



# **HOLDFAST**

## **CLIMATIC POLICY**

### **Master Copy**

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## Introduction

1. During the hot summer months personnel may be at an increased risk of heat stress which occurs when the body's means of controlling its internal temperature starts to fail. As well as air temperature, factors such as work rate, humidity and clothing worn while working may lead to heat stress. Therefore it may not be obvious to someone passing through the workplace that there is a risk of heat stress, all personnel across the RSME PPP must be aware of how to work safely in heat and be aware of the factors that can lead to heat stress and how to reduce the risk of it occurring.

## Aim

2. Work related injuries and illnesses due to exposure to heat must be prevented primarily through elimination, modifying the workplace or systems of work. Where these measures do not adequately control the risk Line Managers may deem it necessary to introduce administrative controls<sup>1</sup> (for example introduction of a work-rest regime). The aim of this Policy is to highlight the issues regarding heat in the workplace and the implementation of control measures in order to reduce the effects of heat.

## Heat and the Law

3. Temperatures in the indoor workplace are covered by the Workplace (Health, Safety and Welfare) Regulations 1992, which places a legal obligation on employers to provide a 'reasonable' temperature. The Approved Code of Practice<sup>2</sup> (ACOP) suggests the minimum temperature in a workplace but a meaningful figure cannot be given at the upper end of the scale due to the high temperatures found in some places of work.<sup>3</sup> Factors other than air temperature, eg radiant temperature, humidity and air velocity, become more significant and the interaction between them become more complex with rising temperatures.

## Reaction to Heat

4. The body reacts to heat by increasing the blood flow to the skin's surface, and by sweating. This results in cooling as sweat evaporates from the body's surface and heat is carried to the surface of the body from within by the increased blood flow. Heat can also be lost by radiation and convection from the body's surface. The exposure to heat could result in the following:

a. **Heat Stress** – This is the mildest form of heat illness caused by the core body temperature rising. Symptoms include inability to concentrate, muscle cramps, heat rash and severe thirst.

b. **Heat Exhaustion** – This occurs in conditions of extreme heat due to the body being unable to cool itself, symptoms include cramps and muscle spasms. If left untreated it can quickly progress to heat stroke. Symptoms include nausea, vomiting, headaches and fatigue.

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<sup>1</sup> Areas such as the Blacksmiths' Shop and Trainees undertaking physical training may be subject to local control measures.

<sup>2</sup> Workplace Health, Safety and Welfare (Health, Safety and Welfare) Regulations 1992.

<sup>3</sup> The MOD also adheres to the information contained in JSP 892 Risk Management, JSP 375 part 2 Vol 1 Chap 40 (Military Training), DSA 01.1 Defence Policy for Health, Safety and Environmental Protection and JSP 539 Heat Illness and Cold Injury: Prevention and Management.

- c. **Heat Stroke** – The most severe of heat illness heat stroke occurs when the body is overwhelmed by excessive heat. Heat stroke requires immediate medical attention and if left untreated it is life threatening. Symptoms include rapid heart rate, nausea, vomiting, headaches and high fever (usually over 40 degrees C).

## Thermal Comfort

The term 'thermal comfort' describes a person's state of mind in terms of whether they feel too hot or too cold. Environmental factors such as humidity and sources of heat combined with personal factors (eg clothing) and the type of work being undertaken will influence 'thermal comfort'. Thermal comfort itself is very difficult to define and Line Managers are to take into account a range of environmental, work-related and personal factors when deciding what makes a comfortable workplace temperature. A thermal comfort checklist can be found at Annex A.

Thermal comfort is not measured by room temperature, but by the number of personnel complaining of thermal discomfort. To better understand why room temperature alone is not a valid indicator of thermal comfort is due to the following factors:

- a. **Air Temperature** –The temperature of the air surrounding the body in degrees Celsius.
- b. **Radiant temperature** – Thermal radiation from a warm object.
- c. **Air Velocity** – The speed of the air moving across the person which may cool them if the air is cooler than the environment (eg desk top fans).
- d. **Humidity** – Relative humidity between 40% and 70% does not have a major impact on thermal comfort. In workplaces which are not air conditioned, or where the weather conditions outdoors may influence the indoor thermal environment, relative humidity may be higher than 70%. Humidity in indoor environments can vary greatly so this factor should be considered.

