



Prepared
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Approved

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HSE guidelines for pregnancy in the lab

This document contains guidelines for what to be aware of and what to avoid in the MiNaLab during pregnancy.

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1. Radiation

All radiation sources should be avoided completely. The ion implanter was measured for radiation in 2014, and no radiation could be detected. These measurements are conducted by the Norwegian Radiation Protection Authority on a regular basis.

2. Chemicals

Take extra care when handling any organic and volatile solvents. The acceptable threshold for exposure to organic solvents for pregnant women are 10% of those for non-pregnant people. Use a hood as far as possible when using solvents.

Some chemicals should be avoided completely if you are pregnant. These are chemicals that are marked as carcinogenic, mutagenic or harmful to genes or reproductive ability.

You should always check the MSDS for all chemicals you are using. Avoid chemicals that has one of the following R(isk) and H(azard)-phrases:

R39 – Danger of very serious irreversible effects.

R40 - Possible risks of irreversible effects.



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R45 - May cause cancer.
R46 - May cause heritable genetic damage.
R48 - Danger of serious damage to health by prolonged exposure.
R49 - May cause cancer by inhalation.
R60 - May impair fertility.
R61 - May cause harm to the unborn child.
R62 - Possible risk of impaired fertility.
R63 - Possible risk of harm to the unborn child.
R64 - May cause harm to breastfed babies.
R68 – Possible risk of very serious irreversible effects.

H310 - Fatal in contact with skin.
H311 - Toxic in contact with skin.
H312 - Harmful in contact with skin.
H340 - May cause genetic defects.
H341 - Suspected of causing genetic defects.
H350 - May cause cancer.
H351 - Suspected of causing cancer.
H360 - May damage fertility or the unborn child.
H361 - Suspected of damaging fertility or the unborn child.
H362 - May cause harm to breast-fed children.
H370 - Causes damage to organs.
H371 - May cause damage to organs.
H372 - Causes damage to organs through prolonged or repeated exposure
exposure
H373 – May cause damage to organs through prolonged or repeated exposure
exposure

Here is a list of chemicals present in our chemical cabinets, where we have checked the MSDS. Please always check the MSDS for yourself before using the product. The MSDS' can be found in LIMS under "info → chemical list":

Does not contain the risk and hazard phrases:

1-butanol
Acetic acid
Acetone
Aluminium etchant
Ammonium hydroxide
Developer AR300-46
Hydrochloric acid



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Hydrogen peroxide
Isopropanol
Nitric acid
Orto-phosphoric acid
Potassium hydroxide
Sodium hydroxide
Sulphuric acid

Avoid completely:

Microposit S1813 G2 Positive (contains 2-metoxypopylacetate, H- 360)

Microposit MF-319 Developer (H371, H372)

HF

Buffered oxide etch (contains HF)

HF is classified as very poisonous and can enter your bloodstream. We recommend to completely avoid using this acid and to stay a safe distance away from those handling it.

3. Noise

The foetus develops its sense of hearing around week 24. Before this week there is no effect on the foetus from noise. After week 24, pregnant women should stay away from locations with sufficient noise to require hearing protection. The noise could both cause damage to the ears of the child and may cause stress for both mother and child.

Some areas of the MinaLab have high noise levels, but are mostly below 70 dB. 70 dB is the lower limit for which some noise protection is required. A list of the measured noise levels is available in lims. Note that some areas may at times have higher noise levels than what is measured here. Notably the e-lab can have high noise levels if certain equipment is running. If you are uncertain of the noise level in the area where you are working, please contact Halvor to obtain new measurements.

4. Magnetic fields

Avoid magnetic fields over 400 mT. The ion implanter and the Hall apparatus contains significant magnetic fields (>1T), however, these are contained within the apparatuses and is of no concern.



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5. Particles

Pregnant women should avoid all exposure to nanoparticles, as their effect on health has not been sufficiently assessed. There are few sources of nanoparticles in the MiNaLab. We recommend to avoid using the sand blaster during pregnancy, and to avoid any possible sources of particles (for instance maintenance of ALD).

6. Further reading

The following links can provide further information on the subject;

<https://arbejdstilsynet.dk/da/regler/at-vejledninger/g/a-1-8-gravides-og-ammendes-arbejds miljoe> (in danish)

<https://innsida.ntnu.no/wiki/-/wiki/Norsk/Gravide+og+kjemikalier> (in norwegian, english version also available by pressing "english version")

<https://innsida.ntnu.no/wiki/-/wiki/English/Pregnancy+and+noise> (in english)

<https://stami.no/wp-content/uploads/2015/01/Faktaark-for-gravide.pdf> (in norwegian)

7. Any questions?

Please contact Halvor (halvor.dolva@fys.uio.no) or Kristin (kristin.bergum@smn.uio.no) if you have any further questions.

8. Revision information

Rev.	Date	Change
A	23-02-2018	New document