POLICY FOR THE PROTECTION OF STAFF AND STUDENTS FROM SOLAR ULTRAVIOLET RADIATION

Statutory Requirements

OH&S ACT 2000 - SECTION 8 (1)
“An employer must ensure the health, safety and welfare at work of all the employees of the employer.”

OH&S ACT 2000 – SECTION 8 (2)
“An employer must ensure that persons (other than the employees of the employer) are not exposed to risks to their health or safety arising from the conduct of the employer’s undertaking while they are at the employer’s place of work.”

OH&S ACT 2000 - SECTION 20 (1)
"An employee must, while at work, take reasonable care for the health and safety of people who are at the employee’s place of work and who may be affected by the employee’s acts or omissions at work."

OH&S ACT 2000 - SECTION 20 (2)
"An employee must, while at work, cooperate with his or her employer or other person so far as is necessary to enable compliance with any requirement under this Act or the regulations that is imposed in the interests of health, safety and welfare on the employer or any other person."

OH&S ACT 2000 - SECTION 21
"A person must not, intentionally or recklessly, interfere with or misuse anything provided in the interests of health, safety and welfare under occupational health and safety legislation."
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1. Scope

Charles Sturt University is committed to providing a healthy and safe working environment for its staff and students. This policy is designed to assist Executive Directors, Heads of School, Centre Directors and all supervisors to formulate risk control plans to minimise any adverse health effects from Solar Ultraviolet Radiation on staff and students coming under their jurisdiction.

2. Background

Australia has the highest rate of skin cancer in the world, with estimates that two out of three people will get at least one skin cancer in their life-time.

Virtually all people in Australia are at risk of skin cancer. However, fair skinned people, particularly those who freckle or who never tan or tan poorly, are at greater risk.

Those staff and students at the University especially at risk include:

- gardeners and grounds maintenance staff;
- building and construction staff;
- painters/plumbers;
- field research staff and students;
- farm/vineyard staff;

and any others who may be required to perform work involving exposure to direct sunlight between 10.00am and 3.00pm, the hottest part of the day.

2.1 Abbreviations

- **BCC**: Basal Cell Carcinoma
- **nM**: Nanometre ($10^{-9}$ metres)
- **PPE**: Personal Protective Equipment (includes protective clothing)
- **PPCE**: Personal Protective Clothing and Equipment
- **SCC**: Squamous Cell Carcinoma
- **UPF**: Ultraviolet Protection Factor
- **UV**: Ultraviolet
- **UVR**: Ultraviolet Radiation

2.2 Definitions

**Outdoor workers**: For the purposes of this policy, outdoor workers are those who in the course of their normal duties spend a significant amount of their time in the open (outside of enclosures). It includes staff and students conducting practical work in the field.

**Protective Clothing**: Clothing designed to protect other clothing, such as dust coats, overalls, aprons, wet weather gear, etc, or clothing that provides direct protection to the wearer, such as UV protection by way of material selection, design or both, cold weather protection, such as thermal underwear, duffle coats, etc. Hats with broad brims or panels that protect neck, ears and face would also be seen as protective clothing.

**Protective Equipment**: Items designed to protect the wearer from specific hazards, eg, safety glasses, goggles, face shields, ear muffs, ear plugs, sunglasses in UV environments, chainsaw chaps, a range of specific gloves, hard-hats or sunscreen.
UV Radiation: Ultraviolet radiation is classified as a non-ionising form of radiation, and is a component of the Electromagnetic Radiation (EMR) spectrum emitted by the sun. It is comprised of wavelengths (unit for characterising EMR) from 100 – 400 nanometres. White light consists of wavelengths in the 400 – 700 nanometre part of the spectrum.

Workplace: The area or place where a staff member is required to work, to undertake his/her normal duties.

2.3 UV Radiation

The sun is the major source of UV radiation. Other sources include welding, gas/vapour discharge lamps, UV lasers, bactericidal lamps or black light lamps. Ultraviolet radiation is a component of the electromagnetic radiation (EMR) spectrum emitted by the sun. Although UV radiation makes up only 5% of the sunlight that reaches the earth, these shorter wavelength, higher energy photons have sufficient energy to initiate undesirable biological effects. UV radiation can be broken into a number of components. The two that have most impact on the skin are the UV–A and UV–B portions. UV-A is characterised by the 315-400 nm wavelengths and UV-B by the 280-315 nm wavelengths of the spectrum. Sunlight contains more UV-A than UV-B, but UV-B is much more active in causing skin and eye damage.

