June 2024

Health control plan resources

Heat stress

What is heat stress?	Why is heat stress a health hazard?	How do I assess potential exposure to heat stress?	What are the health monitoring requirements for the health hazard
Heat stress occurs "when a worker's environment (air temperature, radiant temperature, humidity and air velocity), clothing and work activity interact to produce a tendency for body temperature to rise" (Parsons, 1998)[1]. The body is not able to sufficiently cool itself, leading to heat related illness.	Exposure to hot work environments can lead to a number of acute illnesses including: • prickly heat • heat cramps (salt loss) • fainting • heat exhaustion • heat stroke. Heat stroke refers to failure of the body's heat regulation system that results in rapidly rising core body temperature. Symptoms include dry skin, a rapid, strong pulse, dizziness,	NSW Work Health and Safety (Mines & Petroleum) Regulation 2022 requires underground mines to implement control measures to manage heat stress in places in the mine where people travel and work where the Wet Bulb Globe Temperature (WBGT) exceeds 27° C. **Exposure risk assessment** Assessment methods for heat exposure utilise a heat stress index such as the wet bulb globe temperature (WBGT) or the basic effective temperature (BET). These assessments consider:	There is no legislated requirement for a health monitoring program for workers exposed to heat stress, however it is good practice to institute a health monitoring program.[4]. A program should include a preplacement medical assessment and periodic medical assessments. **Physiological monitoring** Physiological monitoring may form part of the risk management process for work in areas above 30°C. Physiological monitoring should be undertaken by a

[1] www.ohsbok.org.au/wp-content/uploads/2013/12/26-Hazard-Thermal-environment.pdf?x71776

[4] www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf

What is heat stress?	Why is heat stress a health hazard?	How do I assess potential exposure to heat stress?	What are the health monitoring requirements for the health hazard
	nausea and confusion. This ultimately leads to collapse, loss of consciousness and convulsions[2]. Without prompt attention, heat stroke can be fatal. High core body temperature also causes fatigue, decreased productivity, reduced muscular performance and also degraded mental performance[3]. Heat exhaustion is an illness that can happened after several days of exposure to high temperatures and not enough fluid consumption. Symptoms include heavy sweating, rapid breathing, and a fast, weak pulse. If not treated, it can turn into heat stroke. Heat cramps — muscle pains or spasms that happen during heavy exercise. Cramps occur in the abdomen, arms, or legs.	• air temperature • air velocity • humidity. In addition, exposure assessment should consider: • heat generated by the body due to work (metabolic load), • heat generated by equipment (radiant heat) and • clothing which prevents evaporation of sweat (important for regulating body heat). The Australian Institute of Occupational Hygienists (AIOH) recommends a three-stage approach to risk assessment based using air temperatures as trigger points. WBTs between 25°- 27° C a qualitative assessment using a Basic Thermal Risk Assessment (BTRA) is deemed sufficient. If this assessment identifies a potential problem or for WBTs between 27°-30° C an assessment by a technical expert is recommended. At temperatures above 30° C physiological monitoring is	trained or competent person such as an occupational health nurse. Physiological monitoring is based on the workers reaction to the exposure of thermal stress. Monitoring may include assessment of: • recovery heart rate times • oral and core body temperatures • end of shift weight loss to determine level of dehydration • age and fitness.

[2] www.aioh.org.au/onlinestore/publications/a-guide-to-managaing-heat-stress-developed-for-use-in-the-australian-environment

[3] Leveritt, *Heat stress in mining,*

What is heat stress?	Why is heat stress a health hazard?	How do I assess potential exposure to heat stress?	What are the health monitoring requirements for the health hazard
		recommended (see health monitoring requirements). For assistance or more information on the appropriate exposure risk assessment and health monitoring requirements specialist knowledge should be sought from occupational physicians, physiologists or occupational hygienists.	