

Heat Stress, Dehydration & Acclimatisation



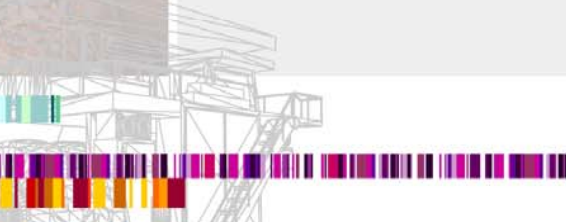
Heat Stress – Is it important?

Most Definitely!

Pilbara Iron mine sites are located at various parts of the north west region.

During the summer season, temperatures can reach in excess of 47 C for a period of days at any one time. Areas can be exposed to dry heat and / or humidity.

ALL EMPLOYEES should be made aware of the symptoms and the preventive measures that need to be undertaken in case of heat exposure.

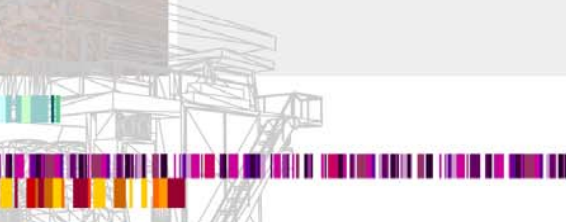


The body's cooling system

The body can lose heat in the following ways:

- Conduction – direct contact with a cooler object
- Radiation – heat loss to surrounding objects
- Convection – movement of air around the body
- Evaporation – of sweat from the skin

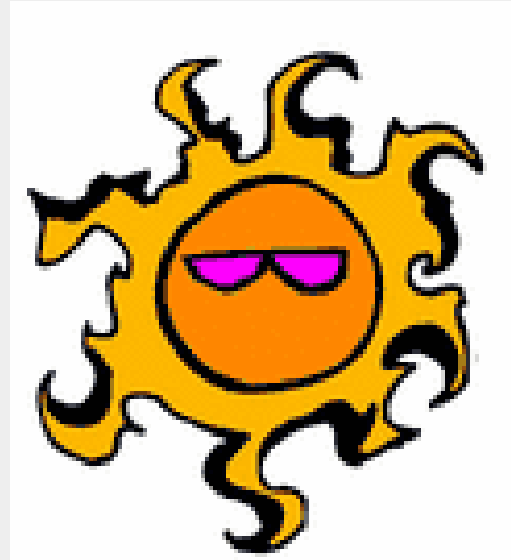
In very hot conditions sweat evaporation is the only means by which the body can lose heat.



Insufficient Cooling System

If the cooling mechanism is insufficient then a heat illness can occur, these being:

- Heat exhaustion,
- Heat cramps,
- Heat stroke,
- Heat stress.

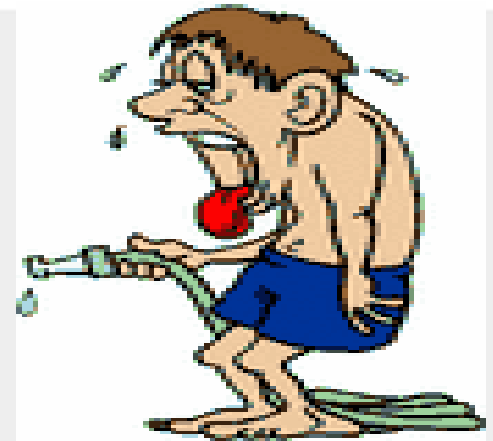


Ultimately, heat stress is the stress of the body's cooling system

People most likely to suffer?

People who are:

1. Overweight,
2. Physically unfit,
3. Suffer from heart disease,
4. Abuse alcohol or take certain medications.
5. People who are not acclimatised are also likely to be affected. These people should gradually work up to a full work rate over a period of 6-9days.



Heat Cramps

The symptoms and signs of heat cramps are :

- Painful muscle cramps of the limbs and abdomen
- Feeling nauseous or vomiting,
- Dizzy, tired and weak,
- The skin is moist and cool.

Management:

- Move casualty to a cool place.
- Lie the casualty down.
- Replace lost fluid.
- Apply ice packs to cramped muscles.
- Gently stretch the muscles, but don't massage them.

