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ARMY

ARMY COMMAND STANDING ORDER

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ARMY HEAT ILLNESS PREVENTION

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Sponsored By:

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ARMY HEAT ILLNESS PREVENTION

INDEX

RECORD OF AMENDMENTS	III
DCGS' FOREWORD	1
CHAPTER ONE – AIM, SCOPE AND PURPOSE	2
AIM.....	2
SCOPE.....	2
PURPOSE.....	2
CHAPTER TWO - GOVERNANCE AND ASSURANCE	3
INTRODUCTION.....	3
COMMAND RESPONSIBILITIES	3
UNIT RESPONSIBILITIES.....	3
ASSURANCE RESPONSIBILITIES.....	4
NON-COMPLIANCE.....	5
ARMY HI WORKING GROUP	6
ACSO POINT OF CONTACT (POC).....	6
CHAPTER THREE - EXECUTION OF POLICY - RISK MANAGEMENT	7
GENERAL	7
PREVENTION OF HI.....	7
RISK MANAGEMENT.....	7
RISK ASSESSMENT	8
CHAPTER FOUR - REPORTING.....	11
GENERAL	11
REPORTING CULTURE.....	11
CLASSIFICATION OF INCIDENTS	11
ARMY INCIDENT REPORTING FOR HI.....	11
CHAPTER FIVE - HEAT ILLNESS PREVENTION TRAINING	13
GENERAL	13
SQEP AND SUPPORT	14
HI PREVENTION TRAINING.....	15
THROUGH LIFE RISK MANAGEMENT EDUCATION.....	15
HI AWARENESS TRAINING	16
RISK ASSESSMENT TRAINING	16
WBGT TRAINING.....	16
APPROVED TRAINING MATERIAL	17
CHAPTER SIX - EQUIPMENT	18
GENERAL	18

CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT (PPE).....	18
VIRTUS	18
CBRN	19
WATER PROVISION	19
CHAPTER SEVEN - HEAT STRESS MONITORING.....	20
INTRODUCTION	20
ROLES AND RESPONSIBILITIES.....	20
WEATHER FORECASTS	20
WBGT MONITORS.....	22
CHAPTER EIGHT - ABBREVIATIONS.....	25

DCGS' FOREWORD

1. Heat Illness (HI) prevention remains a very high priority for the Army. Whilst there has been a marked improvement in our prevention of HI, there is still more that we must do. In my role as the Principal Personnel Officer, I require you all to support me in ensuring the risk of HI is as low as reasonably practicable for all activities conducted by the Chain of Command (CoC). It is vital that commanders at all levels understand their responsibilities and ensure all personnel participating in, or contributing to, any activities where there is a risk of HI are appropriately briefed, prepared and capable of undertaking that activity. To ensure we maintain our focus on the prevention of HI, I have appointed Director Personnel as the 2* Proponent for the management of Climatic Injuries.

2. This ACSO provides direction and guidance to all Army personnel for the prevention, through Force Protection measures, of HI either due to the direct effects of hot environments or from physical activity in any environment. It is written for land-based activities, including training, exercises and operations. Acknowledging there is Defence policy governing the prevention and management of HI, this ACSO is the first step for direction and guidance on the prevention of HI; it directs the reader to other relevant policies when further information is required. All those responsible for planning or conducting training must read and apply this ACSO.

3. Our Force Protection measures must be evidence based, clear and accessible to all our people through appropriate means (including social media). We must train hard but safely; our planning and delivery must achieve both these requirements. By understanding and applying policy it is possible to achieve the right balance between demanding, realistic and safe training balanced against acceptable risk and a culture of 'reasonable challenge'. The Army is a learning organisation; personnel must be able to raise concerns or recommendations without fear of prejudice and with the confidence that the CoC will support and implement changes where appropriate.

4. Evidence shows that the Army manages HI well, in general. However, we must always strive to improve. HI can occur at any time of the year. It is the duty of commanders at every level to follow the guidance in this ACSO and ensure the best possible protection of those under their command.

CHAPTER ONE – AIM, SCOPE AND PURPOSE

Aim

1. The aim of this ACSO is to prevent HI whilst allowing the Army to train at the intensity and tempo required to meeting our operational commitments in the UK and overseas. We must build upon previous experience of developing and improving the management processes in place backed-up by education, training and communications. Through previous events we know certain activities present an increased risk of HI. This document directs the increased levels of training and assurance to prevent and mitigate this.

2. The Health and Safety Executive (HSE) recommend the Plan, Do, Check, Act model which balances the systems and behavioural aspects of Health and Safety leadership and management. It encourages approaching Health and Safety management as an integral part of good management and leadership, rather than as a stand-alone system. Widely used as an industry standard, it can be adapted across the full spectrum of Army activity.

Scope

3. This ACSO applies to all Army personnel, Regular and Reserve. It will be subject to annual review or following any change imperative leading to doctrine or policy change.

Purpose

4. This ACSO provides clarification and additional direction and guidance to [JSP 539](#) (Heat Illness and Cold Injury Prevention and Management) which is the principal MOD document in the prevention and treatment of HI and cold injury. Both this document and [JSP 539](#) must be referred to during the planning of any arduous activity¹ and captured as reference documents against the Risk Assessment (RA). Improved HI prevention requires greater awareness of the risk by commanders and Army personnel at all levels, as well as training in assessing the risk and putting in place the right control measures. To aid familiarisation of this ACSO a quick reference guide is available at Annex A.

5. Commanders at all levels are to ensure that a suitable and sufficient RA in accordance with ACSO 3216 Chapter Five is undertaken by a suitably trained individual prior to every activity carrying a risk of HI. Commanders must consider seeking medical or training staff input for all aspects of the risk management process contained within the Management of Health and Safety in Defence² and the Army's Safety and Environmental Management System³.

6. Commanders should note that as the predominate cause of HI is exertional (due to the metabolic heat generated by the body undertaking exercise), it is entirely possible to be at risk from HI throughout the year in both temperate or cold climates. Provided the risk factors are assessed properly and appropriately managed HI is nearly always preventable or controllable. This ACSO does not provide guidance on medical management and treatment of HI. This information is found in [JSP 539](#) and must be used to develop the medical mitigations measures as part of the RA.

¹ Arduous activity is defined in ACSO 3216 Chapter Six.

² [JSP 375](#).

³ [ACSO 3216](#).

CHAPTER TWO - GOVERNANCE AND ASSURANCE

Introduction

1. The terms Governance and Assurance (G&A) refer to the values and behaviours, structures and processes that are required to enable an organisation to deliver and monitor its outputs. A positive G&A strategy regarding the prevention and management of HI will allow the Army to ensure that essential standards of safety are achieved and maintained. Furthermore, a comprehensive and proactive G&A strategy will reinforce Safety as a key enabler that will be at the forefront of planning and delivery outputs.

Command Responsibilities

2. Appointments with DDH responsibilities must ensure that a HI RA is carried out and that the mitigation measures are implemented. At all levels, Commanders have a duty under Health & Safety (H&S) legislation to assess and control risks to their workforce as detailed in JSP 375.

3. HI cases must be an agenda item on the Unit Health Committees (UHC) where root causes and confirmation of reporting are to be discussed.

4. The following Army personnel have a role in providing G&A for the prevention and management of HI:

- a. All commanders and the CoC.
- b. Audit and assurance personnel:
 - (1) G1 staff (through audit of the UHC process).
 - (2) Physical Development staff.
 - (3) Force and Environmental Protection Assurance staff.
 - (4) Environmental Health staff.

Unit Responsibilities

5. All employers are required to provide suitable and sufficient RA⁴, supported by a competent individual, relative to activities undertaken. Units are to ensure that activities with a potential risk of HI, eg arduous training activities, are suitably assessed, documented and recorded by a competent person. The unit is to retain RA documentation for a period of 3 years following the activity as directed within ACSO 3216. Fmn/unit personnel trained to a competent level⁵ to undertake / support HI Risk Assessments⁶ are:

- a. Unit Health and Safety Staff.

⁴ The Management of Health and Safety at Work Regulations 1999 and ACSO 3216.

⁵ This list is not exclusive and units may wish to conduct internal trg to increase the number of competent personnel able to fulfil this function. Training is available from AFPAs, formation and garrison FP and SHEF staff and Train the Trainer courses are provided via Regional Command.

⁶ In accordance with JSP 539.

