



## **Sun safety and heat stress**

In order to understand the safety requirements for sun safety and heat stress, and your obligations for safety you must consider and understand relevant legislation and codes of practice.

### What law applies

Legal obligations, legislation, codes of practice, guides

### Working in the sun and heat

The risks of working in the sun and heat, workers at risk, employers responsibilities

### The sun and its health effects

Skin cancer, skin conditions, eye injuries, heat related illness

### Heat stress

Causes and sources of heat stress, types of heat related illness

### Sun safety measures

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### Artificial sources of ultra violet radiation

Lamp and lights with the least damaging UV radiation range, UV-generating equipment

## What law applies

In order to understand the workplace health and safety requirements for sun safety and heat stress, and your obligations under the law you must consider and understand relevant legislation and codes of practice.

### **General health and safety obligations**

To understand your obligations and safety requirements you must be familiar with the:

*Workplace Health and Safety Act 1995* which imposes obligations on people at workplaces to ensure workplace health and safety. The *Workplace Health and Safety Act 1995* also helps you to meet your workplace health and safety obligations through:

- The *Workplace Health and Safety Regulation 2008* which describes what must be done to prevent or control certain hazards which cause injury, illness or death
- codes of practice, which are designed to give practical advice about ways to manage exposure to common risks. In particular, the *Risk Management Code of Practice 2007* should be read in conjunction with information on PPE.

Every Queensland employer must have **workers' compensation** insurance. Most employers insure with WorkCover Queensland, while a small number of large organisations have their own insurance. This insurance coverage ensures that employees injured at work receive financial support.

### **What you must do**

It is a requirement of the *Workplace Health and Safety Act 1995* that risks must be assessed and control measures then implemented and reviewed to prevent or minimise exposure to the risks.

If the *Workplace Health and Safety Regulation 2008* describes how to prevent or minimise a risk at your workplace you **must** do what the regulation says. If there is a code of practice that describes how to prevent or minimise a risk at your workplace you **must** do what the code says or adopt and follow another way that gives the same level of protection against the risk.

If there is no regulation or code of practice about a risk at your workplace you **must** choose an appropriate way to manage exposure to the risk. People must, where there is no regulation or code of practice about a risk, take reasonable precautions and exercise proper diligence against the risk.

See the *Risk Management Code of Practice 2007* for further information.

# Working in the sun and heat

## *The risks of working in the sun and heat*

People who spend a lot of time in the sun risk developing skin cancer, other skin disorders, eye injuries, heat stress and heat-related illness. People can experience heat related illness during periods of extreme heat in summer. It can also occur in athletes or others during periods of exertion.

People are most at risk during heat waves and when the temperature hovers about 5°C or more above average for three or more days. The risk is increased when elevated temperatures are combined with increased humidity.

It is vital that workers be protected against harmful UV exposure, Queenslanders have the highest rate of skin cancer in the world.

Two out of three Queenslanders can expect to develop some type of skin cancer, the result of over-exposure to the sun's ultra violet (UV) rays.

## *Workers most at risk*

Workers most at risk of suffering skin cancer and other sun or heat-related illness include:

- building and construction industry workers
- carpark attendants
- gardeners and ground maintenance staff
- fishing industry workers
- lifeguards
- outdoor council workers
- police officers
- pool attendants
- power line workers
- road workers
- roofers
- rural workers
- truck or delivery van drivers.

Within these industries, 'at risk' groups include:

- people with fair skin (especially those who freckle easily or tan poorly)
- people who have not acclimatised to the Queensland climate
- workers who are exposed to direct sunlight between 10am and 2pm
- workers who are exposed to water, construction materials, polished aluminium and grass (common reflectors)
- workers carrying out strenuous tasks or work that is sustained for long periods
- workers who are exposed to additional heat from machinery
- workers in northern parts of Queensland (This area is closer to the Equator and clear sky UV radiation levels are about one-third higher in Townsville than in Brisbane. Skin cancer rates in Brisbane are about four times that of areas south of Sydney).

