



## NWO-I Policy

### Occupational Health & Safety measures Parenthood desire (M/F), Pregnancy & Work



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 Parenthood desire and pregnancy working group  
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## For whom is this information intended?

This extensive information is intended for employees (M/F) with a desire to have children, pregnant women, women who breastfeed, as well as managers. Damage to the DNA of the employee or the unborn child as a result of work activities, daily or otherwise, must be prevented as much as possible. This document will enable us to ensure the right working conditions. The manager is responsible for the working conditions of his/her own employees. Determining which measures should be taken based on the risks will therefore be done by the manager in consultation with the employee (M/F).

This document reflects practical questions, such as:

- What is a good preparation after having reported a parenthood desire, pregnancy and/or lactation period?
- Should measures be taken when an employee reports that she is pregnant?
- What arrangements should be made if an employee desires to breastfeed or to express milk?

### Guidelines after notification of parenthood desire (M/F), pregnancy, lactation period

A different document has been drafted for the purpose of quickly mapping the risks that an employee's work activities entail with respect to fertility and/or the unborn child: *Checklist after notification of parenthood desire (M/F), pregnancy, lactation period*. Using the checklist that is part of that document, it can be easily determined which work an employee is doing and which parts of it form a risk.



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## Part 1: General approach

### 1. Communication

The employer only knows about a parenthood desire, pregnancy or lactation period if this has been communicated. Without such a notification no additional measures can be taken to prevent damage to an unborn child or reproductive system of the (fe)male. Upon commencement of employment and also at regular intervals, all employees are actively made aware of the risks of the occupation with respect to parenthood desire and pregnancy.

- Often, employees will not want to discuss issues pertaining to parenthood desire or pregnancy in relation to work with their managers. Employees can consult the occupational health and safety consultation hour of the OHSa (*in case of parenthood desire*) or the preventive consultation of the occupational physician, (company doctor) *in case of pregnancy*. Employees can also take their queries to the Occupational Health and Safety coordinator, human resource manager (employee of the P&O<sup>1</sup> department) or the confidential advisor at the institute/office.
- Especially when working with chemicals and biological agents, it is important to report a parenthood desire or pregnancy at an early stage.

### 2. Action after notification

After reporting a parenthood desire, pregnancy or lactation period, additional measures must be taken to complement the regular measures in order to protect:

- The employee with a parenthood desire who performs work activities that influence fertility;
- The pregnancy;
- The unborn child;
- The baby and mother during breastfeeding;
- The baby;
- The pregnant employee.

The *Checklist parenthood desire (M/F), pregnancy and lactation period* can be used for this purpose.

An employee is entitled to the measures from the moment of notification. In an ideal situation, it is immediately clear which additional measures are required, and these measures can therefore be taken immediately if necessary. In practice, however, it often takes a short period to get things organised.

#### 2a. Parenthood desire (M/F)

The manager and the employee determine together whether measures are necessary if the employee performs work activities that are harmful to fertility.

#### 2b. Pregnancy

An employer has legal obligations towards occupation health and safety from the moment that the employee reports her pregnancy. From that moment, a manager must take additional measures where necessary. The employee is entitled to extra rest periods, if she so desires.

*The Working Conditions Act states the following:*

*Inform the employee immediately after her pregnancy has been reported about the risks in her work that could affect the pregnancy, the unborn child and her own health. In addition, discuss the measures that are required to prevent or limit any risks. In doing so, discuss the regular measures that apply to all employees as well as the additional measures. Inform the*

<sup>1</sup> In this document the used abbreviation of the department of personnel and organization is P&O. This abbreviation includes also the department HR and HRM (Human Resource Management).

employee as well whom she can address in case she has questions. Do not forget to point out to the woman her right to adapted work and rest periods and the use of a relaxation room.

Under the Working Hours Act, the employer is entitled to ask for a written declaration of pregnancy by a physician or obstetrician.

The pregnant employee needs to send a written declaration of pregnancy to the P&O department of the institute or NOW-I office.

**2c. Lactation period**

At the moment that an employee reports that she wants to breastfeed during working hours (directly or by expressing milk), the employer has to take additional measures for at least nine months after childbirth, where necessary. Each institute/office must make a room available for this purpose<sup>2</sup>.

*The Working Conditions Act states the following:*

*Inform the employee immediately after she has indicated her wish to breastfeed about the risks in her work that could affect the breastfeeding and, via breastfeeding, the baby. In addition, discuss the measures to prevent or limit any risks. In doing so, discuss the regular measures that apply to all employees as well as the additional measures. Inform the employee as well whom she can address in case she has questions. Do not forget to point out to the woman her right to adapted work and rest periods and the use of a relaxation room/feeding room.*

In case an employee needs to breastfeed during work she needs to communicate this as soon as possible with her manager and/or the P&O department so appropriate measures can be taken. Arrangement need to be made if an employee needs to breastfeed for a longer period than 9 months after birth. The institute or NOW-I office will take care the necessary steps to implement the facilities

**3. Risk factors during working hours**

Every employee could be exposed during working hours to various factors that could entail risks to the parenthood desire, the pregnancy and the unborn child or the health of the pregnant woman herself. Pregnant women, for example, are more susceptible to infections after having been exposed to biological agents. Measures must be taken to mitigate these risks.

Below is an overview of risk factors.