- b. Environmental Health Practitioners (EHP).
- c. Army Force Protection Advisers (AFPA).
- d. Combat Health Advisor (CHA)⁷.
- e. Combat Medical Technicians (Class 1).
- f. Physical Training Instructors (ie RAPTCI, AAPTI, SIO PT, other arms and services equivalent).
- g. Personnel trained as a Health and Safety at Work Risk Assessor (recorded on JPA as Health and Safety at Work (RISK ASSESSOR (Joint)) and delivered by a qualified trainer (JPA qualification Health and Safety at Work (RISK ASSESSOR TRAINER (Joint))). Details of qualified trainers can be sought from Deputy Chief Safety (Army).

Assurance Responsibilities

6. **Formation (Fmn) HI Assurance.** 2* fmns are to ensure that HI risk is being appropriately managed across the CoC. Using the Forecast of Events, fmns are to identify events that present an increased risk of HI (see Ch 4. Para 6). For these events, fmns are to provide support using SQEP (eg PD, FP, EH, G7 staff) by:

- a. Engaging with the event organisers (ie Commanding Officer / DDH) as necessary to provide appropriate advice on heat risk management (including mitigations) to help reduce the likelihood of HI and to enable the event to take place safely.
- b. Conducting an assurance visit (where deemed necessary) prior to or during the event. The assurance visit should be seen as an opportunity to support and potentially enhance training options. On completion of the visit an assurance report is to be produced, with appropriate observations, lessons and examples of best practice which will be raised to the Army Heat Illness Working Group and appropriate fmn Health Committees.

7. **Formation G1 Personnel.** Within fmns, units are required to discuss the incidence, management and prevention of HI as part of their routine Unit Health Committees (UHC)⁸ in accordance with AGAI Vol 2 Ch 57. Fmn G1 personnel will audit units to ensure UHCs are compliant with current policy, including the prevention and management of HI as per [JSP 539](#)⁹.

8. **Formation Physical Development Staff.** The PD Audit requires PD staff to assure that training activities are compliant with [JSP 539](#). This must include the provision and recording of suitable and sufficient HI RAs as part of the audit process¹⁰.

9. **Formation Force and Environmental Protection Staff.** The Force and Environmental Protection Audit (FEPA)¹¹ assures compliance with relevant health and safety legislation, including the provision and recording of discrete RAs (footnote 1 refers).

⁷ From Sep 19 onwards.

⁸ AGAI Vol 2 Ch 57 Annex A.

⁹ Unit Administration Manual Ch 31 Annex A.

¹⁰ ACSO 9018 Annex B.

¹¹ ACSO 9016 Annex A.

The FEPA must provide assurance that HI RAs have been completed for relevant activities.

10. **Formation Environmental Health Staff.** The Force Health Protection Audit¹² requires Environmental Health Staff to assure that the prevention and management of HI is compliant with [JSP 539](#) policy. This is determined by ensuring that unit HI RAs are conducted by competent personnel, appropriate to the activity and formally recorded along with any dynamic alterations. Environmental Health Staff may also be required to investigate cases of HI when directed by Army HQ (either SHA(A) or Army Safety Centre (ASC)). Investigation reports are to be submitted through the CoC to Army HQ (SH(A) and ASC Safety Lessons and Investigations).

11. A summary of the various responsibilities from unit to fmn level are detailed in Figure 1:

All Commanders	Have a duty under H&S Legislation to assess and control risks to their workforce
Formation Level	<p><u>Audit regimes aligned to heat illness assurance process:</u></p> <ul style="list-style-type: none"> • 2* Heat Illness Assurance Panel • G1 Staff (through audits of the Unit Health Committee process) • Physical Development Staff • Force and Environmental Protection Assurance Staff • Environmental Health Staff
Unit Level	<p><u>Can support heat illness Risk Assessment process:</u></p> <ul style="list-style-type: none"> • Environmental Health Practitioners (EHP). • Army Force Protection Advisers (AFPA). • Combat Health Advisor (CHA). • Combat Medical Technicians (Class 1). • Physical Training Instructors. • Unit Health and Safety Staff.

Figure 1 - Responsibilities for the prevention of HI

Non-Compliance

12. Any unit non-compliance observations must be formally reported by the Audit Teams through their respective Chains of Command. Audit Teams are responsible for providing ongoing advice and support to the non-compliance. If deemed necessary, they are to raise the issue to the appropriate CoC. Significant concerns are to be evaluated and, where appropriate, the Army Inspector informed.

13. **HI Investigation.** Cases of confirmed HI will trigger subsequent investigations to be carried out in order to identify the causal factors and inform any lessons identified. Investigations not conducted by Defence Accident Investigation Branch (DAIB) will be initiated by ASC on receipt of AF510A and/or the ACSO 3207 Learning Account format. This will require confirmation of a heat injury and trigger subsequent investigation action.

¹² ACSO 9017.

Army HI Working Group

14. An Army Heat Illness Working Group (AHIWG) is to be established at Army HQ as detailed in Figure 2. Representatives from Fd Army and Home Command will attend, alongside relevant SQEP on request. This WG will advise on policy, identify trends and review the Army's HI Management Prevention implementation. It will represent the Army at the Defence HI WG and by exception to Army Health Committee.

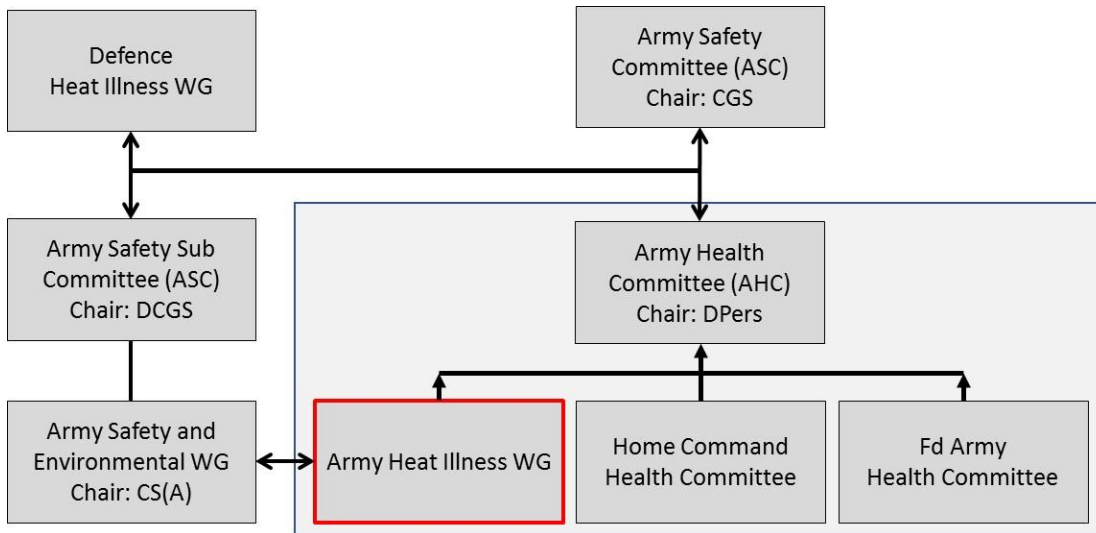


Figure 2 - Responsibilities for the prevention of HI

ACSO Point of Contact (POC)

15. POC for this ACSO is the SO1 Individual Training, Prof Dev, Pers Pol, Army HQ.

CHAPTER THREE - EXECUTION OF POLICY - RISK MANAGEMENT

General

1. [JSP 539](#) is the Joint Service code of practice for the prevention, through Force Prevention measures, of HI (and cold injury) due to either the effects of hot environments, or as a result of physical activity (exertional).
2. The risk of HI is not exclusive to operations in hot environments and many cases occur in temperate climates and occasionally in cool conditions.

Prevention of HI

3. Heat is generated by the body during physical activities and gained from the surrounding environment. In warm or hot environments heat can be lost through sweating and a small amount will be lost to the surrounding air or ground etc. However, if the body gains more heat than it can lose the core temperature will rise which may result in HI.
4. Essential in the prevention of HI is the assessment and management of risk by commanders. As with any health and safety RA process, the commander of the activity is responsible for ensuring that a suitable and sufficient RA for that activity has been conducted¹³. Generic RAs may be produced where similar activities are undertaken or repeated. Equally, they are to be used as part of the forward planning of the activity or event. On the day of the activity or event, the RA must be reviewed and amended as appropriate to be site and conditions specific.