By managing thermal comfort you are likely to improve morale and productivity as well as improving health and safety. Personnel working in uncomfortably hot environments are more likely to behave unsafely because their ability to make decisions and/or perform their daily tasks can deteriorate significantly. Personnel adapt their behaviour to cope with their thermal environment, eg adding or removing clothing, unconscious changes in posture, moving to or away from cooling sources.

## Control Measures

6. There are a number of ways in which the thermal comfort of personnel can be controlled in the workplace, the list is not exhaustive but can include the following:
  - a. **Control the Environment** – Replace hot air with cold as required (eg air conditioning units).
  - b. **Control the Clothing** – If PPE is worn personnel (including trainees) should not wear more PPE than is required, dress codes should be evaluated and adapted to the local conditions.

- c. **Behavioural Adaptations** – Where possible provide cool down areas, provision of water coolers, methods of cooling and allow windows to be open where appropriate.
- d. **Health Monitoring** – Personnel should be monitored to ensure they are not suffering ill effects of heat.
- e. **Risk Assessment** – Risk assessments should be implemented to outline the hazards associated with excessive heat in the workplace. The risk assessment is to include the control measures that are to be implemented to reduce the effects of heat. A heat stress checklist can be found at Annex B.
- f. **Wet Bulb Globe Temperature (WBGT)** – The WBGT Heat Stress Monitor is used to inform the risk management procedure during training across the RSME PPP. Measurements are taken in each location and the readings compared against the matrix in JSP 539. The WBGT is displayed outside of the site gymnasiums<sup>4</sup>; alternatively WBGT information can be sought from gymnasium staff directly.

## Outdoor Working

7. When working outdoors the effects of the weather in the UK environment can potentially have a serious impact on the health of personnel if the risks have not been identified, the results of which could occur immediately or over a prolonged period of time.

The effect of hot weather is compounded when working outdoors and this can have a direct influence on an individual's effectiveness if it is not carefully managed. The following control measures should be considered with regards to the health and wellbeing of personnel during periods of hot weather:

- a. If possible reschedule work to cooler times of the day (eg physical training).
- b. Provision of frequent rest breaks, introduce shading to rest areas.
- c. Access to cool drinking water (with possible enforced water breaks).
- d. Provision of shading in areas where individuals are working.
- e. Encourage the removal of personal protective equipment when resting to help encourage heat loss.
- f. Educate workers (via toolbox talks) about recognising the early symptoms of heat stress and exposure to the sun.
- g. Provision of suncream and UV rated clothing (eg wide brimmed hats).
- h. Consider those personnel that are at increased risk when exposed to heat (eg pregnant, menopausal etc).

## Indoor Working

8. During periods of hot weather Line Managers should undertake a suitable assessment of the risks to the health and safety of personnel and take action where reasonably practicable. The temperature of the workplace has a direct influence on the performance of personnel and Line Managers should consider the following:

- a. Provision of fans.

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<sup>4</sup> Locations may differ across the RSME PPP.

- b. Open window where possible.
- c. Provision of blinds to reduce the effects of the sun.
- d. Siting workstations away from direct sunlight.
- e. Relaxing formal dress code (PPE must still be worn as required).
- f. Allowing sufficient breaks to enable employees to get cold drinks and move to a cooler area (5 mins every 60min is preferable). This is particularly pertinent when working in kitchens.
- g. Introduction of formal systems of work to limit exposure to heat, eg flexible working, task rotation and summer working hours.

## Summary

9. It is important to ensure that, during working hours all temperatures inside buildings is deemed "reasonable"<sup>5</sup>. If thermal discomfort is considered a risk, and employees have raised concerns regarding the thermal environment then a review of the situation is necessary with the implementation of appropriate controls measures to manage the risk.

