



**ACTU GUIDELINES FOR
WORKING IN SEASONAL
HEAT**

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1. Introduction

Working in seasonal heat presents particular health and safety hazards, which may be influenced by a number of risk factors. Over 45% of respondents to the 1997 ACTU National Survey On Stress At Work reported that they were experiencing 'uncomfortable temperatures' at work.

While State OHS Authorities have produced guidelines and information on working in hot conditions, there are no regulatory OHS standards for working in seasonal heat. These Guidelines are designed to assist health and safety representatives and union delegates to identify, assess and control the hazards of working in seasonal heat.

The guidelines can be adapted to suit different working environments and climatic variations throughout Australia, and provide:

- some information about the hazards associated with working in seasonal heat;
- recommended measures to control the working environment in order to eliminate or reduce exposure to hot working conditions; and
- recommended actions to prevent heat stress when working in hot conditions.

The focus of these guidelines is on modifying the working environment and working arrangements in order to *prevent* the onset of heat stress.

2. What is heat stress?

Working in hot conditions can result in a number of adverse health effects - ranging from discomfort to serious illness, which are generally grouped together as heat stress.

Workers in a variety of occupations may be exposed to heat stress. For example, working in any, or a combination of, the following conditions:

- outdoor work during summer months;
- occupations where there are plant or processes which generate radiant heat;
- hot, stuffy, and poorly ventilated buildings; and
- working in vehicles.

Risk Factors

Just how working in heat affects the body is influenced by a number risk factors. The more factors present, the greater the risk of heat stress. Risk factors include:

- air temperature, air movement and humidity - while the level of air movement and humidity will affect the efficiency of bodily cooling mechanisms and levels of discomfort, high air temperature is the most significant seasonal risk factor;
- level of working activity, including number of hours worked;
- clothing worn - in particular essential protective clothing;
- level of fluid loss and replacement, affecting water and salt balance;

- sources of radiant (mechanical and occupational) heat in the workplace;
- acclimatisation - it is important to remember that people generally do not acclimatise to changeable seasonal heat, particularly heat waves; and
- personal factors - for example, use of certain medications and/or pre - existing medical conditions, level of physical fitness and obesity can affect the risk of heat stress. Pregnancy can also reduce tolerance to heat.

3. Health and safety effects of heat stress

When the body produces energy, by physical exertion - and/or receives energy, from an external heat source - body temperature will start to rise. To counter the rise in body temperature, the body's cooling mechanisms automatically come into play. These include:

- perspiration - this is an important mechanism by which the body loses heat, which is less efficient in humid conditions; and
- dilation of the blood vessels and increased blood flow to the surface of the skin in order for the blood to be cooled by the surrounding air - this is why the skin appears red when we are hot.

If, due to environmental conditions and/or the level of physical activity, these cooling mechanisms are unable to prevent body temperature from rising, and/or excessive fluid loss results in dehydration, the following risks to health and safety will occur.

3.1 Heat illness

skin rashes, also known (and felt) as “prickly heat”, often over the arms, shoulders, chest, in body creases and behind the knees.

dehydration, can result from either excessive fluid loss from the body through perspiration, and/or failure to drink enough fluids. Dehydration can contribute to cramps, heat exhaustion and heat stroke. Drinks or medications which increase urine output can increase the risk of dehydration. Feeling thirsty indicates that dehydration is already occurring.

heat cramps, are muscle spasms indicating an imbalance of salt and water in the body, caused by perspiration and/or adequate fluid replacement.

heat exhaustion, indicates that body cooling mechanisms are already overtaxed. It is characterised by clammy, moist skin; weakness and fatigue; nausea; vomiting; headache; giddiness and possibly fainting - due to the dilation of blood vessels and pooling of the blood in the lower limbs.

heat stroke, is a serious condition with a rapid onset. It is characterised by hot, dry skin, and a rapidly rising body temperature. Heat stroke can result in collapse, loss of consciousness, convulsions and death.

It is important to note that there can be a rapid progression from heat exhaustion to heat stroke, and that the effects of severe heat stroke may be irreversible. Employers must monitor employees for signs of heat illness, and act immediately.