Risk Management

5. **Organisational Risk Factors.** In addition to the individual risk factors contained in [JSP 539](#), there are certain training activities with a physical element where participants are known to be at an increased risk of HI¹⁴ and will therefore attract the requirement for additional resources, training and assurance. These events include but are not exclusive to:
 - a. Centralised career selection cadres, especially those with a competitive nature.
 - b. Field-based exercises including live firing.
 - c. Arduous Army training activities.
 - d. Annual physical tests.
 - e. Loaded marching.
 - f. Reserve mobilisation physical tests.
6. Compounding organisation factors include:
 - a. Human individual risk factors contained within [JSP 539 1-12 Table 4](#) (and Annex B) in particular obesity and poor fitness.

¹³ JSP 375 Part 2 Vol 1 Ch 40 Military Training.

¹⁴ Army Inspectorate Thematic Review: Application of HI Prevention Policy.

- b. Participants not well known to directing staff.
- c. Time pressure (real or perceived) to complete the activity.

7. The Army HQ WG is to cascade to the Army CoC in Apr of each year, a reminder of the requirement to incorporate HI risk as a factor for consideration in all external activities' risk assessments, during May – Sep.

Risk Assessment

8. The HI RA must be recorded on Army Form 5010 by a suitably competent and qualified individual (as detailed in Chapter Five). The environmental and individual risk factors to be considered when undertaking a HI RA are clearly contained within [JSP 539](#) with practical direction within MOD - A Commander's Guide to Heat Illness and Cold Injury. As a minimum, commanders must consider:

a. **Work Demand.** The rate of heat generation by the human body is determined by work rate. Depending on the type and duration of activity (eg arduous training, CBRN training etc), consideration should be given to allowing adequate rest periods for personnel to reduce core temperature and allow rehydration. [JSP 539](#) contains Wet Bulb Globe Temperature (WBGT) upper limits and maximum work rate examples.

b. **Activity Preparation.** Commanders must also ensure that all personnel participating in, or contributing to, any activity requiring a heat RA are appropriately briefed, prepared and capable of undertaking that activity. Briefings must include the prevention, signs and symptoms of HI (as detailed in JSP 539), and that individuals are empowered to alert the CoC to potential HI cases without prejudice.

c. **Recording and managing Individual Risk Factors.** JSP 539 (part 2 Section 1 para 12) discusses Individual Risk Factors. To assist commanders in their risk assessment, a check list is found at Annex B. This form can be used to support the risk assessment where an increased risk of HI has been identified. This form, if used, must be retained with the RA.

(1) Commanders should review and consider the JMES and MedLims of all participants (available via Commander's report on JPA or App 9 of non-MFD personnel) including those indicating increased risk of HI.

(2) The individual risk factors identified in [JSP 539](#) are all known to increase risk of HI. There is more HI in the presence of systemic illness and in inexperienced personnel in particular. Combinations of individual risk factors increase the risk of HI, for example, there is additional effect of obesity combined with low physical fitness.

(3) Where Individual risk factors are identified the commander should incorporate additional mitigations to reduce the risk of the activity to As Low As Reasonably Practicable (ALARP) or consider whether individuals can safely participate in the training. Advice from unit medical staff or other SQEP must be sought where required.

(4) Considering the principle of reducing risk to ALARP, when planning activities, it would be appropriate to always mitigate risk through straight-

forward simple steps that can significantly decrease risk such as considering rest breaks, dress-state, water and venting stops.

d. **Environmental conditions.** Commanders must check the weather forecast and WBGT¹⁵ Index:

- (1) The application of WBGT Index is only one factor of the HI risk assessment and must not be used in isolation to inform the RA.
- (2) When there may be an elevated risk of HI, the CoC must ensure that WBGT monitors are readily available and used correctly in order to inform the RA. WBGT measurements must be taken at the location of the highest reading for any planned activity as detailed in [JSP 539](#).
- (3) WBGT measurements must be interpreted and applied by a SQEP individual or a commander noting the upper limits detailed in [JSP 539](#) are based on Service Personnel wearing a single layer uniform with sleeves rolled up and without helmets. Based on the activity and PPE, SQEP individual and commander will assess the risks accordingly.
- (4) For assurance purposes units are to retain a written log of daily WBGT readings as a demonstration of due diligence for any future inquiries or investigations. The requirement to retain WBGT readings applies to Northern Europe (including UK) only between 1 May to 30 Sep where temperatures vary more frequently. The CoC are to ensure the WBGT readings/assessment are cascaded and available via various means (including social media) throughout their area of responsibility. Frequency of readings is determined by risk from both ambient temperature and activity duration. As a minimum, daily readings are to be taken at 0800hrs, 1200hrs and 1600hrs. A template for recording WBGT readings is at Annex C. This should be customised as necessary.
- (5) Where the upper limit of the WBGT work rest tables is likely to be exceeded, the RA must demonstrate appropriate mitigations to reduce HI risk to ALARP. Prior approval to exceed WBGT upper limits must be sought from the appropriate individual in the Duty Holding construct or Chain of Command [ACSO 3216 \(Ch 4, Annex A Safety Risk Escalation Matrix Refers\)](#) dependent upon whether a Risk to Life activity is being conducted, in accordance with ACSO 3216. The decision to allow an activity to continue beyond the upper WBGT limits must be weighed against the training benefit / operational need and must be recorded and articulated. The increased risk of HI must be managed accordingly.
- (6) The absence of a WBGT monitor does not prohibit an activity taking place where it is deemed there is no elevated risk of HI or where an operational imperative exists. In such cases, the commanders must ensure that a detailed assessment, incorporating all other risk factors is conducted, along with application of robust control measures is in place (see Risk Reduction and Residual Risk paragraphs below).

¹⁵ Chapter Eight provides additional information on the use of the weather forecast and WBGT eqpt and unit holds.

- e. **Clothing and equipment worn.** They must be compatible with the environmental conditions; ensuring personnel have access to warm weather clothing and equipment if recommended as a mitigation measure within the RA.
- f. **Water.** Ensure rehydration (and provisions necessary) have been factored into the activity.
- g. **Acclimatisation.** Commanders should note that UK and Northern Europe Service personnel should be considered un-acclimatised at all times. The required acclimatisation period for personnel arriving in theatre is detailed in [JSP 539](#), Part 2, Table 3.

9. **Risk reduction.** Once the RA has been completed commanders must determine what (if any) control measures need to be applied to enable the activity to continue whilst ensuring that the risk is reduced ALARP. Risk reduction methods may include: rescheduling the activity, modifying clothing requirements, increasing the number of water breaks etc.

10. **Residual Risk.** A key part of the RA is for commanders to determine whether achieving the activity objectives justifies the risks taken. Operational imperatives may justifiably attract a higher risk tolerance than routine training activities, however, where a commander believes the residual risk to be unacceptably high, the activity must not proceed or the decision is transferred to the higher commander, in accordance with ACSO 3216 Chapter Four, if there is an operational imperative.

11. **Stopping the Activity.** All activities must have a clear commander/activity owner/OIC who is empowered to stop the activity if pre-determined thresholds are exceeded (eg suspected HI casualty, WBGT reading, loss or reduction of medical cover etc). The commander/activity owner/OIC should dynamically assess the risks during the conduct of the activity and be prepared to pause or stop it as required. Pausing the activity and seeking shade and rest will enable personnel to cool prior to recommencing the activity. Examples of when the commander may consider pausing or stopping the activity are:

- a. During MATT 2 testing the activity must be terminated for all participants if a suspected HI occurs.
- b. Mitigations or controls breached or no longer effective (eg loss of support vehicle or access to route compromised).
- c. Change of environmental conditions (eg greater than forecast increase in temperature).
- d. Emerging risk indicators (eg personnel exhibiting symptoms of HI).
- e. Emerging evidence of individual risk factors not considered during original RA.
- f. Route or activity causing higher than anticipated work rates.

12. **First Aid.** First Aid requirements for initial treatment of HI are contained within [JSP 539](#) and MATT 3. First Aiders must inform the OIC if they are treating a suspected HI casualty.

CHAPTER FOUR - REPORTING

General

1. Incident reporting is fundamental to supporting the Army's HI prevention strategy, allowing causal factors to be identified, an appropriate action plan to be developed and resources allocated. All suspected HI incidents¹⁶ are to be reported to Army Incident Notification Cell (AINC) through an AF510 by the CoC and confirmed following a medical examination through the medical chain.

Reporting Culture

2. Reporting is an important element of safety culture and supported by the Army Leadership Code and the Army's Values and Standards. This is contained within the Army Safety and Environmental Management Sub Strategy (ASEPS) and [ACSO 3216](#).

