



Ministry  
of Defence



# COMMANDER'S GUIDE TO COLD INJURY PREVENTION



## FOREWORD



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“Cold injuries are some of the most common medical conditions affecting members of the Armed Forces. They are frequently debilitating and can be potentially life threatening and range from the mild discomfort caused by chilblains to potentially life threatening hypothermia. But common to all is their impact on Defence capability and their preventable nature; leaders, at all levels, are accountable for both.

Around the globe we often find ourselves living and operating in the harshest environments. But cold injuries can also be sustained in temperate environments too. As leaders, at all levels, our first duty is always Duty of Care and the welfare of our personnel and so we must ensure that both we and those serving under us understand how to prevent, recognise and respond to cold injury.

This policy document is an aid to provide commanders with the knowledge to deal with the challenge of cold injuries. Ensure you read it, understand it, and implement it accordingly. Our goal is to minimise cold related injuries.”

## CONTEXT

Cold injuries can have a significant adverse effect on military training and operations and can result in death or lifelong incapacity. Good leadership, proper training and best practice can prevent or reduce the severity of cold injury. This guide sets out five policy statements, as established by Defence, that **must** be met. It also provides guidance on how to assess and manage the risk of cold injury as part of Defence’s standard risk-assessment process.

**Prevention of cold injuries is the responsibility of commanders at all levels as well as individuals.**

The application of the cold injury prevention policy **must** be assured (that is, its use **must** be guaranteed). As part of their overall assurance activity, commanders or managers **must** make sure that the policy is followed and put into practice effectively. Assurance **must** be carried out as set out in JSP 815.

### Scope

This guide applies to all those employed by Defence (military or civilian) as well as those working on behalf of Defence (for example, contractors). It applies to all Defence activities carried out in any location (UK or overseas).

### How body cooling occurs

As well as natural heat loss, body heat can be lost by touching something cold (for example, by standing or lying on cold ground), by being in wind or water (convection), and through evaporation (for example, through sweat or rain). Humans cool two to five times more quickly in cold water compared to in air of the same temperature.

### Preventing cooling

Even in extremely low temperatures, peripheral (skin level) and core (internal) temperature, along with performance levels, can be safely maintained if the right equipment is used and the right behaviours are demonstrated. Conversely, cold injury may occur in only moderately cold environments when skills are poor, there is little or no opportunity to use the correct equipment, or it is not reasonably possible to limit exposure to the cold. So adopting appropriate strategies for maintaining body temperature in cold environments is crucial.



## TYPES OF COLD INJURY

Cold injury can occur throughout the year, not just in the winter months, and can appear as one or more of the following conditions.

**Hypothermia** (a core temperature of 35°C or lower) is a medical emergency and can prove fatal.

**Freezing and non-freezing cold injuries (FCI, NFCI)** most commonly affect the extremities (fingers and toes, hands and feet, and sometimes ears and nose). FCI involves freezing of the skin, and sometimes of deeper tissues. Prolonged exposure to cold or moderately cold conditions (especially if damp) can cause NFCI, with damage to nerves and blood vessels close to the skin.

### Associated conditions

**Immersion related cold-shock, hypothermia and drowning** These are common consequences of being in cold water. There are several pathways that can result in drowning including:

- being unable to hold your breath when entering the water, due to the gasping associated with cold-shock;
- being incapacitated shortly after entering the water due to cooling of nerves and muscle in the extremities, resulting in not being able to keep the airway clear of the water; and
- unconsciousness as a result of hypothermia preventing the physical activity needed to protect the airway.



These hazards can be reduced by using specialist personal protective equipment (PPE) and lifejackets, entering cold water slowly, and limiting the amount of time in the water.

**Snow blindness** This is sunburn on the surface of the eye caused by ultraviolet (UV) light bouncing from snow or ice, but is not technically a cold injury.

**Acute mountain sickness (AMS)** AMS, often referred to as altitude sickness, is the effect altitude can have on your body. The symptoms are dizziness, nausea, headaches and shortness of breath, and these can complicate travelling at altitude in cold conditions.

**Chilblains** These are small, reddish, itchy lesions on the extremities of the body. They rarely cause long-lasting problems.

## PLANNING

You **must** make sure that the activities you are responsible for are as safe as possible. This includes making sure that risk assessments are carried out and that control measures to reduce risks are identified and communicated to relevant personnel.

Cold injury is a significant hazard and **must** be considered during the planning phase, before an activity is carried out. Specialist advice and guidance can be provided by medical staff and training staff.

### Policy Statement 1

A commander or manager **must** be appointed to command or supervise any activity where the risk of cold injury exists. Those taking part in an activity **must** know who the commander or manager is.