Heat Exhaustion

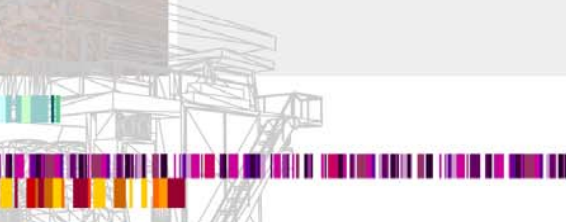
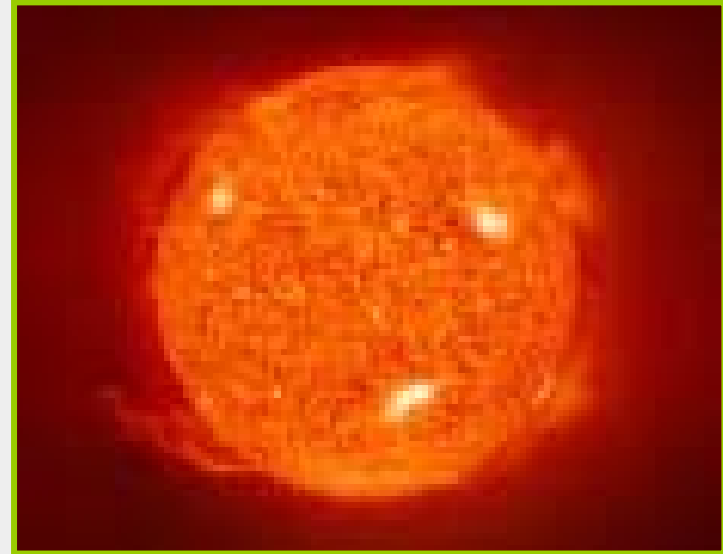
Heat exhaustion occurs mostly in hot, humid conditions.

Symptoms include:

- Feeling hot, exhausted & weak, with a headache,
- Thirsty
- Fatigue,
- Nausea,
- Loss of appetite,
- Giddiness and faintness,
- Stomach & muscle cramps.
- Shortness of breath,
- Weak muscles,
- Lack of coordination,
- Pale, clammy & cool skin
- Profuse sweating,
- Rapid breathing & pulse,
- Possible confusion or irritability.

6 Kinds of Heat Stress

1. Prickly heat (miliaria)
2. Heat fatigue (dehydration)
3. Heat fainting (syncope)
4. Heat cramps
5. Heat oedema
6. Heat stroke



6 Kinds of Heat Stress

Prickly heat (1st level)

- Occurs in humid environments where sweat is not removed from the skins surface .
- Treat with good hygiene, talcum powder and changing clothing wetted with perspiration.
- Rest in a cool place and dry the skin regularly.

Heat fatigue (2nd level)

- Fatigue impairs thought processes, coordination, alertness and causes us to make mistakes (which can become FATAL).
- Effects can be lessened by heat acclimatisation.
- Treat with rest, rehydrate and move to a cool, ventilated area.

6 Kinds of Heat Stress

Heat fainting (3rd level)

- A worker who is not accustomed to hot environments and who stands erect and immobile in the heat, is prone to fainting.
- Blood pools in the skin rather than being returned to the heart to be pumped to the brain.
- Treat by moving around to help prevent blood from pooling in the extremities, lying down and re-hydrating yourself with water.

You can easily prevent further stress by drinking plenty of fluids

6 Kinds of Heat Stress

Heat cramps (4th level)

- Recognised by the onset of muscle cramping or loss of consciousness, and not replacing the body's salts.
- Can be FATAL.
- Treat by seeking medical advice and consuming salted liquids through the mouth.

Heat Oedema (5th level)

- Swelling of the hands and feet.
- Occurs in men and women and resolves when the body is adjusted to heat.
- Usually subsides in several hours after the patient has been laid in a cooler place and treated with ice

6 Kinds of Heat Stress: Heat stroke (6th)

The cooling system shuts down.

Symptoms include:

- Uncontrollable hyperthermia,
- Elevation of body temperature.
- Severe heat congestion and the resultant hyperthermia induces dysfunction of the central nervous system.



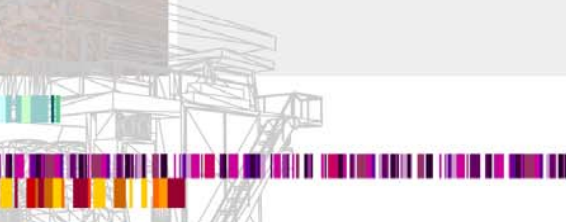
Treatment:

- Moving the patient to a safe, cool, shady and well ventilated place, removing unnecessary clothing, and fanning.
- Cooling the face and head may promote beneficial brain cooling.

Seek help from a medical professional

Heat Stroke

- Heat stroke is poorly understood
- Most people who suffer heat stroke will lapse into a deep coma as the body tries to shut down heat production internally
- Heat stroke has a very sudden onset and people can be exposed to severe symptoms very quickly.
- The best treatment known is to spray sufferers with a fine mist of water and place them near a fan to cool their temperature through evaporation techniques.



