



**THERMAL COMFORT AND HEAT IN TRAIN CABS**

<b>Open Government Status</b>		Fully Open	
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<b>RGD postholder/owner</b>		Rail Companies Team (RCT) Account Manager	
<b>National Team (where appropriate)</b>			
<b>RGD cleared by</b>		Gill Dixie, HMRI Policy Team	
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<b>Target audience</b>		HMRI_____	<input checked="" type="checkbox"/>
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<b>Assign to block</b>		Process/New Legislation_____	<input type="checkbox"/>
		Topic/Technical_____	<input checked="" type="checkbox"/>
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<b>Keywords</b>	Heat stress, Fatigue, SPAD risk, Train Driver cab environment, hot weather working, air conditioning.		
<b>Summary</b>	<p>This document is intended for inspectors to help them in their discussions with the industry. Working in train cabs during hot weather can result in increased risk of heat stress (defined as when the body's means of controlling its internal temperature starts to fail) and deteriorating human performance.</p> <p><b>THIS DOCUMENT IS DIRECTED AT MAINLINE TRAIN AND FREIGHT COMPANIES.</b></p>		
<b>Consultation</b>	Human Factors, Risk and SMS National Expertise Team (HORNET); Railway Operations National Expertise Team (RONET); Rolling Stock National Expertise Team (RSNET); Area Team Managers (ATMs); Topic Leaders; Access Planning and Performance (APP); Competition and Regulatory Economics (CRE); Safety and Economic Policy Directorate (SEPD); Legal Services.		

**Detail**

Working in train cabs during hot weather can result in increased risk of heat stress (defined as when the body's means of controlling its internal temperature starts to fail) and deteriorating human performance.

Some of the effects of exposure to high temperatures include:

- reduced concentration
- tunnelling of vision (reduced peripheral vision)
- reduced vigilance
- reduced work rate (on self-paced tasks)
- increased cycle time (on discrete, repetitive tasks)

There is limited statistical data available on the effects of exposure to high temperatures in the rail industry. Some related information from other industries (*Pilcher et al, 2002, Effects of hot and cold temperature exposure on performance: a meta-analytic review, Ergonomics, vol 45, no 10, pp 682-698*) concludes that temperature extremes (eg over 32° C) have a negative effect on performance of monitoring and vigilance tasks, as well as reaction times, all of which are applicable to train driving.

The most recent Railway Safety and Standards Board (RSSB) report on Category A signals passed at danger (SPADS) for the year ending December 2006 discusses the effects of rising temperatures due to climate change, and notes the increased level of SPADS during the high temperatures in July 2006. The report makes reference to the positive correlation between temperature and the incidence of SPADS but acknowledges that there are also several other causal factors involved.

**Current Position**

The Health and Safety Executive (HSE) has produced guidance dealing with heat stress, (HSE information sheet '[Heat Stress in the Workplace. What you need to know as an employer' GEIS1](#)) and thermal comfort in the workplace ('[Thermal Comfort in the Workplace: Guidance for Employers' HSG194](#) HSE books 1999).

Her Majesty's Railway Inspectorate (HMRI) has also undertaken work in this area, notably with London Underground, as well as with some TOCs and FOCs, primarily where complaints have been raised by staff.

## **Guidance**

This guidance is for inspectors to aid discussion with the industry: possible discussion points are;

### Assessment

A process to identify when cab temperatures are likely to rise above company specified temperature limits, in order to initiate the “hot weather” control measures. (Thermal comfort depends on a number of parameters including humidity, air flow and levels of activity: there are no set upper limits for temperature in the workplace, although typically people feel warm, lethargic and sleepy at 24°C and find 26°C extremely fatiguing with performance deterioration. Some research has suggested that above 32°C someone would have to be acclimatised to be able to continue to work effectively).

### Hot weather risk control measures - good practice for train cabs which are not fitted with air conditioning are:

- 1) issue of cotton / breathable loose-fitting uniforms.
- 2) issue of cooled water when booking on duty (preferably in thermos). (Cooled water to be available at other locations.)
- 3) drivers to receive information about dehydration risks and symptoms of heat stress / heat exhaustion (nausea, muscle cramps, etc.).
- 4) drivers to be made aware that if they feel symptoms of heat cramps / heat exhaustion they must report to line managers and be relieved from duty. Managers to be made aware of this requirement.
- 5) steps to be taken to remove from service a cab when internal cab temperature exceeds certain levels. No set upper limit exists but 28°C or above are current good practice limits with some rail duty holders.
- 6) reduce periods of driving and increase rest periods where possible.
- 7) breaks to be taken, where possible, in a room with fan / air conditioning and cooled water available.
- 8) occupational health to develop policy for drivers with existing medical problems especially cardiovascular conditions, diabetes, and those who are unfit / obese.
- 9) monitor control measures to ensure all are in place and effective, and to consult with safety reps and drivers on any additional suggestions.

Finally, to set out a plan to implement air conditioning in cabs within a time frame or provide justification (using, where appropriate, suitable cost benefit analysis and a professional decision making process) that such fitting is not reasonably practicable

## Rail Guidance Document

### Action

Account Holders/Railway Inspectorate Contact Officers (RICOs) should be contacting their respective train operating companies (TOCs)/freight operating companies (FOCs) to establish what steps they have taken, as part of their hot weather preparedness arrangements, to prevent drivers suffering from heat stress or reduced performance as a result of high temperatures in cabs. They should ask for copies of appropriate risk assessments, with details of mitigation methods that are, or will be, put in place.

Where necessary Inspectors should satisfy themselves that suitable and sufficient risk assessments and cost/benefit analyses have been made, and that adequate control measures are in place. If in doubt about the adequacy of these processes and/or to ensure consistency across HMRI, Inspectors should consult RCT, HORNET, RSNET and RNET as appropriate.

No enforcement action should be taken without first considering consulting the National Expertise Teams (NETs) above.

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