Classification of Incidents

3. There are three broad categories of incident that must be reported by the CoC. These are defined by the HSE¹⁷ as:

- a. **Accident.** Any unplanned event that resulted in injury or ill health of people, or damage or loss to property, plant, materials or the environment or a loss of business opportunity.
- b. **Incident.** A single distinct event.
 - (1) **Near Miss.** Any event, which under slightly different circumstances, may have resulted in injury or ill health of people, or damage or loss to property, plant, materials or the environment or a loss of business opportunity.
 - (2) **Dangerous Occurrence.** Can be defined as "any incident that has a high potential to cause death or serious injury" and are specified by the Reporting of Incidents, Diseases and Dangerous Occurrences Regulations (RIDDOR)^{18,19}.

Army Incident Reporting for HI

4. Army Safety uses the term 'incident' to collectively refer to accidents, incidents, near misses and dangerous occurrences. Army policy is that ALL incidents (which includes suspected HI cases) should be reported to AINC using the AF510 – Incident Notification Report in accordance with Reference B - [ACSO 3216, Chapter 10](#).

5. In addition, when a HI casualty has been confirmed through medical diagnosis, medical staff are to notify the CoC with patient consent if medical confidentiality will be breached. The CoC are to formally report the incident (using AF510) and investigate using AF510A. Medical case recording does **not replace the requirement to report all cases of HI / cold injury to the CoC**.

6. **Reporting.** All reported cases of suspected HI must be investigated, in the first instant by the unit using the AF510A – the Army Incident Investigation Form. This must be

¹⁶ In accordance with the signs and symptoms detailed in JSP 539 Chapter Part Two, Section One.

¹⁷ www.hse.gov.uk

¹⁸ <https://www.hse.gov.uk/riddor/>.

¹⁹ Defence has an exemption from RIDDOR reporting to the HSE. However, all incidents that fall into this category are recorded by the AINC.

sent to AINC where it will be electronically stored against the reported incident and used to inform further actions as necessary in accordance with [ACSO 3216](#). Subsequent confirmation of HI will trigger appropriate investigation by relevant SQEP – as directed by ASC.

a. **Investigation Requirement.** The AF510A should be used to inform the unit learning account, if one is requested. Where additional expertise is required, the unit can call on support from their Environmental Health Team (EHT). In serious cases involving hospitalisation, the incident may be investigated by the Defence Accident Investigation Branch (DAIB). Where DAIB do not conduct a formal investigation Army HQ may determine the requirement for formal investigation using appropriate SQEP.

b. **Investigation Reporting.** On the completion of an investigation, the investigator is to submit the completed AF510A – Investigation Report (or SQEP specific investigation report) to the AINC (as per above). These reports are then collated with the actions tracked centrally to conclusion. Additionally, causal factors are thematically grouped to identify any systemic lessons which are then subject to an ASC / APSG Army Health Military Judgement Panel (MJP) with the results entered onto the Defence Lessons Identified Management System (DLIMS).

c. **DLIMS.** DLIMS allows for the identification of a Senior Point of Authority (SPA) with appropriate Supporting Action Manager (SAM) and for tracking by the ASC to conclusion. DLIMS is accessible to all commanders at all levels via authorised access. However, urgent or reoccurring issues are also circulated through the Army CoC utilising the Safety Notices.

7. **Institute of Navy Medicine (INM) HI Clinics.** The INM provide specialist clinics to diagnose HI, these clinics last 6 hours and involve significant resource and provide information vital to the recovery of the SP. Failure to attend rates from Army personnel are 40%. Commanders are to ensure SP attend INM appointments and disciplinary action is to be taken for non-attendance.

CHAPTER FIVE - HEAT ILLNESS PREVENTION TRAINING

General

1. The unit CoC is to provide 1st Line of Defence Assurance to all unit training activity. Individuals appointed into the role of Unit Training Officer²⁰ / WO (UTO / WO) must possess appropriate SQEP to fulfil the role. In addition to the various cap-badge specific exercise planning and management qualifications, the UTO / WO are to attain the following qualifications prior to taking up the appointment:

- a. Unit SH&E Advisor.
- b. Unit Fitness Training Officer (UFTO).

2. Commanders at every level must ensure the risk of HI is reduced to ALARP. Overall awareness is required by all unit personnel on how to:

- a. Assess HI Risk.
- b. Prevent HI.
- c. Identify HI.
- d. Treat HI (ie First Aid).
- e. Report and record HI.

3. Training on the above is to be delivered to all personnel on a regular basis, ideally annually (as close as possible to 1 Apr) or as conditions, circumstances and resources dictate. Training is to be delivered by the appropriate SQEP. In addition, refresher training is to take place as follows:

- a. Immediately prior to any deployment to an environment where the climate is equal to or warmer than a UK summer.
- b. As part of Unit Workplace Induction Programs.
- c. During Comd Training Cses e.g. Tp / Plt Comds Cses / JNCO Cadres / MATT Training events or arduous training as per ACSO 3216.
- d. Mandated MATT 3 available via AKX/DLE.

Risk of Exertional Collapse

4. All medical and training staff (including OICs and PTIs) involving in physical training activities or field-based exercises must understand the risk of exertional collapse. This includes recognising the signs and symptoms and being to apply immediate first aid. This information is contained in [AGAI Vol 1 Ch 7](#) - Physical Training.

²⁰ Training Officer might have other unit roles eg Regimental 2IC.

SQEP and Support

5. HI prevention and treatment requires a coordinated approach. The list below details SQEP advisors (located at fmn or unit level) available to commanders and outlines their skills and how they contribute to HI prevention and treatment:

a. **Fmn Environmental Health Practitioners (EHP).** The primary role of the EHP on operations is to maintain and enhance military capability through assessing, communicating, correcting, controlling and preventing those factors in the environment that potentially can adversely affect the health or survival of personnel. EHP's have an increased level of knowledge of HI prevention training and should (where possible) be employed as the primary SME to conduct unit briefings including pre deployments. EHPs are also trained in the use and interpretation of WBGT monitor and to conduct environmental investigations where required.

b. **Fmn Army Force Protection Advisers (AFPA).** Army Force Protection Advisers are a cadre of S&EP professionals who operate across the Army TLB to provide advice and guidance to units. They have a limited S&EP training capability and can act as incident investigators when directed by ASC. AFPAs can provide unit level RA training and advise on the production of RAs²¹. After formal training on RA training by an AFPA a certificate of attendance valid for 3 years will be issued to those in attendance and a JPA competency recorded (Health and Safety at Work (RISK ASSESSOR (Joint))).

c. **Fmn/Unit Royal Army Physical Training Instructor (RAPTCI).** The RAPTCI is the Comd's advisor on all Physical Development matters. They possess the SQEP to provide advice to the CoC on the impact of climate on the physical performance of individuals. They are also qualified in the use and interpretation of WBGT monitor and Risk Assessment. RAPTCIs possess the SQEP that enables them to conduct HI prevention briefings, produce RAs and advise the CoC on how to mitigate the risk of HI on non-PD activities that place a physical demand on individuals.

d. **Unit Physical Training Instructor (PTI).** PTIs are employed within units under the supervision of a RAPTCI or, for units without a RAPTCI, the UFTO. In units with a RAPTCI, the PTI is responsible for assisting with the delivery of the Army Physical Training System (APTS) and MATT 2 testing. A PTI is qualified in the use of the WBGT monitor and RA. They also possess the SQEP that enables them to conduct low level HI prevention briefings, produce RAs and advise the CoC on how to mitigate the risk of HI on non-PD activities that place a physical demand on individuals.

e. **Unit Medical Staff.** Unit medical staff are to inform the CoC²² where appropriate, of any personnel who may be at increased risk of HI due to predisposing conditions, relevant medication or illness etc. Although routinely discussed at UHCs, this can be raised at any appropriate time prior to certain activities / training. Additionally, Combat Medical Technicians Class 1 (CMT1) are trained by EH Staff in the prevention and management of HI (including the use and interpretation of WBGT monitor).

f. **Unit Combat Health Advisor (CHA).** Combat Health Advisor is a unit level deployed function. CHAs are trained to identify potential health threats when

²¹ For units without an assigned AFPA, they should contact Deputy Chief Safety to identify a local AFPA to assist them.

²² Using a Light Duties Proforma or JMES and observing medical in conference protocols.

deployed, incl climatic injury threats. Although predominantly required for providing deployed preventive health advice, as of Sep 19 the CHA course now includes instruction on prevention of HI and use and interpretation of WBGT monitor.

g. **Unit Health & Safety Advisor (UHSA)/RPOC Safety Health Environment & Sustainable Development Advisor (SHE&SD Adv.)** They can provide Unit level RA Training (if qualified as a Train the Trainer) and advise on the production of RAs.

