AUSTRALIA POST

Managers Guide Working in Heat

Enterprise Safety
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1 Introduction

This document outlines Australia Post's approach for managing heat illness risks associated with working in hot weather. It will help managers understand the contributing factors and how to effectively manage the risks to prevent heat illness and injury. Effectively applying these guidelines will contribute towards realising Australia Post's vision for zero injuries, zero harm to anyone and zero tolerance of unsafe acts or workplaces.

In preparing this Manager's Guide, Australia Post has drawn on its own heat illness experience over many years, the nature of the activities of workers most exposed to hot conditions across the nation, and expert advice.

> Australia Post does not specify a maximum outdoor temperature above which mail delivery or other work should cease. Many variable personal and environmental factors contribute to heat illness risk. Therefore, it is not practicable or appropriate to prescribe control measures based on ambient air temperature alone.

1.1 Scope

These guidelines apply to all Australia Post operations involving work in non-air-conditioned workplaces and sites.

1.2 Background

Many Australia Post workers spend a large part of their workday outdoors. Various personal, environmental and work factors affect thermal comfort and heat illness risks.

Australia has many different climatic zones that result in varying degrees of acclimatisation. For instance, 35 degrees C with high humidity may be regarded as "hot" by people living in Tasmania but "normal" by people living in Darwin. Seasonal weather conditions can vary widely in some areas, yet remain relatively constant in others. Extremes such as 'heat waves' also occur. Effectively managing these many and changeable variables requires a flexible approach based on an understanding of the risks.

1.3 Consultation

Managers must consult with workers when identifying heat hazards and controlling the risks.

2 Managing Working in Heat

Tips and options for managers

- Prepare for forecast very hot weather eg chill extra water bottles, roster adequate staff, prepare team briefing. Consult with workers.
- Identify those individuals who may be at greater risk on unusually hot days. Make sure they understand how to stay well and monitor them.
- Know those work areas activities or delivery rounds that require more exertion.
- Remind workers of prevention strategies.
- Monitor how workers are coping .
- Demonstrate your understanding and concern; be pro-active.
- Arrange for extra water drops to workers (eg to depot box), low sugar iceblocks etc.
- Moderate and modify the workload for the day as practical.
- Consider re-scheduling non-critical work for another day eg unaddressed mail.

2.1 Heat Injury Risk Factors – Identifying Hazards

Air (ambient) temperature alone cannot be used to determine risk of heat illness for our workers. We must also consider environmental, personal and operational factors.

2.1.1 Environmental Factors

- **Air (ambient) temperature** - When the air temperature is greater than the skin temperature (approx 37.5 degrees C), there is a potential negative heat flow causing body temperature to rise.

- **Humidity** - Humidity is the amount of moisture in the air.
    - High humidity - the volume of sweat that can evaporate reduces as air humidity increases. The cooling effect becomes less efficient. At high humidity (above 70%) it feels hotter and people feel "sticky".
    - Low humidity - moisture evaporates easily from the skin. However, if the relative humidity is very low (below 20%) the skin and mucous membranes (e.g. .nose, throat) can dry out causing problems such as bacterial infection, sinus trouble or headaches. Dry air can also increase static electricity, irritation of the skin and face rashes.

- **Air movement** – Airflow (wind) over the skin assists sweat to evaporate and therefore, assists cooling.

- **Radiant heat** – includes heat directly from the sun and other sources such as hot bitumen, uninsulated metal roofs, hot engines and reflective surfaces.

2.1.2 Personal Factors

- **Physical activity level –** increases the amount of heat the body generates. The type and level of activity can vary widely from mild, intermittent effort to extreme constant exertion.

- **Clothing** – includes the amount of cover and type of material. Protective items such as helmets, boots, gloves and wet weather gear can influence heat retention and sweat evaporation.

- **Hydration -** The body can lose large amounts of fluid through perspiration, especially during physical activity and in high humidity. If fluid is not replaced by drinking, dehydration can result. Also, many people drink less than they should in hot environments, because their thirst does not adequately signal their bodies fluid needs.
- **Acclimatisation** - is a physiological adaptation of the body to a hot environment over a period of time. People can acclimatise to the temperatures of their specific climate zone. During unseasonal heat waves or unusually hot or humid weather, people lack acclimatisation and are at increased risk of heat illness. This can also apply to a person normally working in an air conditioned building starting more active works outdoors where it's hot. People will adapt after about a week and cope more readily. Workers in warmer climates where high temperatures are common will adapt more readily but should still practice precautions.

