shall be reviewed and followed in the further planning and execution of the work.**

## ***Risk assessment***

Risk assessment is conducted on the basis of the performed mapping of the activity. In the risk assessment form, each of the potentially **hazardous activities** identified shall be specified and analyzed with respect to the **unwanted incidents** that may occur. If two or more undesirable incidents can be identified for each activity, they should be specified in separate rows.

For every unwanted incident, **likelihood** and **consequence** shall be reported as numbers (1-5) and letters (A-E), respectively. The values are assigned under the assumption that **existing safety measures are implemented**. See the instructions on the form for values. The consequences for **humans** must always be assessed and reported in the specified column. The relevance of the other consequences (environment, economy/material) should be considered in the individual cases. The «**Risk value**» for the individual incidents is a product of «Likelihood» and «Consequence». The risk value for humans shall be reported.

Finally, all risk values should be evaluated according to the **risk matrix**. Activities that only have risk values in **green** areas are OK. If risk values are in **yellow** or **red** areas, new **safety measures** should be evaluated in order to reduce the risk. Activities that have risk values in the **red** field **shall not be carried out**.

The forms must be signed by the responsible supervisor and master student.