## *Employers' responsibilities*

If an employee works outside for most or some of the working day, their employer is legally obliged to provide protection from the sun and heat, especially during the hotter months.

An employer must protect workers from UV radiation exposure that:

- may cause adverse health effects
- may exceed the Exposure Limits in Schedule 1 of the Australian Radiation Protection and Nuclear Safety Regulation 1999

Workers also have a legal obligation to comply with instructions regarding sun safety precautions, to use personal protective equipment and to ensure that they do not put themselves or another person at risk.

## The sun and its health effects

You do not have to get sunburnt to damage your skin – and sun damage can occur on cloudy days. If you live in Queensland, you are at risk of developing skin cancer.

### ***Skin cancer***

Skin cancer can be deadly. Generally it develops as a result of years of over-exposure to the sun.

**Basal Cell Carcinoma** – This is a common and non-fatal form of cancer that starts as a small lump which flattens out as it grows. It can be easily treated and cured.

**Squamous Cell Carcinoma** – This is also common, however it is more likely to spread to other parts of the body.

**Malignant Melanoma** – This is the most dangerous type of skin cancer which often starts as a dark mole. About 1,200 Australians die every year from Melanoma.

**Sunspots** are not a form of skin cancer, but they do indicate excessive exposure to solar UV radiation. Sunspots are small, scaly patches of skin that generally occur on the arms, face, nose and ears.

### **Symptoms**

Be on the lookout for early warning signs of skin cancer, and contact a doctor if you are concerned. Regularly examine your skin for symptoms that include:

- an unusual skin condition or a lump, bump, spot or sore that won't heal within a month
- a sore, ulcer or scaly patch
- a white patch on the lips that won't heal
- a mole or freckle that grows quickly or changes shape, colour or appearance
- a mole that bleeds or itches.

### ***Skin conditions***

As well as cancer, solar UV radiation can cause skin conditions such as:

- sunburn
- premature skin ageing (wrinkling)
- lasting skin damage
- photosensitivity (a severe reaction to exposure to sunlight, often associated with chemical interaction).

### ***Eye injuries***

While eyebrows and eye sockets provide our eyes with some protection from the sun, solar UV rays can cause damage to the eye lens or cornea. Most of these UV rays are reflected from 15 degrees above and 15 degrees below the horizon of the eyes.

Both short and long-term eye injuries may occur. Symptoms include inflammation, swelling and increasing sensitivity to light.

### ***Heat related illnesses***

Very hot and extreme heat conditions can lead to heat related health problems. Types of heat related illnesses include:

- heat cramps
- heat exhaustion
- heat stroke
- prickly heat
- heat fainting

# Heat stress

## *Causes and sources of heat stress*

### Understanding heat stress

Heat stress occurs when heat is absorbed from the environment faster than the body can get rid of it. Several factors may contribute to heat stress, such as the type of work activity, the surrounding air temperature/humidity level, and the physical condition of the individual (he/she may be new to the job or new to Queensland).

Our bodies maintain a fairly constant internal temperature even though they may be exposed to varying environmental temperatures.

To keep internal body temperatures within safe limits in hot conditions, the body has to get rid of excess heat – and it does this by evaporating sweat and varying the blood flow to the skin. These responses are controlled by the brain and usually occur when the blood exceeds 37 degrees centigrade.