### Commander's action

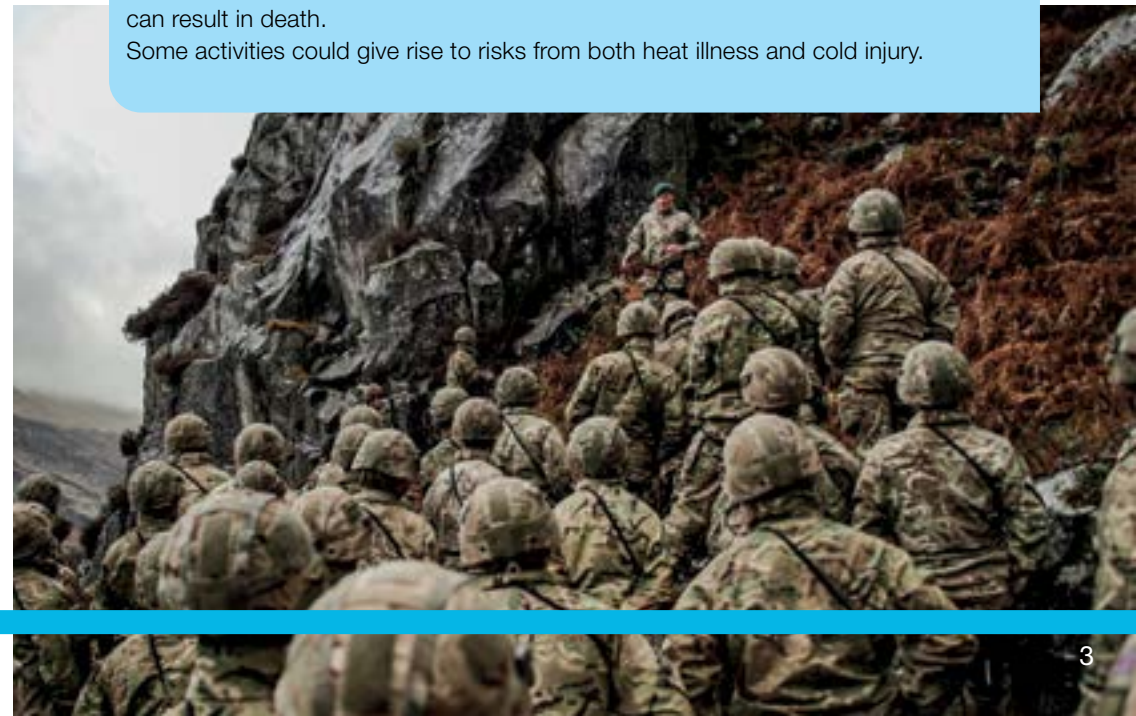
Identify who is responsible for planning the activity and make sure that cold injury is considered when the risk of cold injury exists.

Make sure you are qualified and authorised to command or supervise the activity and that everyone taking part in the activity knows who the commander or manager is.

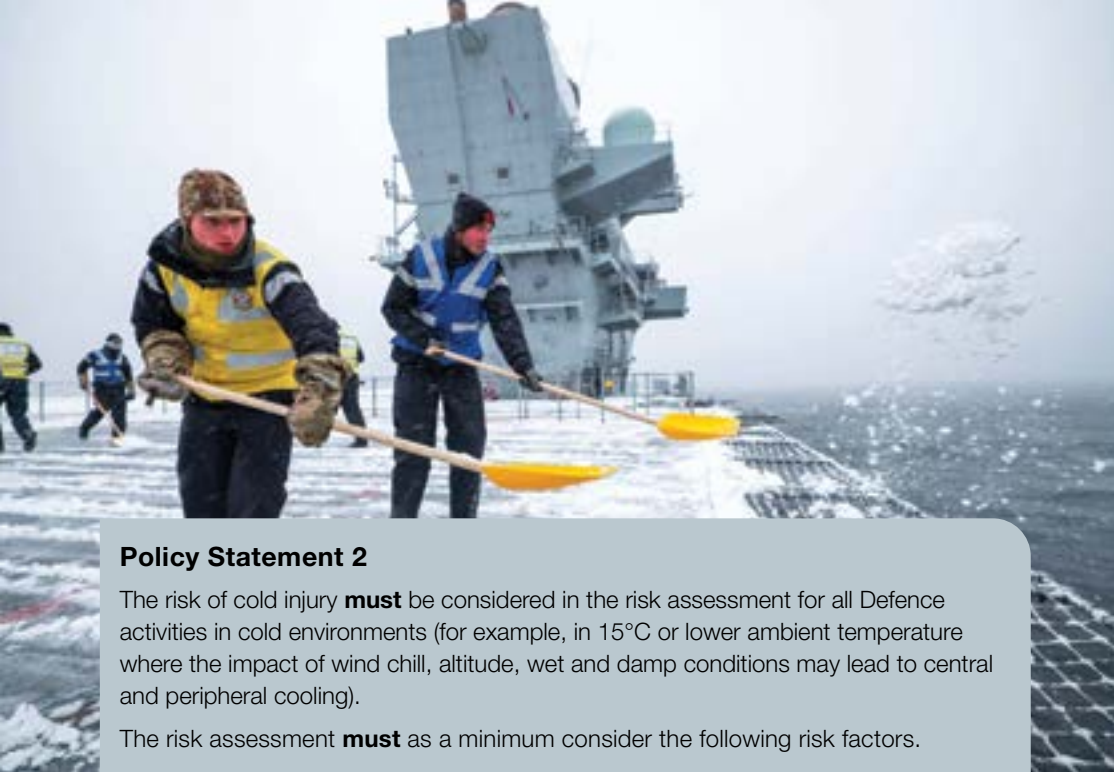
Make sure your junior commanders know their responsibilities and the measures required for the activity to be carried out safely.

**Note:** Commanders **must** understand how serious cold injury can be, and that it can result in death.

Some activities could give rise to risks from both heat illness and cold injury.







### Policy Statement 2

The risk of cold injury **must** be considered in the risk assessment for all Defence activities in cold environments (for example, in 15°C or lower ambient temperature where the impact of wind chill, altitude, wet and damp conditions may lead to central and peripheral cooling).

The risk assessment **must** as a minimum consider the following risk factors.

- a. Environmental
- b. Individual
- c. Psychological
- d. Task-specific

### Commander's action

Make sure that risk assessments are carried out and that the control measures identified in the risk assessment are communicated to the personnel taking part in the activity.

Record the risk assessment so that there is evidence that it took place.

### Notes

You may delegate the responsibility to carry out a risk assessment to a competent person. However, you are responsible for approving the risk assessment, and once it has been approved, it **must** be followed.