- **Duration of exposure** - Longer exposure may increase the risk of heat illness. For example a delivery worker pedalling a bicycle has more sustained exposure to hot conditions compared to a driver who gets in and out of their air-conditioned van.

- **Health status** - can increase a person's susceptibility to heat injury. For example being unwell, having a fever, recovering from recent illness, fitness level, obesity, recent blood donation and previous heat illness history.

- **Age** - Some older adults (eg over 50 years) may cope less well in the heat.

- **Experience** New or inexperienced workers or those returning from long absence may not fully understand how their bodies cope with temperature extremes. They may have no practical experience to draw on or have lost fitness or acclimatisation.

- **Medication** Drugs or supplements may affect the body's ability to manage heat.

2.1.3 Operational/Other Factors

- **Job demands** Some outdoor jobs involve more physical effort than others. Some Australia Post examples are;
    - Riding an un-geared bicycle, especially on hills
    - Pushing a mail buggy or carrying a backpack, especially on hills
    - Some jobs may involve short bursts of more strenuous activity e.g. manually loading a lot of mail into a van in a hot loading bay, or many vans in quick succession
    - Delivery rounds can vary. Some may have shops and other air-conditioned buildings where workers can rest and cool down. Other rounds may be more exposed, have less shade or few air-conditioned buildings.

- **Lone workers (outdoor)** - such as Postal Delivery Officers (PDO) rely on their training, experience and judgement. They need a higher degree of understanding of heat risk factors, heat illness prevention strategies and how their body copes with heat. They need the ability to recognise the early symptoms of heat illness and how to manage this.

- **Consecutive hot days** People may get tired over consecutive days of unusually hot weather. They may progressively get dehydrated if they don't adequately replenish fluids each day.

2.2 Assessing Heat Illness Risk

There are considerable variations in personal characteristics and susceptibilities to heat illness. Therefore workers who show signs and symptoms of heat illness such as dizziness, clumsiness or mental confusion should take appropriate steps to reduce the heat stress. (AIOH, 2003).

Managers should consider the many factors outlined above when assessing the risk of heat illness for their workers.

2.2.1 Summary Guide for Managers

- **Appendix 1** will guide local managers to identify conditions that may present a higher risk of heat illness. Consider the environmental conditions and individual factors (Tables, 1, 2 & 3) to assess the risk of heat illness for your workers.
- Table 1 shows the conservatively calculated metabolic rate for a PDO riding a manual pushbike or walking with a backpack to deliver mail. It is based on 3.5 hours indoor work at the ambient outside temperature (no air-conditioning), and 5 hours delivery. These tasks have the highest metabolic rate of all Australia Post's most heat exposed activities. Other tasks that are less physically demanding have lower risk of heat illness.
- Cells marked "low risk" predict the combinations of air temperature and humidity where the *worker* can do this activity unrestricted without their core body temperature exceeding 38°C. 'Unrestricted' means no special interventions would be needed such as taking extra rest breaks or drinking more water than normal.

- Cells marked "proactively manage" indicate weather conditions where the bicycle or walking (backpack) PDO's core temperature would theoretically rise above 38°C unless effective steps are taken to manage heat stress.

2.2.2 Very Hot Weather and 'heat waves'

- In these conditions pro-active precautions are necessary especially for the more strenuous mail delivery activities.
- In extreme hot weather events where conditions can far exceed those shown in Appendix 1, Table 1, pro-active management becomes more critical to prevent heat illness. As air temperature and humidity increase, heat illness can occur more quickly unless proactive management strategies are used.

2.2.3 Secondary Risks

- Exposure to heat may impact on fatigue, concentration, reaction times and physical coordination. This may impair decision making and affect the worker's ability to work safely and therefore increase the risk of other incidents occurring.

2.3 Preventing Heat Illness – Controlling the Risks

Where a risk has been identified, controls should be put in place, taking into account the hierarchy of controls ie elimination, substitution, engineering, administrative controls.