At the first signs of cramps or heat exhaustion, or if at any time a person reports discomfort or stress from the heat, they must be able to immediately stop work, go to a cool area, rest, have a cool drink, and receive first aid treatment if required. The person should not resume work until they are recovered.

3.2 Increased risk of injuries

Injury rates can increase as a result of:

- slipperiness of sweaty palms
- blood pooling and fainting
- fatigue and reduced concentration
- fogging of safety glasses
- additional discomfort of protective clothing and/or equipment, resulting in reduced protection and unsafe conditions.

3.3 Increased effect of other OHS hazards

Hot working conditions can interact with other workplace hazards, such as noise or exposure to hazardous substances, compounding the level of discomfort and stress.

3.4 Aggravation of existing medical conditions

Working in seasonal heat can exacerbate existing medical conditions. For example, hot conditions increase the workload on the heart, so that workers with pre - existing heart problems or high blood pressure will be particularly vulnerable to the effects of working in heat.

People with kidney conditions, asthmatics and diabetics may need to take extra care.

3.5 Reproductive effects

Research shows that exposure to heat can adversely affect sperm quality. This relates to heat stress environments (eg. fire fighting or working near furnaces) rather than to seasonal weather changes.

4. Controlling the hazards of seasonal heat

4.1 Controlling the working environment

Heat stress must be treated as any other health and safety hazard. The hierarchy of controls must form the basis of measures to reduce the hazards of heat stress. This

means that first actions must be to control the working environment and/or working arrangements in order to eliminate or reduce exposure to hot working conditions, and to protect employees from the effects of heat stress.

Training

Training in the identification, assessment and control of the health and safety hazards of working in seasonal heat should be considered for occupational health and safety representatives and union delegates, managers and supervisors, as should induction training for new employees. Specific training requirements will be influenced by the type of work and/or the climatic conditions.

The indoor working environment

Where possible, indoor workplace temperatures should be kept *between 18 to 26 degrees celsius* through:

- ventilation and mechanical cooling methods, such as air conditioning and/or air circulating fans;
- provision of mechanisms external to the workplace to assist in temperature control, such as planting shade trees, and the use of eaves and verandahs;
- insulating the roofs and walls of the work place;
- insulating or shielding sources of radiant heat in the work place, eg. insulation around ovens, furnaces or other sources of radiant heat; and/or insulated barriers between hotter and cooler parts of the workplace;
- exhaust ducts for venting hot air from the work place.

The outdoor working environment

Arrangements for outdoor working environments should include:

- erection of shelters, tents and/or windbreaks (in the case of hot, dry winds) and provision of suitable clothing, hats etc., to protect outdoor workers from the heat and exposure to UV radiation;
- provision of air-conditioned work vehicles.

Measuring temperature in the working environment

It is recommended that temperature in the workplace be monitored throughout the day. Temperature should be measured as close to the worksite as is possible.

A normal, dry bulb, thermometer is recommended in these guidelines as the most convenient and satisfactory measure of seasonal temperature.

Humidity

The combined effects of heat and high humidity may affect the level of discomfort and the potential for heat stress. Relative humidity in the range of 40% to 65% is generally felt to be the most comfortable.

Where high humidity is expected and/or experienced, consideration could be given to the use of the natural wet bulb thermometer. A natural wet bulb thermometer can be purchased for approximately \$50 to \$60 - a cost supportable, even by small businesses or workplaces.

In particular working environments, where sources of occupational or mechanical heat are found, use of the wet bulb globe thermometer (WBGT) may be considered. The WBGT measures humidity, temperature, and air movement. However, the WBGT cannot be easily used in many working environments, and therefore is not recommended in these guidelines as a convenient method of measuring seasonal heat.

Weather forecasts and reports

Where local temperature measurement is not practicable, for example, when the employee travels between worksites, regular weather announcements from the nearest TV or radio stations can provide a guide to the local conditions. In any case, weather forecasts should be used to plan working arrangements when hot conditions are expected.

4.2 Arrangements for working in heat

When the work environment cannot be sufficiently controlled to reduce temperature and/or humidity a number of work organisation measures, including rest breaks, should be introduced. Consideration of people working different shifts needs to be taken. For example, for the afternoon shift, while the outside temperature may have decreased, the workplace is likely to remain hot.