Dehydration

What is dehydration?

- A condition that occurs when a person loses large amounts of fluids (such as urine or sweat) than he or she takes in.
- The amount of water in his/her body has dropped below its adequate level for functioning.
- Losing large amounts of fluids can result in severe consequences.
- Categories include **Mild**, **Moderate** or **Severe**.
- Severe dehydration is a life-threatening situation.

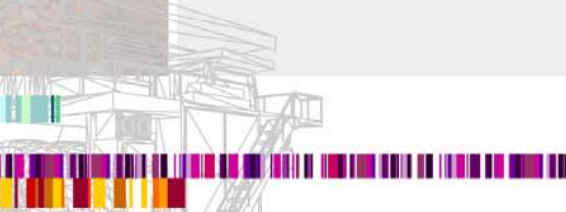
Causes of dehydration

Dehydration occurs when:

- A person becomes ill with fever, diarrhoea, or vomiting or if an individual is overexposed to the sun and heat.
- Excessive sweating, exercise or urine output.
- Dieting, diabetes, kidney disease, burns.
- Body loses essential body salts.
- Occasionally can be caused by drugs, such as diuretics, which deplete fluids and electrolytes.
- The individual should be treated as soon as possible and seek medical advice.

Symptoms of Dehydration

- Thirst and dry mouth
- Less-frequent urination
- Fatigue
- Dizziness
- Not producing tears
- Confusion
- Increased heart rate and breathing
- Rough, dry skin
- Sudden weight loss



You can prevent dehydration!

- Drink lots of water & fluids (especially on hot, dry and windy days).
- Dress appropriately for your activity, eg. loose fitting clothing and a hat.
- Drink before exercise and at regular intervals (every 20 mins).
- Limit caffeine (diuretic), soft drinks, alcohol and tea consumption.
- Try to schedule outdoor activities to cooler parts of the day (early morning and evening).

Are you Drinking Enough Water?

Check the colour of your urine

Amber
or
Light Brown

Darker
Lemon
Straw
Coloured

Pale
Lemon

**EXTREMELY
DEHYDRATED**

Urgently need
to drink more Water,
may require Medical Aid

**SIGNS OF
DEHYDRATION**

Drink more
water

GOOD

Continue to drink
Water

**Drink a minimum of 2 litres a day regardless, up to 5
litres on very hot days & with strenuous activity**

When to see a doctor

- Inability to keep any fluids down.
- Vomiting has been occurring for longer than 24 hours in an adult and longer than 12 hours in a child.
- Diarrhoea has lasted longer than 5 days in an adult or child.
- Anytime you are in doubt or unsure of the symptoms, seek medical opinion

Acclimatisation

Acclimatisation

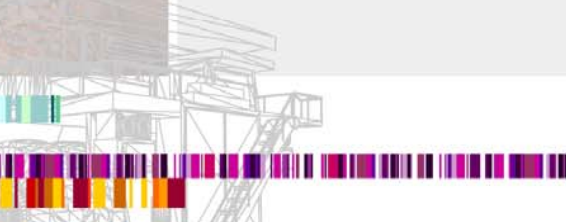
- The ability to adapt to new environmental climates
- When people first arrive in a hotter climate:

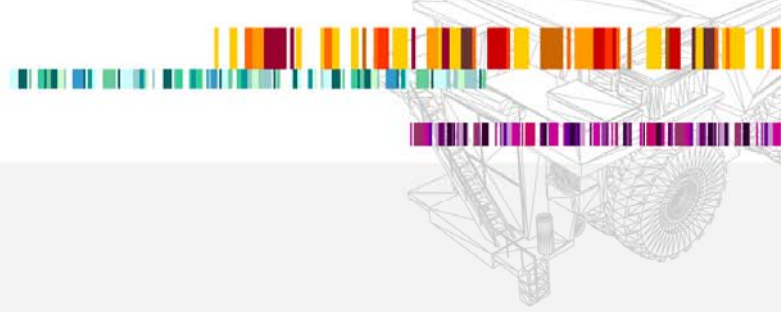
INITIALLY	AFTER ACCLIMATISATION
Increased sweating	Reduced heat discomfort
Increased hunger	Increased sweating effectiveness
Increased fatigue	Lower salt loss through sweat
Decreased concentration	Better recovery through sleep and rest

Becoming Acclimatised

- Techniques

- Regular breaks
- Drink plenty of water
- Eat plenty of the right foods (fruit & vegies, breads & cereals, limit alcohol and coffee)
- Schedule heavy work for cooler parts of the day
- Get as much good sleep as possible!!!





Thank you



Any Questions?

