# Workplan: 6-Step Heat Stress Workplan

Heat and humidity, either courtesy of mother nature or from man-made equipment and environments are hard on workers. Working in hot environments can easily fatigue workers and quickly lead to serious heat-related illness if not properly managed.

**Step 1: Conduct Heat Stress Assessment**

Are workers exposed to direct sunlight; is the humidity high along with the temperature; do workers wear PPE or protective clothing (respirators, fire-resistant clothing, and even hard hats); are there heat-producing equipment or processes?

**Step 2: Measure Heat Exposure**

The WetBulb Globe Temperature (WBGT) is a measure of the heat stress in direct sunlight, which considers temperature, humidity, wind speed, sun angle and cloud cover (solar radiation). This differs from the heat index, which takes into consideration temperature and humidity and is calculated for shady areas. The use of the WBGT as a guide to managing workload in direct sunlight is common. https://www.weather.gov/tsa/wbgt

It’s worth taking the time to learn more about the WBGT and other work/rest schedules, like the Heat Index or the Humidex, but here is an example using the WBGT:

| Heat Stress Category (WBGT) | Moderate Work | | Hard Work | |
|---|---|---|---|---|
| | Work/Rest Cycle | Water Intake Per Hour | Work/Rest Cycle | Water Intake Per Hour |
| **White** ≤76.9°F (≤24.9°C) | 60/15 MINUTES | 300 ml (1/3 qt) | 40/20 MINUTES | 500 ml (1/2 qt) |
| **Green** 77-81.9°F (25-27.7°C) | 60/15 MINUTES | 750 ml (3/4 qt) | 40/20 MINUTES | 1000 ml (1 qt) |
| **Yellow** 82-84.9°F (27.8-29.4°C) | 40/20 MINUTES | 1000 ml (1 qt) | 30/30 MINUTES | 1000 ml (1 qt) |
| **Red** 85-88.9°F (29.5-31.6°C) | 30/30 MINUTES | 1000 ml (1 qt) | **Exercise is forbidden. Very high risk for heat casualties.** | |
| **Black** ≥89°F (≥31.7°C) | **Exercise is forbidden. Very high risk for heat casualties.** | | | |

https://arielschecklist.com/wbgt-chart/

**Step 3: Allow for Acclimatization**

The body will get used to working in a hot environment gradually – it can take anywhere from 7-14 days. This is known as acclimatization or acclimating to the heat. What that means is the body becomes better at cooling itself down – it redirects blood to the skin's surface; the heart becomes more efficient; sweating starts sooner, there is more of it and the sweat contains less salt.

During this adjustment period, symptoms of fatigue, dizziness, heat rash, and stomach discomfort are common. Dehydration can cancel the benefits of acclimatization so providing and allowing for frequent intake of water and sports drinks is a must.

And while acclimatized workers will generally be able to work longer in a hot environment than unacclimated workers, caution must still be taken, and heat stress is still possible.

**Step 4: Prevent Dehydration**

Extreme temps and high humidity can make workers more susceptible to becoming dehydrated. Symptoms of dehydration include thirst,

fatigue, muscle cramps, nausea, dizziness or confusion, excessive perspiration, and hot, dry skin.

Provide water nearby on the job site and ensure everyone drinks ***even if they're not thirsty***. As a general guideline, the recommended amount of water intake is one quart per hour of active work or exercise for the average adult. That is the equivalent of 128 ounces (3.78 liters) every four hours at minimum. It is also suggested that the water intake be distributed over a period of time, such as every 15-30 minutes per shift.

**Step 5: Manage Heat Exposure**

In addition to allowing for acclimatization and preventing dehydration, there are other steps you can take to help workers manage heat exposure. Establish a first-aid response system with trained first-aid providers and a way to record and report heat stress incidents. Use the buddy system so workers can look out early signs of heat stress in each other. Provide shaded shelter and allow for frequent breaks.

Provide lift aids for material handling – dollies, carts, lifting devices – to reduce physical activity. Organize the work to reduce the pace of activity – if possible, postpone strenuous work until a cooler time of the day. Another option is to use job rotation and rotate workers in and out of hot areas.

Fans can be helpful under certain conditions – since fans do not cool the air, so air currents flowing over the body must be cooler than your body temperature to cool you down. So, provide fans when air temperature is below skin temperature (98.6°F/ 35°C) and the humidity is below 70%. Consider cooling or dehumidifying the workplace. When the temperature exceeds 98.6°F/ 35°C and the relative humidity is above 70%, the use of fans will increase worker's temperature because there will be little evaporation of sweat.

**Step 6: Provide Training**

Train workers on the different types of heat-related illnesses, their signs and symptoms, and response and treatment. Educate them

on the importance of staying hydrated and that thirst is not an indicator of hydration – which is why they must drink fluids regularly even if they aren't thirsty. Finally, make sure they understand that medications they take, and activities done outside of work, including drinking alcohol, can affect their response to heat.

https://www.safetyandhealthmagazine.com/articles/12512-worker-hydration

http://www.ohcow.on.ca/edit/files/heatstressawareness/Heat%20Stress%20Awareness%20Guide.pdf