Thermal Comfort Guidelines

Section 1 - Purpose

(1) These Guidelines are designed to provide information to assist managers and their staff to manage issues relating to thermal comfort in the workplace. These Guidelines are to assist individuals and do not deal with the engineering or maintenance aspects of heating or cooling systems, or the processes of justifying and seeking the installation of new systems.

(2) Charles Sturt University (the University) has an obligation to provide a healthy and safe physical environment for all users, including staff, students and visitors. Complementing these obligations are objectives to create facilities that are enjoyable, comfortable and productive places to work and learn. Charles Sturt University's physical assets must also be flexible and adaptable to meet changing needs, provide users with a positive experience, be environmentally sympathetic and be cost effective places to construct and operate over their economic life.

Section 2 - Glossary

(3) For the purpose of these Guidelines:

a. Condition Audit - means a scheduled assessment of the physical state of building elements and services and the assessment of the maintenance needs of the facility;
b. Heat stroke - is an uncommon and more severe form of heat illness, which is a medical emergency. It occurs when the body can no longer control the body temperature and it rises to temperatures where mental function is seriously impaired;
c. Hypothermia - is where a person gets an abnormally low body temperature as a result of exposure to cold environments; it is a serious condition, which can lead to death;
d. Physical Assets - means an asset such as a building or piece of equipment that has physical properties; and
e. Thermal Comfort – means the condition of mind that expresses satisfaction with the thermal environment and is assessed by subjective evaluation.

Section 3 - Policy

(4) Nil.

Section 4 - Procedures

(5) Nil.

Section 5 - Guidelines

Part A - Background

(6) As a certified carbon neutral organisation with a commitment to implementing sustainable practices, buildings are designed, built and operated in such a way that emissions and energy consumption are minimised whilst producing a good indoor environment. Energy used for heating and cooling of buildings is the largest contributor to the University's carbon footprint.

(7) Australia has no current thermal comfort standard. The key referenced standard is the American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE) standard ASHRAE 55-2013, Thermal Environmental Conditions for Human Occupancy.

(8) Due to the prevailing weather conditions during the peak summer and winter periods, many of our campuses experience a number of days of above or below average temperatures. During these periods of extremely hot or cold days, some of our office and teaching buildings may become less comfortable. In the main, this is due to the fundamental building design or plant capacity rather than a system failure.

(9) Facilities Management regularly conducts condition audits on University buildings aiming to improve thermal comfort meeting both occupant and sustainability requirements.

Part B - Responsibilities

Managers and Supervisors

(10) Managers are responsible for the implementation of this Guideline in their respective work area. This includes:

a. using a systematic approach to reviewing hazards associated with working in a hot or cold environment;
b. ensuring hazards are identified and communicated to workers and that corrective actions/control measures are identified and implemented such as workplace inspections, tool box talks, observation and discussion with workers;
c. ensuring workers are aware of their responsibilities, and are provided with adequate information, instruction, training and personal protective equipment (PPE) in relation to their tasks and work environment (i.e. appropriate clothing, sunscreen etc.).

Workers

(11) Workers have a responsibility to adopt the required control measures such as wearing appropriate clothing (PPE) for working in hot or cold environments and to report conditions that may affect their work capacity to their manager.

Work Health and Safety (WHS) Unit

(12) The WHS Unit in the Division of People and Culture is responsible for providing advice and support regarding the hazards and controls associated with working in thermal environments.

Facilities Management

(13) The Facilities Management is responsible for providing technical support to the work areas and WHS Unit in relation to thermal comfort in University facilities.

Part C - Thermal Comfort

(14) Comfort is a subjective issue and can vary widely from person to person. The most important factors influencing

the thermal comfort of an individual are:

a. air temperature;
b. humidity;
c. air movement;
d. radiant heat;
e. activity level; and
f. clothing.

(15) The Managing the Work Environment and Facilities - Code of Practice advises that work should be carried out in an environment where a temperature range is comfortable for workers and suits the work they carry out. Optimum comfort for sedentary work is between 20 and 26 degrees celsius, depending on the time of year and clothing worn.