<b>Risk factor</b>	<b>Period*</b>	<b>Module</b>
Physical stress	P L	A
Exposure to dangerous substances (CMR substances or solvents)	PD P L	B
Exposure to biological agents	PD P L	C
Ionising radiation	PD P L	D1
Non-ionising radiation	PD P	D2
Magnetic fields	P	D3
Harmful noise	P	D4
Vibrations and ultrasonic vibrations	P	D5
Working under hyperbaric conditions (such as diving activities)	P	D6
Travel and expeditions	P	E
Night work	P L	F
Stress or psychological pressure	P L	G
Extreme temperatures	PD P	H
Emergency response activities	P L	I

\* PD = parenthood desire P = pregnancy L = lactation period

<sup>2</sup> Article 3.48 Working Conditions Decree

A suitable and lockable room will be available for pregnant employees and breastfeeding employees, in which it is possible to rest or an opportunity to rest can be immediately created. Such a room must have a proper bed, folding or otherwise, or a proper couch.

#### 4. Taking additional measures

The manager and the employee will determine measures, both regular and additional, to be taken to prevent or limit the risks as soon as possible after notification of parenthood desire or pregnancy. For this purpose, please use the checklist in the document *Guidelines after notification of parenthood desire (M/F), pregnancy, lactation period*. In the case of pregnancy or lactation, the adaptation of working hours and the use of a relaxation room must also be discussed during this meeting. In case of doubt about the risks or measures, the Occupational Health and Safety coordinator can be consulted.

Possible measures are:

1. Adaptation of the work (e.g. substitution of chemicals, different working environment, lifting aid)
2. More or a higher level of protection (e.g. personal protective equipment)
3. More and/or longer breaks
4. Exemption from the work *if the measures above are not feasible* (e.g. no expedition).

The following rules apply in this regard:

- The additional measures will apply as long as a parenthood desire, pregnancy or lactation period or a part thereof exists.
- The additional measures must be considered according to the sequence mentioned. Each following measure may only be taken if the previous measure is not reasonably possible.
- The additional measures do not need to be identical for each period (parenthood desire, pregnancy, lactation period).
- Additional measures may have consequences for the workload of colleagues. The manager will make sure to communicate this and will supervise whether appropriate measures are implemented.

#### 5. Considerations when taking additional measures

Several considerations need to be emphasised when determining which additional measures should be taken. These should be assessed systematically. This will make the assessment more deliberate and will provide a firmer foundation for the additional measures. For example:

- Do the occupational hazards already pose a threat when there is a desire to have children or during the early or later stages of pregnancy? This would at least apply to dangerous substances, biological agents, ionising radiation and work stress. Upon notification of pregnancy, there is very little time to carefully examine which additional measures must be taken. Time is of the essence.
- Personalised measures have advantages and disadvantages. An advantage is that the additional measures perfectly suit the work situation and the employee. A disadvantage could be the time it takes to find a suitable package of measures. How does this time (hours, days, weeks, months?) relate to the employer's duty to protect the employee from the moment of notification of a desire to have children or a pregnancy?
- Which additional measures could be realised within the institute/office? It may be possible to assign different tasks or different work to a pregnant employee or a breastfeeding employee. There may also be possibilities for utilising support from a pool of expert and experienced staff.
- How should one act in case of exposure to an occupational hazard for which the effects on parenthood desire, pregnancy, the unborn child or the lactation period are unknown, unclear or have generated inconclusive research findings? In that case, consider the *precautionary principle*. This means that the employee will not be exposed to this risk during the period of parenthood desire, pregnancy or lactation as



long as the risks are unknown. You can also consult the company doctor or another expert, such as an occupational hygienist, for a risk assessment.

The following part will deal with the additional measures to be taken for the various occupational hazards. Using this list, the employee (M/F) and the manager can make a precautionary assessment of the risks.

## Part 2: Risk-specific modules

Part 2 includes the following modules:

Module A: Physical stress

Module B: Dangerous substances

Module C: Biological agents

Module D: Physical factors

- D1 Ionising radiation
- D2 Non-ionising radiation
- D3 Magnetic fields
- D4 Harmful noise
- D5 Vibrations
  - o Ultrasonic vibrations and ultrasound
- D6 Working under hyperbaric conditions

Module E: Travel and expeditions

Module F: Night work and shift work

Module G: Stress or psychological pressure

Module H: Extreme temperatures

Module I: Emergency response activities

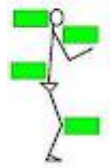


## Module A: Physical stress

pregnancy - lactation period

Physical load includes:

- Physical exertion, such as carrying, lifting, pushing or pulling;
- Stressful posture, such as prolonged standing, stooping, crouching or kneeling;
- Physical activity, such as walking and climbing stairs;
- Repetitive movements.



During pregnancy and the lactation period, additional measures are required.

### Pregnancy or lactation period

Assess the work activities of the pregnant employee. Does her work entail:

- Extreme physical exertion?
- A stressful posture?
- Extreme physical activity?

Limit values that may not be exceeded apply to the physical load for pregnant women and breastfeeding women. These limit values are based on scientific research.

During pregnancy, a woman's physical fitness and work capacity change due to the softening of tissue under the influence of hormones. Her blood pressure is sometimes lower as well. During the last few months of pregnancy, the belly also gets in the way when performing physical work. As a result, pregnant women may tire more easily and/or suffer tissue damage as a result of physical exertion that was previously unproblematic. For this reason, more flexible breaks apply to pregnant women in addition to reduced physical exertion.