HI Prevention Training

6. Units are to ensure specific serials on prevention and treatment of HI are included within all training planning (to include Competent Medical Authority Approved Health Risk RSOI / Pre-Deployment packages). This is to take place prior to any deployment into the field or on Operations regardless of location or environment. The same rigour is to be applied to UK and overseas deployments, thereby reinforcing the understanding of HI across all ranks. The depth of the brief must be proportionate to the risk of HI. The following table provides guidance on what should be briefed and by whom:

Event	Pre-training Required	Timescale	MATT 3 In date	Delivered by	Key Reference Doc / Material
Operations (inc PDT)	RSOI Package	Prior to or within 2 weeks of arriving	Yes	EHP	OP Mounting Instruction / JSP 539
Exercises (overseas)	RSOI Package	Prior to or within 1 week of arriving	Yes	EHP	JSP 539 / EASP
Non-OP Named STTT	RSOI Package	Prior to or within 1 week of arriving	Yes	EHP for overseas	JSP 539 / Mounting Instruction Commander's Guide to Heat Illness and Cold Injury
Exercises (UK)	RSOI Package	Prior to Ex	Yes	EHP	JSP 539, Commander's Guide to Heat Illness and Cold Injury EASP
Arduous Training	Safety Brief	Within 12 hours prior to event	Yes	EHP / RAPTCI	JSP 539 Commander's Guide to Heat Illness and Cold Injury
Ad Hoc Trg	Safety Brief	Within 4 hours prior to event	Yes	Plt / Tp Comd	EASP, JSP 539 Commander's Guide to Heat Illness and Cold Injury
Physical Training / Testing	Safety Brief / Test protocols	Within 4 hours prior to event	Yes	OIC PT / RAPTCI / AAPT / SIO PT	AGAI V1 Ch7, MATT2, JSP 539
Sport	Safety Brief	Within 4 hours prior to event	Yes	Event Organiser	NGB, RA, JSP 539 Commander's Guide to Heat Illness and Cold Injury
Cadre Courses	Safety Brief	Within 1 week prior to event	Yes	UTO / RAPTCI	JSP 539 Commander's Guide to Heat Illness and Cold Injury

Through Life Risk Management Education

7. The requirement for through-life Risk Management training has been reviewed by the ASC. The outline intent is to incorporate such training at key milestones through an individual's career, for example within ALDP and Officer Career Stage 1 and 2. By providing broader Risk Management awareness to those responsible for organising and delivering training, it will supplement the HI prevention direction contained with this ACSO. In addition, it may present opportunities to include specific HI prevention information, potentially delivered as early as Basic Training to all recruits.

HI Awareness Training

8. Unit Comds are to ensure all Unit Training Staff undertake seasonal (ie within the first 3 months of the training year (Q1)) refresher training on the prevention of HI by an EHP. As a minimum this training is to be provided to the following personnel:

- a. Unit Training Offr / WO²³.
- b. Trg Offr / WO (Sub Unit).
- c. PI / Tp Comds.
- d. RAPTCIs / AAPTI / SIO PT.
- e. Assistant PTIs.
- f. Unit MATT Instrs.

Risk Assessment Training

9. All training events must be RA in accordance with ACSO 3216 Chapter Four using the AF5010 – Army Risk Assessment Form. All RAs must be signed off by the Activity Owner, supported by requisite Specialist Qualification (Spec Qual). Whilst this ACSO is specific to HI, this direction for Risk Assessors to be suitably trained applies to the production of all Army RAs and ACSO 3216 will be updated in due course to reflect this additional requirement. The RA spec quals are to be recorded on JPA by unit administrative staff on production of a course certificate and are as follows:

- a. **Health and Safety at Work (RISK ASSESSOR (Joint))**. This Specialist Qualification demonstrates that Risk Assessment Training has been completed. The training included what Risk Assessments are, how and when to perform them, an understanding of the benefits and compliance with legislation.
- b. **Health and Safety at Work (RISK ASSESSOR TRAINER (Joint))**. This Specialist Qualification demonstrates that the individual is qualified to deliver Risk Assessment Training including what Risk Assessments are, how and when to perform them, an understanding of the benefits and compliance with legislation. Risk Assessors must undertake the training package delivered by a qualified Risk Assessor trainer (such as an Army Force Protection adviser (AFPA)) who hold the Specialist Qualification (Spec Qual).

WBGT Training

10. The WBGT is **a tool to assist** with the RA process. RAPTCIs / PTIs / SIO PT and EHPs receive specific training on how to use and interpret WBGT readings. In the absence of a stand-alone WBGT cse and limited availability of equipment, units are to conduct in-house WBGT training. This training is to take into account future commitments/activities where there is elevated risk of HI and the use of WBGT will be required. Training is to focus on the following areas and attendance records retained at unit level (ie training logbooks etc):

²³ As a minimum Unit Trg Offrs / WO are to be in possession of the SQEP that enables them to conduct 1st LoDA on all aspects of Unit Trg.

- a. How and where to place a WBGT in relation to where training is conducted.
- b. How to take WBGT readings.
- c. How to interpret the WBGT reading in conjunction with JSP 539 (and local SOPs where necessary) and the Approved Training Material detailed below.

11. In the absence of sufficient WBGT monitors, at the very least, sub-unit trg staff are to be fully conversant on how to obtain temperature and humidity readings from www.jomoc.net (further details are provide at Chapter Seven).

Approved Training Material

12. Current and approved training material (written and audio-visual) that supports [JSP 539](#) can be sourced through the British Defence Film Library catalogue accessed the defence gateway and the [MILLIE online portal](#). The following key documents and DVDs are available:

- a. Key policies and reference documentation at Annex D.
- b. Heat Prevention & WBGT (C5181 / 09).
- c. Living with Heat (A2727).
- d. Tri-Service video 'Keep your cool' (A3876).
- e. MATT 3 via DLE and AKX.

CHAPTER SIX - EQUIPMENT

General

1. The aim of this chapter is to provide commanders direction and guidance on how issued personal / unit equipment and materiel should be prepared and in order to ensure HI prevention measures are applied. The chapter covers equipment, focussing on specific items but is by no means an exhaustive list. Commanders and Duty Holders are to include this information into SOPs / TTPs, Eqpt Care Plans and activity planning, such as: Ex / Trg / Op / Admin instructions, orders and at any other relevant preparation and planning opportunity.

Clothing and Personal Protective Equipment (PPE)

2. **Personal Issue.** There are a variety of personal climatic issuable items, through unit QMs, that must be considered when planning any training activity. These are to be articulated in all orders and instructions pertaining to training and operations and Deployment kitting lists etc (sun-cream, water jerricans, cam-nets, added shade, insect repellent etc).

3. **Clothing and Personal Protective Equipment (PPE various).** If CBRN protective clothing, Public Order PPE or VIRTUS-Combat Body Armour is worn, the WBGT index upper limit for un-acclimatised personnel must be reviewed and threshold reduced by 5 degrees centigrade as directed in [JSP 539](#).

4. **Combat Clothing (Pers Holding Records (PHR) entitlement).** The combat dress layering principle should be adopted in all conditions. Layers of clothing should be removed immediately prior to, and during physical exercise and training serials. This will allow adequate ventilation as the tactical situation or the training schedule permits.

5. All personnel are issued warm weather supplementary items as core (sweat rags, sun hats) during Phase One training. The CoC must ensure that the items are checked regularly to ensure that they are available for use. It is important that commanders at all levels, consider the likely clothing requirements during the planning stage of their exercise / deployment, enabling deficiencies to be found through routine checks. These can then be demanded through the QM / Log Sp chain in good time.

6. **Public Order PPE.** Public Order clothing and equipment is designed to protect the person in role-specific public order disruption, riot control scenarios and in all climatic conditions. It must be used in accordance with the usage instructions and local commander's orders. Commanders are to consider the climatic factors in their operating environment and be prepared to take appropriate mitigating measures such as squad rotation or the loosening of clothing should the operational situation permit this.

VIRTUS

7. VIRTUS (Camel Backs, modular layering, EC etc) is by design a scalable, modular system, facilitating the ability for commanders to evaluate the risk of HI against the ballistic threat. VIRTUS can be worn in four configurations of increasing protection ranging from soft armour filler only, as a plate carrier, as a combination of hard and soft armour, and finally with the full employment of additional extremity protection. This scalability allows for reduction of the thermal burden or to reduce weight thereby increasing mobility. It also has

the dynamic weight distribution (DWD) system, that may also assist in reducing thermal loading and reducing Musculoskeletal Injury (MSKI).

