VIEU Information Brochure
Hazards of Working in Heat
January 2009

This information Brochure is designed to assist Health and Safety Reps, Sub-Branch Reps and Members identify, assess and control the hazards of working in heat. The focus is on ways to modify the working environment so that the onset of heat stress and heat discomfort may be prevented.

What is heat stress?
Heat stress is a potentially serious medical condition and occurs when the human body takes in more heat than it releases. Heat is released from the body mainly by evaporation through sweating. When the temperature in the working environment increases it leads to a corresponding increase in body temperature. This triggers sweating and a flow of blood to the skin where it can be cooled by evaporation. Excessive sweating leads to a loss of water from the body, dehydration and loss of salt, resulting in potentially serious health effects including death. Outdoor workers such as grounds and maintenance staff are most at risk of heat stress.

What is heat discomfort?
Heat discomfort is not a medical condition. It is the discomfort felt by most people when it is hot. Although the level of risk of heat discomfort is not as significant as that of heat stress it is important to note that the working conditions which create heat stress will also cause heat discomfort. While teachers, school officers, school assistants, clerical and administrative staff are less likely to suffer heat stress, working in hot, stuffy and poorly ventilated rooms is very likely to cause heat discomfort.

Risk Factors
How the body is affected by heat is determined by a number of risk factors. The more factors present, the greater the level of risk.

- Air temperature, air movement and humidity will influence how efficiently the body is able to cool itself.
- Workload – in particular the level of physical exertion and control the employee has over the organisation and pace of work.
- Clothing – in particular whether or not it is essential to wear protective clothing or equipment while working.
- Level of fluid lost from the body and the rate of its replacement.
- Radiant heat from the sun and also from machinery or equipment used in the workplace such as ovens, kilns and furnaces.
- Acclimatisation – people generally do not acclimatise to rapidly changing seasonal heat such as heat waves.
- Personal factors – people who are overweight, recovering from illness, using certain medications, are physically unfit, have a pre-existing heart, circulatory or skin disease are dehydrated or pregnant may have a reduced tolerance to heat.

Legal Standards

In Victoria, there are no regulations specifying standards for maximum temperatures in the workplace. However employers have a duty under Section 21 of the Occupational Health and Safety Act 2004 to so far as is reasonably practicable, provide and maintain for employees of the employer a working environment that is safe and without risks to health. The employer also has an obligation to monitor conditions in the workplace. This includes conditions heat and cold. The Act also imposes a duty upon employers to consult with their employees about the identification and assessment of hazards and the decisions taken to control the risks of those hazards. In addition, The Victorian *Compliance Code for Workplace amenities and work environment* includes provisions that can be used to protect workers from heat stress:

- Workplaces that are buildings need to be capable of maintaining a temperature range that is comfortable and suitable to the work. Workplace temperatures that are too high or too low can contribute to fatigue, heat illness and cold-related medical conditions. (Section122)

- Optimum comfort for sedentary work is between 20°C and 26°C, depending on the time of the year and clothing worn. Employees undertaking work requiring physical exertion usually prefer a lower temperature range. (Section124)

- The means of maintaining a comfortable temperature will depend on the working environment and the weather and could include any of the following (Section125):

- air-conditioning

- fans

- electric heating

- open windows

- building insulation

- the layout of workstations

- direct sunlight control

- controlling airflow and the source of draughts

- a work and rest regime

- All heating and cooling facilities need to be serviced regularly and maintained in a safe condition (Section 126)

- Air movement throughout a workplace is necessary for the health and comfort of employees. Employers need to ensure workplaces that are buildings provide natural ventilation, or mechanical ventilation which complies with *AS 1668 The use of ventilation and air-conditioning in buildings.* In enclosed workplaces, employers need to ensure that comfortable rates of air movements (usually between 0.1m and 0.2m per second) are maintained. (Sections128 - 131)

If there are concerns that the ventilation in a workplace either natural or mechanical is inadequate, the employer may need to engage an industrial hygienist or air conditioning mechanic to assess rate and volume of air movement

Action Plan for Health and Safety Reps
The focus of the employer must be on changing the work environment and/or the work arrangements to eliminate or reduce as much as possible the exposure to heat. According to the Canadian Centre for Occupational Health and Safety; 35 – 40 degrees is considered to be 'the limit of high temperature tolerance' for most people.