Pregnancy period	Limit values
During the entire pregnancy and until six months after giving birth and during the lactation period	<ul style="list-style-type: none"> <li>• Prevent stooping, crouching or kneeling as much as possible;</li> <li>• Prevent lifting objects by hand as much as possible;</li> <li>• The maximum weight of an object to be lifted in a single motion is 10 kg.</li> </ul>
From the 20th week of pregnancy onwards	Objects weighing more than 5 kg may not be lifted by hand more than 10 times a day.
From the 30th week of pregnancy onwards	<ul style="list-style-type: none"> <li>• Objects weighing more than 5 kg may not be lifted by hand more than 5 times a day;</li> <li>• Pregnant employees must not be forced to crouch, kneel, stoop or operate foot pedals standing up more than once an hour on a daily basis.</li> </ul>
During the entire pregnancy	Standing must be kept to a minimum, especially during the third trimester of pregnancy.

## Module B: Dangerous substances

parenthood desire - pregnancy - lactation period

Working with dangerous substances can negatively impact fertility, the foetus or the unborn child, or breastfeeding. Carcinogenic substances could also reach the child and cause cancer.

Mutagenic substances could result in birth defects.

Substances that have a toxic effect on reproduction (repro(duction)toxic substances) could also result in defects to the child or to the male and/or female reproductive cells. Exposure to these CMR substances must therefore be controlled before any pregnancy. Reprotoxic substances also include substances that could reach the child through breastfeeding.



All employers are obliged to take measures towards preventing and limiting exposure to dangerous substances and the effects thereof. In the case of a desire to have children, pregnancy and breastfeeding, additional measures are required. Information about dangerous substances can be obtained from the Risk Inventory & Evaluation (RI&E), from the dangerous substances registration and information from the Material Safety Data Sheet (MSDS), and, not to be overlooked, the dangerous gases/substances that can be released by machines and equipment.

Not every chemical substance is harmful to fertility, pregnancy or the unborn child. The website of the Dutch Ministry of Social Affairs and Employment (SZW) provides information about which substances are relevant.

There are three categories that together provide an overview of the substances that can be harmful.

1. Substances that belong to one of the following categories:
  - Organic solvents (especially in paint, varnish, glue, detergent and ink);
  - Heavy metals and their compounds (especially cadmium, mercury, lead, manganese and thallium);
  - Anaesthetic gases/inhalation anaesthetics;
  - Drugs for which the instruction leaflet mentions harmful effects for pregnancy (such as cytostatics and chemotherapeutics);
  - Crop protection agents and biocides<sup>11</sup>;
  - Polycyclic aromatic hydrocarbons (PAHs in soot, among other things);
  - Substances that can influence the oxygen content of the blood, such as carbon monoxide.
  
2. Substances that appear on one or more lists of the Ministry of Social Affairs and Employment (SZW):
  - The list of reprotoxic substances;
  - The list of carcinogenic substances and processes;
  - The list of mutagenic substances.



*This pictogram is used to indicate health hazards of substances and compounds that are, for example, carcinogenic, mutagenic and/or reprotoxic or are suspected to be so.*

3. Substances for which certain warnings are placed on the label or in the MSDS: the so-called H-sentences (H stands for Hazard):

No	H-sentence
H340	Can cause genetic harm
H341	Suspected of causing genetic harm
H350	Can cause cancer
H351	Suspected of causing cancer
H360	Can harm fertility or the unborn child
H361	May possibly harm fertility or the unborn child
H362	Can be harmful via breastfeeding

### Parenthood desire

Please pay attention to the following warnings when using dangerous substances:

- SZW list → The list of reprotoxic substances
- The following H-sentences
  - H340: Can cause genetic harm
  - H341: Suspected of causing genetic harm
  - H360: Can harm fertility or the unborn child
  - H361: May possibly harm fertility or the unborn child

### Pregnancy

In order to be harmful for the pregnancy or the unborn child:

- The substance must be absorbed through inhalation, through the skin or by swallowing;
- The substance must be able to reach the unborn child through the body of the mother. This concerns substances that enter the mother's bloodstream and are capable of passing the placental barrier.

Substances that are not absorbed or that cannot reach the unborn child through the body of the mother are not relevant to the pregnancy.

### Lactation period

During the lactation period, specific attention must be paid to exposure to substances that can influence the baby through breastfeeding. Please pay attention to the following warnings:

- SZW list → The list of reprotoxic substances, provided the substance is stated in the 'breastfeeding' column
- The H-sentence H462: Can be harmful via breastfeeding

## Module C: Biological agents

parenthood desire - pregnancy - lactation period

Biological agents are viruses, bacteria, fungi and yeasts, among other things. The official definition is: "genetically or non-genetically modified cell cultures, human endoparasites and microorganisms".

Exposure to biological agents can result in infectious diseases. Biological agents can cause (seriously) harm to the pregnancy, the unborn child and the baby through breastfeeding.



Employers are obliged to take measures towards preventing and limiting exposure to biological agents and the effects thereof. In the case of a desire to have children, pregnancy and breastfeeding, additional measures are required.

### Parenthood desire

1. Consider the biological agents to which an employee with a desire to have children may be exposed. Please use the table below.