The risk of heat illness can be significantly reduced with a combination of relatively simple and practical control measures described here:

- **Hydration** Adequate fluid intake is vital to replace that lost through perspiration. Sweat evaporating from the skin cools the body.
    - It is important to be well hydrated before going out into the heat, and to rehydrate at the end of the day
    - Drinking frequently every 15 – 20 minutes throughout the day, and before feeling thirsty
    - On very hot days when sweating feely, drink 500ml up to 1 litre per hour to maintain proper hydration. As a guide drink at least 250ml per hour on other days.
    - Drinking water should be readily available to allow regular, adequate fluid intake
    - Outdoor workers should take at least one water bottle (approximately 1 litre) and refill as needed
    - Workers should NOT force themselves to continue drinking excessively large amounts of water – this could have serious health consequences.
    - Australia Post provides re-fillable drinking bottles to outdoor workers. These may be pre-chilled.
- **Urine colour** – is a good guide to the level of hydration. Dark urine indicates poor hydration (see **Attachment 2**)

Drinks

Cool water is the best drink in hot weather. Caffeinated, sugary, or milk drinks are not recommended. Salty or electrolyte 'sport' drinks are not normally necessary (except on medical advice) as a normal diet generally has adequate salt. The increased salt/sugar content can have other health effects.

- **Hats** - A broad brim hat or a cap with peak and neck flap provide protection from the sun's radiant heat and UV rays.

- **Clothing** Light coloured, loose fitting clothing helps keep the body cooler. Clothes insulate the body from radiant heat and allow air to circulate to evaporate sweat and protect from sun burn. Australia Post work uniforms meet these needs.
    - Head wear such as hats and especially motorcycle helmets can be uncomfortable in very hot weather. Periodically removing headwear during task breaks and wetting the head will provide some relief. Disposable helmet liners are available on request. These absorb perspiration and can be easily changed on the round. Helmets must always be securely fastened when riding.

- **Food** – has energy and salts. Eating regular healthy snacks and small meals in hot weather maintains energy and salt levels.

- **Rest** - Rest breaks (preferably in a cool and shaded place) should be taken. Rest is important as it gives the body an opportunity to get rid of excess heat. Short spells of work followed by short rests are better than long spells of work followed by long rests. Rest breaks also allow workers to remove their helmet, drink fluids and eat a snack.
    - On days of extreme heat, workers may reasonably need additional time to complete their duties. Managers should take a practical approach to allocating additional time for rest periods. Individuals will differ in their need for additional rest periods.

- **Work organisation** Where practical the more strenuous tasks should be undertaken during the cooler times of the day. Allow an earlier start where practical.

    - In extreme weather events, consider shortening or reducing the work based on the managers judgement and feedback from workers.

    - Where practical rotate on-site (e.g. loading dock) workers through varying duties with some time in a cool environment

- **Supervision** - Monitor how workers are managing. Tolerance to heat stress varies between individuals. For example, on extremely hot days, workers may be asked to ring in and report or you could check on individuals that are more likely to need closer supervision (See Personal Factors above).

- **Individual tolerance –** Workers should be aware of heat illness symptoms and personal limitations such as their age, fitness, current health and medications. They should advise the manager if their health status has changed.

- **Report** - Workers should report symptoms of heat illness to their manager. They should also report to their manager if they are not well before working in hot weather. An incident report should be completed for all incidents of Heat Illness.

- **Education/Training** Workers (including visitors and contractors) need to understand risk factors for heat illness, how to recognise early symptoms of heat illness and how to prevent it. This is particularly important for those who work alone or in isolated areas.
    - Regularly remind workers of the risk factors, the early symptoms of heat illness and the practical measures they can take. This is especially important just prior to forecast extreme weather.
    - Make information and advice readily available to workers potentially exposed to working in hot conditions.

- **Screening** Australia Post's pre-employment medical screening will identify applicants with conditions affecting tolerance to heat.
- **Buildings**
    - **Non air conditioned** As a general rule, air temperature should be kept between 18 degrees and 30 degrees C. If air temperature reaches 30-32 degrees C, utilise strategies as below. The placement of fans and especially ceiling fans to increase air movement can make a valuable contribution to comfort. Air movement should not exceed 0.2m/s for comfort. Cool drinking water should be easily accessible. Window shading may be required if there is direct sunlight.
    - **Air-conditioned buildings** - In air-conditioned working space the ambient temperature should be maintained within an optimum range of 21-26 degrees C. In the event of air-conditioning system breakdown, temporary provision should be made for creating air movement. Ventilate the area eg open windows, provide fans. Cease activities that may contaminate the air.

