



# Thermal Comfort, Your Workplace and Heat Related Illness

## **What is Thermal Comfort?**

Human thermal comfort is defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) as the state of mind that expresses satisfaction with the surrounding environment (ASHRAE Standard 55).

Thermal comfort is affected by heat conduction, convection, radiation, and evaporative heat loss. Thermal comfort is maintained when the heat generated by human metabolism is allowed to dissipate, thus maintaining thermal equilibrium with the surroundings. Any heat gain or loss beyond this can generate a sensation of discomfort. The sensation of feeling hot or cold therefore is not just dependent on air temperature alone.

## **When might my thermal comfort place me at risk of injury or illness?**

Although we are most comfortable in an environment that allows us to maintain a thermal equilibrium, the sensations of thermal discomfort do not necessarily automatically relate to the experience of a heat related illness. The body is capable of cooling itself by sweating and varying blood flow and as such an increase in the temperature of our work environment, although uncomfortable at times and a nuisance, might not result in a health and safety issue.

In some situations however sweating isn't enough to cool ourselves and body temperature rises. During very hot and extreme heat conditions, people are at greater risk of health problems due to heat. These problems can be specific heat-related illnesses or a worsening of existing medical problems.

## **What are extreme heat conditions?**

Risk is greatest during heat waves and when the temperature hovers about 5°C or more above average for three (3) or more days. The risk is increased when high temperatures are combined with increased humidity.

## **How will I know if I am experiencing a Heat Related Illness?**

Sensations of feeling hot and sweating do not necessarily mean a person is experiencing a heat related illness. 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 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.

Heat related illness (or heat stress) on the other hand occurs when heat is absorbed from the environment faster than the body can get rid of it using the body's normal physiological mechanisms (i.e. sweating and varying blood flow). 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. On page 3 of this information sheet you will find the typical heat related illness, their symptoms and treatment.

If you or any of your work colleagues experience any of the symptoms associated with heat related illness it is essential that you initiate the relevant treatment as soon as possible, contact your local [First Aid Officer](#) for assistance and support and where required call for an Ambulance (if calling an Ambulance remember to also advise [Campus Security](#) so that they can meet the Ambulance and escort them to your location).

## **What can you do to prevent the onset of a heat related illness?**

- Drink plenty of fluids during hot weather – cool water is best
- Don't wait until you are thirsty to drink – drink regularly during the whole day
- Urine colour is a good guide to hydration – it should be clear to light straw-coloured, not dark or golden
- Increase natural ventilation by opening windows and using fans
- If possible seek an air-conditioned environment
- Seek your doctor's advice about predisposing medical conditions and medications
- Wear light coloured, loose fitting clothing
- Pace yourself and limit strenuous outdoor activity

- Stay out of the sun
- Take time to adjust to the environment
- Avoid alcohol, coffee and other caffeinated drinks, and high sugar drinks
- Limit hot foods

If you must be out in the heat (e.g. for those working outdoors)

- Limit outdoor activity to morning or evening hours
- Protect yourself from the sun and **slip, stop, slap** when outside by using sunscreen, wearing a hat and covering exposed skin
- Rest regularly in the shade and drink fluids frequently.

#### **Managing Thermal Comfort Issues in your workplace.**

Despite a thermal comfort issue being potentially unrelated to a health and safety concern (that is, the issue may not be posing a risk of developing a heat related illness), CSU still accepts and understand the need to provide staff, students and visitors with a comfortable and productive CSU environment.

Therefore, if on a regular basis (that is, not just during periods of extreme heat conditions or unseasonable weather) you feel that your workplace is having a detrimental impact on your thermal comfort, CSU has developed some guidelines for you to refer to. These guidelines aim to enable you to manage and resolve thermal comfort issues in consultation with your local manager, colleagues and other areas of the University (e.g. DFM or OHS).

Please refer to the 'Guidelines for managing issues relating to Indoor Thermal Comfort (hot conditions)' and 'Outdoor Thermal Comfort - Management Guidelines' for additional information.

#### **Where can I get more information?**

- Guidelines for managing issues relating to Indoor Thermal Comfort (hot conditions)
- [Outdoor Thermal Comfort - Management Guidelines](#)
- [NSW Department of Health](#)
- [WorkCover NSW – Fact Sheet, Working in Hot Environments](#)
- [ACT WorkCover - Guidance to Working in Hot or Cold Environments](#)
- David Tallentire, Manager - Occupational Health and Safety  
[dtallentire@csu.edu.au](mailto:dtallentire@csu.edu.au) or 6338 4096

There are a number of heat related illnesses that can occur and if left untreated one heat related illness can escalate to another. Typical heat related illnesses include:

Heat Related Illness	Typical Symptoms	Treatment
<i>Heat Cramps</i>	<p>Heat cramps are muscle pains or spasms, usually in the abdomen, arms or legs. They may occur after strenuous activity in a hot environment, when the body gets depleted of salt and water.</p> <p>They may be a symptom of heat exhaustion.</p>	<p>Treatment should include:</p> <ul style="list-style-type: none"> <li>• Stop activity and sit quietly in a cool place</li> <li>• Increase fluid intake</li> <li>• Rest a few hours before returning to activity</li> <li>• Seek medical help if cramps persist</li> </ul>
<i>Prickly heat</i>	<p>Is an intense, itchy red skin rash. It is caused by a blockage of the sweat ducts from prolonged wetting of the skin.</p>	<p>Treatment should include:</p> <ul style="list-style-type: none"> <li>• Treat by keeping the skin cool and dry, wearing suitable clothing and avoiding hot work.</li> </ul>
<i>Heat fainting</i>	<p>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.</p>	<p>Treatment should include:</p> <ul style="list-style-type: none"> <li>• If a person faints, lay him/her in the shade, remove outer clothing, provide cool water and fan vigorously to increase evaporation.</li> </ul>
<i>Heat Exhaustion</i>	<p>Heat exhaustion is a serious condition that can develop into heat stroke.</p> <p>Warning signs may include:</p> <ul style="list-style-type: none"> <li>• Pale and sweating</li> <li>• Rapid heart rate</li> <li>• Muscle cramps, weakness</li> <li>• Dizziness, headache</li> <li>• Nausea, vomiting</li> <li>• Fainting</li> </ul>	<p>Treatment should include:</p> <ul style="list-style-type: none"> <li>• Get the person to a cool area and lie them down</li> <li>• Remove outer clothing</li> <li>• Wet skin with cool water or wet cloths</li> <li>• Seek medical advice</li> </ul>
<i>Heat Stroke</i>	<p>Heat stroke is a <b>life-threatening emergency</b>. It occurs when the body is unable to prevent the temperature rising rapidly.</p> <p>The symptoms may be the same as for heat exhaustion, but the skin may be dry with no sweating, and the person's mental condition worsens. They may stagger, appear confused, have a seizure, appear to have a stroke or collapse and become unconscious.</p>	<p>Treatment should include:</p> <ul style="list-style-type: none"> <li>• Call an ambulance</li> <li>• Get the person to a cool area and lie them down</li> <li>• Remove clothing and wet skin with water, fanning continuously</li> <li>• Position an unconscious person on their side and clear the airway</li> </ul>