MOD Form 5010 is recommended for recording the risk-assessment process, but alternatives may be used. For dynamic risk assessments this record can be as simple as a note in a notebook or a logged message over the radio network. Reviews of risk assessments can be scheduled, or they may be triggered by a specific event or circumstance (for example, a high drop-out rate).

## THE FIVE-STEP RISK ASSESSMENT PROCESS

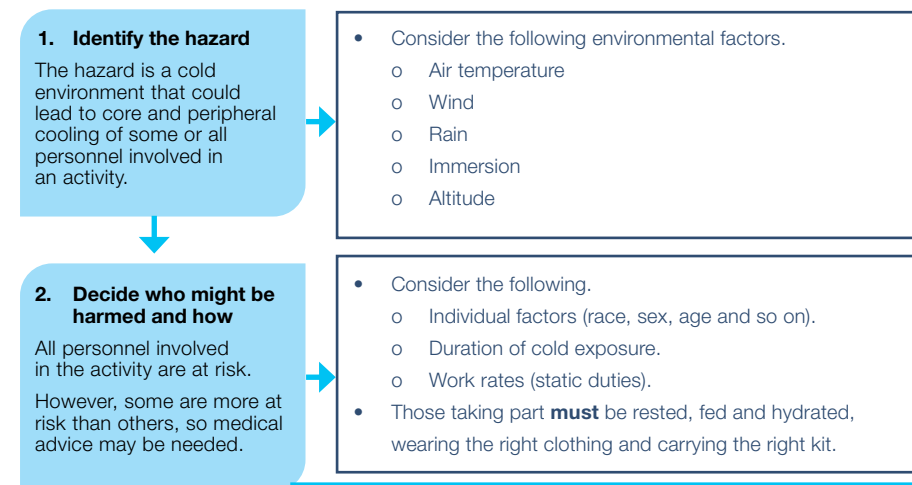
In line with Chapter 8 of JSP 375 Volume 1, commanders or managers **must** make sure that risk assessments are carried out using the following five-step risk assessment process.



### Awareness

You need to be aware of the factors that increase risk. This requires a systematic process of identifying the risk factors and then evaluating them, taking into account that a combination of risk factors increases the overall risk. The five-step risk assessment process, and examples of the risk factors that must be considered, are shown in the following flow chart, with further details in the risk factor tables.

### Risk assessment process flowchart



**3. Evaluate the risks and identify suitable and sufficient control measures**

The risk assessment needs to consider the likelihood and severity of the risk and identify appropriate control measures.

- Get appropriate information on the following.
  - Weather
  - Availability of equipment and shelter
  - Availability of clothing and footwear
  - Ability to dry clothing
  - Availability of food and water
- Plan verbal checks and regular hand and foot inspections (increase frequency for high-risk personnel).
- Provide suitable clothing and guidance on use (including mandatory use and changes of clothing).
- Provide food and water.
- Plan rotation of tasks.
- Plan facilities for warming up in the field.
- Make sure a Medevac plan is in place.
- Make sure all personnel have completed relevant training and brief them immediately before the mission.
- Train for buddy checks, and for hand and foot inspections (including using the NFCI Field Assessment Tool (NFAT)).
- Make sure measures for new supplies are in place.

**4. Record your findings and implement them**

Once the planning has been completed it is time to act.

- Use Mod Form 5010 (or an alternative) to record the whole risk assessment for the activity.
- Make sure everyone taking part in the activity, and all support staff, understand the risks, control measures and medical plan.

**5. Review your assessment and update as necessary**

Review the risk assessment before an activity starts to make sure it is still valid and that all the control measures are still in place.

If something changes while the activity is underway, a further risk assessment (a dynamic risk assessment) **must** be carried out.

- If something has changed, carry out a dynamic risk assessment.
- Consider if the existing control measures need to be changed.
- Consider if further control measures are required.
- Record the dynamic risk assessment so that there is evidence that it took place.

## RISK FACTORS

### Risk factor table

You **must** consider the following risk factors when carrying out a risk assessment.

Environmental	
Ambient temperature	The colder the air temperature, the greater the risk of cold injury. The risk of NFCI increases in temperatures of 15°C or lower, and the risk of FCI generally increases at temperatures of -0.55°C and lower.
Wetness	Wet clothing next to the skin increases heat loss.
Altitude	The temperature drops by about 1°C every 100m gain in height, and decreased oxygen levels at altitude increase the risk of cold injury.
Wind chill	Heat loss increases with wind strength (see the wind chill table below). Travel in open vehicles creates a similar risk.
Individual	
Race	African and Caribbean personnel are two to four times more likely to suffer a cold injury due to their physiological response to cold (according to 'The effect of ethnicity on the vascular responses to cold exposure of the extremities' (MJ Maley, CM Eglin, JR House and MJ Tipton), published in the European Journal of Applied Physiology).
Sex	Females are generally more susceptible to cold injury than males.
Medical conditions and medications	Some medical conditions, medications and illnesses (such as flu and fevers) can increase the risk of cold injury.
Alcohol	Consuming alcohol within 24 hours of cold exposure may increase the risk of cold injury, affecting both judgement and causing vasodilation (blood vessels widening as a result of their muscular walls relaxing).
Age	Thermoregulation (control of body temperature) weakens with age, but the risk of cold injury as a result of this only begins to rise after the age of about 50.
Lack of sleep and insufficient food or drink	Lack of sleep, poor hydration and insufficient food (such as good-quality carbohydrates) may all increase the risk of cold injury.
Inadequate training	Individuals who have little or no cold-weather training and experience are at greater risk of cold injury.  Personnel need to be taught that when it is cold, tasks may be more difficult but they are not impossible and can generally be performed safely.