2.4 Personal Risk Factors

You are more likely to suffer greater skin damage and the possibility of skin cancer if you were born in Australia, came here as a child, do not protect your skin from the sun, spend a lot of time in the sun (at work or at home), have fair skin, easily burn, have a family history of melanoma or have sun spots or moles.

2.5 Effects of Exposure

Short term exposure to the sun can result in sunburn. Untanned skin will show mild sunburn within 12 minutes when exposed to summer sunlight between 11 am and 3 pm (daylight saving time). Permanent damage will occur after two hours of exposure.

Effects of long term exposure or prolonged or repeated exposure to the sun can result in premature skin aging, eye damage, skin keratoses and/or skin cancers.

2.6 Types of Skin Cancer

Basal Cell Carcinomas (BCC) are the most common and least dangerous type. They usually appear on the face and neck, as small round or flattened lumps. They usually do not spread or cause death.

Squamous Cell Carcinomas (SCC) are less common but more dangerous than BCCs. They very occasionally spread to lymph nodes.

Melanomas are the least common but most dangerous of the skin cancers. They often start as a new spot, freckle or mole that changes in shape, thickness or colour. Melanomas can spread to internal organs and can cause death if they are not detected and removed early.

All skin cancers are curable if treated early. Watch out for spots or moles on the skin that change colour or shape and white sores that won’t heal, and seek medical advice. Never delay having any suspicious spots or moles checked.

2.7 Factors which Affect the Intensity of Solar UV Radiation

Some factors which can affect the intensity of solar UV radiation include:

a) The time of day:
UVR is most intense during the middle of the day (11 am and 3 pm daylight saving time) when the sun is more directly overhead;

b) Cloud cover:
Although cloud cover can attenuate the amount UVR, it does NOT eliminate it. You still receive UV radiation on a cloudy day.;

c) The presence of shade:
Shade can dramatically reduce the amount of direct UVR received, but UVR can still be present from scattered sources;

d) The extent of reflection in the workplace:
UVR is not only received directly from the sun. A large component of UVR can be received from scattered sources, such as reflection from water or shiny surfaces eg roofs, white surfaces or concrete; and

e) The time of the year:
The sun is more directly overhead during the summer months and as such the intensity of UVR is greater.

2.8 Photosensitising Substances

Although rare, exposure to photosensitising substances can worsen the effects of exposure to the sun in some individuals. These substances may include some drugs (pharmaceuticals), plants, oils, fragrances, and industrial chemicals. A list of these substances can be obtained from Worksafe Australia, and their possible effect should be taken into account during a risk assessment.

3. Responsibilities

3.1 Supervisors’ Responsibilities

Occupational health and safety legislation in Australia requires the University to provide and maintain, as far as is practicable, a working environment that is safe and without risks to health. This is known as the employer’s general duty of care.

The Supervisor shall:

a) conduct a risk assessment of the potential for exposure to solar UV radiation amongst his/her staff and students;

b) supply and maintain suitable protective clothing and equipment for all staff who have a high risk of exposure;

c) provide training for all staff and students in the correct use of personal protective equipment and other control measures;

d) provide education on the effects of UV exposure to all staff and students; and

e) ensure compliance with this policy.

3.2 Staff/Student Responsibilities

Staff and students shall comply with all instructions given by their supervisor for reasons of health and safety and take reasonable precautions to protect themselves and others at work.

Staff and students shall:

a) comply with this policy in order to achieve a safer workplace;

b) report any problems in achieving compliance to their supervisor immediately;

c) provide feedback on training or education requirements to permit compliance with the policy;

d) ensure that personal protective equipment and the use of other control measures as outlined in the policy are utilised when working outdoors;
e) not intentionally misuse PPCE or other safety items provided in the workplace;
f) maintain personal protective clothing in a clean and tidy condition;
g) not substitute any of the issued personal protective clothing with garments that expose them to increased levels of UV, ie short sleeve shirts, shorts, etc;
h) be aware that failure to comply with this policy may result in disciplinary action.

