



Working safely in hot conditions

This bulletin provides practical advice for employers and workers on heat illness, related health and safety problems and actions and measures to take to prevent or minimise the likelihood of heat illness.

Introduction

In Western Australia, hot workplaces are common. Heat may come from:

- hot climatic conditions;
- heavy work in moderately hot conditions;
- hot work processes (such as welding);
- radiant heat from the surroundings;
- work where heavy protective clothing must be worn; or
- any combination of these factors.

The Occupational Safety and Health Act 1984 requires employers to provide and maintain, so far as is reasonably practicable, a working environment in which workers are not exposed to hazards. This applies to any risk to safety and health, including illness from working in heat.

Heat stress

Heat stress is the total heat burden to which the body is subjected by both external and internal factors.

The body must balance the heat transferred into the body, heat generated in the body and heat coming out of the body.

Heat illness occurs when the body cannot dispense the heat burden sufficiently for normal functioning to be maintained.

Heat illness

Heat illness covers a range of medical conditions which include:

- heat stroke – a life threatening condition that requires immediate first aid and medical attention;
- fainting;
- heat exhaustion;
- heat cramps;
- rashes (also called 'prickly heat'); and
- heat fatigue.

Signs of heat illness include feeling sick, nauseous, dizzy or weak. Clumsiness, collapse and convulsions can also be the result of heat illness and workers with these signs need to seek immediate medical attention.

Working in hot conditions may aggravate pre-existing illnesses and conditions.

Managing the risk of heat illness

In identifying, assessing and controlling risks associated with heat illness, employers should consult with workers likely to be exposed to heat as well as with any elected health and safety representatives.

Identifying risk factors

The key risk factors to take into account are:

- air temperature;
- humidity (high humidity limits the evaporation of sweat – a key cooling mechanism for the body);
- radiant heat (from the sun or other sources such as furnaces, ovens and hot vessels);
- air movement or wind speed;
- workload (intensity and duration of the work);
- physical fitness of the worker, including acclimatisation and any pre-existing conditions such as obesity, heart/circulatory diseases, skin diseases or use of certain medicines that can effect the body's ability to manage heat (eg diuretics, antidepressants and anticholinergics); and
- clothing (including protective clothing that may restrict air flow across the skin and hinder evaporation of sweat).

Assessing the risk of heat illness

Should be carried out by a person competent in heat assessment.

The risk assessment may include use of an appropriate heat stress index. A commonly used and recognised index is the Wet Bulb Globe Temperature (WBGT). This takes into account air temperature, radiant heat, humidity and

air movement. Adjustments can take into account such things as physical workload, clothing and work organisation.

The Thermal Work Limit (TWL) is an alternative approach being used increasingly in Australian workplaces, particularly in the resource industry. It accounts for all of the major factors mentioned above and provides guidance on managing workloads and fluid intake.

If the assessment indicates a risk of heat illness occurring, employers need to put control measures in place. Workers considered at risk due to factors such as pre-existing medical conditions should be medically assessed.

Reducing the risk of heat stress

There is a recommended order of control measures that eliminate or reduce the risks of injury or harm. Often a combination of controls will be necessary. Examples of these follow.

Engineering

Engineering controls are an effective way of reducing heat stress and preventing or minimising occurrence of heat illness. Examples include:

- increasing air movement using fans;
- installing shade cloth to reduce radiant heat from the sun;
- installing shields or barriers to reduce radiant heat from sources such as furnaces or hot vessels;
- removing heated air or steam from hot processes using local exhaust ventilation;
- installing air conditioners or coolers to reduce air temperature;
- locating hot processes away from people; and
- insulating /enclosing hot processes or plant.

Organisation of work

Heat stress can be reduced by attention to the way work is organised. Examples include:

- rescheduling work so the hot tasks are performed during the cooler part of the day or in cooler times of the year;
- reducing the time an individual spends doing the hot tasks eg by job or task rotation;
- arranging for more workers to do the job;
- providing additional rest breaks in cool, shaded areas; and
- using mechanical aids to reduce physical exertion.

Providing training and information

Training and information will enable workers to:

- identify hazards associated with heat stress;
- recognise symptoms of heat stress and heat illness;
- identify appropriate first aid procedures;
- understand how to avoid heat illness;
- recognise the potential dangers associated with the use of alcohol and/or drugs; and
- use appropriate protective clothing and equipment.

Toolbox meetings and pre-start meetings present opportunities to reinforce the actions needed to avoid heat illness.

Providing personal protective clothing

Providing personal protective equipment (PPE) such as reflective aprons and face shields can reduce exposure to radiant heat. Ice vests and liquid and air circulating systems can be worn under PPE where appropriate. Outdoor workers should be provided with protection against ultraviolet exposure, such as a wide brim hat, loose fitting, long sleeved collared shirt and long pants, sunglasses and sunscreen.

Preventing heat illness

Keeping well hydrated

The Western Australian Occupational Safety and Health Regulations 1996 require that a supply of clean, cool drinking water is provided and is readily accessible to workers.

Keeping well hydrated is a critical factor in avoiding heat illness. Information on keeping well hydrated should be provided as part of workplace inductions.

Workers should be encouraged to start their shift fully hydrated. An easy way to establish hydration status is by checking the colour and volume of urine. If urine is plentiful and a light straw colour, this is an indicator of good hydration.

During hot work conditions, workers should be encouraged to drink a cup of water (about 250ml) every 15 to 20 minutes.

Although water is generally adequate for fluid replacement, low joule cordials and electrolyte replacement solutions may be provided to encourage fluid intake. High sugar cordials and sports drinks are not recommended.

Caffeinated drinks and alcohol should be avoided since these are diuretics that cause increased rate of urination.

Allowing for acclimatisation

Workers, in particular those with fly-in fly-out contracts, may experience significant differences in climatic conditions between the workplace and their off-work location, especially after an extended absence.

Suitable acclimatisation procedures should be considered for workers who are subject to hot work conditions. Such procedures should be developed in consultation with workers and consider the particular shift roster schedules used.

Other preventative measures

Providing:

- adequate supervision of workers; and
- first aid facilities, instruction and training and access to medical help.

If symptoms occur, workers need to rest in a cool, shaded, well-ventilated area and drink cool fluids. If symptoms do not reduce quickly, seek medical help.

Employers should plan ahead and ensure all the necessary measures for preventing heat illness can be implemented when hot weather is predicted.

Other sources of information

The *Occupational Safety and Health Act 1984* and the Occupational Safety and Health Regulations 1996 can be accessed free of charge from the State Law Publisher's website at www.slp.wa.gov.au or purchased on (08) 9426 0000.

Further information on SunSmart at the workplace, including the publication *Skin cancer and outdoor work - A guide for working safely in the sun* is available from www.worksafe.wa.gov.au - safety topics – diseases and health.

For further information on sun protection and skin cancer including the publication *Skin cancer and outdoor work: A guide for employers*, visit the Cancer Council website, www.cancer.org.au/sunsmart or call the Cancer Council Helpline on 13 11 20.

WorkSafe Division Department of Commerce

Level 5, 1260 Hay Street, West Perth
Western Australia 6005

1300 307 877

safety@commerce.wa.gov.au

www.worksafe.wa.gov.au

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