CBRN

8. CBRN PPE significantly reduces the body's ability to lose heat. Commander's must be supported by Defence C-CBRN Advisors who can provide appropriate advice when undertaking physical activities where there is an elevated risk of HI. [JSP 539](#) provides specific guidance on CBRN PPE dress states and HI mitigations. Defence C-CBRN advisors and HQ cells may also have access to reach-back MOD scientific support at DSTL under project VAMPER²⁴ on both operations and in-training. Further guidance on the use of CBRN PPE is contained within Annex E.

Water Provision

9. Commanders must ensure that the guidance on water intake is incorporated into their assessment/plans and appropriate provisions of storage are available. Under no circumstance is the availability of drinking water to be restricted.

²⁴ 2019DIN03-018.

CHAPTER SEVEN - HEAT STRESS MONITORING

Introduction

1. A HI RA is essential for the prevention of HI and should incorporate weather forecast data and measured data from an authorised WBGT monitor²⁵ where there is an elevated risk of HI.
2. Weather forecasts are valuable for planning purposes. They provide commanders with advance warning of expected levels of heat stress. This timely information enables mitigation measures to be put in place ahead of activity that could cause HI. WBGT readings from weather forecasts are not as accurate as those measured from correctly sited and operated WBGT monitors. Measured readings must therefore be taken using an authorised WBGT monitor prior to and during planned activity in accordance with the HI RA process described in Chapter Five. Where measured WBGT monitor readings deviate from what was forecasted, the HI RA must be reviewed.

Roles and Responsibilities

3. Roles and responsibilities for heat stress monitoring capability, systems and equipment are as follows:
 - a. **Capability Sponsor.** HOC CSS is the Capability Sponsor and responsible for developing heat stress monitoring capability. Contact: ArmyCap-CSS-MedCap-SO3@mod.gov.uk.
 - b. **Through Life Support.** Assistant Head Equipment (Through Life Support) is responsible for the through life support of fielded monitoring equipment. Contact: ArmySpEqpt-TLS-OIP-CIMSO2@mod.gov.uk.
 - c. **Equipment and Support.** DE&S Operational Infrastructure (OI) Team are responsible for the supply and sustainment in service of QT34. Contacts are:
 - (1) OI Team. DESLEOI-Wksp-PMTH@mod.gov.uk.
 - (2) Calibration Enquiries. tepl.helpdesk@deca.mod.uk; phone 01244 847365.
 - d. **WBGT Scientific Advice.** Scientific advice relating to QT34 and WBGT monitoring equipment is available from the Institute of Naval Medicine (INM). Contact: NAVYINM-EMSAP3@mod.gov.uk.
 - e. **Weather Forecasting.** Joint Operational Meteorology and Oceanography Cell (JOMOC) in PJHQ manages the provision of weather forecasting for MOD. Contact: JFC-C4ISRJtUser-JGIMaritimeSO2@mod.gov.uk.

Weather Forecasts

4. **General.** When planning activity, commanders should use weather forecast information well ahead as part of the HI RA. Where hot and humid weather is forecast, commanders should consider adjusting dates and times to better suit the activity. If they cannot adjust timing, they must plan to mitigate the anticipated heat stress. Weather

²⁵ QUESTemp 34 is currently the only WBGT monitor authorised by MOD.

forecast data are also helpful at the start of prolonged activity, for they can give an indication of how weather might change over the whole course of the activity.

5. **Publishing Forecast WBGT Indices.** Heat Stress forecasts are for planning purposes only and forecast WBGT indices, if disseminated, are to be annotated as such.

6. **Sources.** Weather forecasts and other meteorological information and advice can be obtained from the following sources:

a. **Defence Met Office Websites.**

(1) **JOMOC Homepage.** This can be found at <http://www.jomoc.r.mil.uk/> and <http://www.jomoc.s.mil.uk/> on the RLi and SLi respectively. Some JOMOC pages are also available via open source internet at www.jomoc.net; the open source pages require a username and password, which can be requested from JOMOC Ops Spt (NavyOps-JOMOCOpsSptGroup@mod.gov.uk). JOMOC is responsible for all Defence Meteorological data and forecast products. The organisation provides global forecasting to meet operational and exercise requirements across domains from Open Source to Above Secret via a Royal Navy and Met Office staffed 24 / 7 facility at HQ Northwood.

(2) **Met Office Defence Tactical Decision Aids (TDA).** JOMOC also manage access to the TDA site, which provides weather data, including a WBGT. A login should be requested through JOMOC Ops Sp (as above).

b. **Bespoke Forecasts.** Where commanders require it, they may contact JOMOC for a bespoke forecast for anywhere in the world. If there is no assured host nation support, JOMOC will provide their forecasts. JOMOC maintains a 24-hour help desk to which urgent requests can be directed (Mil: 9360 58112 Civ: (01923) 958112 Civ: + 44 (0)1923 958112). However, in order to enable JOMOC to provide an efficient bespoke service the timelines set out in [JSP 539](#) should be followed²⁶:

c. **Open Source Met Office Forecast.** Open source weather forecasts from the Met Office can be accessed at <https://www.metoffice.gov.uk/>. This site provides information on temperature, wind-speed, humidity and Solar Ultraviolet Indices²⁷ for the United Kingdom, Europe, the Mediterranean and locations further afield. However, it does not provide a forecast of WBGT.

7. **Heatwave Planning.** The Met Office provides a system of heatwave alerts, which operate in England from 1 Jun to 15 Sep each year. During this period, the Met Office may forecast heat waves. The heat-health watch system has five alert levels (Figure 3 below and . Each alert level should trigger appropriate action as set out in the heatwave plan. Actions by the Army may differ from the civilian population, but heat wave alerts are an important aid to planning. From summer 2020 the Heatwave Alert Level will be cascaded through the CoC for all training using various communication channels available to the unit/organisation (eg social media). The Army HI WG will be responsible for developing the mechanism/ToRs for cascading the Heatwave Alerts. For heatwave information outside the UK, commanders should use JOMOC.

²⁶ Ideally all communications should be via MODNET, however if the commander does not have access to MODNET (particularly during the activity period) planning forecasts can be emailed to a civilian email address. However, consideration should be given to operational security.

²⁷ Solar Indices are particularly important to understand the risk of sunburn.

Level 0	Long-term planning - All year
Level 1	Heatwave and Summer preparedness programme - 1 June – 15 September
Level 2	Heatwave is forecast – Alert and readiness - 60% risk of heatwave in the next 2 to 3 days
Level 3	Heatwave Action - temperature reached in one or more Met Office National Severe Weather Warning Service regions
Level 4	Major incident – Emergency response - central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health

Figure 3. Heatwave Alert Levels promulgated by the MET Office

WBGT Monitors

8. **General.** WBGT monitors gather data on four different environmental parameters. [Annex F to JSP 539](#) describes these parameters and how they are used to calculate the WBGT Index. Different models of WBGT monitor gather the data in different ways and this markedly affects the accuracy of the WBGT Index each provides. Units must only use an authorised monitor.

9. **Single Authorised WBGT Monitor: QUESTemp 34 (QT34).** The QT34 (NSN 6685-99-665-9590) is the only WBGT monitor authorised by MOD. QT34-measured WBGT Indices alone must be used to determine upper limits for different work rates set down in JSP539. WBGT indices from forecasts or from unauthorised sources are not to be used to determine upper limits for work rates.

10. **Dissemination of Interim Direction and Guidance.** New direction or guidance relating to WBGT or heat stress monitoring will be disseminated by DIN until primary references are updated. Once published, DINs will become authoritative references until rescinded or replaced. If they contain safety-related information, they will be notified through chains of command using the Army Safety Notice process set out in Chapter One of [ACSO 3216](#)²⁸.

11. **WBGT Unit SQEP.** In accordance with Chapter Five to this ACSO, fmns and units must ensure they have enough SQEP to operate, maintain and manage WBGT. Roles and responsibilities must be specified within SOPs and Equipment Care Directives. Personnel must be correctly trained and, whilst in role, must maintain the currency of their expertise.

12. **Management.**

a. **Holdings.** All Army units must hold at least two WBGT monitors, unless authorised by their fmn EHP staff. Independent sub-units must hold at least one QT34 monitor. Total holdings for any unit will vary dependent on unit role and location and must be sufficient to enable the release of monitors for annual calibration and routine maintenance. Holdings must be reviewed annually by unit SQEP (see Chapter Five) as part of the annual Force Health Protection Audit process set out in [ACSO 9017](#). Fmns are responsible for balancing any short-term deficit in availability amongst subordinate units in the event of unusually high levels of demand or unserviceability.

b. **Accounting.** All WBGT holdings must be recorded and managed on MJDI. Unit Equipment Entitlement advice is available from Army Medical Services Equipment Sponsor (ArmyCap-CSS-Med-EqptLiab-WO@mod.gov.uk).

