WorkSafe SmartMove

Additional resources

Outdoor Workers

Working Safely in the sun and heat

In collaboration with

Disclaimer

Date published: 31 March 2023

Reference

Department of Energy, Mines, Industry Regulation and Safety. (2023, March 23). *WorkSafe SmartMove Knowledge. Outdoor workers: Working safely in the sun and heat*. Western Australian Government.

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Contents

Working safely in the sun and heat

Learning outcomes

In this information session you will:

1. Learn about ultraviolet (UV) radiation and heat exposure.
2. Recognise existing and potential hazards for UV and heat.
3. Understand first aid treatments for heat-related illness.
4. Understand how to implement preventive measures to reduce over-exposure to UV and heat.
5. Gain knowledge to lessen the likelihood of developing skin cancer from outdoor work activities.
6. Understand the responsibilities of employers and workers in work health and safety.

Working outdoors puts workers at an increased risk of heat-related illness, and skin and eye damage caused by exposure to solar UV radiation. Outdoor workers are likely to be exposed to unforgiving weather conditions including the sun, high heat and high humidity. Over-exposure to UV radiation from the sun can lead to permanent skin and eye damage, and is a major risk factor for skin cancer.

Common industry sectors where workers spend all or part of their day working outdoors may include:

- farming, horticulture, fishing and forestry
- construction
- sport and recreation
- hospitality
- transport and warehousing
- mining
- utilities
- education and training.

Did you know?

- In Australia, outdoor workers receive up to 10 times more sun exposure than indoor workers, placing them at a higher risk of heat-related illness, skin and eye damage and skin cancer.
- In Western Australia, UV levels are high enough to damage unprotected skin most days of the year – not just in summer.
- Tanned skin and sunburn are evidence of damage to your DNA leading to wrinkles and potential skin cancer.
- Sunburn can occur in as little as 10 minutes, even on cool and cloudy days.
- Most skin cancers are caused by over-exposure to UV radiation from the sun.
- Heat stroke can be fatal.

UV exposure

A young man spent most of his life working outdoors, initially with the Australian Army and later working as a carpenter. Both jobs required spending most of the day outdoors in the sun. While he did have a mole and freckle removed successfully, the first signs that something was really wrong with his health began with aches and pains, tiredness, and severe headaches. Eventually he was rushed to hospital and was diagnosed with melanoma.
The melanoma was too advanced for surgery because it had already entered his brain and spread throughout his body. Sadly, he passed away at the age of 30, just 6 months after his diagnosis.
Melanoma is the most harmful form of skin cancer.
It is the most common cancer diagnosed in Australians aged 15-29 years, and accounts for 15% of all cancers in this age group.

Working outdoors exposes workers to UV radiation from the sun. This may become hazardous specifically when:

- little or no personal protective equipment (PPE) (such as broad brimmed hats or helmet brims, long sleeve clothing, sunglasses and sunscreen) is used
- hot temperatures prompt workers to remove their PPE
- working near or around highly reflective surfaces such as sand, concrete, white house paint, and water
- no shade or protection is available
- work vehicles do not have tinted windows.

> ***Remember:***
>
> *Understanding the risks caused by UV exposure and taking steps to control those risks, will allow people to work safely and comfortably outdoors.*

What is UV?

UV radiation is a type of energy produced by the sun. The sun emits heat and light that we can feel and see, but UV radiation that cannot be seen or felt. UV radiation can reach you directly from the sun, indirectly reflected off different surfaces, or scattered by clouds or other particles in the air.

Regardless of whether it is hot or cold, you can be exposed to high levels of UV.

> ***Remember:***
>
> *You can still be exposed to high levels of UV, even though you can't see or feel UV radiation.*

Risks of UV exposure from the sun

UV radiation can lead to sunburn, premature ageing of the skin and serious health issues such as eye damage and skin cancer.

UV radiation has been classified as a 'Group 1 Carcinogen' - meaning that it causes cancer in humans. Overexposure to UV radiation is the most common carcinogen experienced by Australian workers.

> ***Be aware:***
>
> *A suntan is NOT a sign of good health but a sign of skin damage from over-exposure to UV, causing more pigment to be produced and darkening the skin.*
>
> *Sunburn is a radiation burn to the skin. All types of sunburn, whether serious or mild, can cause permanent and irreversible skin damage.*
>
> *Every sunburn and suntan contributes to an increased risk of skin cancer.*
>
> *Eye damage such as cataracts and cancers can be caused by overexposure to UV radiation.*

UV Index

The UV Index, developed by the World Health Organization, describes the amount of UV radiation at the Earth's surface.