Pathogen	Disease (Latin name)	Disease (popular name)	Frequently occurring source
Chlamydia	Chlamydia Trachomatis	Chlamydia infection	Laboratory work
Mumps virus	Paramyxovirus	Mumps	Contact with children
Retrovirus human immunodeficiency virus (HIV)	HIV infection/AIDS	HIV/AIDS	Laboratory work Contact with blood

2. Let the company doctor examine whether the employee is immune to the relevant microorganism.
3. Take measures, if necessary, to avoid exposure (see pregnancy, point 4)

### Pregnancy

1. Consider the biological agents to which the employee may be exposed. From now on, we will call these *relevant* biological agents. Consult the RI&E, among other things.
2. Verify via the table below whether the relevant biological agents could be harmful to the pregnancy or the unborn child.

Pathogen	Disease (Latin name)	Disease (popular name)	Frequently occurring source
Toxoplasma gondii (parasite)	Toxoplasmosis	Toxoplasmosis (feline distemper)	Animal contacts Meat processing
Listeria monocytogenes (bacteria)	Listeriosis	Listeria	Animals and foodstuffs that have been contaminated with listeriosis
Rubella virus	Rubella	German measles	Contact with children
Cytomegalovirus	Cytomegalia	CMV	Contact with children
Herpes-simplex-virus	Herpes simplex	Herpes	Saliva contact
Varicella-zoster virus	Varicella	Chickenpox	Contact with children
Borrelia burgdorferi (bacteria)	Lyme borreliose	Lyme's disease	Work in nature

*Relevant biological agents table (continued)*

Pathogen	Disease (Latin name)	Disease (popular name)	Frequently occurring source
Retrovirus human immunodeficiency virus (HIV)	HIV infection/AIDS	HIV/AIDS	Laboratory work Contact with blood
Human Parvovirus B19	Erythema infectiosum	Parvo B19 (Fifth disease)	Contact with children
Hepatitis B virus	Hepatitis B	Hepatitis B	Laboratory work Contact with blood
Measles virus	Morbilli	Measles	Contact with children

3. Let the occupational health physician examine whether the employee is immune to the relevant biological agents.
4. Take additional measures for relevant biological agents to which the pregnant employee is not immune:
  - Provide (renewed) education about contamination sources and about the regular hygienic and other measures. The same hygienic and other measures that apply to all employees apply to pregnant women as well.
  - Establish which additional measures are required on top of the regular hygienic and other measures that have to be taken for all employees. The following applies to the aforementioned examples:

Disease	Additional measures during pregnancy
Toxoplasmosis	Prohibiting work that may entail exposure (=legal prohibition).
Listeria	Exemption from work with living and dead animals that have been contaminated with listeriosis.
German measles	Prohibiting work that may entail exposure (= legal prohibition).
CMV	In case of an infection in the work environment: stricter hand hygiene, especially in contact with saliva and urine. Furthermore, avoid contact with the source in case of a clinically proven infection on the work floor (in general, do not cuddle child and avoid contact with urine).
Herpes	-
Chickenpox	In case of an epidemic: With viruses, there is a certain period between the contamination with the pathogen and the occurrence of the symptoms. This is called the incubation period. It rarely makes sense for pregnant employees to stop working after the outbreak of an epidemic, as contamination has usually already taken place before the occurrence of the first symptoms. However, if the employee has been absent or rarely present at the location where the epidemic has broken out, it would, of course, be sensible to avoid this location.
Lyme's disease	-
HIV/AIDS	-
Parvo B19	In case of an epidemic: <see chickenpox>
Hepatitis B	-
Measles	In case of an epidemic: <see chickenpox>



### **Lactation period**

1. Verify whether the relevant biological agents can be passed on to the baby by breastfeeding. Of the eleven biological agents included in paragraph C.1, this applies to Cytomegalia and HIV (both through the breast milk), Herpes simplex and Hepatitis B (both through damage to the nipple).
2. Provide (renewed) education about contamination sources and about hygienic and other measures. The same measures (hygienic and otherwise) that apply to employees who breastfeed often apply to other employees as well.
3. For agents that can be passed onto the baby through breastfeeding, the same additional measures have to be taken as during pregnancy.

## Module D: Physical factors

parenthood desire - pregnancy - lactation period

The following physical factors are dealt with:

- Ionising radiation
- Non-ionising radiation
- Magnetic fields
- Vibrations
  - o Ultrasound vibrations & ultrasound
- Sound (noise)
- Working under hyperbaric conditions (diving).

### Radiation

In general, radiation can be subdivided into:

- Ionising radiation
- Non-ionising radiation.

Particle radiation is always ionising. Two forms of electromagnetic radiation are also ionising: gamma radiation and x-rays generated in an x-ray machine.

The other forms of electromagnetic radiation are non-ionising.

### D.1 Ionising radiation

parenthood desire - pregnancy - lactation period

Exposure to ionising radiation can be harmful to fertility, pregnancy and the unborn child.

Exposure can take place by external radiation (e.g. by x-rays) or by internal contamination (e.g. through ingestion of radioactive substances as a result of contamination). Both types of exposure must be prevented during pregnancy. During breastfeeding, predominantly internal contamination has to be prevented as radioactive substances may be passed on to the child via the breast milk.



Ionising radiation is also harmful to the semen production of the man. The production of sperm cells takes place in rapidly dividing tissue. Rapidly dividing tissue is sensitive to ionising radiation, as a result of which exposure can negatively impact semen production.