When thermal stress is identified:

1. Meet with the Principal to discuss the issue as soon as possible. Keep written records of all discussions, outcomes of negotiations and undertakings given.
2. Initiate consultation and discussions to control the problem and reduce the risk of injury or illness to staff and students.
3. If there are no policies or procedures in place, propose that as a longer term strategy these be developed in consultation with leadership, health and safety reps and staff.
4. Contact VIEU for assistance.
5. If negotiations do not progress quickly enough, if the Principal is dismissive and doesn't recognize thermal stress as a health and safety issue, inform the

Principal that in your opinion and based on your belief, there is a breach of the OHS Act occurring and that you will be issuing a Provisional improvement Notice (PIN). Contact VIEU for assistance with the PIN

Identify the Hazard.

- Meet with the members of your designated work group and talk with them about heat and its effect of health. Identify areas of the workplace where heat is a problem and whether seasonal heat is a hazard, especially for grounds and maintenance staff.
- Examine and assess the effectiveness of any existing procedures or policies in the workplace for dealing with exposure to heat.
- Take into account absenteeism and illnesses.
- It is ideal to do this prior to the onset of any heat wave or extreme cold snap

Assess the Risk

- Inspect areas of the workplace where thermal stress has been identified as a problem. The easiest and most convenient method of collecting temperature data throughout the course of the working day is to use a normal dry bulb thermometer. To collect humidity data a normal wet bulb thermometer is used. Measurements should be taken as close to the place where the work is being performed as possible.
- Meteorological data and past records of staff reporting problem areas can also be used to further identify the risk.
- The presence of other risk factors such as workload, clothing, radiant heat and personal factors should also be taken into account.
- Use the risk assessment to prioritise areas of greatest concern.

Controlling the Risk

Once the level of risk has been determined it is important your employer adopts measures to eliminate or reduce that risk and that they consult with you as to how this will be done. Here are some measures which health and safety reps can suggest the employer implements.

- Indoor air temperatures should be maintained between 18 to 23 degrees Celsius for work requiring physical exertion and 20 to 26 degrees for sedentary work. Humidity between 40 and 60%. This can be achieved through
  - Air conditioning or circulating fans to improve ventilation. Fans on their own are ineffective as a cooling measure when the temperature is over 27.
  - Insulation in the roof and walls of buildings
  - Insulation or shielding of sources of radiant heat such as kilns
  - Exhaust ducts for venting hot air from rooms, particularly in workshops, wood and metal and food teaching areas.
  - Provide portable air cooling cabinets which can be moved from room to room or area to area.
  - Provision of shade trees, window tinting, blinds, eaves and verandahs to reduce heat gain from windows.
  - Moving desks and workstations away from windows and other sources of radiant heat.
  - Relax the dress codes of staff and students and allowing people to dress appropriately for hot weather by allowing ties, jackets to be removed and shorts to be worn
- For outdoor work where it is very difficult to control temperature the risk to workers can be reduced through the use of shade cloths, shelters, tents, curtain walling and in the presence of hot, dry winds, windbreaks. The provision of light loose fitting clothing consisting of a collared shirt and long trousers, wide brimmed hats with neck guards, sunglasses and sunscreen may further reduce the risk from the sun's radiant heat. Work vehicles should also be air-conditioned.
- It is also important to examine ways to reduce the workload of grounds and maintenance staff to reduce the risk of heat stress. Where the outside temperature exceeds 26 degrees it is necessary to consider measures to prevent to risk of heat stress. Some ways to do this are:
  - Reschedule tasks so the most demanding ones are performed in the coolest parts of the day.
  - Reduce the amount of time spent doing physically demanding tasks.

  - Arrange for more staff to complete a job.
  - Provide access to mechanical aids to reduce the level of exertion
  - Wear the lightest clothing that still provides the required level of protection
  - Schedule extra rest breaks in a cool area with cool drinking water provided. During periods of excessive heat it is advisable to drink a cup of water every 15 – 20 minutes. Coffee and tea is best avoided as they have a dehydrating effect on the body.
  - Lunch rooms should be maintained at a temperature between 18 – 23 degrees.
- The following duration of rest breaks per hour for outdoor work may be used as a guide when the temperature reaches or exceeds the level shown:
  - 15 minutes – 30 degrees
  - 30 minutes – 32 degrees
  - 45 minutes – 34 degrees
  - cease work – 36 degrees
- Grounds and maintenance workers in particular, should also be provided with information, instruction and training by their employer in how to recognise heat stress and how to give emergency first aid to colleagues who may be effected.

Policy Development

Few schools have effective policies in place to deal with heat problems in the workplace. Often the issue is not raised until the onset of the first summer heat wave. This is the worst time to raise the matter with the Principal as any arrangements set in place are more likely to ad hoc and quickly put together. The health and safety rep should initiate the development of a policy or a review of the existing one. Whilst initiated by the health and safety rep, this is a task best carried out by the OHS Committee and should have the involvement of everyone affected. Matters to be addressed by the policy have been covered in the action plan for health and safety reps. The policy should be reviewed regularly.