The index is a scale ranging from 0 and has no upper limit. The higher the index, the greater the potential damage for skin, and the less time it takes for the damage to occur.

For an outdoor worker exposed to high levels of UV daily, it is recommended that sun protection measures are used whenever working outdoors.

The UV Index varies with time and location, peaking at solar noon

Visit Cancer Council's MyUV or download the SunSmart Global UV app for daily and up-to-date information on UV levels in your location.

Be aware:

The UV Index is likely to change from place to place, season to season and hour to hour. Check your local UV forecast regularly.

As UV exposure is cumulative, it is recommended outdoor workers use sun protection whenever they are working outside.

During summer in Western Australia, the UV Index forecast reaches extreme levels everyday, reaching highs of up to 17.

Reflective surface

UV exposure from the sun together with reflective surfaces increase your levels of UV exposure.

Some buildings and ground surfaces such as polished aluminium, construction materials, light coloured concrete and water, reflect UV radiation back onto the skin and eyes.

Material	Percentage of reflected UV radiation
Grasslands	1-2%
Lawn, grass	2-5%
Soil, clay	4-6%
Asphalt road	4-9%
Beach sand, wet	7%
Boat deck	7-9%
Open water/ocean	3-8%
Concrete	8-12%
Beach sand, dry	15-18%
White house paint	22%
Sea surf, foam	25-30%
Snow	50-88%

Percentage of UV radiation reflected by different surfaces.
Source: *Cancer Council Victoria. Shade for everyone.*

Protecting outdoor workers

Generally, when the UV Index is at 3 and above, sun protection is required. At this level, the amount of UV radiation is high enough to damage unprotected skin.

Because UV damage accumulates over time, it is recommended that outdoor workers – or those working near highly reflective surfaces – use sun protection year round, even when the UV is below 3.

To minimise the risks, workers should:

- be aware of an increased risk of UV exposure when working near or around any reflective surfaces
- minimise the time spent outside, in direct sunlight and/or during peak UV times
- practice the 5 SunSmart behaviours - Slip, Slop, Slap, Seek and Slide.

> *Recommended by Cancer Council WA.*

Slip on sun protective clothing

For outdoor workers, clothes must be designed to:

- cover as much skin as possible
- suit the task they are completing
- allow good ventilation
- be comfortableprevent them from overheating.

Manufactured garments designed primarily for protecting outdoor workers are now widely available. Look to see if it has a swing tag with a UPF (ultraviolet protection factor) rating.

Slop on SPF30 sunscreen

Sunscreen should be:

- SPF (sun protection factor) 30 or higher
- water resistant – it's less likely to be removed from sweating or contact with water
- shelf life – about two years so check the expiry date
- applied 20 minutes before exposure
- applied using approximately 5ml (one teaspoon) for each exposed arm, leg, body front, body back and face (including neck and ears)
- re-applied at least every two hours.

Slap on a hat

- wear a broad brimmed, bucket or legionnaire style hat
- your hat should be made of tightly woven fabric that is UPF 50
- baseball caps and visors do not provide adequate protection for the neck and ears, which are common skin cancer sites.

Note: *See the difference in protection between a broad brimmed hat and a cap. The person wearing the cap has his ears and neck completely exposed.*

Seek shade

- whenever possible seek shade, whether it be from existing built structures, trees or portable methods
- spend work break times inside or in the shade
- ensure that lunch and other breaks are taken inside or in shaded areas
- shade reduces UV radiation exposure but it can still be reflected off surfaces, so make sure you use shade in combination with other sun protection measures.

Slide on sunglasses

Sunglasses are essential to prevent eye damage to outdoor workers associated with UV radiation exposure. Sunglasses sold in Australia must comply with Australian Standard AS/NZS 1067, which recognises the special climatic circumstances present in Australia.

- sunglasses should be close fitting and wrap around, to reduce reflected UV radiation and glare (which passes around the edge of sunglasses)
- sunglasses labelled EPF 10 (Eye Protection Factor rating 10) exceed the Australian standard and provide excellent protection
- sunglasses may also be labelled UV400 which block at least 95% of UV
- Safety Glasses Standard - AS/NZS 1337:2010: 'Eye protectors for industrial applications'. Untinted eye protectors marked 'O' (for outdoor) also have sufficient UV protection for outdoor use.