Psychological	
Inexperience	Those new to the military are at greater risk of cold injury, including as a result of emotional stress due to unfamiliar circumstances.
Task-specific	
Stationary duties	Staying still (for example, when on sentry duty, in small compartments in vehicles, and in defensive fighting positions) increases the risk of cold injury.
Immersion	Being in cold water increases heat loss, more so if the water is moving or personnel are moving in it.  Immersion will severely reduce the insulation provided by clothing.
Prolonged exposure	Risk varies between individuals but increases with the duration of exposure to cold. Personnel exposed to cold over several days are particularly susceptible, even if they take breaks to warm up.
Lack of shelter	Shelter is critical for protection against wind, rain, snow and so on, and for creating a warmer environment.  Without shelter, even an improvised structure, the risk of cold injury increases.
Contact with metals and liquid	Direct skin contact with metals or fluids with low freezing points (such as fuel) can cause FCI in seconds.
Clothing and equipment	Clothing and equipment <b>should</b> be appropriate for the environment personnel are operating in (for example, is it waterproof and does it have the correct thermal efficiency?)



## WIND CHILL

The table below (produced by P Tikuisis and RJ Osczevski in 2003) shows the wind chill temperature for a combination of air temperatures and wind speeds. The temperatures are shown in Celsius (°C). Wind speeds are measured at 10 metres above the ground and are shown in km/hr. To convert km/h to mph, divide by 1.609.

For weather forecasts, phone the Joint Operational Meteorology and Oceanography Centre's 24-hour phone line - military: 9360 58112, civilian: +44 (0)1923 958112.

## WIND CHILL CHART

$V_{10}$		Air Temperature (°C)											
		0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-55
Wind Speed (km/h)	5	2	-7	-13	-19	-24	30	-36	41	-47	-53	-58	-58
	10	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63	-63
	15	-4	-11	-17	-23	-29	-35	-41	-48	-54	-60	-66	-66
	20	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62	-68	-68
	25	-6	-12	-19	-25	-32	-38	-44	-51	-57	-64	-70	-70
	30	-6	-13	-20	-26	-33	-39	-46	-52	-59	-65	-72	-72
	35	-7	-14	-20	-27	-33	-40	-47	-53	-60	-66	-73	-73
	40	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68	-74	-74
	45	-8	-15	-21	-28	-35	-42	-48	-55	-62	-69	-75	-75
	50	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69	-76	-76
	55	-8	-15	-22	-29	-36	-43	-50	-57	-63	-70	-77	-77
	60	-9	-16	-23	-30	-36	-43	-50	-57	-64	-71	-78	-78
	65	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-79
	70	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-80	-80
	75	-10	-17	-24	-31	-38	-45	-52	-59	-66	-73	-80	-80
	80	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-81

	Low risk of frostbite		Very high risk in 5 to 10 minutes of exposure
	Moderate risk		Severe risk in 2 to 5 minutes of exposure
	High risk in 30 minutes of exposure		Extreme risk in 2 minutes or less of exposure

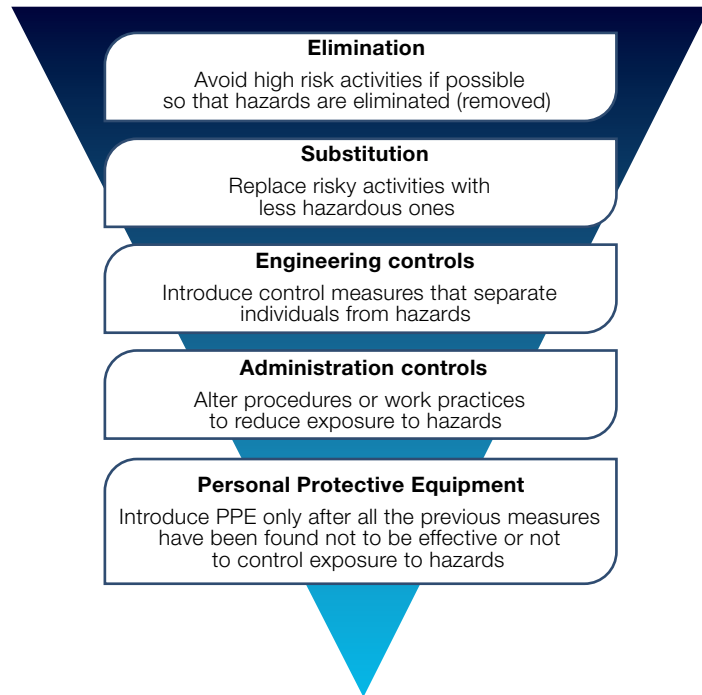
$V_{10}$  = wind speed measured 10 metres above ground level

The colouring in the table indicates facial cooling during cold air exposure (Bull Am Meteorol Soc BAMS: 927-933).

# CONTROL MEASURES

When preparing for deployment in cold conditions, you **must** anticipate the effects the environment can have on the functioning of individuals, as well as the unit, by carrying out a risk assessment. The control measures identified by the assessment **must** be implemented to reduce risks to 'as low as reasonably practicable' (ALARP). (See Annex C - Risk factors and controls (Safe system of work) - for more information.)

The hierarchy of controls - the order control measures should be applied in.



## Policy Statement 3

The control measures in the risk assessment **must** be complied with. If the control measures in the risk assessment or any other aspect of this cold injury prevention policy cannot be complied with the commander or manager **must** pause or stop the activity. However, if the activity **must** still proceed then the commander or manager **must** consider applying additional control measures and if required elevate the risk through their chain of command for approval.

## Commander's action

Make sure you review the risk assessment and consider any further control measures that may be needed, before re-approving it. Once the risk assessment has been approved, it **must** be followed.