3.3 University Responsibilities

Charles Sturt University, through its Radiation Safety Committee and Division of Human Resources, shall:

a) assist Schools/Centres/Departments with the process of assessing workplace exposure;
b) advise on suitable protective clothing and equipment;
c) assist supervisors to provide education and training programs for staff and students;
d) monitor the effectiveness of this policy; and

e) assist any staff member diagnosed with occupationally derived skin cancer in their rehabilitation.

4. UV Control Strategy

Solar UV radiation is at its greatest intensity between the hours of 10.00 am and 2.00 pm EST. It is important to note that these times should be adjusted to 11.00 am and 3.00 pm during daylight saving periods.

The UV control strategy is based on the hierarchy of hazard control and, as such, it is important to remove or control the hazard as much as practicable, using the following principles as listed in order, ie PPE is used as the last type of control measure.

A combination of the following strategies may be employed to provide the best control over the potential UVR hazards in the workplace. Factors such as the type of work performed and the place and time of work must be taken into account to achieve the greatest result.

4.1 Engineering Strategies

Use of Natural and/or Artificial Shade: It is important to remember that shade only reduces (not eliminates) the potential exposure to solar UV radiation. Sunburn can still occur in shaded areas, due to the scattering and reflection of solar UV radiation. The amount of UV received from scattered sources can be as great as that received directly from the sun.

When available, shade created by permanent objects such as trees, buildings and other structures should be used. In the absence of such objects, shade can be created by the use of canopies, tents, screens, umbrellas or other similar portable shade structures. In particular, a shady area should be provided for lunch and tea breaks so that staff and students can get out of the sun during these periods.

Equipment: Existing equipment, such as ride-on mowers, should be reviewed for the possible installation of shade devices, and purchasers of new equipment should consider shade options, if available.
4.2 Administrative Strategies

Consideration should be given to the simple reorganisation of outdoor work programs so that alternative tasks (such as administrative work) can be undertaken when the sun is most intense, that is, between 10.00 am and 2.00 pm (or 11.00 am and 3.00 pm during daylight saving).

A combination of the following strategies may be the best alternative and hence have the greatest effect to reduce the time spent in the open during the most intense periods.

**Allocation of Duties:** Work should be organised, where possible, to perform tasks in areas that have shade at that particular time of the day. Other options may include moving to indoors or to rotate workers (swap with someone who is not always in the sun) during peak UVR periods to limit possible exposure.

Throughout the year, outdoor work should be organised as much as possible to be done outside the hours of maximum sun intensity, ie before 10 am and after 2 pm (11 am and after 3 pm daylight saving time).

Supervisors and staff should actively plan outdoor work to conform to this policy as far as possible.

**Working Hours:** During the summer period, the nominal working hours for outdoor workers may be varied to minimise the time spent working during the most UVR intensive periods. Options may include variation in starting and finishing times or alteration to lunch breaks.

4.3 Protective Equipment

The protective equipment referred to in this policy is designed to provide protection to workers from the hazards presented by UV radiation and/or other specific workplace hazards. It may include clothing, eye/face protection and hats. It is important to bear in mind that in providing protection from one hazard, another is not created, ie a hat that may provide protection from the sun could create poor vision. Protective equipment and personal protective items must be chosen to comply with the relevant Australian Standards. The relevant Standards are listed at clause 8 of this policy.

**Clothing:** To provide an adequate level of protection from UVR, it is necessary to wear long sleeved shirts with collars, that are loose-fitting to allow air to circulate, to reduce heat stress. Long-legged trousers provide protection to the legs. Cuffs, ankles and waistbands should be loose providing they do not create a “catch” hazard. Light coloured clothes are cooler and reflect the heat away. Natural fibres such as cotton permit better sweat evaporation than synthetic fibres.

**Eye Protection:** Eye protection glasses and/or sunglasses must conform to the Australian Standards for protection against the sun and also, if relevant, against impact hazards. An assessment must be made to determine the most appropriate type of eye protection required for the duties undertaken. Glasses that provide protection from the side are recommended.

