

Congratulations



Leaflet for pregnant and breastfeeding women
at the Department of Molecular Biology and Genetics (MBG)
Aarhus University

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- Work Environment in Denmark = Arbejdstilsynet
- The Clinic of Occupational Medicine = Arbejdsmedicinsk klinik
- The Danish Health Authority = Sundhedsstyrelsen
- The Danish National Institute of Radiation Protection = Statens Institut for Strålebeskyttelse
- Work Environment in Denmark’s guidelines for pregnant and breastfeeding women = Arbejdstilsynets vejledning for gravide og ammende
- Guideline from Work Environment in Denmark = AT-vejledning
- The on-line information system of occupational medicine = Arbejdsmedicinens online informationssystem

Translation from Danish of the leaflet "Informationshæfte til gravide og ammende ved Institut for Molekylærbiologi og Genetik (MBG), Aarhus Universitet, Revideret udgave 12.2.2014" by LH.

Pregnancy policy for MBG

The overall objective of the pregnancy policy at MBG is to ensure a good and safe working environment for the pregnant staff and students so that they can continue to work safely throughout pregnancy until maternity leave.

Work must be organised to eliminate any risks, if possible – either by substitution with other compounds, substances, physical aids, personal protection or exemption from certain risky work. If it is not possible to change the working processes or procedures, the pregnant women must be transferred to other types of work.

To ensure a safe workplace, the pregnant women, her colleagues and the management must enter into a binding collaboration that respects the rules of pregnant women working in the laboratory.

The pregnant women should:

- inform about her pregnancy at an early stage
- be given a workplace in a non-radioactive laboratory
- be given the chance not to work with compounds specially risky for pregnant women
- not be asked to lift heavy parcels, equipment etc., nor work at awkward or repetitive working positions
- have the possibility of starting a new project (students)
- be able to get assigned to other types of work if uncomfortable with a particular work situation

Reference: Work Environment in Denmark's guidelines for pregnant and breastfeeding women = Arbejdstilsynets vejledning for gravide og ammende ("AT-vejledning A. 1.8-7")
<https://at.dk/regler/at-vejledninger/gravides-ammendes-arbejds miljoe-a-1-8/> (in Danish only)

Risk assessment – Clinic of Occupational Medicine

The workplace risk assessment for pregnant women must be prepared by the employer in cooperation with the working environment organisation. The risk assessment in relation to pregnancy can, however, be complicated. If the employer – alone or with the help of a safety advisor – is not able to make the required risk assessment, the pregnant woman's own physician may refer her to a clinic of occupational medicine for help with the risk assessment.

The occupational medical examination takes place in the form of a 30-60 min. interview with a physician. Based on this interview, the physician makes a detailed evaluation of the pregnant woman's daily work and work environment, so that any risk to the fetus or the pregnancy is disclosed. The clinic of occupational medicine looks at the physical risk factors (lifting, pulling, pushing, prolonged walking or standing work, extreme temperatures, radiation, etc.), chemical and infectious exposure.

After the medical interview, the physician might require further information, which is often the case when the pregnant woman is exposed to chemical exposure. Once the risks to the pregnant woman's work have been evaluated, the physician assesses whether the pregnant woman can continue working as usual, or whether changes should be made to the working conditions of the pregnant woman.

Reference: The on-line information system of occupational medicine: <https://dasam.dk/>

Reference: Work Environment in Denmark's guidelines for pregnant and breastfeeding women: <https://at.dk/regler/at-vejledninger/gravid-ammendes-arbejdsmiljoe-a-1-8/> (in Danish only)

Rules for pregnant and breastfeeding women working with radioactivity

Women of reproductive age must be instructed by the supervisor/employer that special rules apply during pregnancy. The pregnant woman must be made aware of the Danish Health Authority's guide "Guidance on the use of open radioactive sources, 2020" ("Vejledning om brug af åbne radioaktive kilder, 2020"), the Danish Health Authority, Radiation Protection.

<https://www.sst.dk/-/media/Udgivelser/2020/Brug-af-aabne-radioaktive-kilder.ashx?la=da&hash=EC15FECD83C4AC7D43A58B76C6852CAF88787626> (in Danish only)

Women should notify the employer of the pregnancy as early as possible so that the work can be organised taking into account the dose to the fetus. This also applies to breastfeeding women for the sake of the child being nursed.

After the announcement of pregnancy, the responsible leader and the pregnant woman must assess the amount of radiation the unborn child could be exposed to during pregnancy. If necessary, the Clinic of Occupational Medicine could be involved in the risk assessment. If these parties are uncertain, a written workplace assessment (WPA) (Danish "APV") could be submitted to the Danish National Institute of Radiation Protection for a final evaluation.

Ionising radiation

Pregnant women must always wear the personal dosimeter at belt height.

In addition, there is a requirement that the equivalent dose to a fetus as a result of the pregnant woman's occupational exposure must be kept as low as reasonably possible and must not exceed 1 mSv after notification to the employer of the pregnancy.

Herudover er der krav om, at ækvivalent dosis til et foster som følge af den gravides erhvervsmæssige bestråling skal holdes så lav som med rimelighed opnåeligt og ikke må overstige 1 mSv efter meddelelse til arbejdsgiveren om graviditeten.