Work organisation measures for working in heat include:

- rotation of tasks within workplaces and between employees, so that work that is designated as 'hot' is rotated with 'cooler' tasks.
- long periods of standing should be avoided in hot conditions, due to the risk of blood pooling in the lower limbs. Tasks requiring long periods of standing should be rotated with tasks that can be performed while seated, or regular rest periods allowed.
- rescheduling of harder physical work to the cooler part of the day;
- recognising and making arrangements for reduced work rates and/or work pace in hot conditions; and

- rostering the times when hot plant (eg. ovens) is run to cooler parts of the day.

4.3 Provision of amenities

All workplaces must have the following basic amenities:

Drinking water

An ongoing supply of drinking water must be readily accessible to people whenever they require it. The water should be cooled, clean and palatable. It is essential that people be encouraged to drink fluids regularly before, during and after working in the heat in order to prevent dehydration. Feeling thirsty indicates that dehydration is already occurring, therefore drinking just to satisfy thirst is not enough to keep a person well hydrated. Drinks with a high salt content should be avoided, as should tea, coffee and alcohol as these have a diuretic effect.

At least one drinking point should be provided for at least every twenty employees or part thereof. The drinking points should be placed where they are readily accessible to all people whenever they require them. In some cases, employers should provide an additional cool water supply near a hot or strenuous workstation.

The distance of travel to a drinking point should not exceed 10 metres. In a workplace, such as a warehouse where a small number of people may be employed in a large area, it may be reasonable to extend that distance if the employees agree.

Where a connection to a permanent water supply is not possible, drinking water may be provided by other means such as a flask, cooled drink dispenser or waterbag. The most appropriate method should be selected by agreement.

Drinking water facilities, as with other eating facilities, must be separate from sanitary facilities. Labelling of drinking water supplies may be necessary in some circumstances. Hygiene requirements must be considered, for example, supply of upward jets, clean cups, glasses and containers.

Lunch/rest rooms

A cool, comfortable lunch and/or rest room with temperature range between 18-26°C is recommended, and should be provided in all workplaces where hot temperatures are routinely experienced. In mobile and/or isolated working environments, suitable alternative arrangements for lunch and rest facilities should be negotiated.

First aid

A first aid room with temperature range between 18-26°C is also recommended, and should be provided in all workplaces where hot temperatures are routinely experienced. Where the provision of a permanent or fixed first aid facility is not practicable, such as in mobile and/or isolated working environments, then suitable alternative arrangements should be negotiated.

4.4 Rest breaks for working in heat

It is recommended that where the temperature at work exceeds 26 degrees celsius, measures should be taken to prevent the onset of heat stress. Rest breaks should be introduced and modified by negotiation to suit local conditions, but it must be remembered that rest breaks are important preventative measures. It is not acceptable to wait until employees are already suffering heat stress before implementing preventative measures.

Table 1 provides a regime of recommended rest breaks for working in seasonal heat. These are presented as a basis for negotiation. Variations may be needed for specific industries, working conditions or circumstances, and climatic variations.

Table 1: Recommended rest breaks for working in seasonal heat

Duration of paid rest breaks within each hour when the temperature reaches and/or exceeds temperatures shown	Temp. Degrees Celsius
	temperate - northern
10 minutes	30 - 32° C
20 minutes	32 - 34° C
30 minutes	34 - 36° C
cease working	36 - 38° C

As these guidelines are designed to be adapted for use throughout Australia, it is reasonable that rest break regimes be negotiated, which reflect local conditions and take specific risk factors into consideration. For example, the rest break regimes may be varied in northern climates, where there may be some acclimatisation to working in heat, however other control measures for the prevention of heat stress must be observed.

Outdoor work, where escape from the elements may be difficult or impossible, will require rest breaks and stop work to be initiated at lower temperatures.

State Trades and Labour Councils (TLC's) and unions may vary in their recommended rest break/temperature regimes, depending on the type of work and/or particular climatic conditions. It is recommended that health and safety representatives and union delegates contact their local TLC and/or the appropriate union for further advice.

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