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<sup>5</sup> In accordance with The workplace (Health and Safety and Welfare) Regulations 1992 (Regulation 7)

**THERMAL CHECKLIST**

<b>Factor</b>	<b>Description</b>	<b>Yes</b>
<b>Air Temperature</b>	Does the air feel hot?	
	Does the temperature in the workplace fluctuate during a normal working day?	
	Does the temperature in the workplace change a lot during hot or cold seasonal variations?	
<b>Radiant Temperature</b>	Is there a heat source in the environment?	
	Is there any equipment that produces steam?	
	Is the workplace affected by external weather conditions?	
<b>Humidity</b>	Are your employees wearing PPE that is vapour impermeable?	
	Do your employees complain that the air is humid?	
	Do your employees complain that the air is too dry?	
<b>Air Movement</b>	Is cold or warm air blowing directly into the workspace?	
	Are employees complaining of draught?	
<b>Metabolic rate</b>	Is work rate moderate to intensive in warm or hot conditions?	
	Are employees sedentary in cool or cold environments?	
<b>PPE</b>	Is PPE being worn that protects against harmful toxins, chemicals, asbestos, flames, extreme heat, etc?	
	Is respiratory protection being worn?	
	Can employees make individual alterations to their clothing in response to the thermal environment?	
<b>Employees Opinion</b>	Do your employees think that there is a thermal comfort problem?	

Read the descriptions for each thermal comfort factor, and tick the appropriate box. If you tick two or more 'YES' boxes there may be a risk of thermal discomfort and there be a requirement to carry out a more detailed risk assessment.

**Heat Stress Check List**

This check list is only to be used when conducting a heat stress risk assessment it should not be used for the purposes of a thermal comfort risk assessment.

**Risk Assessment Work Sheet**

- Please complete one risk assessment worksheet for each employee.
- Read the questions carefully, and provide an answer in the relevant space provided.

**Personal Status of employee**

<b>Employees Age</b>		<b>Is the employee male or female?</b>	<b>Male/Female</b>
Is the employee acclimatised:	<b>Yes / No</b>	If yes provide details of acclimation:	
Is the employee experienced in the job?			<b>Yes / No</b>
Is the employee experienced in working in the heat?			<b>Yes / No</b>
Has the employee been trained to work in the heat?			<b>Yes / No</b>

Please provide a brief description of the work being performed:	
How many employees are involved in this task?	

Where was the assessment conducted? (Please provide a description of the workplace. If necessary use the back of the page to provide a diagram of the workplace and the area)	
How long (in minutes) does the work typically take?	
How often will this task take place:	
Is refresher training given to employees?	<b>Yes / No</b>
If YES how often?	

What were the external climatic conditions? (If measurements are not available, provide a brief description).	<b>Air temperature:</b>	
	<b>Radiant temperature:</b>	
	<b>Air velocity:</b>	
	<b>Relative humidity:</b>	
	<b>Description:</b>	

### Hazard Identification

<b>Name of Risk Assessor:</b>	
<b>Date of Assessment</b>	
<b>Task being assessed:</b>	
<b>Location of Assessment:</b>	
<b>Name of employee being assessed:</b>	

This observational check list helps identify potential heat stress hazards. If you observe any of the hazards described, tick the box to the right of that description.

If you identify a heat stress hazards not listed, describe the hazard in the "Other" box, and tick the appropriate answer.

<b>Consideration</b>	<b>Description</b>	<b>Tick</b>
<b>Air Temperature</b>	Does the air feel warm or hot?	
<b>Humidity</b>	Is there any equipment that produces steam?	
	Is the workplace affected by external weather conditions?	
	Are the employees wearing PPE that is vapour impermeable?	
<b>Air Movement</b>	Is warm or hot air blowing onto your employees	
<b>Metabolic rate</b>	Is the work-rate moderate to intensive?	
<b>PPE</b>	Is PPE being worn to protect against harmful chemicals, asbestos, flames, extreme heat etc?	
	Is respiratory protection being worn?	
<b>Employees opinion</b>	Do your employees think that heat stress is a problem?	
	Do your employees complain of feeling warm or hot?	
<b>Other</b>		

If any of the descriptions to any of the above questions have been ticked there may be a heat stress risk and you should now conduct a more detailed risk assessment using the heat stress observation checklist.

