

# HSE: Heat stress in the workplace

## A brief guide

This leaflet describes what you, as an employer, may need to do to protect your employees from heat stress in the workplace. **It will also be useful to employees and their safety representatives.**

It tells you about the risks to the body from overheating when working in hot conditions (such as bakeries, compressed air tunnels, foundries and smelting operations) and gives practical guidance on how to avoid it. It does not address issues of thermal comfort in the workplace.

If you need more information on workplace temperature management than is provided here then visit our web pages on heat stress risk assessment ([www.hse.gov.uk/temperature/heatstress/riskassessment.htm](http://www.hse.gov.uk/temperature/heatstress/riskassessment.htm)) and heat stress measurement ([www.hse.gov.uk/temperature/heatstress/index.htm](http://www.hse.gov.uk/temperature/heatstress/index.htm)).

In many jobs heat stress is an issue all year round but this information also applies during the hot summer months where there may be an increased risk of heat stress for some people.

You and your employees must be aware of how to work safely in heat, the factors that can lead to heat stress, and how to reduce the risk of it occurring.

## What is heat stress?

Heat stress occurs when the body's means of controlling its internal temperature starts to fail. Air temperature, work rate, humidity and work clothing are all factors which can cause heat stress. **It may not be obvious to someone passing through the workplace that there is a risk of heat stress.**

## How does the body react to heat?

The body reacts to heat by increasing the blood flow to the skin's surface and by sweating. This cools the body as heat is carried to the surface from within by the increased blood flow and sweat evaporates. Heat can also be lost by radiation and convection from the body's surface.

## HSE: Heat stress in the workplace

### A brief guide

This leaflet describes what you, as an employer, may need to do to protect your employees from heat stress in the workplace. **It will also be useful to employees and their safety representatives.**

It tells you about the risks to the body from overheating when working in hot conditions (such as bakeries, compressed air tunnels, foundries and smelting operations) and gives practical guidance on how to avoid it. It does not address issues of thermal comfort in the workplace.

If you need more information on workplace temperature management than is provided here then visit our web pages on heat stress risk assessment ([www.hse.gov.uk/temperature/heatstress/riskassessment.htm](http://www.hse.gov.uk/temperature/heatstress/riskassessment.htm)) and heat stress measurement ([www.hse.gov.uk/temperature/heatstress/index.htm](http://www.hse.gov.uk/temperature/heatstress/index.htm)).

In many jobs heat stress is an issue all year round but this information also applies during the hot summer months where there may be an increased risk of heat stress for some people.

You and your employees must be aware of how to work safely in heat, the factors that can lead to heat stress, and how to reduce the risk of it occurring.

## What is heat stress?

Heat stress occurs when the body's means of controlling its internal temperature starts to fail. Air temperature, work rate, humidity and work clothing are all factors which can cause heat stress. **It may not be obvious to someone passing through the workplace that there is a risk of heat stress.**

## How does the body react to heat?

The body reacts to heat by increasing the blood flow to the skin's surface and by sweating. This cools the body as heat is carried to the surface from within by the increased blood flow and sweat evaporates. Heat can also be lost by radiation and convection from the body's surface.

### Typical example of a heat stress situation

Someone wearing protective clothing and performing heavy work in hot and humid conditions could be at risk of heat stress because:

- Sweat evaporation is restricted by the type of clothing and the humidity of the environment.
- Heat will be produced within the body due to the work rate and if insufficient heat is lost deep body temperature will rise.
- As deep body temperature rises the body reacts by increasing the amount of sweat produced, which may lead to dehydration.
- Heart rate also increases which puts additional strain on the body.
- If the body is gaining more heat than it can lose then the deep body temperature will continue to rise. Eventually it reaches a point where the body's control mechanisms start to fail..

The symptoms will get worse the longer someone remains working in the same conditions.

## What are the effects of heat stress?

Heat stress can affect individuals in different ways and some people are more susceptible to it than others.

Typical symptoms are:

- Inability to concentrate
- muscle cramps
- heat rash
- severe thirst - a late symptom of heat stress
- fainting
- heat exhaustion - fatigue, giddiness, nausea, headache, moist skin
- heat stroke— hot dry skin, confusion, convulsions and eventual loss of consciousness. This is the most severe disorder and can result in death if not detected at an early stage.

## **Where does heat stress occur?**

Examples of workplaces where people might suffer from heat stress because of the hot environment created by the process or restricted spaces are:

Boiler houses are a prime example

In these industries working in the heat may be the norm. For others it will be encountered less often depending on the type of work being done and changes in the type of work being done and changes in the working environment, e.g. seasonal changes in outside air temperature can contribute significantly to heat stress.

[How can I reduce the risks?](#)

Remove or reduce the sources of heat where possible:

**CONTROL THE TEMPERATURE** using engineering solutions, e.g. change the processes, use fans or air conditioning, use physical barriers that reduce exposure to radiant heat.

- **PROVIDE MECHANICAL AIDS** where possible to reduce the work rate.

- **REGULATE THE LENGTH OF EXPOSURE TO HOT ENVIRONMENTS BY:**

- Allowing workers to enter only when the temperature is below a set level or at cooler times of the day;
- Issuing permits to work that specify how long your workers should work in situations where there is a risk;
- Providing periodic rest breaks and rest facilities in cooler conditions.
- **PREVENT DEHYDRATION.** Working in a hot environment causes sweating which helps keep people cool but means losing vital water that must be replaced. Provide cool water in the workplace and encourage workers to drink it frequently in small amounts before, during (where possible) and after working.
- **PROVIDE PERSONAL PROTECTIVE EQUIPMENT.** Specialised personal protective clothing is available which can incorporate personal cooling systems or breathable fabrics. The use of some protective clothing or respiratory protect equipment may increase the risk of heat stress.
- **IDENTIFY EMPLOYEES WHO ARE MORE SUSCEPTIBLE** to heat stress because of an illness, condition or medication that may contribute to the early onset of heat stress, e.g. pregnant women or those with heart conditions. You may need advice from an occupational health professional.

**Monitor the health of workers at risk.** Where a residual risk remains after implementing as many control measures as practicable, you may need to monitor the health of workers exposed to the risk. You should then seek advice from an occupational health professional.

For more information visit the HSE website:

**Health and Safety Executive**

This is a web-friendly version of leaflet INDG451(rev1),published 06/13