Pregnant women must not be exposed to a load of more than 1 mSv from the period of notification of pregnancy until she has given birth.

Dose limit is considered complied with if the pregnant woman does not work with activity volumes exceeding the following limits at a time:

Isotope maximum allowable amount

- ^{32}P 5MBq (135 μCi)
- ^3H , ^{14}C , ^{35}S and ^{33}P 50MBq (1,35 mCi)
- Pregnant women must not make iodine with ^{125}I .
- Pregnant women must not take radioactive stock solutions

If these rules cannot be met, the pregnant women must be given other types of work. In case of accident, the pregnant woman's work situation must be reassessed.

Breastfeeding

If a breastfeeding woman is exposed to radiation during a period in which she is working with open radioactive sources, precautions must be taken to ensure that there is no significant risk of internal or external contamination of the body with radioactive material, as there may be a risk of transmission of radionuclides to the baby via the mother's milk.

Breastfeeding women must not take stock solutions and iodinations.

These rules are in accordance with The Danish Health Authority's Act no. 669 of 1 July 2019 on ionising radiation and radiation protection:

<https://www.retsinformation.dk/eli/ta/2019/669> (in Danish only)

Work Environment in Denmark's ("Arbejdstilsynet") guidelines for pregnant and breastfeeding women:

<https://at.dk/regler/at-vejledninger/gravides-ammendes-arbejds miljoe-a-1-8/>

Chemical influence

Always read the workplace instructions for each substance you are handling.

The general safety precautions must be observed, and the concentrations of the substance being studied should be considered.

Hazardous substances should be substituted by other, less dangerous, if possible.

Guidelines for an assessment of whether the exposure in the working environment constitutes a risk of a negative impact on the pregnancy can be found in At-guide ("Arbejdstilsynet") A. 1.8-7.

If you are in doubt, please contact the safety representative or the Department of Occupational Medicine.

During pregnancy and breastfeeding, you must pay particular attention to those marked with the following risk codes:

Hazard statement for physical hazards	Code
Life threatening in contact with skin	H310
Toxic in contact with skin	H311
Dangerous in contact with skin	H312
May cause genetic defects	H340
Suspected of causing genetic defects	H341
Suspected of causing genetic defects	H350
May cause cancer by inhalation	H350i
Suspected of causing cancer	H351
May damage fertility or the unborn child	H360
Suspected of damaging fertility or the unborn child	H361
May cause harm to breast-fed infants	H362
Causes damage to organs	H370
May cause damage to organs	H371
Causes damage to organs through prolonged or repeated exposure in contact with skin	H372
May cause damage to organs through prolonged or repeated exposure in contact with skin	H373

The administrator of Kiros can download an updated list of relevant substances for the individual group, or you can search under "advanced search", e.g. for substances with the above H-phrases.

Kiros www.kiros.dk

Note: Imidazole

According to Sigma-Aldrich MSDS, it can harm the unborn child (H360D) if it is Imidazol Free base. If Imidazole Hydrochloride is used instead, the problem can be avoided as there is not the same danger label.

See also the Department's website:

<https://mbg.medarbejdere.au.dk/arbejds miljoe/godkendelser-og-instrukser/arbejde-med-imidazol> (in Danish only)

Ergonomic influence

Physical impacts

Pregnant women should be aware of the negative impacts that may arise during work:

Vibrations

Especially centrifuges, but also other laboratory devices – such as large, fast-paced shaking tables/shaking incubators – could pose a risk.

Lift

Pregnant women should avoid lifting heavy loads, as they may pose a risk to the unborn child and premature birth. In general, a pregnant woman should make sure that the lift is done under optimal conditions:

- that the lift takes place at the centre front of the body
- that the lift takes place at mid-thigh and elbow height
- that the load is designed for handling
- that carrying when lifting is avoided
- that the footing is stable

Noise and ultrasound

The hearing of the unborn baby is developed in the latter half of pregnancy, and it may be damaged by strong low-frequency noise (below 500 Hz). Noise will be reduced through the skin, abdominal wall, uterus and amniotic fluid to the fetal ears. This attenuation is very small at low frequencies. Pregnant women should therefore not be exposed to loud noise containing low frequency (below 500 Hz).

Ultrasound, i.e. frequencies above 18,000 Hz, is considered to pose a risk to both mother and child. By an ultrasound in air, the fetus is protected by the mother's body, no matter how powerful the ultrasound is. The ultrasound will pass into the human tissue when the body is in contact with solid objects or liquids that oscillate at ultrasonic frequencies.

This means that the pregnant woman usually should not make a sonication.

Extreme heat

Working temperatures above 35°C can be harmful to fetal development. This may be due to overheating of the fetal tissue or failure of the blood supply to the fetus. High working temperatures can occur, for example, in greenhouses in the summer.

Work Environment in Denmark's guidelines for pregnant and breastfeeding

<https://at.dk/regler/at-vejledninger/gravides-ammendes-arbejds miljoe-a-1-8/> (in Danish only)

Biological influence

A study of 2 June 2004 showed that none of the biological agents (bacteria, viruses and cells) used at the Department of Molecular Biology and Genetics are considered hazardous to pregnant women.