**Hats:** Hats provide shade and the broader the brim, the greater the amount of shade that is provided. Hats with a brim of 8-12cm and neck flap (if bending) are recommended. The duties performed may have to be taken into account when recommending the construction, size and shape of the hat required. If hard hats are required, attachable brims and neck flap protectors can be used to provide greater protection from the sun. Care must be taken to ensure that their inclusion will not create further hazards to the user.

4.4 Personal Protection

The use of personal protection is an important component in the solar UV radiation control strategy. *Personal protection or the use of protective equipment are not to be used as the sole means of reducing exposure to UV radiation.* These items provide a valuable aid when used in conjunction with other control strategies.
**Sunscreen:** Sunscreen should be applied at least 15 minutes before exposure to the sun and at approximately 2 hourly intervals thereafter. More frequent applications may be required depending on the individual, the type of work being performed and environmental factors, i.e., during excessive sweating. Sunscreens should be broad-spectrum and selected in accordance with the skin type, working conditions and must meet or exceed Australian Standard requirements (SPF 30+).

Some individuals may be hypersensitive to certain sunscreens. Any history of an individual's reaction to sunscreen products should be taken into account with sunscreen selection. Rather than not wearing a sunscreen under such circumstances, another sunscreen type should be used. Individuals who may suffer from allergies should apply a small portion of the sunscreen to their forearm to test for any reaction before applying liberal amounts. Adequate supplies of sunscreen should be maintained at all convenient work locations.

**Lip protection:** Lip protection is a very important part of sun protection. The lips do not contain melanin, which provides natural protection. Lip cancer from prolonged exposure to sunlight is common in outdoor workers. To avoid damage by solar UV radiation, lips should be protected with sunscreen or a lipstick, which has an Australian Standard approved rating. Shading from broad-brimmed hats may also contribute to some protection to the lips. Lip balms must not be shared between individuals for health reasons.

5. **UV Risk Assessment**

As indicated at clause 3.1, one of the supervisor's responsibilities is to conduct a Risk Assessment to identify those staff and students at high risk of exposure to UV radiation. Another responsibility is to identify work situations which have a high UV radiation exposure risk.

As solar UV radiation exposure in outdoor environments may vary depending on where and the type of work, an exposure assessment should identify:

- a) all jobs or tasks, including breaks, which may involve solar UV radiation exposure;
- b) the time of day when the tasks are carried out and the frequency with which the tasks are performed;
- c) what shade the physical environment in which the work is to be carried out could provide;
- d) the presence of surfaces or objects which may reflect or cause scattering of UVR, for example, water, reflective building glass, white surfaces, rock, cement, and corrugated steel or aluminium roofing.

A Risk Assessment should be repeated whenever there are changes in work procedures which might lead to a change in exposure to UVR. A review should also be conducted on the receipt of advice or further information relating to exposure limits, prevention strategies or other health-related information.

A “SunSmart” Risk Assessment Checklist and Risk Control Worksheet developed by the Anti-Cancer Council of Victoria are located in the Appendix (clause 9) to this policy for the convenience of supervisors.

[Further information can be found at the Cancer Council Victoria Web-site at the following address:](http://www.cancervic.org.au/index.htm)

6. **Health Surveillance**

In most cases, primary health surveillance for skin cancer involves self-screening, i.e., individuals examining their own skin for changes in the shape and colour of moles or spots. Supervisors should
ensure that staff and students under their jurisdiction are provided with information on self-screening for skin cancers as part of the education program. If an individual detects an abnormality that may indicate the presence of a skin cancer or sunspot (keratosis), they should consult a medical practitioner promptly. Early detection of skin cancer is the most important factor in ensuring effective treatment of the condition.

A skin/skin cancer medical assessment should be considered as part of the pre-employment procedure for some outdoor worker positions at the University.

7. Education and Training

The supervisor shall provide education and training sessions as the need arises for all staff and students working outdoors or exposed to high levels of UV radiation. These sessions should be on a regular basis (at least annually) to include all new staff and students and provide updates on new medical advances for detection.

The program shall include:

a) an explanation of UV radiation and its sources;
b) how ultraviolet radiation causes damage to the eyes and skin;
c) an outline of the different types of skin cancer;
d) information regarding the highest risk periods for solar UV radiation;
e) methods of skin self-examination to aid early detection; and
f) prevention strategies to ensure compliance with this policy.