#### Parenthood desire or pregnancy

In case of a desire to have children or pregnancy, the employee must discuss work activities that include ionising radiation as soon as possible, in consultation with the supervising or coordinating radiation expert. The radiation expert can then determine whether the 1 millisievert (mSv) per annum is exceeded in the case of the employee.

If the annual dose exceeds or is likely to exceed 1 mSv, the radiation expert must take measures in consultation with the employee.

#### Lactation period

During the breastfeeding period, the employee will be exempted from actions that entail a greater than negligible risk of radioactive contamination of the body (Article 7.36 of the Basic Safety Standards Decree, radiation protection). This means that the employee will be exempted from actions involving open (dispersible) radioactive substances.



parenthood desire - pregnancy

## D.2 Non-ionising radiation

Non-ionising radiation consists of:

- Ultraviolet (UV) radiation → e.g. sun and welding arcs
- Visible light and infrared (IR) radiation → e.g. sun, fire and hot objects
- Radio frequency (RF) fields → e.g. mobile telephones, radio and television transmitters, radar, diathermy equipment (such as industrial sealing devices and physiotherapy heating devices) and walkie-talkies
- ELF (Extreme Low Frequency) fields → e.g. high-voltage lines and electrical equipment.



*Ultraviolet radiation, visible light and infrared radiation* lead to tissue warming that can cause damage to the eyes and the skin. The types of radiation mentioned do not cause any extra problems in terms of parenthood desire, pregnancy and lactation period.

*Radio frequency fields* cause a thermic effect (warming) of tissue that can cause damage to internal organs in addition to the eyes and the skin. During pregnancy, exposure to radio frequency electromagnetic fields can cause serious hyperthermia (warming) of the unborn child and as such birth defects.

The frequency range between 80 MHz and 1500 MHz is harmful. The frequency that is harmful to the unborn child depends on the size of the child and therefore varies during pregnancy. The exposure limit value for the unborn child equals that for the general population, which is five times lower than that for the working population (= employees). In case of exposure to 100 kHz – 1 MHz, the limit value is 0.4 W/Kg for the working population and 0.08 W/Kg for the general population (this includes pregnant women who are occupational exposed). This means that the exposure limit value for the frequency range mentioned is five times lower for a pregnant employee than for a member of the working population (see also table D1).

Exposure to high field intensities can result in, among other things, reduced fertility and irregularities in the development of the unborn child.

Non-ionising radiation does not have any adverse effects during the lactation period.

*Table D1: limit values and field intensity values for employees and the general population*

	General population	Employee	General population	Employee
<b>Frequency range</b>	SAR <sup>3</sup> (W/kg)		E- Field intensity (V/metre)	
<b>100 kHz – 1 MHz</b>	0.08	0.4	28	620
<b>Employee/general population ratio</b>	5x		22x	

### Parenthood desire or pregnancy

Determine whether the employee performs work activities that involve or could involve exposure to high field intensities of extremely low frequency fields and strong radio frequency fields. If that is the case then determine whether the legal limit values for the general population are exceeded. If that is the case, the employee must be exempted from those work activities.

<sup>3</sup> SAR: Specific Absorption Rate



### D.3 Magnetic fields

pregnancy

The effects of strong magnetic fields on the developing human body are not yet known. When moving through a static magnetic field, electric currents can be generated, creating heat in the body. Other symptoms are seeing light effects in the eye, nausea/dizziness and disorientation.



The effects of magnetic fields in relation to the desire to have children are still unknown, as a result of which no exposure limits have been established.

#### Pregnancy

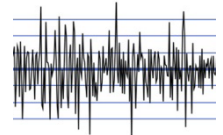
Pending further research, the exposure limits specified in EU Directive 2013/35/EU will be deemed a safe limit for pregnant women. Pregnant employees may not be exposed to magnetic fields equal to or higher than 0.5 mT.

### D.4 Vibrations

pregnancy

#### D.4.1 Mechanical vibrations

A mechanical vibration is a back-and-forth motion. Employees come into contact with vibrations through direct contact with vibrating machine parts, vehicles, a vibrating floor or a vibrating piece of work.



There is a difference between hand/arm vibrations and body vibrations. Hand/arm vibrations are not harmful during pregnancy.

In the case of body vibrations, the entire body is brought into motion.

Exposure to body vibrations is suspected to increase the risk of premature birth and also increases the risk of back complaints during pregnancy. Therefore, additional provisions relating to this type of vibration apply for pregnant employees.

As yet, vibrations do not appear to influence fertility or breastfeeding.

#### Pregnancy

Pregnant employees are exempted from exposure to body vibrations exceeding 0.25 m/s<sup>2</sup>.

#### D.4.2 Ultrasonic vibrations and ultrasound

pregnancy

An *ultrasonic vibration* is a mechanical vibration travelling at the speed of sound in solid matter, liquid or air. Sources of ultrasonic vibrations are, among others, medical diagnosis and treatment equipment, ultrasonic welding equipment, ultrasonic drills (such as those used by dentists), ultrasonic equipment for industrial non-destructive material research (such as welding seams) and ultrasonic cleaning baths.



*Ultrasound* arises if the ultrasonic vibration transfers its mechanical energy to the air.

Ultrasound cannot be heard by humans. It is sound with a narrow wavelength and a frequency above 20 kHz. Most industrial ultrasonic equipment produces components between 8 and 20 kHz in addition to 'real' ultrasonic vibrations. These are also called upper sonics, or Low Frequent Ultra Sonics (LFUS).