The current rules for laboratory classification must always be followed, and the supervisor/employer must give new staff/students a thorough instruction before they start working in the laboratory.

More information about this topic: "Bekendtgørelse om biologiske agenser og arbejdsmiljø" ("Act of biological agents and the working environment") from the Work Environment in Denmark

<https://at.dk/regler/bekendtgørelser/biologiske-agenser-arbejdsmiljoe-1652/> (in Danish only)

Avoid working with test animals

Test animals may pose a danger to the fetus:

Test animals can carry a protozoan, *Toxoplasma gondii*, which can cause toxoplasmosis (hare disease) in humans. It is recommended that you get your physician to take a blood sample from you to determine antibodies against toxoplasmosis. The animals can also be tested. If you have the antibody, the work can continue as before, otherwise you should be moved to other types of work.

Avoid working with poultry/birds

Avoid working with birds/poultry because of the risk of ornithosis (psittacosis). Both toxoplasmosis and ornithosis can damage the unborn child.

Samples from patients

Be careful when working with blood and tissue samples; all samples from patients are considered potentially infectious and should be treated accordingly. A vaccination against hepatitis before starting work (and before becoming pregnant) is recommended.

Working with cytostatics

Work with cytotoxic drugs can only be considered to be safe for pregnant women if the work is done in such a way that there is no risk that the drugs are absorbed by the pregnant woman.

The highest risk is found when preparing cytotoxic agents, cleaning preparation rooms and when installing and injecting/infusing cytostatics. These tasks should not normally be performed by pregnant women.

Work Environment in Denmark's guide on work with cytostatics: D.2.12, December 2004

<https://at.dk/regler/at-vejledninger/arbejde-cytostatika-d-2-12/> (in Danish only)

Nano particles in the working environment

During the past 10 years, there has been an increase in the development and application of particulate nanomaterials. At the same time, research has given rise to suspicion of possible health risks related to exposure to nanoparticles in the workplace.

Industry's Working Environment Council ("Industriens Branchearbejdsmiljøråd") has prepared a booklet on nanoparticles in the workplace. The guidelines in this booklet **are not approved** Work Environment in Denmark, but it expresses the partners' preliminary recommendations.

The booklet has been prepared on the basis of knowledge available in 2010.

Nano particles in the working environment: www.i-bar.dk and https://www.arbejdsmiljoweb.dk/om_arbejdsmiljoweb/bfa/tre-tidligere-branchearbejdsmiljoeraad-3bar/bar_u_f (in Danish only)

Safety

There are no regulations ensuring an unambiguous specification of labelling and classification of products with nanoparticles.

Based on the available knowledge about the health effects of airborne nanoparticles, it is recommended to minimise exposure to airborne particles as much as possible, and to follow the precautionary principle:

Safety precautions

- use cupboard, glove boxes, or laminar flow benches with an HEPA filter
- avoid bringing dust into the room
- use personal protective equipment
- dispose of waste as being potentially harmful

References (in Danish only)

Arbejdsmedicinens online informationssystem

<https://dasam.dk/>

Arbejds miljø i det offentlige og finanssektoren

www.arbejdsmiljoweb.dk

Arbejdstilsynet

www.at.dk

Arbejdstilsynets bekendtgørelse om biologiske agenser og arbejdsmiljø

<https://at.dk/regler/bekendtgørelser/biologiske-agenser-arbejdsmiljoe-1652/>

Arbejdstilsynets vejledning for gravide og ammende A1.8

<https://at.dk/regler/at-vejledninger/gravides-ammendes-arbejdsmiljoe-a-1-8/>

Arbejdstilsynets vejledning om arbejde med cytostatika D.2.12, december 2004

<https://at.dk/regler/at-vejledninger/arbejde-cytostatika-d-2-12/>

Gravid med job – portalen

www.gravidmedjob.dk

Industriens Branchearbejds miljøråd

www.i-bar.dk og https://www.arbejdsmiljoweb.dk/om_arbejdsmiljoweb/bfa/tre-tidligere-branchearbejds miljoeraad-3bar/bar_u_f

MBGs kemikalierregistreringssystem

www.kiros.dk

Nanopartikler i arbejdsmiljøet

www.i-bar.dk og https://www.arbejdsmiljoweb.dk/om_arbejdsmiljoweb/bfa/tre-tidligere-branchearbejds miljoeraad-3bar/bar_u_f

NanoSafer

<https://nfa.dk/da/Vaerktoejer/Andre-vaerktoejer/Nanosafer>

Retsinformation

www.retsinformation.dk

Statens Institut for Strålehygiejne

<https://www.sst.dk/da/opgaver/straalebeskyttelse>

Sundhedsstyrelsen: www.sst.dk

Sundhedsstyrelsens vejledning om brug af åbne radioaktive kilder, 2020

<https://www.sst.dk/-/media/Udgivelser/2020/Brug-af-aabne-radioaktive-kilder.ashx?la=da&hash=EC15FECD83C4AC7D43A58B76C6852CAF88787626>