

## 1. Purpose

To describe the key safety requirements to effectively identify, assess and control potential heat stress situations at sites or during tasks where extreme temperatures may be encountered. The controls described in this protocol are aimed at avoiding adverse health effects caused by exposure to heat and outlines the treatment of heat related conditions.

This Protocol applies to all Department of Natural Resources & Mines work sites and personnel including;

- permanent employees
- temporary employees
- casual employees; and
- contractors.

## 2. Authority

[Work Health & Safety Act 2011 \(Qld\)](#)

[Work Health & Safety Regulation 2011 \(Qld\)](#)

[Managing the Work Environment and Facilities Code of Practice \(QLD\)](#)

## 3. Protocol

### 3.1 Identification and Evaluation of Potential Heat Stress Situations

Assess tasks to identify possible work practices or environments which have the potential to cause excessive heat load and establish a list of critical tasks.

Assess the heat load of a task by taking account of:

- the physical demands of the work
- the heat radiating from hot sources e.g. sun, metal, hot plant & equipment
- the heat due to the combination of air temperature and humidity; and
- the amount of air movement.

A personal risk assessment should be conducted prior to the commencement of work, so that workers can identify and control the environmental conditions, using the Heat Stress Management Checklist (Attachment 1) as a prompt to assist in identifying potential risks and controls.

Conduct pre and post-trip briefings and debriefings to determine what else can be done to reduce risk.

### 3.2 Implementation of Control Measures to Prevent Heat Related Illness

Investigate the feasibility of engineering and administrative control measures to reduce the heat load on individuals;

Where the assessment indicates a significant heat risk:

- provide appropriate education for supervisors and "at risk" employees
- assess the fitness of persons to work in heat
- ensure an adequate supply of cool drinking water where possible

- supply and enforce use of wide brim hats or hard hats with brim overlay and neck coolers
- supply loose fitting clothing (collard long sleeve shirts and long pants) safety tinted glasses and sunscreen
- implement control measures to limit the impact of heat.

### **3.2.1 Control measures to limit the impact of heat**

#### **a) Limit exposure time and/or temperature**

- When possible, schedule hot jobs for the cooler part of the day, or the cooler months of the year.
- Schedule routine maintenance and repair work in hot areas for the cooler seasons of the year.
- Provide regular rest breaks that have cool areas for rest and recovery. (Shaded areas, air-conditioned vehicle etc)
- Add extra personnel to reduce exposure time for each member of the crew.
- Encourage increased water/electrolyte replacement intake of workers on the job.

#### **b) Reduce Heat Load**

- Automate the physical components of the job to reduce manual labour, where possible.
- Turn off unnecessary heat sources.
- Install heat shields on plant which radiates heat.
- Reduce or alter working hours to avoid peak heat load periods (reduce workday, increase rest time, and restrict extra shift hours).

#### **c) Minimise Heat Source**

- Provide a shaded work area and rest area.(Canopies or awnings etc)
- Insulate radiant heat sources.

#### **d) Other measures to be considered**

- Increase air movement through use of fans, air conditioners or evaporative coolers.
- Wait for hot plant or equipment or processes to cool down before commencing work on them.
- Ensure heat acclimatisation for new employees or employees returning from long breaks in a cooler climate.

## **4. Where a potential heat load situation arises when working in a confined space**

- The people entering the confined space shall receive specific instructions regarding the precautions necessary.
- The hazard shall be recorded on the Confined Space Authorisation.
- A second worker shall be instructed regarding the signs and symptoms and management of heat stress and will monitor the worker in the Confined Space.

For further specific information about working in confined spaces, refer to the [Confined Spaces Code of Practice](#).

## 5. Awareness and Education

Train all personnel who may work in hot environments in the following aspects of heat management:

- introduction to heat awareness
- recognising the signs and symptoms of the various types of heat induced illnesses
- potential controls to mitigate or reduce the impact of heat load
- basic instruction on the treatment of the various heat illnesses; and
- the effects of non-occupational factors (drugs, alcohol, fatigue, obesity, diet) on tolerance to heat stress.