As far as presently known, ultrasonic vibrations and ultrasound have no effect on fertility or breastfeeding.

**Pregnancy**

Pregnant employees are not allowed to carry out work activities where direct contact is made with an ultrasonic vibration source with a frequency higher than 20 kHz whereby the exposure exceeds 110 dB per third-octave band. This is a legal prohibition.

**D.5 Sound (noise)**

pregnancy

Sound is a wave motion that propagates through air. Too much sound (harmful sound) has a negative impact on the embryo or foetus, as soundwaves pass through the abdominal cavity of the mother. Noise can result in irreversible hearing damage to the unborn child. This effect can be acute as a result of a peak sound, such as a gunshot, or it can occur in the long term by protracted exposure to excessive sound levels. Harmful sound can also result in stress for the mother (see also module G). This can result in changes to the hormonal regulation, the heart and the blood circulation, such as increased blood pressure. These non-specific changes to the mother can have an adverse effect on the unborn child, such as a lower birthweight or premature birth. As far as we know, sound has no effect on fertility or breastfeeding.



**Pregnancy**

Pregnant women must be exempted from work if they are exposed to equivalent sound levels higher than 80 dB(A) and peak sound levels higher than 112 Pa. The normal levels for employees are 87 dB(A) and 200 Pa respectively.

**D.6 Working under hyperbaric conditions**

pregnancy

Working under hyperbaric conditions can take place during activities using breathing air in confined spaces, breathing air carriers (ships and Emergency Response deployment) and diving activities. With respect to diving, the deeper an employee dives, the higher the pressure becomes because of the water on top of them.



The increased oxygen pressure can negatively impact the unborn child. During the development of the child in the uterus, defects to the eyes can develop, causing the child to become blind. There is also an increased chance of miscarriage. In addition, pregnant women appear to be more sensitive to decompression sickness. Decompression sickness can occur when people are exposed to increased air pressure. If they return to quickly to an environment with a lower pressure, nitrogen bubbles can form in the blood. In serious cases, the patient can become unconscious or (temporarily) paralysed or even die. Decompression sickness in pregnant women can have consequences for the unborn child. Because the bloodstream of the unborn child is linked to that of the mother, the nitrogen bubbles can also enter the body of the unborn child and cause irreversible damage.

**Pregnancy**

Pregnant women are not allowed to perform work activities under hyperbaric conditions. This is a legal prohibition.



## Module E: Travel and expeditions

Note: travel in this chapter is related to traveling for occupational reasons. Traveling for private reasons is not a responsibility of the employer.

This chapter gives an overview of risks and measures to be taken during traveling and expeditions. For more information, please contact the occupational health physician (company doctor), a gynecologist or another expert.

Travel and/or expeditions can entail a number of risks during pregnancy, especially during the first three months. Illnesses, tropical diseases, travel and/or expedition conditions and the available medical facilities play a role in this.

- Many illnesses during pregnancy can have serious consequences.
- Sailing and air travel are safe, although many carriers do not allow this during the last weeks of pregnancy.
- It would be unwise to travel to remote areas or regions with poor medical care, as the possibilities to receive medical treatment in case of an illness or problem during pregnancy are too limited.

In addition to the measures referred to in this module, the measures referred to in four previously mentioned risk-specific modules also apply during travel and expeditions:

- A: Physically demanding work
- B: Dangerous substances
- C: Biological agents
- D: Work-related stress.

If an employee is pregnant it is expected that she takes initiative to decrease risks during traveling and expedition. In case the pregnant employee has questions she always can get advice from an expert, for instance an occupational health physician (company doctor) or a gynecologist.

The employer is obligated to inform a pregnant employee when and where she is going to work related to traveling and expedition. In this case the employee can collect information of the (medical) circumstances during traveling and expeditions.

### Pregnancy

#### E.1 Air travel

If you want to fly during pregnancy, a number of rules apply. Most airlines allow pregnant women to fly up to the 37th week of pregnancy or up to the 32nd week in the case of a multiple pregnancy.

In case of a pregnancy between 32 and 37 weeks, many airlines require a medical certificate from a physician or gynaecologist confirming that the woman is allowed to fly and stating how far the pregnancy has advanced. The pregnant woman also has to sign a declaration indemnifying the carrier from any complications during the flight.

#### E.2 Sailing

Sailing is only permitted in case of an uncomplicated pregnancy between the 13th and 28th week.

The first and last trimesters of pregnancy and the recovery period after delivery (post partum) are considered to be unsuited for sailing, which is consequently not permitted. Sailing during the second trimester of pregnancy is only permitted on vessels in a *limited* sailing area, such as the Waddenzee, so that adequate medical facilities are relatively close at hand. Sailing in an *unlimited* sailing area, such as an ocean, is permitted on vessels

carrying an on-board physician with sufficient expertise in the area of obstetrics. Extra attention must be paid to a first pregnancy and to previous pregnancies with complications in the anamnesis (previous history).

The pregnant woman has the final decision regarding whether or not she wishes to be eligible for approval during this period.

In case of a pregnancy, the woman must be able to submit a certificate from a physician or gynaecologist, stating that she is healthy and fit to work on board a ship.