Remember:

When working outdoors, check your local UV forecast and be aware of any reflective surfaces around your workspace.

Always Slip, Slop, Slap, Seek and Slide.

What to do if you have already been exposed to UV

All skin types can be damaged by over exposure to UV radiation. Damage is permanent and irreversible and continues to add up with each exposure.

If you do suffer from excessive exposure to UV, here are the immediate treatment steps to follow.

Sunburn

- Avoid any further exposure to sunlight and UV until the skin has healed
- Treatment for sunburn should include cooling the skin with a cold compress, cool shower, or suitable 'cooling' sprays. It is preferable to apply these various products via spray as opposed to using creams.
- Apply moisturisers to protect the skin below the level of sun damage. Aloe vera can help reduce the discomfort of the sunburn when applied topically.
- Once the initial pain and heat has subsided it's better to let the skin flake naturally than to try and remove it through abrasion or picking.
- In extreme cases of sunburn, medical attention should be sought. Symptoms such as headaches, nausea, vomiting, skin blistering, and severe pain may be present.

> ***Remember:***
>
> *Most skin cancers, including melanomas are preventable.*
>
> *Skin cancer can be successfully treated if found early, however can be fatal if left untreated.*
>
> *Check myuv.com.au for tips on how to check your skin and see your doctor as soon as possible if you notice anything unusual.*

Knowledge quiz – UV exposure

1. A high temperature means the level of UV radiation is always high.
   a. True
   b. False

2. Reflective surfaces increase levels of UV exposure when working outdoors.
   a. True
   b. False

3. Which of the following statements are correct? (Choose three correct answers.)
   a. UV Index changes based on location
   b. UV Index changes from hour to hour
   c. UV Index changes from season to season
   d. UV Index stays the same regardless of location
   e. UV Index stays the same during the day
   f. UV Index stays high during the night

4. UV radiation has been classified as a ‘Group 1 Carcinogen’ – meaning that it causes cancer in humans, just like tobacco, asbestos and alcohol.
   a. True
   b. False

5. The treatment for sunburn is to remove the dead skin and apply moisturiser after the dead or flaky skin has been removed.
   a. True
   b. False

6. Identify the 5 SunSmart behaviours:
   S…… on sun protective clothing
   S…… on SPF30 or higher sunscreen
   S……. on a broad-brimmed hat
   S……. shade
   S……. on sunglasses.

Heat exposure

Two workers and a supervisor were searching for proposed drill sites in rugged terrain. The three men were required to walk more than 16km each day in harsh conditions, carrying equipment and supplies. The work took place over two days in high temperatures over 37°C. At the end of the second day, one of the workers collapsed and later died of heat stroke after complaining of leg cramps and that he felt dehydrated the day before.

While policies were in place concerning the risks associated with exposure to extreme conditions, the three workers did not understand they were required to complete heat stress assessments. The assessments would have alerted them to the serious risk that muscle cramps and dehydration are symptoms of heat stress, and can lead to life-threatening conditions such as heat exhaustion or heat stroke if not appropriately managed.

The company pleaded guilty in the Magistrates Court for failing to ensure the safety of their employees, who were exposed to extreme conditions without proper training.

When working outdoors in hot conditions, workers are at risk of heat-related illness. Thermal heat generated by human body, combined with environmental heat, can lead outdoor workers to experience heat-related stress, illness, or even death.

Heat may come from:

- hot climate conditions
- heavy work in moderately hot climate conditions
- hot work processes (such as welding)
- radiant heat from the surroundings such as heat trapped in ceiling space
- work where heavy PPE must be worn which can prevent the body from cooling down
- any combination of the above factors.

Risk factors include:

- over-exertion on physical activity while working in hot conditions
- no regular rest breaks when doing physical activity
- losing fluids without replacing them
- losing salts and electrolytes
- inadequate resources and facilities provided (e.g. no shade or air-conditioning available during rest breaks; no access to cool drinking water)
- not acclimatising* to outdoor work conditions.

> **Acclimatising* ***Acclimatising*** *allows a worker to get used to working in excessive heat. This involves slowly increasing their hours over a period of one to two weeks to reduce the chances of the worker experiencing heat-related illness.*

Heat and the human body

Human body temperature needs to be around 37°C for the body's internal organs to function effectively. Any outside factors such as viruses and bacteria or hot weather conditions can cause human body temperature to rise, as it's working harder to maintain normal bodily functions. The process of the body regulating the temperature can cause heat-related illness (HRI).