## 6. Definitions

**Hot Environment** means a situation where the following applies:

- Heavy physical work when wearing occlusive protective clothing e.g. chemical suits, disposable overalls, full-face respirator etc.
- Working in confined spaces where there may be reduced air movement, high humidity, increased workload and higher temperatures.
- Working in close proximity of uninsulated corrugated iron or aluminium roof, walls or metal structures.
- Working in the open environment on very hot, cloudless days.
- Working next to hot plant which will radiate heat.

**Heat Stress** is a general term which describes a variety of symptoms produced when the human body is exposed to a combination of heat and work which interferes with the body's ability to dissipate the heat energy.

**Heat Cramps** are painful muscle cramps of the limbs and/or abdomen, muscle twitching, tingling or pins and needles in the hands and feet. The patient may experience tiredness and nausea. The symptoms may be due to dehydration and mineral imbalance in the body.

**Heat Exhaustion** may take many days to develop and be characterised by a progressive decline in work performance, lack of appetite, headache, cold clammy, pale skin, rapid weak pulse, nausea and vomiting. The patient may collapse.

**Heat Stroke** is a serious medical condition. The patient has a temperature in excess of 40°C, sweating often stops, the skin is hot, pulse rate is rapid, and there may be dizziness, weakness, headache, nausea and visual disturbances. The patient may be aggressive, irrational and convulsing. Medical attention must be sought. **Heat stroke is a potentially fatal condition.**

**Acclimatisation** is the gradual adapting of the human body to cope with higher heat exposure.

**Heat Load** is the aggregate of environmental and physical work factors that impose a total heat load on the body.

- Environmental factors include air temperature, radiant heat exchange, air movement and humidity.
- Physical work contributes to the total heat load of the job by producing metabolic heat in the body in proportion to the intensity of the work. Clothing may also affect the heat load.

## 7. Further information

Should you require any further information or clarification, please contact:

- Your Supervisor or Manager
- Your Trained Safety Advisor and Health and Safety Representative
- Your [DNRM Regional Senior Advisor WHS](#) (where applicable)
- Corporate – Human Resources [Safety & Wellbeing team](#)

## 8. Review

The effectiveness of this procedure as a whole within DNRM will be reviewed in consultation with key divisional managers/staff, Trained Safety Advisors, Health & Safety Representatives as part of the WHS Management Review; unless triggered by:

- audits and outcomes of corrective/preventive actions
- incident/hazard data
- changes to work environments, processes or practices; and
- changes to relevant legislation, Standards, Codes of Practice and Industry Guidelines.

Any improvements to this process will be documented and incorporated into the DNRM WHS Management System by the Corporate WHS Team.

## 9. Version History

Date	Version	Action	Description / comments
12 July 2017	1.00	New Protocol	

## **DNRM Heat Stress Management Checklist**

- Are adequate supplies of palatable cool drinks available?
- What is the major source of heat stress and how can it be mitigated (e.g. protective clothing requires particular strategies)?
- If radiant shielding (including shade) is possible, is it in the most strategic location?
- Is temperature monitoring equipment available at the work site?
- Are work guidelines that are appropriate to the situation available to workers and supervisors?
- Are first aid supplies available that are appropriate to heat/cold emergencies?
- Has an appropriate work rate been determined, and is there sufficient manpower to stay on schedule despite a slower work pace?
- Have supervisors been instructed to remove workers at the first sign of problems?
- Have workers been properly and thoroughly acclimatised (or reacclimatised after a time away from the stressing environment)?
- Is a cool recovery/rest area available?
- Are workers and supervisors trained in recognising the symptoms, and providing first aid treatment of heat injury?
- Is there a means of calling emergency medical support? Do workers know how and where to call emergency medical support?
- Is the clothing appropriate (minimal obstruction of sweat evaporation and maximal protection from radiant heat i.e. use the lightest, most permeable clothing that provides adequate safety)?
- Is the air velocity as high as practical?
- Are workers well hydrated at the beginning of work?
- Is spot cooling available?
- Is microclimate cooling (e.g. cool type vests) available as needed?
- Have workers been reminded of appropriate safety precautions?
- Have workers who are pregnant, have relevant medical conditions or who are taking medication that increases their risk, have had previous heat injuries, and who have fever, been protected from elevated internal body temperatures?