**Personal Risk factor Checklist**

<b>Name of Risk Assessor:</b>	
<b>Date of Assessment</b>	
<b>Task being assessed:</b>	
<b>Location of Assessment:</b>	
<b>Name of employee being assessed:</b>	

This is not intended to replace a medical examination and is only to be used as a preliminary observation tool. If in doubt, seek advice from an occupational health physician who has experience of working in the heat.

Has the employee had a pre-exposure medical examination by a qualified occupational health professional?		<b>Yes/No</b>
<b>If YES:</b>	Have they been cleared to work in an environment where they may be at risk from heat stress	<b>Yes/No</b>
<b>If NO:</b>	Consult a physician	
When was their last medical screening done?		
When was their last medical screening done? When is their next medical screening due?		
Before this assessment had the employee completed a pre-exposure medical questionnaire?		<b>Yes/No</b>
If any answers were <b>YES</b> then consult a medical professional.		
Please provide any other information that may be relevant to this part of the assessment.		

**Heat Stress Observation Checklists**

Each of the following check lists addresses one of the one of the six basic parameters.

Each parameter is described and a risk score is given for each. The higher the score, the higher the risk it may contribute to heat stress.

You should observe the environment, taking note of the description provided, and tick the box that best fits your workplace. This will provide you with an estimated risk score for that parameter. You may tick more than one box if the environment is changing, or if the employee is moving between environments.

If you do not see a description that best fits the work situation you are assessing, or are unsure then tick the “Don’t know” box at the bottom of that table. This introduces an uncertainty into the assessment and requires that you conduct a more detailed qualitative assessment.

What is air temperature and what should you look out for? Air temperature is described as the temperature of the air surrounding an employee. Consider the air temperature surrounding the employee and how you would describe it.		
Subjective description of air temperature	Score	Tick
Cool	-1	
Neutral	0	
Slightly Warm	1	
Warm	2	
Hot	3	
Very Hot	4	
Don't Know		

### Radiant temperature

What causes radiant temperature and what should you look out for? Thermal radiation is the heat that radiates from a heat source and will be present if there are heat sources in an environment. Examples include: the sun, electric fires; furnaces; ovens; kiln walls; cookers; dryers; hot surfaces & machinery, exothermic chemical reactions, deep mine tunnel walls; molten metals, etc. Observe the surroundings and identify heat sources. Consider how close your employees are to these heat sources. Do they need to wear protective clothing to prevent burns etc?		
Subjective description of radiant temperature	Score	Tick
Objects colder than the surrounding air are near to worker.	-1	
There are no heat sources in the environment	0	
A heat source is present but the employees are not in close proximity to it. The heat source surface is warm to touch and there is no risk of contact burns.	1	
The heat source surface is hot to touch. <input type="checkbox"/> Employees feel hot when they stand near the heat source.	2	
The heat source surface is very hot to the touch and may burn the skin. Employees cannot work in close proximity to the heat source for more than 10 minutes without wearing PPE	3	
Contact with the heat source will cause burning. Employees cannot work in close proximity to the heat source for more than 5 minutes without wearing PPE.	4	
Workers are not permitted to work in the environment without PPE to protect them from the radiant heat in that environment.	5	
Don't Know		

## Air Velocity

Air velocity is the speed of air moving across an employee and may affect the employee if it is not cooler than the environment. Four categories of air velocity are provided. They are Still, Low, Moderate and High. Employees that feel hot or warm air blowing on any exposed skin or is the moving air cooler or warmer than the ambient air temperature.