### E.3 Medical certificate

A medical certificate is required when travelling by air or boat and may also be necessary at immigration checkpoints. Pregnant women are advised to consult their general physician or gynaecologist before travelling and to request a medical certificate (in English) dated within 10 days of departure. The certificate must include:

- Confirmation that it concerns a normal pregnancy;
- The estimated birthdate;
- A statement that the woman is in good health;
- A statement that the physician has no grounds to assume that she is unable to travel/work.

### E.4 Vaccination

If you are staying in so-called risk areas, you are required to get the right vaccinations. Whether or not to vaccinate pregnant women is an individual decision and must be taken by travel advice experts. The risk of illness (place, term, incidence of illness), the illness burden (consequences of infection) and possible side effects of vaccines must be carefully weighed for each pregnant woman. For this reason, a pregnant woman who plans to travel to tropical or subtropical regions, for example, should be referred to the Municipal Health Services (GGD in Dutch) or a travel clinic.

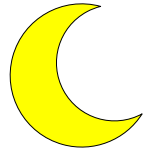
You can read more about this on the website of the National Travellers Vaccination Coordination Centre (LCR) at <http://www.lcr.nl>.

## Module F: Night work and shift work

pregnancy - lactation period

Night work and shift work can have harmful consequences for the pregnancy and the unborn child. Night work and shift work are also a major cause of pregnancy-related absenteeism

Therefore, the Working Hours Act provides frameworks for the working hours and rest periods for pregnant women until six months after giving birth, and for employees who breastfeed.



These are rules relating to:

- Limiting irregular work in general and night work in particular;
- Extra breaks;
- Maximising the number of working hours per day, month and quarter;
- The opportunity to undergo pregnancy examinations;
- The opportunity to breastfeed / express milk.

### Pregnancy

There are legal regulations governing the limitation of shift work and night work:

- A pregnant employee is entitled to a stable and regular pattern of work and rest.
- The employee cannot be obliged to work at night (between midnight and 6 AM) unless the employer can demonstrate plausibly that this cannot be reasonably demanded.
- Work is organised in such a way that her specific circumstances are taken into account. If a pregnant employee makes a request to this effect, the employer must honour this within a reasonable term.

In concrete terms, the following shift schedule should be aimed at for pregnant women:

- Exemption from work between 11 PM and 7 AM;
- A recovery time between shifts of at least 12 hours;
- Limitation of on-call duties;
- Ideally: only work in day shifts.

Make sure these arrangements are implemented as quickly as possible, preferably within two weeks after:

- The notification of the pregnancy;
- The submission of a request by the pregnant person to adapt the working hours.

A transition period can be agreed on to solve organisational problems.

Prevent the workload of colleagues from being increased as a result of more irregular shifts.

As long as the pregnant woman has irregular working hours, works in shifts or does night work, she should be consulted every month about the work in general and the working hours in particular. Agree who will conduct these talks (preferably the immediate supervisor). Make sure to conduct this conversation in a room where you cannot be easily disturbed or overheard. Enquire whether she can maintain the current pattern of working hours (in combination with the workload) and make new arrangements if necessary.

### Lactation period or up to 6 months after the delivery

Shift work and night work does not affect breastfeeding. Additional measures relating to shift work or night work are not required in terms of breastfeeding. However, the woman is entitled to the opportunity and time to breastfeed her child or express milk during the first nine months after delivery.

During the first six months after delivery - irrespective of whether the woman is breastfeeding or not - under the Working Hours Act the woman can choose not to work at night.



The relevant Working Hours Act rules are:

- The female employee is entitled to a stable and regular pattern of hours and rest periods.
- The employee cannot be obliged to work at night (between midnight and 6 AM) unless the employer can demonstrate plausibly that this cannot be reasonably demanded.
- Work is organised in such a way that her specific circumstances are taken into account. If a female employee makes a request to this effect, the employer must honour this within a reasonable term.

## Module G: Stress or psychological pressure

pregnancy - lactation period

Stress or psychological pressure has a negative impact on pregnancy, the unborn child and breastfeeding. Stress also leads to pregnancy-related absenteeism and a longer absence before resuming work after the birth. Stress is caused by psychosocial work stress (PWS).



PWS is an umbrella term for aggression & violence, pressure of work, bullying and sexual intimidation. Every employer is obliged to take measures towards preventing and limiting PWS.

Additional measures are required for two risks during pregnancy and lactation, namely *aggression & violence* and *pressure of work*.

### Pregnancy

#### G.1.1 Aggression & violence

Attention to aggression & violence during pregnancy is important for at least two reasons. Aggression and violence can lead to stress. In addition, the pregnant woman is clearly extra vulnerable. Also, the woman is clearly increasingly less able to respond adequately to incidents as her pregnancy progresses. Her reaction speed may be reduced and she may be less equipped to act physically in the event of aggression & violence. The latter can be threatening for the pregnant woman, her direct colleagues and the adequate execution of tasks.

#### G.1.2 Work Load

The balance between work load and work capacity can change quickly during pregnancy. Therefore, it is important to closely monitor pregnant employees who are facing too much work load. Conscious monitoring can prevent the balance from being disturbed.

The following additional measures are important in order to control pressure of work.