²⁸ Army Safety Notices are promulgated through Safety Notices via Email (SNvE).

c. **Routine Checks and Maintenance.** Units are responsible for undertaking routine checks and maintenance in accordance with Annex F of JSP 539 and the QT34 AESP. The latter can be accessed by searching for the AESP reference²⁹ on the [Technical Documents OnLine \(TDOL\) Viewer](#).

d. **Calibration.** WBGT monitors require annual calibration to remain accurate. Calibration is undertaken by Defence Electronics & Components Agency (DECA). It is a unit responsibility to ensure WBGT monitors remain in date for calibration. It is also their responsibility to request this service from DECA (see Chapter Six of the QT34 AESP on the [TDOL Viewer](#)). Turn-round time for calibration will typically be 2-weeks and should be organised for the cooler months of the year in order to maximise availability of WBGT when heat stress is highest.

e. **QT34 Demands.** Demands for new WBGTs are to be raised in accordance with the User Guide on MJDI and in line with entitlement guidelines detailed within the Defence Logistic Framework.

f. **Warning Label.** All WBGT monitors are to have a printed label affixed to the front face of the sensor bar. The label is to show the following text: ***“ATTENTION: When using this WBGT to take daytime outdoor readings, make sure that it is not shaded in any way from sunlight. It must be in any direct sunlight”***. Labels will be placed prior to issue and will be checked as part of the calibration and repair process. However, units are also to check label placement as part of routine maintenance and replace labels, where they may have become or damaged.

g. **Aide Memoire.** A printed copy of the QT34 Aide Memoire at Annex F is to be stored with each WBGT monitor.

13. **Employment and Use.** Where available and if indicated as part of the HI RA risk mitigation, QT34 monitors must be used to monitor WBGT readings before and during the activity to ensure the activity remains within the bounds of the RA. The WBGT monitors must be employed in accordance with the direction Chapter Seven.

a. **Operating Instructions.** All users must comply with the operating instructions for QT34 published within Annex F of JSP 539 and the QT34 AESP:

(1) The Aide Memoire at Annex F and the QT34 User Videos below are available to refresh trained users on the use of QT34.

(2) When ionised or distilled water is unavailable, bottled drinking water may be used to fill the wet bulb reservoir. This shortens the life of the wick, which will need to be replaced more regularly. Users must check regularly for wick discolouration and replace it when discolouration is observed. Failure to do so will result in QT34 giving higher than actual WBGT readings.

(3) A daily log of QT34 WBGT data must be retained and stored in accordance with the direction in Chapter Three.

b. **Siting.** WBGT must be sited in accordance with the direction and guidance within JSP 539 and the WBGT AESP. The correct siting of WBGT monitor is

²⁹ AESP Reference: 685-D-120-201. Monitor, Thermal Environment, QT-34 Operating Information.

particularly important, with poor siting a significant causal factor in some recent HI cases. Particular care should be taken to ensure the following:

- (1) When used to establish outdoor WBGT, they must be placed in direct sunlight and must not be shaded in any way³⁰.
- (2) WBGT monitors must be sited at the location of greatest heat risk for the monitored activity, rather than of the greatest convenience. Users must note that WBGT readings can vary significantly over even quite short distances. For activities taking place over a large area, it may be necessary to place multiple WBGTs.
- (3) WBGT Index readings are likely to change during the course of an activity and commanders are to ensure they are able to receive updated readings throughout. WBGT Index upper limits apply for the entire duration of an activity and not just the time of commencement. Where WBGT changes are observed, commanders must be prepared to adjust their plan.
- (4) Unit SOPs must specify where WBGT monitors should be sited for different routine activities and users must be made aware. Unit WBGT must review siting at least annually and whenever the location of an activity changes. Siting must take account of daily and seasonal variation and this must also be included within SOPs.

14. **User Video.** A QT34 User Video is available at the following links to refresh trained users on use:

- a. [AKX](#). *(Recommended link from MODNet terminals).*
- b. [Defence Connect](#).
- c. [Defnet](#). *(Highest quality but must be downloaded to desktop to play).*
- d. [YouTube](#). *(Not accessible from MODNet).*

³⁰ In exceptional circumstances, for example in the jungle, where all activity is occurring under the canopy, it may be appropriate to place QT34 under the canopy. This must be done in consultation with local SQEP.

CHAPTER EIGHT - ABBREVIATIONS

Abbreviation	Full Title
AFPA	Army Force Protection Advisers
ALARP	As Low As Reasonably Practicable
APTS	Army Physical Training System
ASC	Army Safety Centre
CHA	Combat Health Advisor
DSTL	Defence Science and Technology Laboratory
EHP	Environmental Health Practitioners
FEPA	Force and Environmental Protection Advisor
HI	Heat Illness
HSE	Health and Safety Executive
LoD	Lines of Development
MSKI	Musculoskeletal Injury
NGB	National Governing Body
PD	Physical Development
PTI	Physical Training Instructor
QT34	QUESTemp 34 WBGT Monitor
RA	Risk Assessment
RAPTCI	Royal Army Physical Training Corps Instructor
RLi	Restricted Land Interface
RPOC	Regional Point of Command
SH&E Advisor	Safety, Health & Environment Advisor
SHE&SD	Safety Health Environment & Sustainable Development Advisor
SLi	Secret Land Interface
SQEP	Suitably Qualified and Experienced Person
UFTO	Unit Fitness Training Officer
UHC	Unit Health Committee
UHSA	Unit Health & Safety Advisor
UTO	Unit Training Officer
WBGT	Wet Bulb Globe Temperature
WO	Warrant Officer

ACSO 3222 – QUICK REFERENCE GUIDE

The following table can be used as a quick reference guide to aid familiarisation of this ACSO. It highlights the key points from each chapter; but must not be used in isolation. Individuals must be fully conversant with the ACSO and its application.

Key Points	Ch
Aim, Scope and Purpose	
This is the Army's Direction & Guidance on the management/prevention of HI.	1
We must train hard to the intensity and tempo required - but safely . The way we plan and deliver training must achieve both these requirements.	1, 2
HI risk is highest in the summer, but over-heating can occur any time of year.	1
Governance and Assurance	
JSP 539 is the principal MOD document for the prevention and treatment of HI.	2
A thorough RA is essential. It is the responsibility of all involved in the management and execution of training to ensure RAs are in place (and reviewed dynamically throughout). Units must retain RA documentation for 3yrs.	2
Various appointments are available to provide advice and guidance at fmn and unit level. Fmn: G1, PDA, Force and Environmental Protection Assurance etc. Unit: Unit H&S staff, Environmental Health Practitioners, Army Force Protection Advisers, PT Staff etc.	2
Fmns have a responsibility to ensure HI risk is being managed appropriately. A fmn assurance team is available to assist using SQEP (eg PD, FP, EH, G7 staff).	2
Unit Health Committees (UHC) must cover HI, in particular root causes and reporting.	2
The Army will create a HI WG. This will provide greater focus and increased governance across the Army.	2
Execution of Policy - Risk Management	
Units must retain a written log of daily WBGT readings (between 1 May to 30 Sep where temperatures vary more frequently).	3
Risk of HI is increased for certain activities. While not exclusive, they may include: Centralised career selection cadres, Field-based exercises including live firing, Arduous Army training, Annual physical tests etc.	3
<p>RAs must consider: work rate and duration, preparation, individual risk factors, clothing and equipment, hydration and acclimatisation.</p> <p>Generic RAs can be used as part of the forward planning of the activity or event.</p>	3
Ensure that HI risk, prevention and control measures are briefed and followed.	3
WBGT thresholds are to prompt further RA and mitigation, not de facto stop activity. The absence of a WBGT monitor does not prohibit activity.	3