(16) Workers involved in physical exertion usually prefer a lower temperature range. The means of maintaining a comfortable temperature will depend on the working environment and the weather, and could include any of the following:

a. fans;
b. open windows;
c. shading for windows or outdoor work;
d. access to cool drinking water;
e. adequate rest breaks;
f. rescheduling work to cooler parts of the day;
g. barriers/shielding from hot processes;
h. controlling airflow or drafts;
i. wearing appropriate clothing for the conditions; and
j. working in an alternate location.

Thermal Performance of Buildings

(17) The University has a large variety of building types and styles with as many different types of methods to achieve environmental comfort. Examples include passive systems, evaporative cooling systems and refrigerative systems. These may be locally controlled, occupant controlled at a building level or electronically controlled via a Building Management Information System (BMIS) system. See attached guide to the types of building cooling systems at the University.

(18) The first step in addressing thermal comfort issues is to ensure that the building's system is functioning correctly. If the building has a closed refrigerative system, ensure that windows and doors are closed. If the system is of the evaporative type, ensure that windows are partially open in all rooms. It should be noted however that on days of extreme temperature, even a fully functioning system may not have the capacity to maintain a temperature in the range 18 - 27 degrees celsius.

(19) The use of personal fans or heaters in an air-conditioned area where people are experiencing discomfort may exacerbate the situation. It may make the area hotter or colder due to interference with the automatic control system of the air conditioning system. For example, a personal heater may cause a nearby air conditioning thermostat to falsely sense that the room is too warm, consequently decreasing the temperature of the air supplied to the room. This can exacerbate an already uncomfortable environment.

(20) The use of personal heaters is not permitted in the workplace due to the interference with building systems and the impact on other individuals. Personal heaters can also pose electrical and fire risks, not meet current Australian

Standards or be appropriately serviced. If you are experiencing thermal comfort issues within your area, contact the Facilities Management via a Pulse Service Request.

(21) To achieve the best performance out of a building's system it is important that the occupants of a building fully understand how their system operates. Please contact the Facilities Management if you have any questions about the function or operation of your building's systems.

Sustainable Operation of Heating and Cooling Systems

(22) Set the room temperature between 18 to 20 degrees celsius in winter and between 25 to 27 degrees celsius in summer. Check the temperature after the unit has been operating for 30 minutes.

(23) When a hot day is expected, turn on the air conditioner early rather than wait until the building becomes hot. It operates more efficiently when the outside air temperature is cooler.

(24) If you have ceiling fans and air conditioning installed, switch off your air conditioner once you have cooled the room to the desired temperature and then use your fan to circulate the conditioned air.

(25) Keep windows and doors closed when using reverse cycle air conditioners. Evaporative air conditioners require some air flow so you need to keep some windows open.

(26) Cool air naturally falls while hot air rises. If your air conditioner has adjustable louvres, adjust them towards the ceiling when cooling and towards the floor when heating.

Part D - Thermal Discomfort

(27) Thermal discomfort does not necessarily lead to risk of suffering a heat related illness. In many cases, although we feel uncomfortable, the work conditions are such that we face no significant risk of succumbing to the serious health and safety problem of heat related illness. However, working conditions that cause heat related illnesses will also cause heat discomfort. People who work indoors completing sedentary tasks, i.e. office workers, are very unlikely to be at risk of suffering a heat related illness. Any heat problems they experience are far more likely to be due to heat discomfort.

(28) Some medical conditions including cardiovascular disease, low or high blood pressure, respiratory conditions or kidney disease may make a person more likely to suffer health affects while working in uncomfortable conditions. Older people and women who are pregnant may also be more susceptible to health affects, especially from heat discomfort.

(29) Workers should discuss any medical conditions with their supervisor in the first instance.