Factors that may contribute to heat-related health problems at work include:

- inadequate cooling off or rest periods
- insufficient water consumption
- climatic conditions (such as low air movement, high humidity levels and high air temperature)
- inappropriate clothing
- individual factors that may cause dehydration (such as poor diet, vomiting, diarrhoea or alcohol and caffeine consumption)
- individual medical conditions that may cause heat stress (such as heart problems, diabetes or hypertension)
- individual medication that may affect the body's temperature regulation
- an individual's age, general physical fitness and weight

### Environmental factors

Environment and seasonal factors that can contribute to heat problems:

- high air temperatures
- radiant heat from hot objects such as machinery
- radiant heat from working outdoors in the sun
- higher relative humidity levels
- low air movement

Various engineering controls are effective for reducing heat in workplaces. Examples include:

- reducing the body's metabolic heat production using automation and mechanisation of tasks
- reducing radiant heat emissions from hot surfaces and plant e.g. by insulation and shielding
- using ventilation and air-conditioning

- humidity reducing methods e.g. install a dehumidifier (seek engineering advice)
- creating some shade (tarp, umbrella) or at least find a tree for outdoor workers' rest breaks.

## ***Types of heat related illnesses***

**Heat cramps** are painful muscle cramps that can occur on their own or with other heat-related illness such as heat exhaustion. Lay the person in the shade, remove outer clothing, provide cool water and fan vigorously to increase evaporation.

**Heat exhaustion** is a serious condition that can develop into heat stroke. It is sometimes suffered by people new to Queensland's hot climate. A person with heat exhaustion may complain of weakness, nausea and/or giddiness, may look pale and be breathless. The skin is usually wet from sweating.

Lay the person in the shade, remove outer clothing, provide cool water and fan vigorously to increase evaporation.

**Heat stroke** is a medical emergency, caused by a rise in core body temperature. A person suffering heat stroke becomes confused, and may stagger or collapse. The skin may be either dry or wet.

Call an ambulance and apply urgent first aid. Remove outer clothing, wet the skin and fan vigorously to increase evaporation.

**Prickly heat** is an intense, itchy red skin rash. It is caused by a blockage of the sweat ducts from prolonged wetting of the skin. Treat by keeping the skin cool and dry, wearing suitable clothing and avoiding hot work.

**Heat fainting** occurs when blood vessels (particularly in the legs) dilate in order to increase heat transfer to the skin and cause reduced return blood flow to the heart. This response temporarily reduces blood flow to the brain, which can cause a person to faint.

If a person faints, lay him/her in the shade, remove outer clothing, provide cool water and fan vigorously to increase evaporation.

# Sun and heat safety measures

## *Sun exposure in Queensland*

The Commonwealth Department of Health and Community Services monitors UV radiation levels around Australia. These levels are recorded on the UV Index, often reported as part of the weather report on nightly television.

About midday in a Queensland summer, the Index may reach 15, especially where there are highly reflective surfaces. Anything over 10 is regarded as extreme.

For at least half the year in Queensland (except on cloudy days), the UV Index is in the extreme range about the middle of the day.

## **Controlling exposure**

At any time when your shadow is smaller than you, there is a risk of UV radiation exposure. Every workplace should carry out its own assessment of sun exposure, identify tasks that place workers at risk, and control the degree of exposure.

- Wear personal protection (sunscreen, sunglasses and suitable clothing), take precautions and set limits during summer's highest risk time – between 10am and 2pm (or between 10am and 3pm in western Queensland).
- Reorganise work schedules so that outdoor tasks are done early in the morning or late in the day.
- Rotate or job-share tasks that involve direct sun exposure.
- Implement easy 'sun smart' policies (such as a directive that workers drive with their vehicle windows up between 10am and 2pm).
- Plan the work around the movement of the sun. For instance, do outdoor work on the western and northern side of a building in the morning, and work on the eastern and southern sides in the afternoon.
- Where possible, do not work in an environment heated by several sources (such as burning off under a mid-summer sun).
- Use trees, buildings and temporary shelters (such as awnings or tarps) to shade the work area and/or rest area.
- Insulate plant and equipment to reduce radiant heat emissions.
- Where possible, fit a shade to equipment and machinery (such as tractors, small earthmovers, etc). Do not remove shielding that is provided on plant or equipment.
- Provide laminated windscreens and tinted side windows to trucks or vehicles.
- Where possible, mechanise physically demanding tasks.
- Take rest or meal breaks in shady areas.
- Drink plenty of cool water.
- Gradually adjust your workload when starting or returning to work in hot conditions. Generally, the process takes about a week.
- In extreme conditions, wear specialised liquid or air cooled clothing.
- Screen workers for heat tolerance.
- Follow a doctor's advice before working in hot conditions if you are on medications such as sedatives, tranquillisers, antidepressants, amphetamines, antispasmodics, diuretics or medication affecting blood pressure.
- Have a plan in place for treating heat affected workers.