There are other internal factors that can contribute to the way human body copes with heat. These are, for example:

- fitness level
- body weight
- age
- existing medical conditions.

Heat related illness (HRI)

Heat-related illness describes a range of health symptoms and illness resulting from heat exposure. These ranges from minor conditions such as heat rash, to serious and life-threatening conditions such as heat stroke.

Heat rash

Heat rash (*prickly heat*) occurs in humid climates where heat can lead to heavy sweating and the body fails to properly evaporate moisture from the skin. This leads to a rash developing in areas such as the neck and chest, groin, and creases under the breast, behind the knees or in the elbow. It's red and itchy, and can be identified as a red cluster of what appears like pimples or small raised bumps.

Be aware:

Heat rash can vary in severity depending on whether it's occurring frequently or has become infected.

It's important to keep skin clean to avoid any potential infection.

When heat rash covers a larger area of the body, it can lead to heat stress as the skin affected is unable to sweat properly.

What to do:

- Make sure the affected area remains clean and dry. Infections can occur if bacteria enters the blocked pores leading to increased swelling and pain, and requiring antibiotic treatment.
- Take a cool shower or a bath, and after that keeping the area dry by wearing loose cotton clothing.
- A powder can be applied to reduce itching, and these can normally be bought from a pharmacy.

Heat edema

Heat edema is swelling in the legs and hands when you sit, stand or walk for a long time in a hot environment. This condition is not dangerous but may prove uncomfortable.

What to do:

- For swelling in the lower legs, feet, and hands, move to a cooler location (such as in an air-conditioned environment or a shaded area). This will help resolve the swelling faster.
- Drink plenty of fluids.

Heat syncope (fainting)

Heat syncope is fainting and light-headedness which occurs when individuals stand for extended periods of time in the heat. Heat syncope is linked to heat edema.

What to do:

Lie the person down in a cool place, such as an air-conditioned room, until recovered.

Heat cramps

Heat cramps are involuntary muscle spasms that occur during strenuous physical activity in a hot environment.

Be aware:

Cramps may occur at the end of the day once activity has ceased, and not necessarily during strenuous physical activity.

What to do:

- Cease current activity, focus on breathing calmly and stretching out the affected muscles.
- Drink plenty of fluids. Sports drinks are helpful as these can replace the lost electrolytes, salts, magnesium, potassium and other imbalances.
- After the cramp has ceased, rest for a period of time before re-starting any physical exertion.

Heat stress

Heat stress or heat exhaustion occurs when the body cannot cool itself enough from increased exposure to heat, or is dehydrated when fluids are lost from the body but not replaced and/or while performing excessive physical activity. This causes heavy sweating for the body so it is unable to maintain a healthy temperature.

Symptoms of heat stress include:

- the person appears wet, white and weak
- muscle cramps
- pale, cold clammy skin
- increased heavy sweating
- possible fainting, light-headedness and dizziness
- a weak but faster pulse or heart rate
- nausea or vomiting.

> ***Be aware:***
>
> *Heat stress must be treated immediately. Untreated heat stress can lead to heat stroke, a life-threatening condition.*

What to do:

- Help the person to lie down and rest in a cool location.
- Remove excessive clothing and loosen any tight clothing.
- Cool by fanning and moisten skin if possible.
- If fully alert and responsive, provide cool drinks such as sports drinks or water.

Heat stroke

Heat stroke is much worse than heat stress. Heat stroke occurs when the body sweats heavily while performing physical exertion in hot conditions. This causes the body temperature to rise above 40°C, leading the person to collapse or fall unconscious. The dehydration and high body temperature could damage internal organs and lead to death.

Symptoms of heat stroke include:

- red, hot and dry skin
- a body temperature more than 40°c
- no longer able to sweat
- a rapid, strong pulse, and noisy breathing
- irritability or confusion
- speech problems
- unconsciousness
- *Cardiac arrest*.*

> *****Cardiac arrest*** *is a life-threatening condition that requires immediate first aid (cardio pulmonary resuscitation – CPR) and medical treatment. It is potentially fatal; however, it is reversible in most cases if treated within a few minutes.*

What to do:

- First, call 000 for an ambulance.
- Lay the person down.
- Cool the person down by applying cold packs or wrapped icepacks to neck, groin and armpit areas.
- Use a wet towel, sheet or clothing to cover the person.
- If shivering occurs, reduce active cooling.
- Do not give the person anything to drink.
- If unresponsive or not alert, place in the recovery position.
- Prepare to give CPR if necessary.