If at any stage of the activity, including before it starts, the direction in this policy or the control measures in the risk assessment cannot be met, or anyone shows signs of cold injury, you **must** re-assess the risk. You **must** then consider doing the following.

- a. **Pausing or stopping the activity** - If the activity needs to be paused or stopped, you **must** carry out a dynamic risk assessment in line with policy statement 4. However, there are a very limited number of activities that may need to continue without pausing or stopping. Examples include combat operations and other instances where pausing could cause a greater risk to life than continuing. The original risk assessments for these activities **must** indicate that a greater level of risk is acceptable for the task to be achieved. When this is the case, the level of risk **must** be elevated and approved at the appropriate level in the chain of command before the activity starts.
- b. **Applying further control measures** - Further control measures could be, for example, introducing alternative ways of working or personal protective equipment (PPE). If the risk that remains after applying further control measures is higher than the level of risk you are authorised to accept, you **must** elevate the risk through your Military Command's or Defence organisation's elevation process.
- c. **Elevating the risk** - If the risk of an activity is higher than the level of risk you are authorised to accept, you **must** elevate the risk in line with your Military Command's or Defence organisation's elevation process. In exceptional and unforeseeable operational circumstances where it is not possible or proportionate to refer the matter to a superior officer, you may accept the risk and take personal responsibility for the consequences. However, in these circumstances you **must** report your decisions up through your chain of command at the earliest opportunity.

**Note:** All decisions you make in connection with the actions above **must** be recorded in line with step 4 of the five-step risk assessment process during the planning phase, and in line with step 5 once the activity has started.

# COLD INJURY (CI) RISK PLANNING TOOL

**Step 1:** Identify the hazard, **Step 2:** Decide who might be harmed and how,

**Step 3:** Evaluate the risks and **identify suitable and sufficient control measures**

Risk assessments **should be** continuously reviewed throughout the activity

	Ask yourself	Reponse		Guidance	Notes / Control Measures
		Y	N		
Activity	Is shelter available for periods when personnel are stationary?			The risk of cold injury is increased when stationary, particularly if this follows a period of intense activity. Immersion and wet clothing greatly increases the risk of cold injury.	
	Can long periods of being stationary be avoided?				
	Can immersion be avoided?				
	Are there plans for changing into dry clothes after any immersion?				
Duration of activity	Can rest periods be incorporated in the activity?			Exhaustion increases the risk of cold injury.	
	Can any rest be provided in shelter?			Any structure can provide protection from danger or the weather	
Environmental conditions	Has accurate weather forecast been obtained?			The risk of cold injury increases when the air temperature is below 15°C. Windy and wet conditions greatly increase risk.  (For weather forecasts, phone the Joint Operational Meteorology and Oceanography Centre's 24-hour phone line - military: 9360 58112, civilian: +44 (0)1923 958112.)	
	Has wind chill been taken into account?				
	Can training be carried out in warmer or more sheltered conditions?				
Supervision	Are directing staff (DS) and training staff competent?			Training staff and DS provide vital information on preventing cold injury and spotting the early signs of cold injury.	
	Is the medical support plan adequate?				

Preparation / Education	Have all those taking part attended a presentation on cold injury or watched the training video?			Knowledge of risk factors, and the signs and symptoms of cold injury, should help to prevent cold injury and identify casualties as early as possible.	
	Have guides to cold injury been issued?				
Water Intake	Will a sufficient amount of safe water (or other drinks) be available throughout the activity?			Individuals may not feel thirsty in cold conditions, and you may need to encourage drinking.	
Food intake	Has the need for increased calories, and the availability of good-quality carbohydrates, been considered?			Energy requirements increase in cold conditions, so calorie intake needs to be higher.	
Alcohol	Has alcohol been avoided for 24 hours before the activity?			Alcohol increases the risk of cold injury.	
Dress & Equipment	Has the correct clothing and sleeping system been provided?			Correct clothing and equipment will reduce the risk of cold injury.	
	Do all troops have spare dry clothes?				
Predisposing Factors	Can the activity wait until personnel have rested?			Lack of sleep, insufficient food or drink and illness increase the risk of cold injury.  Those with a previous cold injury may be at greater risk.  African and Caribbean personnel may be at greater risk.	
	Have personnel been provided with food and water before taking part in the activity?				
	Have personnel with underlying medical conditions that may put them at a higher risk of cold injury, and those who are unwell or injured, been identified and reviewed by medical staff?				
	Have previous cold injuries been declared to, and investigated by, medical staff?				
	Are any personnel in more vulnerable ethnic groups?				



#### Step 4: Record your findings and implement them

Action	Comment
Record	Record the cold-injury risks as part of the overall risk assessment, and make sure the risk assessment is authorised by you or another named commander
Report and elevate	Report additional risks and elevate any risks that you cannot control, or that have not been authorised, up the chain of command.
Communicate	Make sure everyone taking part and all support staff understand the risks, control measures and medical plan. Use orders, briefs, exercise instructions and so on.
Training	Carry out pre-activity training if appropriate or necessary. Make sure you identify and monitor the individuals at greater risk. Use qualified staff to carry out the training.
Consider the balance of risk and reward	Does the reward for taking the risk reflect the level of risk taken?  Would a greater risk arise from pausing the activity? There are times when greater risk is acceptable (for example, when preparing for operations, to make sure personnel are operationally ready).
A risk assessment <b>must</b> be approved by the activity commander.	