Reporting	
Reporting of HI incidents, including near misses, must be improved as it is key to the Army's HI prevention strategy.	4
Report all incidents (including those suspected) that meet the reporting threshold (JSP 539) using AF510.	4
Units, in the first instance, must investigate all suspected incidents on AF510A and send to AINC. Seek advice and support from Environmental Health Teams if required.	4
Serious cases that involve hospitalisation may be investigated by the DAIB.	4
When a HI casualty has been confirmed through medical diagnosis, medical staff are to notify the CoC without breaching medical confidentiality.	4
HI Prevention Training	
As the Unit Trg Offr/ WO assure training activity, they must be Unit SH&E Advisor and UFTO trained.	5
Annual training on HI risk, prevention, identification, treatment and reporting must be delivered to all personnel prior to the summer season. In particular, those planning and leading activity with a HI risk.	5
There are a number of unit SMEs that can provide advice and support for HI and RAs. Training materials are available.	5
Equipment	
Warm weather clothing and supplementary items are issued during Phase One training and can be demanded through the QM / Log Sp chain.	6
VIRTUS, Public Order and CBRN clothing increase thermal loading (refer to JSP 539), hence the WBGT index upper limit should be reduced by 5 deg C.	6
Ensure that the appropriate provisions of water storage is available.	6
Heat Stress Monitoring	
Use weather forecasts to inform planning ahead of the event so that mitigations can be put in place, rather than leaving it to the day.	7
Heatwave alert levels will be cascaded through the CofC.	7
The QT34 is the only endorsed WBGT that can be used.	7
Maintain QT34 user SQEP through annual familiarisation with the user video.	7
Hold at least two QT34 WBGT per unit. Calibrated annually.	7
WBGT monitors must have labels affixed and aide memoire with them.	7
Site WBGT monitors correctly; out of shade at the location of greatest HI risk.	7

INDIVIDUAL RISK FACTORS - SUPPORTING INFORMATION FOR THE RA

Individual Risk Factors	
Factors	How to Check
Lifestyle:	
Individual Volition	Comd Judgement
Being overweight or obese	FISS 2 BCM Record
Lack of physical fitness	Document Review
Smoker (not ex-smokers)	Document Review
Alcohol intake within the past 48 hrs	Spot Check Comd Judgement
Illicit drugs eg ecstasy	Spot Check Comd Judgement
Use of supplements	Spot Check Comd Judgement
Health:	
Previous HI	Document Review
Mild illness eg diarrhoea, common cold, fever	Document Review
Vaccination within the past 48 hours	Document Review
Current sunburn	Spot check
Prescribed and over-the-counter medication eg antihistamines and painkillers	Document Review Spot Check
Dehydration	Spot Check
Work Constraints:	
Inexperienced personnel	Comd Judgement Document Review
Air travel within the past 24 hours	Spot Check Document Check
Poor nutrition (missed meals within the past 24 hours)	Spot Check
Lack of sleep	Spot Check
Un-acclimatised personnel (this includes all UK and Northern Europe-based personnel)	Document Review

Addition Comments as Required

WBGT DAILY READINGS

Date:

WBGT Serial Number:

Timings	Requirement	Temperature (°C WBGT)	Location of Reading ³¹	Maximum Work Rate ³²	Recorded By
0000 hrs	Subject to unit activity				
0100 hrs	Subject to unit activity				
0200 hrs	Subject to unit activity				
0300 hrs	Subject to unit activity				
0400 hrs	Subject to unit activity				
0500 hrs	Subject to unit activity				
0600 hrs	Subject to unit activity				
0700 hrs	Subject to unit activity				
0800 hrs	Mandatory				
0900 hrs	Subject to unit activity				
1000 hrs	Subject to unit activity				
1100 hrs	Subject to unit activity				
1200 hrs	Mandatory				
1300 hrs	Subject to unit activity				
1400 hrs	Subject to unit activity				
1500 hrs	Mandatory				
1600 hrs	Subject to unit activity				
1700 hrs	Subject to unit activity				
1800 hrs	Subject to unit activity				
1900 hrs	Subject to unit activity				
2000 hrs	Subject to unit activity				
2100 hrs	Subject to unit activity				
2200 hrs	Subject to unit activity				
2300 hrs	Subject to unit activity				
2359 hrs	Subject to unit activity				

³¹ Readings should be taken in direct sunshine.

³² [JSP 539](#).

KEY DOCUMENTS RELATING TO HI PREVENTION & TREATMENT

	Participants	Instr (Cpl/PTI)	OIC/OC/ Activity Owner
Joint Policy	JSP 375 Management of H&S	●	●
	JSP 539 Prevention and Management: Heat Illness And Cold Injury	●	●
Army Policy	ACSO 3216 Safety and Environmental Management system	●	●
	ACSO 3222 Heat Illness Prevention	●	●
	AGAI Vol 1 Ch 7 Physical Training	●	●
	MATT 2 Physical Testing	●	●
Users Guides	Comd's Guide Heat Illness & Cold Injury		●
	Individual's Guide Heat Illness & Cold Injury	●	
	Army Field Guide Heat Illness & Cold Injury	●	

GUIDANCE FOR THE USE OF CBRN

1. At sub-unit level, Defence C-CBRN Instructors provide the advice on C-CBRN operations and their considerations. Application of [JSP 539](#) and WBGT data is practically tested so that Defence C-CBRN Instructors can effectively and safely deliver training. They are also trained in the management and servicing of CBRN PPE, including the hydration system, to ensure fitness for role.
2. CBRN PPE by its very nature comes with an increased thermal burden on the wearer. Extensive research is done by DSTL to minimise and quantify that burden before CBRN PPE is brought into service. The current UK Mk 4a CBRN suit is a semi-permeable specifically designed to reduce the heat stress impact upon the user. This differs from the PPE worn by other nations and in multi-national settings this must be factored in. CBRN dress states and type and number of layers under the CBRN suit are key to remaining within the guidance in [JSP 539](#). It should be noted that HI in C-CBRN PPE can still occur even when the ambient outside temperature is low. All personnel should be trained in recognising the signs and symptoms of HI in themselves and others during CBRN activities and for some time post training. HI symptoms can appear similar to some chemical and biological agent effects and military medical staff receive specialist training to assist in correct diagnosis.
3. Pragmatic planning of dress states can enhance the ability and endurance of the user. Small changes to the dress state such as removal of gloves or hoods have a significant effect upon the total thermal burden. Conversely additional external layers such as splash-suits, body armour or dirt contamination of the suit can disproportionately reduce the ability to cool the wearer. All CBRN PPE comes with a rehydration demand and the practicing of CBRN eating and drinking drills are an area that is historically poor. Waterbottle couplings for respirators are life-saving equipment and their serviceability and cleanliness should be afforded the same priority as fit and filtration.
4. Some specialists, such as EOD, Medical or aircrew, may utilise specific dress states or types of CBRN PPE not covered by [JSP 539](#). This may include non-permeable oversuits, breathing apparatus, powered respirators or undersuits. These PPE options have their own specific heat management issues and specialist users should be provided with guidelines and training in their operation. There should be no attempt to read across from generalist CBRN PPE limits and guidance. Where an HQ requires guidance on specialist PPE they can refer up the CoC including utilising VAMPER if appropriate.

AIDE MEMOIRE: GUIDE FOR USE OF QT34 WET BULB GLOBE TEMPERATURE MONITOR

1. The aim of this Aide Memoire is to refresh and revise trained users. A copy must be held with each QT34 WBGT monitor.
2. Make sure the wet bulb wick is clean (square box middle sensor). If the wick is discoloured it should be replaced. To replace the wick, take the lid off, slide the old wick off and place a new wick over the sensor, making sure the bottom of the wick is down in the reservoir.
3. Fill the wet bulb reservoir with distilled or de-ionised water. (In very exceptional circumstances, clean, bottled water may be used, providing the wick is changed more frequently to avoid sediment accumulation.)
4. Place the QT34 in the work area, approximately 1.1m above the ground, ideally on a tripod, in an open area away from walls or obstructions that could interfere with the readings. The QT34 must be in direct sunlight and not shaded in any way.
5. Press the I / O Enter key to turn on.
6. Check battery. If the battery voltage displayed during the power-on sequence is less than or equal to 6.4 volts, replace or recharge the batteries.
7. Leave on for 10 minutes to allow the sensors to stabilise.
8. Take reading. I / O Enter button to select 'view'. Then scroll up and down using the arrow keys to see the readings. To record them, press the Run / Stop button: the * symbol on the screen bottom right indicates when it is recording.
9. Record heat stress indices. Make indices available to local commanders and staff controlling physical activities so that RAs can be carried out and appropriate mitigation put in place to reduce the risk of HI.
10. Switch off by holding the I / O Enter button.
11. WBGT monitor readings are not to be taken in the rain, as this will affect the heat stress index calculations and potentially give wrong readings. If raining, operators should remote the sensor bar and keep the instrument sheltered.
12. QT34 Video. A QT34 User Video is available at the following links:
 - [AKX](#). (Recommended link from MODNet terminals).
 - [Defence Connect](#).
 - [Defnet](#).
 - [YouTube](#). (Not accessible from MODNet terminals).