Chapter 13

Hot and cold

What is the hazard?

Thermal comfort at work relies on more than the temperature – it's the combination of many factors like the nature and duration of work tasks and drinking enough fluids etc. There is a Code that applies for general thermal comfort. This applies to indoor work.

But despite the extremes of temperatures and conditions in Australia, we do not have regulations on safe temperatures for workers. Heat stress is not a problem of "wimps" who can't take the heat – workers die from heat stress.

It's not temperature alone:

- Acclimatisation (has the employee just started work or are they used to the conditions)
- Humidity
- Radiant heat/cold
- Air movement/wind speed
- Prevailing weather conditions (intense solar radiation, lighting, snow, hail, heavy rain, cloud cover, lack of solar radiation etc.)
- Workload
- Clothing/PPE
- Duration of exposure
- Fatigue (length of shift, number of shifts, overtime)
- Physical fitness of the worker (including acclimatisation, health conditions)
- Physical exertion of the worker (heart rate(s), muscle fatigue etc.)

Warning

Being physically fit does not mean the person cannot suffer from heat stress. Recent deaths have been of fit men.

Being thirsty means the person is already dehydrated.

Sweating is the main way our body keeps cool. In hot environments you will be losing significant amounts of body fluids, so fluid replacement is necessary. As the body dehydrates the colour of urine becomes darker.

Dehydration causes a lack of concentration, reduced strength and endurance which can lead to heat stress. Drink 100–150 ml every 15–20 minutes.

Health effects – heat

Effects on workers which need to be prevented include:

- Reduced concentration (and increased likelihood of accidents)
- Increased discomfort in use of protective clothing and equipment
- Aggravation of effects of other hazards, e.g. noise
- Aggravation of pre-existing illnesses
- Heat illness e.g. fainting, heat stroke – the core body temperature needs to be maintained at 36.8°C.
- Heat exhaustion can be fatal, it occurs when the body can no longer cool down the core body temperature.

The Regulations

As there are no Regulations or Codes for working in heat or cold. The AMWU encourages HSRs and delegates to use the following information to ensure the PCBU/employer takes action – before hot days – to control the risk of exposure to heat.

The Bureau of Meteorology issues a three-day temperature forecast and uses an index called EHF. This gives advice on extreme heat days.

Seasonal heat

This occurs during summer months to both indoor and outdoor workers.

A satisfactory measure of seasonal hot conditions is provided by the (ordinary) dry-bulb temperature reading. Heat discomfort is felt at 30°C and all efforts should be taken by employers to keep temperatures below this level or to provide conditions for outdoor workers that help reduce the effects of seasonal hot conditions where the temperature exceeds 30°C.

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All new indoor work areas should be temperature-controlled, using air-conditioning or other methods of heat reduction:

- Air conditioning of work areas
- Installing roof and wall installation
- Isolate workers from the heat source using walls or temporary barriers
- Use job rotation and/or scheduled breaks and/or protection from direct/indirect radiant heat
- Use PPE (sun hats, neckerchief guards/coolers, sun screen/block out etc.)
- Increase air flow movement using localised air-circulating fans
- Use mechanical aids/team lifts to assist carrying out manual tasks (including light products)
- Providing lighter alternative work:
- Alter work schedules so that work is done at cooler times (start earlier)
- Use workplace to pace their work across the shift and alternate tasks
- Use of shade cloths:
- Provide cool drinks and ice in insulated containers that are readily available in the workplace
- Provide cooled well ventilated and/or an air-conditioned room where workers can take rest breaks.

It is essential that first aid requirements are understood and applied during hot work/ weather.

Work breaks

If, and only if, all of the above are done, then work breaks are required to prevent heat stress. The temperature must be taken where the person is working.

For southern areas – where due to variable temperatures many workers are not acclimatised:

- 30–32°C: 10 minutes rest every hour
- 32–35°C: 15 minutes rest every hour
- 35–38°C: 30 minutes rest hour
- Over 38°C: Rest in a ventilated area until less than 38°C

For hotter northern parts of the country – as workers are acclimatised to higher temperatures:

- 36–38°C: 10 minutes rest every hour
- 38–40°C: 15 minutes rest every hour
- 40–42°C: 30 minutes rest hour
- Over 42°C: 45 minutes break every hour and no more than 2 hours at this temperature

Permanently hot work

A heat stress area is one where the temperature at work is normally or consistently above 35°C, i.e. this is the limit of discomfort from transient heat conditions for workers who are not acclimatised.