Subjective description of air velocity	Score	Tick
Cold air at a high speed (e.g. employees standing in front of an air conditioning unit)	-3	
Cold air at a moderate speed or cool air at high speed	-2	
Cool air at low speed or cool air at moderate speed	-1	
Still air in a neutral environment	0	
Warm air and low air speed	1	
Still air in a warm environment	2	
Still air in a hot environment.	3	
Warm air at a moderate air speed, or still air in a very hot environment	4	
Hot air and moderate air speed or very hot air at a high speed	5	
Don't know		

## Humidity

When water is heated and evaporates into the air this provides the environments humidity. High humidity environments contain a lot of water vapour and this is important as it reduces the ability of sweat to evaporate from the skin which is the main means by which your employees lose heat. When vapour impermeable PPE is worn, sweat cannot evaporate and increases the humidity inside the PPE. If an employee is wearing this sort of PPE (e.g. asbestos, chemical protection suits etc) the humidity within the microclimate of the garment may be high. Humidity is very difficult to estimate. Profuse sweating may be an indication of high humidity, but it may also be an indication of a high physical activity. Is the environment susceptible to outdoor conditions, especially in summer? Are there any dryers or other machines producing steam? Do workers complain about the humidity? Are they wearing vapour impermeable PPE?

Subjective description of humidity	Score	Tick
No humidity. Air is dry, with no drying processes or other mechanisms for increasing the humidity in the workplace.	0	
Humidity seems to be somewhere between very humid and very dry.	2	
Air is very humid. Examples may be near drying machines, laundry machines, chemical processes where steam is given off	5	
Vapour impermeable PPE is worn	6	
Don't know		

## Clothing

Clothing interferes with our ability to lose heat to the environment. Where heat stress is a risk eg where workers may be wearing PPE, even if the environment is not considered warm or hot. It is important to identify whether the clothing the employee is wearing may contribute to the risk of heat stress. It is impossible to list or describe all the clothing that may be worn in industry so only general descriptions of clothing are provided. Observe the employee and select the clothing type that best represents what is worn in that workplace. When employees wear or remove clothing depending on the job or task, it may be necessary to conduct a quantitative heat stress risk assessment. .

Subjective description of clothing	Score	Tick
Shorts and a T-shirt. No protective or work clothing worn	-1	
Light work clothing	0	
Cotton coverall, jacket	2	
Winter work clothing, double cloth coveralls, water barrier materials.	3	
Don't know		

## Work Rate

### Work rate explained

A, knowledge of the work or metabolic rate, is important when conducting a heat stress risk assessment. The more physical work performed, the more heat produced and the more heat that needs to be lost to prevent overheating. Observe your employees, note their movements, posture, speed, effort, weight of materials they handle, parts of their bodies responsible for their movement etc? Review your manual handling assessment for information of the components of the task. Five categories of metabolic rate are described as 1. Resting, 2. Low, 3. Moderate, 4. High 5. Very High.

Subjective description of work rate	Score	Tick
Resting	-2	
Low (ie driving, sitting at a desk, lifting light loads over short distances)	0	
Moderate (ie lifting and carrying, operating power tools)	2	
High Intensity work (ie digging, heavy lifting and carrying)	4	
Very High Intensity Work (ie work that cannot be sustained for long periods of time)	6	
Don't know		

## What to do with results from Observations check list

Referring back to each of the parameters you have just observed please tick the score which corresponds to the score you gave each parameter.

The black squares indicate that the score is not available for a particular category.

Where you have a score higher than 1 the greater the heat stress risk. As the scores increase (also shown by colour shading from light red to dark red) so the risk of that parameter contributing to heat stress increases. If three or more of your scores are greater than 1, there may be a risk of heat stress.

If you score greater than 5, then in these situations, physiological monitoring may be required. If you are not competent in measuring, analysing and interpreting physiological measurements you should now seek expert advice.

	SCORES										
	-3	-2	-1	0	1	2	3	4	5	6	Don't Know
Air Temperature	Black	Black	White	White	White	Light Red	Pink	Dark Red	Dark Red	Dark Red	Dark Red
Radiant Heat	Black	Black	White	White	White	Light Red	Pink	Dark Red	Dark Red	Dark Red	Dark Red
Air Velocity	White	White	White	White	White	Light Red	Pink	Dark Red	Dark Red	Dark Red	Dark Red
Humidity	Black	Black	Black	White	Black	Light Red	Black	Dark Red	Dark Red	Dark Red	Dark Red
Clothing	Black	Black	White	White	Black	Light Red	Pink	Dark Red	Dark Red	Dark Red	Dark Red