## ***Protective clothing***

When working in the sun, always wear protective clothing. Protective clothing includes:

- a hat with a broad brim (7.5-8cm) or a flap at the back to shade both the face and back of the neck
- a hardhat with a brim added
- a loose-fitting, long-sleeved, collared shirt
- a shirt made from a dark, close weave fabric (a dark colour gives better protection than a light colour or white)
- woven, rather than knitted, fabrics
- loose trousers
- sunglasses with side protection (look for the code AS 1067 Sunglasses and Fashion Spectacles)
- safety glasses designed to minimise UV radiation exposure to the eye
- garments with a UV protection factor (look for this label).

Ensure that personal protection equipment does not create a hazard in itself. For instance, disposable overalls with plastic lining do not allow sweat to evaporate, thereby increasing heat stress in a hot climate.

## ***Sunscreen***

- About 15 minutes before you go out under the sun, apply a sunscreen with a very high sun protection factor (at least a 15+ broadspectrum sunscreen, but 30+ is preferable). The skin should be dry.
- Apply extra sunscreen or zinc cream to vulnerable places such as the nose, lips, ears, bald head, neck and back of the hands.
- Reapply sunscreen at least every two hours if you perspire or get wet.
- Select a gel-based or alcohol-based sunscreen if you are handling tools. These sunscreens will not make hands as greasy as a cream-based sunscreen.
- Generally, you need to apply about 35ml of sunscreen to ensure there is an adequate barrier between the skin and the sun.
- Provide an adequate supply of sunscreen and zinc cream at the workplace at all times.
- Carry a clear lip balm that contains sunscreen, and apply it regularly.

## ***Hydration***

Our body can sweat about one litre an hour performing heavy work, however we often drink less fluid than we need because our thirst response lags behind the actual level of dehydration. Most heat-related illnesses are caused by dehydration.

- Drink 150-200mm of cool fluids every 15 to 20 minutes, rather than consume a 1 litre drink every now and again.
- Choose water or a sports drink rather than tea, coffee or milk.
- Increase your intake of fluids if your urine is dark (the normal colour should be pale yellow).
- Add a little extra salt to food if you are acclimatising to hot working conditions, however do not take salt tablets.
- If you suffer dehydration, do not recommence work until you are fully rehydrated.

## ***Training***

Workers exposed to the sun as part of their work should be educated about the dangers of UV radiation exposure and how to identify early signs of skin cancer.

- Know how to self-screen for skin cancers.
- Be trained in the correct use of personal protective equipment.
- Implement a 'buddy system' where workers and supervisors in hot environments look out for early signs of heat illness in their workmates.
- Implement an acclimatisation program that gradually adjusts workloads for new workers and those returning from holidays.
- Include sun safety information in induction training.

## Artificial sources of ultra violet radiation

UV radiation can also be generated by lamps (such as quartz-halogen lights or germicidal lamps) and welders.

- Seek advice from the supplier or manufacturer regarding UV radiation levels and safe exposure times.
- Address all risks associated with exposure from the UV radiation source. Train workers about the risks and how to safely use the UV-generating equipment.
- Select lamps and lights with the least damaging UV radiation range. Where possible, avoid lamps with a wavelength of 240-300 nm.
- Rotate relevant tasks in order to minimise the amount of time that each worker is exposed to UV radiation.
- Regularly maintain the equipment in accordance with the manufacturer's directions.