INSTITUT FOR GEOSCIENCE
AARHUS UNIVERSITET

Geoscience guidelines for *Pregnant and breastfeeding women*

The following rules apply to women working in the Geoscience laboratories.

This policy has been developed on the basis of the Danish Working Environment Authority's (Arbejdstilsynet) guidance "Pregnant and breastfeeding employee's working environment" ("Gravides og ammendes arbejdsmiljø" At-vejledning A.1.8-9). The policy aims to prevent pregnant or breastfeeding women from working with substances or in situations that may be harmful to the fetus or the child, now or later. More info can be found on the AU website (currently Danish only).

As soon as the pregnant woman discovers her pregnancy, she should inform her immediate manager. This allows the work tasks to be organized so that the fetus is not endangered. Women who try to conceive are also encouraged to contact their manager or a health and safety representative.

The work must be assessed individually and planned by the laboratory manager and/or project manager, to comply with the guidelines below.

If the evaluated work is considered to involve a risk, the following should be addressed in order of priority:

1. Provide technical measures or altered workplace settings, or if it is not sufficient or possible,
2. Change the planning and organization of the work, or if it is not sufficient or possible,
3. Transfer the pregnant or breastfeeding woman to other tasks, or if it is not sufficient or possible,
4. Decide that the pregnant or breastfeeding woman cannot carry out the task in question.

If it is not possible for the pregnant woman to perform her normal tasks, it is the responsibility of the laboratory manager and/or project manager to find other tasks that the pregnant woman can do.

If there is any uncertainty, the pregnant woman may refer to her own doctor or the Occupational Medical Clinic (Arbejdsmedicinsk Klinik) for an assessment of the situation.

Long-term standing and walking at work:
Geoscience must arrange the work of the pregnant woman so that she can switch between standing/walking and seated work, starting from the beginning of the fourth month of her pregnancy.

The relief periods achieved by seated work should be distributed evenly throughout the day. The periods should be without interruption and of considerable length. The first relief period of approximately half an hour may for example be between the start of the workday and the lunch break. For full-time employees, there should be two relief periods of approximately half an hour between the lunch break and the end of the workday. The pregnant woman should work for a maximum of 1-1.5 hours standing and/or walking between the relief periods. If there is no work to be carried out in a seated position, breaks are recommended instead.

The pregnant woman does not get the necessary relief if she shortens the working day by the corresponding time, instead of doing seated work during the last relief period.

The need for relief periods at work increases as the pregnancy progresses. Therefore, it may often be necessary for the pregnant woman to have breaks in a suitable rest area during the last months of the pregnancy.

Heavy lifting, pulling, and pushing:
Repeated heavy lifting, moving objects manually, pulling and pushing, or constant walking and long-term standing can give rise to birth defects. Combining two or more of these workloads will increase the risk.

The work must be organized to provide variation in the tasks and the option to take breaks if needed. Additionally (and as much as possible), the workplace should be arranged regarding the potential requirements of additional space or the need for special technical aids.

X-rays:
No-one may use the department's handheld XRF (HH-XRF) as pregnant or near a woman who is pregnant, since X-rays may cause birth defects.

Working with the XRF-core scanner, micro-XRF and X-ray diffraction system (XRD) does not give rise to exposure, as the X-ray sources are shielded from the user and have several safety circuits. However, it is still important to check any radiation emissions regularly with a Geiger counter, which is normal instrument handling procedure for X-ray users. Radiation dosage must not exceed the background radiation. Refer to the safety documentation or ask the manager of the X-ray instrument.

Strong magnetic fields:
Pregnant women must not use the magnetic separator located in 1674-114. During the separation process, a magnetic field is formed, and one can be affected by it within a radius of 1 meter (also through the wall). Pregnant women must never be within 1 meter of the magnetic separator.