The type of work where heart stress is common includes steel work, foundries, bakeries, glassworks, boiler rooms, restricted work areas, confined spaces and underground mines.

Only authorised, acclimatised and trained employees should be allowed to work in heat stress areas, subject to the following conditions:

- Time will be given to acclimatise, on full pay
- All workers in a heat stress area should be given time to acclimatise on full pay
- New workers should be given 5–7 working days in which to acclimatise
- The acclimatisation schedule should begin with 20% of the anticipated workload on Day 1, followed by 20% increases on each additional day – building up to 100% workload on Days 5–7
- Regular acclimatised workers who return from nine or more consecutive days leave should undergo a four-day re-acclimatisation process. Starting on Day 1 with 50% of the regular workload, 60% on Day 2, 80% on Day 3, and 100% on Day 4
- Regular acclimatised workers who return from four or more consecutive day's illness should undergo a four-day re-acclimatisation process, as above
- Workers over 45 years of age working in heat stress areas should be given the right to transfer to other work areas which do not involve an acclimatisation program without loss of pay, seniority and other entitlements e.g. heavy work in the vicinity of heat sources – furnaces, ovens, laundries or typical heat micro climates like underground mines
- All workers will be provided with regular paid work breaks of 30 minutes, each hour. Taken either as 15 minutes on, and 15 minutes off, or 30 minutes on and 30 minutes off, depending on conditions. Cooled rest rooms should be provided where these breaks are to be taken
- There should be constant environmental monitoring, using an ordinary dry-bulb thermometer, supplemented in some cases, by WBGT rating instruments
- No work should ever take place in areas where the temperature exceeds 50°C, or 32°C (WBGT). All workers should be provided with appropriate protective clothing that promotes air circulation and evaporation of sweat and with copious supplies of cool non-alcoholic drinks.

For those in permanently hot work:

- All workers should be provided with regular medical checks – at least once a quarter to ensure that they are coping with the stress
- Checks should include an Electrocardiogram (ECG) to monitor heart condition
- All new employees should be trained in the basics of heat stress and its prevention and be provided with a copy of the Agreement
- Where the heat is intractable and safety equipment is required to be worn or used, exposure to the hazard needs to be reduced and appropriate conditions negotiated.

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Working in extreme cold

Our bodies are unable to acclimatise to cold.

Prevention against the harm of cold environments is very important. Cold stress is associated with low temperature, high air movement and humidity i.e. from a blast of cold.

Under cold conditions, the body attempts to keep heat in by restricting blood flow to the skin and by functions such as shivering.

Minimum temperatures - working at a normal rate, in an air temperature of 1°C should be considered the minimum.

Measures to control exposure to cold

Hand protection:

- If fine work needs to be done with bare hands at temperatures below 16°C for longer than 10–20 minutes, special precautions need to be taken to keep hands warm i.e. use of warm air blowers, insulated handles on tools.
- If fine work is not required, protective gloves should be worn for: non-moving work below 10°C and light work below 4°C.

Protective clothing and equipment (PCE): Clothing such as thermal underwear, thick socks, gloves or mittens are needed in cold areas. Thermally insulated suits are needed for cold store work.

Adequate paid work breaks in a warm rest area, where warm non-alcoholic drinks are provided, of at least:

- 10 minutes off each hour for temperatures between 9–7°C
- 20 minutes off each hour for temperatures between 7–4°C
- 30 minutes off each hour for temperatures between 4–1°C

Shift arrangements can be altered to minimise risk, i.e. rotate jobs so that individual workers are not exposed to the low temperature problem for the entire working day, or make sure appropriate rest breaks are arranged.

Resources

Prevention of Heat Stress: Queensland Government has produced a useful tool to guide: https://fswqap.worksafe.qld.gov.au/etools/etool/heat-stress-basic-calculator-test/

Hot days

It is easy to be ready and aware of upcoming hot days – smart phones and very good services from the Bureau of Meteorology. The BOM provides regular three-day warnings and daily maximum temperature extreme area maps.