Backpack Carriers, Cooling Neck Ties and Vests

Australia Post does not provide this equipment because working in the heat can be effectively managed through other methods outlined in this policy.

However, if individuals wish to use this type of equipment which has been purchased privately, then they may do so with the approval of their manger and the workers agreement to the following guidelines:

- **Small backpack type water carriers**
    - Worker must stop in a safe place to drink
    - Equipment must be high visibility
    - Recommended maximum capacity 2 litres
    - Do not freeze

- **Cooling neck ties and vests**
    - The necktie must have a 'hook and loop' or similar safety release.

- The weight of this equipment must be taken into consideration of total rider weight limits
- The worker is responsible for the proper use and maintenance of the equipment.
- Reasonably practical arrangements should be considered for hygienic storage and cooling of the equipment.

3 Definitions

Heat Stress - is the net heat load to which a worker may be exposed from the combined contributions of metabolic work (effort), environmental factors and clothing.

Heat Strain - is the overall physiological response resulting from heat stress. The physiological adjustments are dedicated to dissipating excess heat from the body.

Heat Illness - (hyperthermia) occurs when the body cannot sufficiently cool itself. Normal body core temperature is around 37°C. Advanced heat illness occurs when the core body temperature increases beyond 38°C.

It covers a range of medical conditions including rashes, cramps and heat exhaustion. The severity of signs and symptoms can range from mild irritation to a medical emergency such as heat stroke. **See Appendix 3** for details of heat illness symptoms and First Aid.

Heat discomfort (thermal discomfort) - is what many people feel when it is hot. It is important to distinguish between a feeling of discomfort and a condition that threatens health and safety. It is not a medical condition like heat illness and therefore is not considered a risk to health. However, it is necessary to recognise and take preventive steps to control discomfort as much as practicable in order to prevent the onset of heat illness.

4 Other Information

Further information is available:

- POGO/ At work/ Safety/ Enterprise/ Newsletters and Communications/ Team Talks/ Working in Heat
- POGO/ At work/ Safety/ Enterprise/ Newsletters and Communications/ Team Talks/ How News for Posties fact sheet
- POGO/ At work/ Safety/ Enterprise/ Policies and Procedures/ Hot Weather and Sun Protection/ UV Protection Policy
- POGO/ At work/ Safety/ Enterprise/ Newsletters and Communications/ Posters/ What Colour is Your Urine?

5 References

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Environmental Health Solutions. (2013). *Theoretical Heat Stress Survey for Mail Workers Exposed to Heat for Australia Post.*

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Appendix 1 – Managers Summary Guide: Managing Working in Heat

Table 1- Environmental Factors* (Environmental Health Solutions, 2013)

Air Temp** / Humidity**	24°C	26°C	28°C	30°C	32°C	34°C +***
50%	Low risk	Low risk	Low risk	Low risk	Proactively Manage	Proactively Manage
60%	Low risk	Low risk	Low risk	Low risk	Proactively Manage	Proactively Manage
70%	Low risk	Low risk	Low risk	Low risk	Proactively Manage	Proactively Manage
80%	Low risk	Low risk	Low risk	Proactively Manage	Proactively Manage	Proactively Manage
90%	Low risk	Low risk	Proactively Manage	Proactively Manage	Proactively Manage	Proactively Manage

Table 2 - Personal Risk Factors

These factors may increase an individual's risk of heat illness:

- Physical demands of the task
- Acclimatisation
- Health and fitness
- Illness, medication
- Hydration levels
- Age
- Experience
- Clothing

Table 3 – Proactive Strategies

Worker

- Drink water frequently – at least 250ml up to 1 litre per hour
- Check urine colour
- Take short rest breaks in a cool place
- Eat regular healthy snacks
- Respond to early signs of heat illness

Manager (as appropriate and practical)

- Moderate and modify the work
- Allow extra time
- Remind workers of prevention strategies, the early symptoms of heat illness and what to do
- Identify and help vulnerable workers
- Monitor how workers are coping
- Arrange extra drinking water

Using the tables

- On days where the environmental factors (Table 1) indicate "proactively manage", managers and workers should apply the "Pro-active Management Strategies" (Table 3) to reduce the risk of heat illness.
- Pay particular attention to those workers who have personal risk factors (Table 2) or perform more physically demanding tasks (eg riding manual pushbike, walking with backpack).
- As the weather conditions exceed 34°+, the pro-active heat stress management strategies become more critical.