#### Step 5: Review your assessment and update if necessary

Ask yourself the following and confirm higher up the chain of command.
<ul style="list-style-type: none"> <li>• What is the consequence of stopping, or not going ahead with, the activity? Can alternatives be found?</li> <li>• Have you identified all the risks and the individuals at greater risk?</li> <li>• How often do I need to review the situation?</li> <li>• Have I recorded any extra control measures?</li> </ul>

Active management and rapid responses to changing conditions or signs of risk are vital for avoiding serious cases of cold injury. The **RAPID** checklist below is intended as a guide for commanders to use just before and during a planned activity, to make sure the key elements of the safe system of work and training are in place. It does **not** replace the MOD five-step risk-assessment process used to carry out a formal risk assessment of the activity.

What to do	Comment
<b>R</b> Assess, understand and control the <b>Risks</b>	<ul style="list-style-type: none"> <li>• Make sure there is an up-to-date risk assessment.</li> <li>• Make sure the risk assessment is checked and signed by the person responsible for the activity.</li> <li>• Do you understand the controls set out in the risk assessment?</li> </ul>
<b>A</b> What are the specific considerations relating to the <b>Activity</b> ?	<ul style="list-style-type: none"> <li>• Does the activity increase risk? Do you understand the intensity of the activity? What clothing and equipment is needed?</li> <li>• Is it a test, what is the duration and do you have the correct equipment?</li> <li>• How would you manage an emergency?</li> </ul>
<b>P</b> Are the <b>Personnel</b> prepared and competent for the activity?	<ul style="list-style-type: none"> <li>• Consider acclimatisation, education and training, experience, fitness, injuries, and the effect of other activity.</li> <li>• Are those taking part rested, fed and hydrated, wearing the right clothing and carrying the right kit?</li> <li>• Do you have enough personnel with the necessary skills, knowledge, experience and behaviours (SKEB) for the activity?</li> </ul>
<b>I</b> Has the correct <b>Information</b> been supplied to the participants?	<ul style="list-style-type: none"> <li>• Does everybody understand the control measures?</li> <li>• Do those taking part understand the causes, signs and symptoms of cold injury and know what to do if they have or witness them?</li> <li>• Does the medical plan have adequate resources (both staff and equipment) and have staff been adequately briefed?</li> <li>• Are casualty procedures rehearsed and agreed with all staff?</li> </ul>
<b>D</b> <b>Dynamically</b> risk manage the activity?	<ul style="list-style-type: none"> <li>• All activity <b>must</b> be 'dynamically' risk managed, with risk assessments carried out while the activity is underway as well as before it starts.</li> <li>• How will you manage a situation and prevent an emergency?</li> <li>• What could trigger a review of the risk assessment? <ul style="list-style-type: none"> <li>o Difficulty - is the activity more difficult than you thought (terrain, intensity and so on)?</li> <li>o Duration - is the activity lasting longer than planned?</li> <li>o Casualty - has there been a cold-injury casualty?</li> <li>o Environmental - has there been a change to the weather forecast (such as temperature, humidity, cloud cover, wind strength and wind chill)?</li> </ul> </li> </ul>

# CONDUCT

## Policy Statement 4

All activity **must** be dynamically risk assessed where there are changes to the activity or the surrounding circumstances either, just before the activity starts or whilst the activity is underway. In these cases, or where cold-injury symptoms are observed then:

- (1) the activity **must** be paused, **must** be dynamically risk assessed and where necessary further control measures **must** be applied;
- (2) the activity **must** only be restarted once further control measures have been applied. If no further control measures are made to lower the risk, this **must** be justified and **must** be approved by the commander or manager; and
- (3) all suspected and confirmed cold-injury casualties **must** be reported and investigated in line with Military Command or Defence organisation policy.

## Commander's action

Monitor the activity, liaise with junior commanders or managers, safety staff and medical providers, and make sure that effective treatment is delivered to any suspected cold injury casualties.

Act quickly if you identify suspected cold-injury casualties or any change to factors that can increase the risk of cold-injury (increased duration or intensity, or a change in weather).

When cold injury is identified, the activity **must** be paused. You must carry out a dynamic risk assessment and put further control measures in place to prevent other cases of cold injury. The significant findings from the dynamic risk assessment, and any control measures put in place, **must** be recorded in line with step 5 of the five-step risk assessment process.

If NFCI is suspected, the casualty **should** be slowly rewarmed. If considered necessary, do not restart the activity until clearance has been given (over the phone or radio) by the named commander of the activity.

The record **should** set out the information that the dynamic assessment was based on, and then kept as evidence of the assessment taking place. This record can be, for example, a note in a notebook, a logged message over the radio network or an entry in the relevant section of MOD Form 5010.

Defence tasks can often be extremely demanding. To adequately prepare military personnel for operations, the training and selection activities must be robust and realistic. They will sometimes push people beyond what is comfortable for them, but in a controlled and safe environment.

**No life should be risked by pushing on through life-threatening conditions during training or assessment.**

## RECOGNITION AND RESPONSE

- early recognition of cold injury can save lives

If the risk of cold injury could be reasonably expected, Defence personnel **should** have a basic knowledge of the cold injury prevention policy (Chapter 42 of JSP 375 Volume 1). The minimum requirement is for personnel to understand what causes cold injury, what the signs and symptoms are, what measures to take if they recognise cold injury in themselves or others, and what they can do as an individual to help reduce the risk (for example, looking out for colleagues to minimise the sense of isolation).

Commanders **should** fully understand the signs and symptoms of cold injury and the actions to be taken.

- You **should** put a 'buddy' system in place to monitor performance and health. Teach personnel to check their buddies every few hours.
- You **should** appropriately supervise your personnel at all times in cold conditions and make sure hand and foot inspections are carried out frequently. If personnel say they are feeling cold, extra checks **should** be carried out. The NFCI Field Assessment Tool (NFAT) at Annex E **should** be used as a guide for all hand and foot inspections.
- You **should** suspect NFCI if a person is suffering numbness, tingling, pain or swelling in their hands or feet.
- You **should** follow the first-aid guidelines (overleaf) once a cold injury is suspected.