- Consult with the pregnant employee every month about work in general and the pressure of work in particular. Agree who will conduct these talks (preferably the immediate supervisor). Make sure to conduct this conversation in a room where you cannot be easily disturbed or overheard. Asking 'is everything all right?' in passing is not enough.  
It is important to consider finding a (new) balance between work and private life.
- Take measures in case the work load is too high. Discuss with the pregnant employee exactly where the problem lies. For example, is there too much work, are the working days/overtime too long, is the work too difficult or are the deadlines too tight? Agree on measures to reduce the pressure of work.

### Lactation period

#### G.2.1 Aggression & violence

If aggression & violence lead to stress, then additional measures are needed during the lactation period. The extra vulnerability that is visible during pregnancy will no longer be present during the breastfeeding period. It is therefore unnecessary to exempt the employee from work that often entails aggression and violence during the breastfeeding period. However, it is often necessary for a woman to regain her physical condition and resilience after giving birth.

#### G.2.2 Pressure of work

Stress as a result of pressure of work must be avoided during the breastfeeding period. Consider the same measures as proposed during pregnancy.



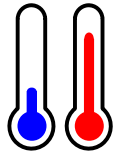
## Module H: Extreme temperatures

parenthood desire - pregnancy

Extremely high and low temperatures have a negative impact on fertility and the unborn child. As far as we know, extreme temperatures have no effect on the lactation period.

When talking about (extremely) low temperatures, this concerns temperatures of up to 4°C (working in cold stores) and sub-zero temperatures (working in freezers).

When talking about (extremely) high temperatures, this concerns temperatures of 25°C and above. This entails work in climate rooms and outdoors on hot summer days.



### Parenthood desire

Men who are exposed to extreme heat or cold may have a low sperm count. It is sensible to take this into account if circumstances allow.

The extent to which extreme cold or heat influences fertility in women is not known.

### Pregnancy

It is unwise to work in a cold or hot environment during pregnancy. Blood pressure may drop rapidly (with the risk of fainting) and the blood supply to the womb may consequently be reduced.

Pregnant women who are exposed to extreme heat during the last three months of pregnancy may suffer from physical stress. They suffer an increased risk of delivering a baby with a low birthweight or having a premature delivery (<https://wibnet.nl/mens/lichaam/babys-krimpen-door-kou-en-hitte>).

### Measures

Measures to be taken to prevent *hypothermia* during work may include:

1. Adapting working hours and rest periods;
2. Making clothing available;
3. Exempting pregnant employees from certain activities.

For work that is carried out in high temperatures, the following measures can be taken:

1. Adapting working hours and rest periods;
2. Making sufficient water available;
3. Exempting pregnant employees from certain activities.



## Module I : Emergency Response activities

pregnancy - lactation period

Performing company emergency response (BHV in Dutch) activities can be mentally and physically stressful. As stated in Module G, these factors may have a possible effect on pregnant employees.



### Pregnancy

In case of a fire or evacuation, pregnant Emergency Response officers are advised to suspend their duties temporarily. After all, during an emergency no guarantees can be given regarding the outcome or the deployment. Emergencies are invariably dynamic and unpredictable! Aspects such as dangerous substances, pressure of work and physical load are not known in advance.

Pregnant women are not allowed to carry breathing air masks during Emergency Response exercises and deployments (see module *Dó working under hyperbaric conditions*).

### Lactation period

Employees who breastfeed can consult with the Emergency Response coordinator as to whether or not they can continue with their Emergency Response duties.

## Information sources

Additional information is available on the intranet of the institute or office.

Websites		Themes
NWO-I	Collective Labour Agreement	<a href="http://www.wvoi.nl/cao-oi-nl/collectieve-arbeidsovereenkomst-onderzoekinstellingen">www.wvoi.nl/cao-oi-nl/collectieve-arbeidsovereenkomst-onderzoekinstellingen</a>
<a href="http://www.rivm.nl/cib">www.rivm.nl/cib</a>	Infectious disease control centre of the RIVM	Biological agents
<a href="http://www.wip.nl">www.wip.nl</a>	Biological agents infection prevention working group.	Biological agents
<a href="http://www.kiza.nl">www.kiza.nl</a> + helpdesk	Infectious diseases and employment knowledge system (KIZA)	Biological agents
<a href="http://www.arboportaal.nl">www.arboportaal.nl</a>	Ministry of Social Affairs and Employment (SZW)	- General education about working conditions - Lists of reprotoxic substances, carcinogenic substances and processes, and mutagenic substances
<a href="http://www.veiligwerkenmetchemischestoffen.nl">www.veiligwerkenmetchemischestoffen.nl</a> <a href="http://www.ser.nl">www.ser.nl</a>	Social and Economic Council (SER)	Dangerous substances limit values
<a href="http://www.erfocentrum.nl">www.erfocentrum.nl</a> + helpdesk	Erfocentrum	General information on pregnancy (not focusing specifically on employment)
<a href="http://www.zwangerwijzer.nl">www.zwangerwijzer.nl</a>	Erfocentrum	General information on pregnancy (not focusing specifically on employment)
<a href="http://www.borstvoeding.nl">www.borstvoeding.nl</a>		General information on pregnancy (not focusing specifically on employment)
<a href="http://www.overheid.nl">www.overheid.nl</a>		Working Conditions Act, Working Conditions Decree, Working Conditions Policy Rules, Working Hours Act, Sickness Benefits Act, Work and Care Act, Radiation Protection Decree
<a href="http://www.lcr.nl">www.lcr.nl</a>	National Travellers Vaccination Coordination Centre (LCR)	Vaccination