*Table 1. Cells marked "proactively manage" indicate weather conditions where the modelled core temperature for a PDO riding a non-power assisted pushbike or walking with a backpack could theoretically rise above 38°C without taking any pro-active management strategies. This conservative model is based on 3.5 hours indoor work (non-air conditioned building) and 5 hours outdoor delivery. Note: Other tasks which are less physically demanding have lower risk of heat illness.

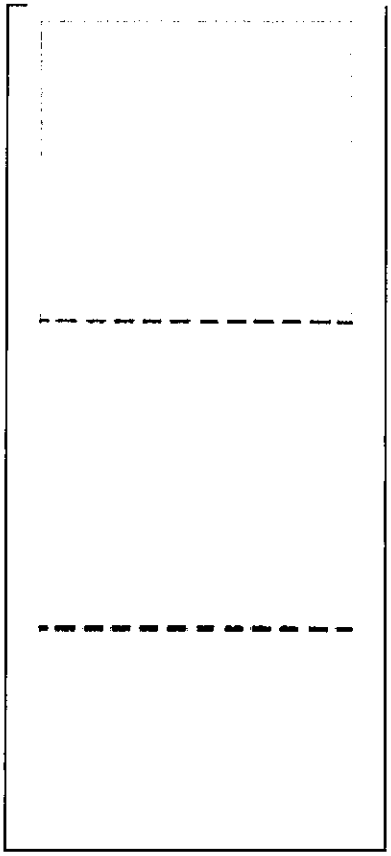
**Air Temperature and Humidity forecasts can be obtained from www.weatherzone.com.au or similar website.

*** As air temperature and humidity increase beyond those shown in Table 1, the risk of heat illness increases and the appropriate heat stress management strategies become more critical.

Appendix 2 – Urine Chart

What Colour is your **Urine?**

It is recommended that you drink at least 250 ml of water per hour, ensuring that at least 2 litres of water is consumed per day. During periods of heavy physical work or active sport on hot days, up to 1200ml of water per hour is recommended.



Extremely Dehydrated

Drink Water Immediately!
Electrolyte Replacement Drinks are also recommended

Mildly Dehydrated

Drink More Water, at least an additional 250 ml per hour.

Hydrated

Maintain drinking at least 2 litres of water per day

DO YOU PASS THE TEST?

Note: If doing heavy physical work or playing active sport, an electrolyte replacement drink may be beneficial to increase absorption of water and replace electrolytes lost due to excessive sweating.

Urine colour may vary because of diet or supplements (e.g. multivitamins).

11 September 2003

Appendix 3 – Summary Guide: Heat Illness, Symptoms and First Aid

Condition	Symptoms and signs	First Aid If in doubt on the correct treatment seek medical advice immediately.
Summary Guide – **Heat Illness** (hyperthermia) occurs when the body cannot sufficiently cool itself.		
Early symptoms of heat illness. These can indicate that the body is starting to overheat. With prompt action to hydrate and allow the body to cool down, person should recover quickly with no lasting health affects	• muscle cramps • feeling hot, exhausted, weak, fatigued • feeling giddy or faint • persistent headache • thirst, feeling sick (nausea) • shortness of breath, panting • fast pulse, cool clammy skin • Heat rash	**The worker should;** • Stop and rest in a cool place • Drink fluids • Contact their supervisor for help if they do not recover quickly or if these things keep recurring.
Advanced heat illness	As well as the early signs above, a person with more advanced heat illness can have; • very heavy sweating, • pale skin, • difficulty thinking clearly	• Lie the person down in a cool place. • Loosen tight clothing, remove headwear and unnecessary clothes • Sponge with cold water • Give cool water to drink (if conscious and can swallow) **Seek medical help** if the person vomits or does not recover promptly,
Medical emergency The body is overheating and vital organs are at risk.	• mental confusion, incoherent speech, irritable • hot, red, dry skin • vomiting, • dizziness, vision disturbance • fainting, convulsions, unconscious	**Call '000' for an ambulance** DRSABCD; Lie them down in a cool place. Remove almost all clothing. Cool their body as much as possible e.g. wet with cool water, cover with a wet sheet, fan to increase air flow. If available apply cold packs/ice to armpits, neck, groin.
In all cases of heat illness, complete an Incident Report.		

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