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# WSH INSIGHTS

## Managing heat stress as Singapore gets warmer

2023 was Singapore's fourth-hottest year<sup>1</sup>, with a sweltering high of 37°C in May 2023. In the Third National Climate Change Study<sup>2</sup>, Singapore's climate is projected to become warmer, with very hot days becoming more frequent by the end of this century.

The rise in temperatures puts workers, especially those working outdoors, at an increased risk of heat stress. For work to continue in a safe manner, employers will need to do more to protect outdoor workers.

In the upcoming months, the Ministry of Manpower will be conducting workplace inspections in the construction, shipyards and process industries, to check the effectiveness of heat stress measures for outdoor work.



Figure 1: Workers at a construction site working under direct sun.

### Implementing an Effective Heat Stress Management Programme

To protect workers and increase resilience to rising temperatures, employers are required to implement enhanced heat stress measures for outdoor work<sup>3</sup>. Workplaces are to ensure effective implementation of the following protective measures:

<p><b>Acclimatise</b></p> <p>Acclimatise workers who are:</p> <ul style="list-style-type: none"> <li>• New, or returning from a cold climate</li> <li>• Newly assigned to outdoor work</li> <li>• Recovering from prolonged illness</li> <li>• Returning from long leave of more than one week</li> </ul>	<ul style="list-style-type: none"> <li>• Identify workers vulnerable to heat stress<sup>4</sup> and build their heat resilience by gradually increasing daily heat exposure<sup>5</sup> over at least seven days or even redeploying them.</li> <li>• Review the list of vulnerable workers periodically.</li> </ul>
<p><b>Drink</b></p> <p>Schedule hydration sessions for workers exposed to heat stress</p>	<ul style="list-style-type: none"> <li>• Keep workers hydrated by providing adequate cool or cold drinking water near work areas.</li> <li>• Safeguard time for workers to drink a recommended 300ml per hour or more (depending on the work intensity).</li> </ul>
<p><b>Rest Under Shade</b></p> <p>Provide regular breaks under shade for workers exposed to heat stress</p>	<ul style="list-style-type: none"> <li>• The Wet Bulb Globe Temperature (WBGT) provides a good indicator of heat stress levels. When the WBGT reaches 32°C, workers carrying out heavy physical work activities should have shaded rest breaks of at least 10 minutes every hour. Resting allows the body to dissipate accumulated heat and reduces heat load.</li> <li>• Provide longer rest durations when the WBGT increases.</li> <li>• Reduce direct sun exposure at rest areas.</li> <li>• As far as possible, provide shade for outdoor work areas (e.g. working under portable tents).</li> </ul>
<p><b>Monitor WBGT</b></p> <p>Measure WBGT in work areas prone to heat stress</p>	<ul style="list-style-type: none"> <li>• Monitor WBGT once every work hour, especially during the hotter periods of the day, to determine heat stress risk.</li> <li>• Onsite WBGT meters are required for shipyards, process plants and construction sites with a contract sum of S\$5 million or more.</li> <li>• Other workplaces can refer to WBGT readings provided on the MyENV app.</li> </ul>
<p><b>Emergency Response</b></p> <p>Establish emergency response procedures for heat stress illnesses and conduct drills</p>	<ul style="list-style-type: none"> <li>• An emergency response plan with ready first-aid facilities and supplies can prevent or mitigate heat strokes.</li> </ul>



Figure 2: Example of a portable WBGT monitor.

### Other Heat Stress Protective Measures

- **Adequate ventilation:** Cool rest and work areas with fans or air coolers.
- **Light-coloured clothes:** Provide breathable, loose-fitting and light-coloured clothing for outdoor workers to wear.
- **Work rescheduling:** Carry out physical work during cooler parts of the day.
- **Mechanical assistance:** Reduce physical exertion with mechanical aids, like manual handling equipment and powered tools.
- **Early recognition of signs and symptoms:** Implement a buddy system to aid early recognition of heat-related signs, symptoms and illnesses (e.g. fainting spells, disoriented behaviours) for prompt interventions.

Heat-related illnesses may affect workplace safety or lead to a workplace accident. The WSH Council urges employers to partner workers and manage heat stress effectively, for a safe and healthy workplace.

<sup>1</sup> The Straits Times (29 Jan 2024): 2023 was Singapore's 4th hottest year, based on records kept 1929 onwards.

<sup>2</sup> Ministry of Sustainability and the Environment's Joint Media Release on [Singapore's Third National Climate Change Study](#) (5 Jan 2024).

<sup>3</sup> Ministry of Manpower's Press Release on [Enhanced Measures to Reduce Heat Stress for Outdoor Workers](#) (Oct 2023).

<sup>4</sup> Workers who are vulnerable to heat stress includes those who are newly assigned to outdoor work; unacclimatised to working in hot environments (e.g. new or returning from countries with a cold climate); returning from long leave of more than a week; recovering from prolonged illness; and have personal factors (e.g. chronic diseases, medication use, history of heat injury or pregnant).

<sup>5</sup> Refer to Page 17 of [WSH Guidelines on Managing Heat Stress in the Workplace](#) for an example of how to gradually increase a worker's daily heat exposure.

#### For more information:

##### Ministry of Manpower

[Enhanced Heat Stress Measures for Outdoor Work](#)

[FAQs on Heat Stress Measures for Outdoor Work](#)

##### National Environment Agency

[Heat Stress Advisory](#)

##### Workplace Safety and Health Institute

[OWLlinks Issue 79 – Heat Stress in the Workplace](#)

##### Workplace Safety and Health Council

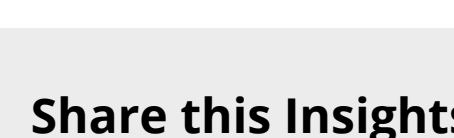
[WSH Guidelines on Managing Heat Stress in the Workplace](#)

[Heat Stress Management Compliance Checklist](#)

[Specifications for WBGT Meters for Workplace Measurement](#)

[Monitor and Manage Heat Stress Poster](#)

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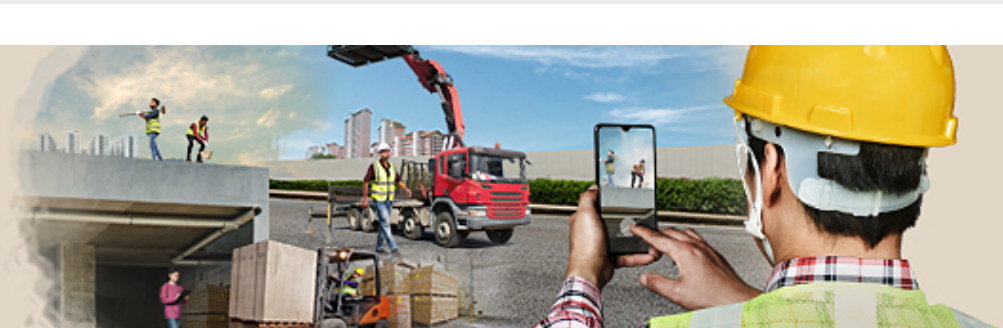


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