## Typical symptoms and signs of hypothermia are as follows. Not all symptoms may be present.

### Mild

- Casualty says they feel cold
- Cold to touch
- Uncontrolled shivering
- Mild confusion, disorientation, or irritability
- Loss of manual dexterity (clumsiness)

### Moderate or severe

- Slurred speech
- Lips may turn blue
- Shivering has stopped
- Apathetic, confused, irrational (may deny problem and refuse help)
- Reduced level of consciousness
- Slow and/or irregular pulse or undetectable pulse
- Unresponsive and may look dead

## If anyone taking part in the activity shows any signs or symptoms of hypothermia, pause or stop the activity and then:

- remove the casualty from immediate danger;
- carry out the 'airway, breathing and circulation' (ABC) assessment; and
- assess the severity of hypothermia.

### Mild hypothermia

#### Prevent further cooling

- Protect the casualty from the wind and rain - (move to shelter or shield them).
- Put a layer of insulation between the casualty and the ground.
- Remove wet clothing.
- Put any available dry, warm and windproof clothing on the casualty.
- Cover the casualty's head and neck.

#### Gently warm the casualty

- Give the casualty high-energy food such as chocolate.
- Huddle around the casualty.
- When the casualty is dry and has been stable for at least 30 minutes, help them with gentle exercise.
- Transfer the casualty to a heated environment when possible.

**CONSCIOUS:** Treat the casualty as you would for mild hypothermia - prevent further cooling and gently warm.

### Moderate or severe hypothermia

#### Handle the casualty very gently

- Keep the casualty horizontal, lying as flat as possible.
- Carefully check for signs of life, for at least 60 seconds.

#### Are there signs of life (breathing, a pulse)?

**YES**

**NO**

**UNCONSCIOUS:** Gently place the casualty flat or in the recovery position, on top of an insulating layer between them and the ground if possible.

#### Are any of the following true?

- The conditions make it too unsafe to rescue the casualty.
- It is obvious that the casualty is dead and could not be resuscitated.
- The casualty was buried by an avalanche for more than 60 minutes and they have no pulse.

**YES**

**NO TO ALL**

Consider withholding or stopping CPR.

- Immediately call for evacuation transport and start CPR.
- If continuous CPR is not possible due to difficult or dangerous conditions, consider:
    - delaying CPR; or
    - performing CPR intermittently.

Prevent further cooling and gently warm the casualty as for **mild hypothermia**, as long as it does not prevent effective CPR or delay transport.

The casualty can return to the activity when a clinical assessment finds that they have recovered.

Evacuate the casualty for emergency care (Civilian emergency services or Role 2/3 medical treatment facility (MTF))

### REPORT THE SITUATION

in line with your Defence organisation's occurrence-reporting procedures.

**Note:** A single case is a warning that other personnel are at risk. A dynamic risk assessment **must** be carried out and any extra control measures that are identified **must** be put in place.

Use the NFCI Field Assessment Tool (NFAT) at Annex E as a guide for hand and foot inspections.

Suspect FCI if a hand or foot inspection identifies any of the following signs and symptoms.

- The affected area of skin is much paler than normal, with a clear border between the frozen skin and normal coloured skin.
- The casualty is not in pain and there is no feeling in the affected part.
- The affected part feels cold and hard to touch.
- Any skin that is warming up appears blistered and bruised

Does the casualty also show any of the signs and symptoms of hypothermia or FCI?

YES

Treat for hypothermia.

**Note:** Do not use any artificial heat, hot water or stoves. This will make the injury worse.

NO

Prevent further cooling

- Protect the casualty from the wind and rain (move to shelter or shield them).
- Put a layer of insulation between the casualty and the ground.
- Remove wet clothing.
- Put any available dry, warm and windproof clothing on the casualty.
- Cover the casualty's head and neck.

If the affected part were warmed, would there be a risk of it freezing again?

YES

Do not try to warm the affected area.

Move the casualty to a heated environment and get medical care for them.

**Note:** A single case is a warning that other personnel are at risk. A dynamic risk assessment **must** be carried out and any extra control measures that are identified **must** be put in place.

NO

Warm the affected part by placing it either under your hands on your lap or under the casualty's armpits.

- Do not apply direct heat.
- Do not rub the affected area (this could damage the tissue).
- Do not allow the casualty to smoke or drink alcohol.
- Do not use ointment (for example, Deep Heat).
- Do not allow the casualty to use the limb when it has warmed up, unless absolutely essential.
- Replace wet socks or gloves.

If the skin is blistered or discoloured, cover it with a light dressing. Give the casualty warm drinks (not alcoholic) or high-energy food such as chocolate.

**REPORT THE SITUATION** in line with your Military Command's or Defence organisation's occurrence-reporting procedures.

Carry out a hand and foot inspection using the NFCI Field Assessment Tool (NFAT) in Annex E.

You should suspect NFCI if a person is suffering numbness, tingling, pain or swelling in their hands or feet after prolonged exposure to cold or wet conditions.

Prevent further cooling

- Protect the casualty from the wind and rain (move to shelter or shield them).
- Put a layer of insulation between the casualty and the ground.
- Remove wet clothing.
- Put any available dry, warm and windproof clothing on the casualty.
- Cover the casualty's head and neck.

Gently warm the casualty

- Provide warm food and drink.
- Huddle with others around the casualty.
- Once the patient is dry, has had some food and has been stable for at least 30 minutes, encourage mild exercise.
- Re-warm hands and feet using available measures (body warmth, clothing, rubbing, hand warmers).