Chemical agents:
Certain chemical substances may endanger the health of the pregnant woman and the unborn child. Therefore, a list has been compiled at the Department of Geoscience, with an overview of known chemicals containing one or more of the following hazard statements. These chemicals should therefore be treated with special caution or not used at all during a pregnancy. This list should not be regarded as complete. It is therefore always important to read the supplier's material safety data sheets (MSDS) that are available in the respective laboratories. If you have the least doubt, it is important to seek guidance from your Geoscience health and safety representatives or the Occupational Medical Clinic (Arbejdsmedicinsk Klinik).

A work environment representative from Geoscience must make a personalized risk assessment if your work involves any of the following hazard statements (H phrases):

The Danish Working Environment Authority (Arbejdstilsynet):
- 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
- H350i May cause cancer by inhalation
- 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
- H373 May cause damage to organs through prolonged or repeated exposure

Supplementary at Geoscience:
- H301 Toxic if swallowed
- H331 Toxic if inhaled

Overview of known chemicals at Geoscience, which are a potential risk for the pregnant woman:

Chemical	**Hazard statements** Presented in the list above	**Laboratory/ function**	**May the pregnant/ breastfeeding woman work with the substance?**
Hydrofluoric acid	H310: Fatal in contact with skin (In addition: Reproductive damage)	Isotope Lab, Semi-clean, Cosmo-lab	No
Ethylene glycol	H373: May cause damage to organs through prolonged or repeated exposure to skin. (Kidneys)	Clay-separation	Yes, but no handling of the liquid directly from the bottle
Tetrachloroethylene	H351: Suspected of causing cancer	Sediment-lab	No
Dodecylamine	H373: May cause damage to organs through prolonged or repeated exposure to skin. (Gastrointestinal tract, liver, immune system)	Cosmo-lab Floatation	No *(It is always used along with HF)*
Epofix hardener	H312: Harmful in contact with skin	Epoxy-lab	No
Phenolphthalein 1% in ethanol	H341: Suspected of causing genetic defects H350: May cause cancer	Clean Lab	Yes, in small volumes
Blue lubricant liquid	H373: May cause damage to organs through prolonged or repeated exposure to skin. (Kidneys)	Polishing lab	No
Berylliumoxide	H350i: May cause cancer by inhalation H372: Causes damage to organs through prolonged or repeated exposure to skin	Semi-clean	No
Methanol	H301 + H311 + H331: Toxic if swallowed, in contact with skin or if inhaled H370: Causes damage to organs (eyes)	Biomarker-lab	No
Dichloromethane (DCM)	H351: Suspected of causing cancer	Biomarker-lab	No
n-Hexane	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child H373: May cause damage to organs (nervous system) through prolonged or repeated exposure by inhalation	Biomarker-lab	No
ICP multi-element standard	H350: May cause cancer	Semi-clean	No
Crude oil	H350: May cause cancer H372: Causes damage to organs through prolonged or repeated exposure	(1674-137) – outreach only	Do not open bottle
Arsenic standard	H350: May cause cancer	Isotope lab	No
Boric acid	H360fd: May damage fertility or the unborn child	Isotope lab	No
Pyridine	H312: Harmful in contact with skin	Biomarker	No

Xylene	H312: Harmful in contact with skin	LOC	No
Potassium iodide	H372: Causes damage to organs through prolonged or repeated exposure	Isotope lab	No
2,2 Bipyridyl	H311: Toxic in contact with skin	Biomarker	No
Tetramethyl ammonium hydroxide solution (TMAH)	H310: Fatal in contact with skin H370: Causes damage to organs (eyes) H372: Causes damage to organs through prolonged or repeated exposure	(1674-137)	No
Trichlorethylene	H341: Suspected of causing genetic defects H350: May cause cancer	(1674-137)	No
Diiodomethane	H311: Toxic in contact with skin	(1674-137)	No
Hydroxylammonium chloride	H312: Harmful in contact with skin H351: Suspected of causing cancer H373: May cause damage to organs through prolonged or repeated exposure	(1674-137)	No
THIS LIST IS NOT COMPLETE! These examples are evaluated based on the processes at Geoscience (how much you use the substance, the amount of work, and the working conditions.)			