8. References

1. ADFA (University College), Protection of Outdoor Workers Exposed to UV Radiation from Sunlight (2001).
2. Anti-Cancer Council of Victoria, UV Risk Assessment (SunSmart).
3. Australian National University (ANU), UV Exposure to Outdoor Workers from the Sun (1990).


9. **Appendix**

   Anti-Cancer Council of Victoria (SunSmart): *Risk Assessment Checklist & Risk Control Worksheet* (attached).
### Risk Assessment Checklist

<table>
<thead>
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<th>Description of Work Location</th>
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<td></td>
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<th>Description of Task(s) Performed</th>
<th>Health &amp; Safety Representative</th>
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#### ENVIRONMENTAL FACTORS

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<tr>
<th>TIME OF DAY</th>
<th>RISK</th>
<th>WORK SYSTEM FACTORS</th>
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<tbody>
<tr>
<td>Before 8.00am</td>
<td>LOW</td>
<td>Indoor work</td>
</tr>
<tr>
<td>After 4.00pm</td>
<td>LOW</td>
<td>Total shade</td>
</tr>
<tr>
<td>8.00am – 10.00am</td>
<td>LOW</td>
<td>Partial shade</td>
</tr>
<tr>
<td>2.00pm – 4.00pm</td>
<td>LOW</td>
<td>No shade</td>
</tr>
<tr>
<td>All day</td>
<td>HIGH</td>
<td></td>
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</table>

#### ALTITUDE

<table>
<thead>
<tr>
<th>ALTITUDE</th>
<th>RISK</th>
<th>SHADE AT REST BREAKS</th>
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<td>Less than 400 m</td>
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<td>Indoor work</td>
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<tr>
<td>500 – 1000 m</td>
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<td>Total shade</td>
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<td>1000 – 1500 m</td>
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<tr>
<td>More than 1500 m</td>
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#### SEASON

<table>
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<th>SEASON</th>
<th>RISK</th>
<th>HAVE EMPLOYEES EVER BEEN SUNBURNT AT WORK?</th>
</tr>
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<tbody>
<tr>
<td>Winter</td>
<td>LOW</td>
<td>NO</td>
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<tr>
<td>Autumn/Spring</td>
<td>LOW</td>
<td>YES</td>
</tr>
<tr>
<td>Summer</td>
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<tr>
<td>All year</td>
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Comments

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HAZARDOUS FACTORS

The presence of reflective surfaces or photosensitising substances will increase the risk posed by UV radiation.

An increased number of factors will increase the magnitude of the risk.

PRESENCE OF REFLECTING SUBSTANCES
- Concrete
- Sand
- Glass
- Snow
- Roofing iron
- Water
- Aluminium foil

USE OF PHOTOSENSITISERS*
- NO
- YES *see over for list of photosensitisers

PROTECTIVE FACTORS

The use of any personal protective equipment will provide some protection from UV radiation.

The use of more equipment will provide adequate and appropriate protection from solar UV radiation.

USE OF APPROPRIATE CLOTHING/PERSONAL PROTECTIVE EQUIPMENT
- Broad brimmed or legionnaire’s hat
- Construction helmet with brim attachment
- Long-sleeved shirt
- Long trousers
- Sunglasses (AS 1067 or AS/NZS 1337)
- SPF 30+ sunscreen
- Portable shade structure

Risk Control Worksheet

FACTORS ASSESSED AS A RISK (From Risk Assessment Checklist)

Refer to Worksafe Australia Guidance Note [NOHSC: 3012 (1991)]

IS THE JOB/TASK NECESSARY?

OPTIONS:

NO

YES

ELIMINATE JOB/TASK

Options:

SHORT TERM

MEDIUM TERM

LONG TERM

Is elimination and/or reduction of risk by use of engineering controls practical?

Options/Actions:

Timeframe

SHORT TERM

MEDIUM TERM

LONG TERM

Is elimination and/or reduction of risk possible by use of administrative controls?
<table>
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<th>Timeframe</th>
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<tbody>
<tr>
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Is elimination and/or reduction of risk by the use of personal protective equipment and clothing practical?

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<th>Timeframe</th>
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This is now a risk control plan for the worksite. It should be filed and kept for reference. A re-assessment should be performed once improvements have been implemented.