Remember:

Urgent medical attention must be sought if the person becomes unconscious or has a seizure. In the case of cardiac arrest, CPR is required immediately and should continue until the paramedic (ambulance) arrives. If available, attach an automated external defibrillator (AED) to the person as soon as possible and follow the step-by-step instructions.

A first aid officer is trained to perform CPR in your workplace. If CPR is required but the first aid officer is not yet on scene, anyone with basic CPR skills should proceed as time is of the essence.

Knowledge quiz – Heat exposure

8. Which of the following statements about heat illness are correct? Select three correct answers
    a. Heat stroke occurs when a person becomes dehydrated with body temperature rising above 40° from exposure to heat.
    b. Heat stress occurs when fluids are lost from the body but not replaced, and the individual will appear wet, pale and weak.
    c. Heat syncope (fainting) can be a symptom of heat stress.
    d. Heat rash is swelling in the legs and hands when sitting, standing or walking for long periods of time in a hot environment.

9. _____is the most serious form of heat stress.
    a. Heat rash
    b. Heat edema
    c. Heat stroke
    d. Heat cramps

10. What should you do in the first instance when you suspect that your workmate is experiencing heat stroke?
    a. Call 000 for an ambulance.
    b. Lie the person down.
    c. Cool the person down by applying cold packs or wrapped icepacks to neck, groin and armpit areas.
    d. Use a wet towel, sheet or clothing to cover the person.

11. Heat stroke is a life-threatening condition.
    a. True
    b. False

How to stay safe from UV and heat

What can your employer do to keep you safe from harm?

Your employer's main duty of care is to make sure that the workplace is safe for everyone, as set out under the WHS laws. These include having policies and procedures in place to control hazards from UV and heat. For example:

- Know the weather forecast and assess how to organise the day's tasks to avoid the risk of heat stress and heat stroke.
- Discuss and/or provide information about the forecast and UV Index to your workers.
- Make shade available.
- Rearrange tasks and lighten the work in extreme heat.
- Provide workers with information, instruction and training on heat stress assessment, which provides information on heat-related symptoms and skin cancer and ways to prevent both.
- Provide PPE and tools to protect workers from UV and heat.
- Supervise workers to ensure they are working safely and in line with heat policies and that their skin is not exposed to the sun.

What can you do to be safe?

As a worker you also have a 'duty of care' to look after yourself and must make sure you don't put anyone else in danger. This means you must follow the health and safety rules given to you by your employer.

For example, when working in hot environments:

- Follow policies or procedures put in place by your employer.
- Check weather conditions beforehand to determine whether they will present a health risk.
- Drink approximately 250ml of water every 15 to 20 minutes during hot working conditions. Keeping well hydrated is a critical factor in avoiding heat illness.
- Take regular breaks. Know your limits. Practice self-pacing when working in hot conditions.
- Inform your employer if you have an underlying health condition (e.g., heart disease, high blood pressure and diabetes) that may increase your risk of heat illness.
- Slip, Slop, Slap, Seek and Slide when working outdoors.
- If feeling tired, dizzy or weak or having trouble concentrating, tell your supervisor.
- Maintain a healthy lifestyle, including a healthy diet and regular exercise.

Be aware:

If you work outdoors and your workplace does not offer any sun protection measures, it is important to raise the issue with your health and safety representative or manager.

If self-employed it is in your best interests to look after yourself and use sun protection at work.

Knowledge quiz – How to stay safe from UV and heat

12. Which of the following are considered controls for exposure to excess heat and UV put in place by your employer? (select all that apply)
    a. acclimatisation
    b. providing a display board of the heat and UV index
    c. adjust work schedules to avoid hottest part of the day
    d. adjust work schedules to avoid peak UV times in the day where possible
    e. encourage workers to work as much as possible outdoors.

13. To avoid heat stress during hot work conditions, it is recommended that you drink at least 250ml of water _____to replace lost fluids.
    a. every 15 to 20 minutes
    b. during lunch break
    c. every 2 to 3 hours
    d. if needed