Do not immerse the hands and feet in water or hold them up to a flame.

When the casualty has warmed up, follow the management guidelines in NFAT.

**REPORT THE SITUATION** in line with your Military Command's or Defence organisation's occurrence-reporting procedures.

**Note:** Do not use any artificial heat, hot water or stoves. This will make the injury worse.

**Note:** A single case is a warning that other personnel are at risk. A dynamic risk assessment **must** be carried out and any extra control measures that are identified **must** be put in place.





## RECOVERY

Any casualty with FCI or NFCI will be downgraded while they are injured. Most people will recover from their injury, but how long this will take can vary from less than a week to a number of years. A casualty is considered to have recovered when they do not have any symptoms when in the cold and recovery has been confirmed by a medical officer.

During recovery, the casualty can do outdoor work but their protection from the cold **must** be enough to prevent cooling to the point of loss of feeling. This will vary from person to person. You **should** regularly check that the casualty is warm (this can be by asking them every hour) and there **must** be arrangements in place to remove them from the cold environment within an hour if they show any signs or symptoms of further cold injury. You **should** then manage the situation as set out in the NFAT.

A casualty can be deployed to cold environments if appropriate support is in place. A rigorous risk assessment **must** be carried out and recorded on the Medical Risk Assessment, with evidence. The control measures identified in the risk assessment **must** include providing adequate protection from the cold and ready access to facilities where casualties can warm up if needed.

Once symptoms have gone and a medical examination has confirmed that the casualty has recovered, the medical officer will recommend that they start to be exposed to increasingly cold environments to make sure they have a normal response to cold. Once this has taken place, upgrading the person who has recovered may be considered in line with JSP 950, leaflet 6-7-7.

The Military Command or Defence organisation is responsible for overseeing the controlled re-exposure (progressive exposure to cold, in terms of both duration and severity) of the recovered person. Exposure **should** start with short periods spent in relatively mild conditions, building up to longer periods in more severe conditions. The person **should** be exposed to the full range of duties required of their career employment group (CEG). For example, those who deploy forward **should** spend at least three consecutive nights in UK winter conditions or equivalent.

## REPORTING, INVESTIGATION AND RECORDING

MOD Form 5010 **should** be used to record risk assessments, but alternatives specified by a Military Command's or Defence organisation's Safety and Environmental Management Systems (SEMS) may be used. Risk assessments **must** be kept for audit and investigation purposes, as set out in Chapter 39 of JSP 375 Volume 1 (Retention of records).

Dynamic risk assessments triggered by a specific event or circumstance may be recorded in a notebook or logged as a message over the radio network.

All suspected and confirmed cases of cold injury **must** be reported in line with your Military Command's or Defence organisation's occurrence-reporting procedures, and the responsibility for doing so rests with the chain of command.

Any case **should** be reported and recorded as 'suspected' until it is formally diagnosed by a doctor. As a minimum, reports **should** specify the following.

- Details of the activity being performed - type, time and location.
- The casualty's personal details - name, rank and service number for military personnel and name, grade and staff number for civilian personnel.
- A description of the cold injury, recording this as 'suspected' until it is diagnosed by a medical officer.

Unit medical centres **must** be told about all suspected cases of cold injury, through the chain of command, to make sure appropriate medical follow-up action (as per JSP 950, leaflet 2-9-4) and recording takes place.

Any dynamic risk assessment triggered by a suspected case of cold injury **should** include a rapid, local and easy-to-use procedure for making all local units performing similar activities aware of the risks.

For confirmed cases, the Unit Investigation **should** use an appropriate investigation method to identify contributory factors (the factors that contributed to the case) and the action needed to avoid those factors in the future. The actions **should** be tracked until the investigation has been completed

### Additional Reporting:

The chain of command **must** report all suspected or confirmed (clinically diagnosed) cold-injury cases to their relevant Safety Centres within 48 hours. If appropriate, a preliminary investigation must be carried out. Cases which lead to hospitalisation or significant medical intervention must also be reported to the Defence Accident Investigation Branch (DAIB) on their Duty phone line (01980 348622).

The chain of command **must** carry out an investigation locally to identify lessons that can be learnt and shared with other units.

For details on reporting requirements, see Chapter 16 of JSP 375 Volume, 1.

## TRAINING

### Policy Statement 5

Those involved in planning or undertaking activities which involve any risk of cold injury **must** receive suitable training.

### Commander's action

Make sure that:

- you have received sufficient training so that you have the knowledge, skills and attitudes necessary to consider cold injury as part of any Defence activity, and to confidently apply this policy statement;
- those under your command understand what causes cold injury, what the signs and symptoms are, and what they can do as an individual to help reduce the risk; and
- you have access to medical advice to help with planning and undertaking activities.

You **must** be able to continuously manage the risk of cold injury and make sound judgments and decisions in all eventualities.

All commanders and managers have a duty of care, meaning that you are legally responsible for the health and safety of others and **must** be appropriately trained so that you:

- have the skills, knowledge, experience and behaviours (SKEB) necessary to consider cold injury when planning and taking part in any Defence activity; and
- can confidently apply this policy.

All military personnel (and non-military personnel if the risk of cold injury could reasonably be expected) **should** have a basic level of knowledge of the cold injury prevention policy as set out in Chapter 42 of JSP 375 Volume 1. The minimum requirement is for personnel to understand what causes cold injury, what the signs and symptoms are, what they can do to help reduce the risk, and what control measures to use if they notice signs of cold injury in themselves or others.

Further information and guidance is set out in Annex B - Individual's guide to cold injury.

## NOTES

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