

## Common Ergonomic Hazards

### Prolonged standing and sitting:

Work tasks involving extended periods of standing and sitting, longer than one hour, are associated with some risks to the fetus including stillbirth and early delivery.

### Common risks for the mother include:

- Dizziness and fainting
- Increased blood pressure and blood clot development
- Fluid retention in the legs and feet
- Reduced blood flow to the womb (and therefore the baby)
- Muscle strain (lower back).

### Heavy work:

Work tasks involving lifting, pushing, pulling or bending over are associated with some risks to the fetus including miscarriages and early delivery.

### Common risks for the mother include:

- Back injury
- Increased fatigue
- Increased risk of slipping

### Scheduling:

What time of day a person works, shift rotation, shift duration and night shift are associated with increased risk of miscarriage, low birth weight, early delivery and may cause sleep disturbance for the mother.

### Stress:

Work-related and non-work-related stress such as high job demands, workplace conflicts, bereavement or financial strain are associated with increased risk of miscarriage, low birth weight and early delivery.



It is important that the pregnant worker talk to trained professionals, review safety protocols and attend workshops to remain up-to-date on how best to minimize personal exposure to reproductive hazards. The pregnant worker should request a review of personal work tasks to itemize potential hazards and discuss any potential risks with any or all of the following people: supervisor, industrial hygienist, occupational health and safety representative, doctor or qualified health care practitioner and lactation consultant.

### Workplace reproductive hazards information sources

#### Motherisk Program

- 1-877-327-4636
- [www.motherisk.org](http://www.motherisk.org)

#### Organization of Teratology Information Specialists

- 1-866-626-6847
- [www.otispregnancy.org](http://www.otispregnancy.org)

#### Canadian Centre for Occupational Health and Safety

- [www.ccohs.ca](http://www.ccohs.ca)

#### Ontario human rights commission; pregnancy

- [www.ohrc.on.ca](http://www.ohrc.on.ca)

#### Ontario Ministry of Labor; pregnancy leave

- [www.gov.on.ca](http://www.gov.on.ca)

#### Workplace Safety Insurance Board (WSIB)

- [www.wsib.ca](http://www.wsib.ca)

#### Material Safety Data Sheets (MSDS)

- [www.msdsonline.com](http://www.msdsonline.com)

Prepared by: Céline Boudreau-Larivière, PhD and Sandra Dorman, PhD



## Healthy Pregnancies in the Mining Workplace



## What is a reproductive hazard?

A hazard is an agent that has the potential to cause harm to a person. A 'reproductive' hazard is an agent that can interfere with a woman's or a man's ability to conceive a baby or harm the developing fetus during the pregnancy. Hazardous agents are found inside and outside of the workplace. Examples include cigarette smoke, x-rays and car exhaust. Examples of reproductive problems caused by hazardous agents include infertility, miscarriage, premature labour, low birth-weight and fetal malformations.

## Why are pregnant workers at greater risk to hazards?

A pregnant woman's body undergoes changes that can make her more susceptible to workplace hazards. Some key changes and associated risks include:

- **Circulatory:** Higher heart rates (especially during physical activity) increasing chances of water loss, heat stress, swelling and tiredness.
- **Airway:** Larger amounts of air breathed into and out of the lung per minute, increasing the number of toxins inhaled during pregnancy.
- **Hormonal:** Higher female sex hormones causes ligaments, tendons and other connective tissues to soften, increasing risk of injury, particularly for tasks that stretch joints.
- **Anatomical:** Expanding uterus increases strain on the back and decreases blood flow to the legs and may also pinch the sciatic nerve. Work-related physical tasks, prolonged sitting and standing further increase these risks.

## Can you continue to work in the mining environment when you are pregnant?

Yes, in the majority of cases only minor job modifications are required to manage your pregnancy safely at work. However, always request a personal job assessment when you know you are pregnant to review potential hazards and safety procedures.

### A word on breastfeeding

Breastfeeding has many benefits and is recommended by the World Health Organization. However, hazardous agents can also contaminate breast milk, which could then impact the breastfed baby. It is therefore important that the breastfeeding worker and the employer continue to be vigilant about minimizing exposure to workplace hazards. In cases of known or suspected exposure the worker should ask for advice from a doctor or other health professional. Women who are breastfeeding should drink plenty of water, especially in hot or humid environments, so that they are able to make enough milk for their baby.

## Common Physical Hazards

Physical hazards in the mining industry are associated primarily to work tasks related to heat, noise and vibration.

### Heat:

Working in hot and/or humid environments may increase the risk of dehydration and heat stress for the mother which may cause fetal distress and miscarriage.

### Noise:

Machines and tools in the mine that create excessive noise may impair the developing baby's hearing since the baby's ears are not protected. Loud noises may also increase stress for mother and baby.

### Vibration:

Vehicle operation, equipment and other mining tools that generate vibration may increase risk of miscarriage or early delivery.

## Common Chemical Hazards

Chemical hazards in the mining industry are primarily related to work tasks involving mechanical extraction of ores, smelting/refining, welding, vehicle operation, and mine fires.

### Mechanical extractions of ores and milling:

Mechanical extraction of ores includes blasting and crushing of rock and its transportation to the milling and refining facilities. The blasting process involves explosives, which produce chemicals linked to increased risk of miscarriage, fetal abnormalities and death after delivery. Milling includes the subsequent crushing and grinding of the rock, and could include various chemical reagents. During mechanical extraction and milling, rock dust is created, which on its own does not pose significant risk to the fetus and risk to the mother is the same as to the non-pregnant worker. However, rock dust containing any of the following chemicals (arsenic, cadmium, selenium, tellurium and thallium) is related to increased risks of miscarriage and fetal abnormalities.

### Mine fire:

Chemical agents released during a fire are numerous, unpredictable and often hazardous. Carbon monoxide is one chemical released which is particularly dangerous because it interferes with oxygen delivery to the fetus. If a fire takes place leave the area immediately if possible and let other workers extinguish the fire.



### Smelting and refining:

Smelting is a form of mineral extraction from ore. This process emits large quantities of hazardous fumes including sulfur dioxide, nitric oxides, hydrogen fluoride, polyaromatic hydrocarbons and metals (arsenic, aluminium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, thallium, and zinc). These chemicals are hazardous to the pregnant worker and may prevent the normal development of the fetus or result in miscarriage. In addition, these emissions may cause pregnancy complications for the mother, such as high blood pressure.

### Welding:

The welding process involves the melting and joining of metals. This process emits large quantities of fumes containing chemicals such as aluminium, beryllium, chromium, manganese, zinc, nitric oxides, and others. These chemicals are linked to increased risk of miscarriages, fetal abnormalities and complications to the mother such as hypertension.

### Vehicle operation:

All gas and diesel-operated equipment release fumes. These fumes contain carbon monoxide, nitric oxides, sulfur dioxides, polyaromatic hydrocarbons (PAHs), and particulate matter all of which may increase risks of low-birth weight, miscarriage and fetal abnormalities. Mothers are also at increased risk of high blood pressure.

Cigarette smoke is another source of these same chemicals so, it is particularly important for the pregnant worker to quit smoking and avoid second-hand smoke to limit additional exposure.