(30) If a significant proportion of people are experiencing discomfort in a work area for a long period of time, then the cause of the discomfort should be investigated using a risk management approach. The following factors should be considered in the context of the specific workplace, activities and tasks:

a. level of physical activity required to perform tasks;
b. temperature in the area;
c. does the work performed require safety critical tasks such as operating machinery or use of chemicals;
d. number of people in the area;
e. individual needs, e.g. people with medical conditions;
f. concerns expressed by workers or students; and
g. resolution of the thermal discomfort issues could include any or a combination of solutions noted in Part C.

Heat-Related Illness

(31) Heat-related illness includes dehydration, heat cramps, heat exhaustion, heat stroke and worsening of existing medical conditions. If you have a medical condition such as heart disease, diabetes, or kidney disease and if you take certain medications, heat can make your symptoms worse. Further information can be found by reading the NSW Health Fact Sheet on Heat-related Illness.

(32) SafeWork NSW in its Managing the Work Environment and Facilities - Code of Practice notes:

> "It is important to distinguish between a condition that threatens health and safety, and a feeling of discomfort."

(33) Terms like heat stroke and hypothermia refer to serious medical conditions.

Part E - Hot, Cold and Wet Environments

Hot Environments

(34) Working in a hot environment presents particular hazards which need to be considered before the worker is required to enter the area. Careful planning is required to ensure that the risk management approach can be used and implemented. If the hazard cannot be eliminated, then exposure to such conditions as extreme heat, the risk of heat strain and exhaustion must be minimised. For example:

a. increase air movement using fans;
b. isolate workers from indoor heat sources;
c. remove heat from hot processes using local exhaust ventilation;
d. altering work conditions so work is performed during cooler parts of the day;
e. working in an alternate location such as a different office or building;
f. working from home where appropriate and approved;
g. using mechanical aids for manual tasks;
h. providing shading for outdoor work;
i. wearing light clothing;
j. job rotation;
k. slowing down the pace of work;
l. providing cool drinking water; and
m. providing cool rest areas.

Cold Environments

(35) Working in cold environments, e.g. snow conditions, can impose unique hazards and risks. Sufficient planning using the risk management approach is required to ensure that people are not places at risk in this type of environment. If the hazard cannot be eliminated, the risk of hypothermia must be minimised. For example:

a. providing localised heating;
b. providing shelter against the wind and rain;
c. wearing clothing that protects against the cold; and
d. job rotation.

Wet Environments

(36) Staff and students may be required to work outside in wet weather or in other wet environments. Working in wet weather conditions may change the nature of the hazards and risks associated with the particular task or job.

(37) The University will attempt to minimise any discomfort due to wet weather by providing appropriate personal protective equipment (PPE) or scheduling alternative duties where available. If it is not possible to eliminate exposure to wet conditions, the risks must be minimised. For example:

a. providing shelter against the wind and rain;
b. wearing clothing that protects against the wet conditions; and
c. job rotation.

(38) If extreme weather events are forecast such as high winds, flooding or severe storms then work should be postponed until after these events occur. It is important that you continually monitor the conditions, especially if you are working in the field, and that you are prepared if weather conditions change suddenly.

Part F - Further Information

(39) If following the completion of a risk assessment, (refer to the Health, Safety and Wellbeing Procedure - Risk and Hazard Management), some of the identified thermal comfort hazards have been assessed as an unacceptable risks, these hazards should be referred to the Manager, Health Safety and Wellbeing, Division of People and Culture or the Manager, Health Safety and Wellbeing, Facilities Management for further investigation and identification of additional hazard controls. An unacceptable risk would occur where, despite implementation of the controls listed above, there is still an imminent risk of injury/illness. For information on completing a risk assessment and relevant risk assessment templates please contact the Work Health and Safety Unit at ohs@csu.edu.au.

Status and Details

Status	Current
Effective Date	12th April 2019
Review Date	13th December 2024
Approval Authority	Executive Director, Human Resources
Approval Date	3rd April 2019
Expiry Date	Not Applicable
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