

## Revised framework to guide employers and protect outdoor workers against heat stress

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### REVISED FRAMEWORK TO GUIDE EMPLOYERS AND PROTECT OUTDOOR WORKERS AGAINST HEAT STRESS

With global warming, rising temperatures in Singapore will place workers, especially outdoor workers, at an increased risk of heat stress. Unlike the general population, outdoor workers have less discretion over their work activities, and may be more vulnerable to heat stress. The Ministry of Manpower (MOM), in consultation with the industry and tripartite partners, has reviewed our heat stress management measures to ensure outdoor workers are adequately protected at varying temperatures, while allowing flexibility for employers to adjust and implement measures based on their localised conditions.

2 The framework for outdoor workers has been aligned with the three-tier Heat Stress Advisory for the general population, which is based on the Wet Bulb Globe Temperature (WBGT)[1]. The framework includes required measures that are critical in mitigating the risk of heat stress, such as heat acclimatisation, regular hydration, monitoring of WBGT and provision of adequate rest breaks under shade, that must be implemented. There are also recommended practices, such as close monitoring of worker's health condition and provision of ventilation, for employers to consider at the different WBGT bands. The framework is appended in the **Annex**.

3 MOM will conduct inspections at workplaces to ensure that required measures under the framework are implemented. More information on the framework can be found at [go.gov.sg/heatstress-outdoorwork](https://go.gov.sg/heatstress-outdoorwork)

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[1] The WBGT is an internationally recognised measurement that reflects the main environmental factors contributing to heat stress. Besides air temperature, WBGT is also affected by humidity, wind speed, and solar radiation.

Measures	Wet Bulb Globe Temperature (WBGT, °C) Bands		
	WBGT (°C) < 31	31 ≤ WBGT (°C) < 33	WBGT (°C) ≥ 33
	Below 31	31 to less than 33	33 and above
Acclimatise	<ul style="list-style-type: none"> <li>Acclimatise workers new to Singapore or returning from leave of more than a week and gradually increase workers' daily heat exposure over at least 7 days</li> </ul>		
Drink	<ul style="list-style-type: none"> <li>Provide cool or cold drinking water supply near work areas</li> <li>Rehydrate regularly</li> </ul>	<ul style="list-style-type: none"> <li>Provide cool or cold drinking water supply near work areas</li> <li>Rehydrate at least hourly (Recommended intake of 300ml per hour or more depending on work intensity)</li> </ul>	
Rest & Shade	<ul style="list-style-type: none"> <li>Ensure workers get adequate rest under shade for recovery from heat</li> <li>Rest areas to be near work areas, where feasible</li> </ul>	<p>WBGT (°C) 31 to less than 32:</p> <ul style="list-style-type: none"> <li>Ensure workers get adequate rest under shade for recovery from heat</li> <li>Rest areas to be near work areas, where feasible</li> </ul> <p>WBGT (°C) 32 and above:</p> <ul style="list-style-type: none"> <li>Provide hourly rest breaks of a minimum of 10 minutes for heavy physical work activity when WBGT reaches 32°C and above</li> </ul>	<ul style="list-style-type: none"> <li>Provide hourly rest breaks of a minimum of 15 minutes for heavy physical work activity</li> <li>Longer rest periods recommended as WBGT increases</li> </ul>
Monitor WBGT	<ul style="list-style-type: none"> <li>Monitor WBGT every hour during work hours, especially during the hotter periods of the day</li> </ul> <p>On-site WBGT meters are required for construction sites with a contract sum of S\$5 million or more, shipyards and the process industry. Other workplaces can refer to the National Environment Agency's myENV app.</p>		
Reschedule	NA	<ul style="list-style-type: none"> <li>Reschedule outdoor physical work to cooler parts of the day where feasible</li> </ul>	
Monitor Worker	NA	<ul style="list-style-type: none"> <li>Close monitoring of worker's health condition, particularly for vulnerable* workers</li> <li>Implement a buddy system: workers to lookout for each other for signs of heat-related illnesses</li> </ul>	
	<ul style="list-style-type: none"> <li>Identify workers vulnerable* to heat stress and make re-deployment arrangements where required</li> </ul>		<ul style="list-style-type: none"> <li>Redeploy vulnerable* workers to non-outdoor work</li> </ul>
Emergency Response	<ul style="list-style-type: none"> <li>Establish emergency response plan and implement reporting procedures</li> </ul>		
	NA		<ul style="list-style-type: none"> <li>Workplaces should have cold water, icepacks, water spray and cooler boxes on standby</li> </ul>



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Ventilation	NA	<ul style="list-style-type: none"><li>• Cool rest and work areas with fans, air coolers etc.</li><li>• Provide loose-fitting and light-coloured clothing to workers</li></ul>
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Note: Bold items are required measures that must be implemented at the respective WBGT bands.

\* Workers vulnerable to heat stress include:

- Older workers above 65 years old of age
- Pregnant workers
- Overweight or obese workers
- Newly assigned to outdoor work
- Unacclimatised to working in hot environments such as new or returning from countries with cold climate
- Returning from long leave of more than 1 week
- Currently unwell or recovering from illness
- With personal risk factors such as chronic diseases, medication use, or history of heat injury



Note:

This list is not exhaustive and neither covers all individual variabilities nor all conditions.

Workers should consult a medical doctor if they have any of the above health related conditions and wish to be certified fit to work outdoors.

Workers with other medical conditions or who are uncertain should consult a medical doctor.

Employers who wish to deploy vulnerable workers have a duty to ensure they are fit for outdoor work. They should seek the worker's consent and make provisions for the worker to consult a medical doctor.

## ANNEX

[heat-stress-framework-outdoor-workers](#)

