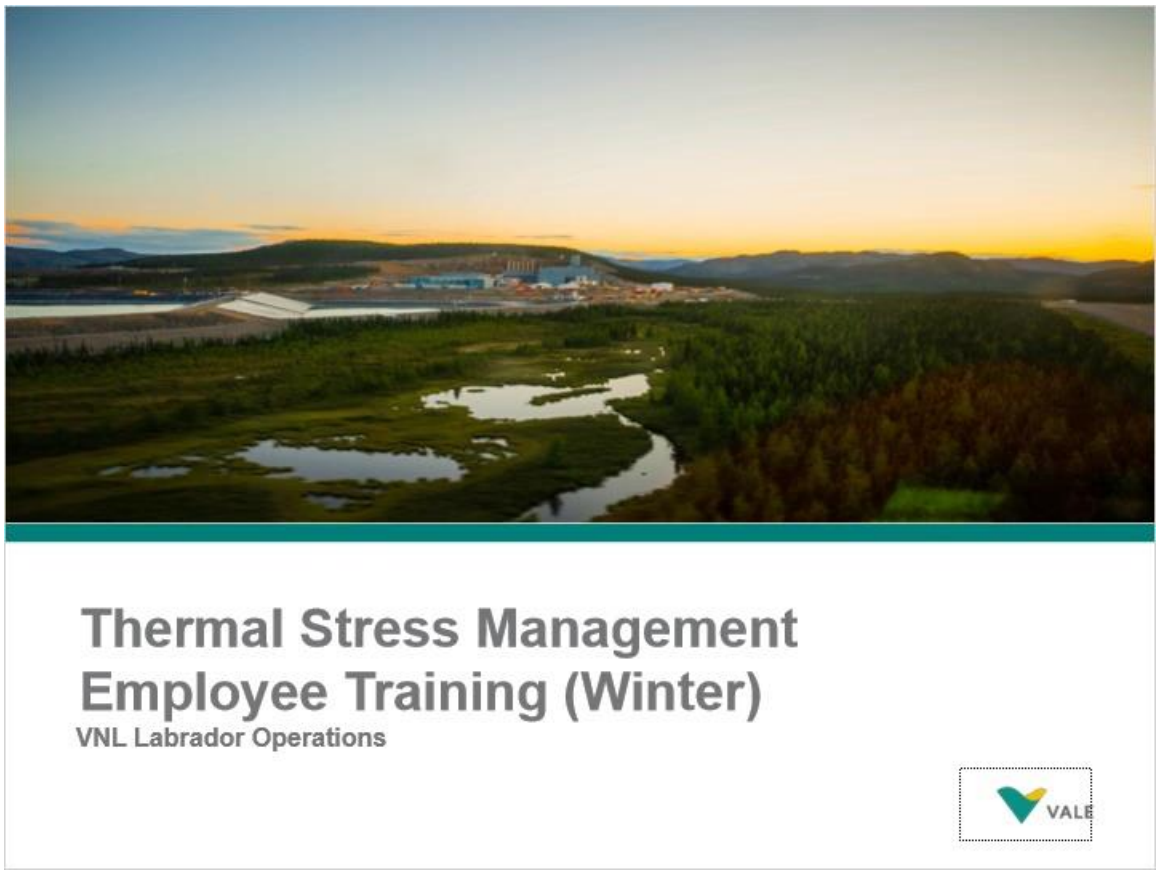
Voisey's Bay: Thermal Stress Management Orientation

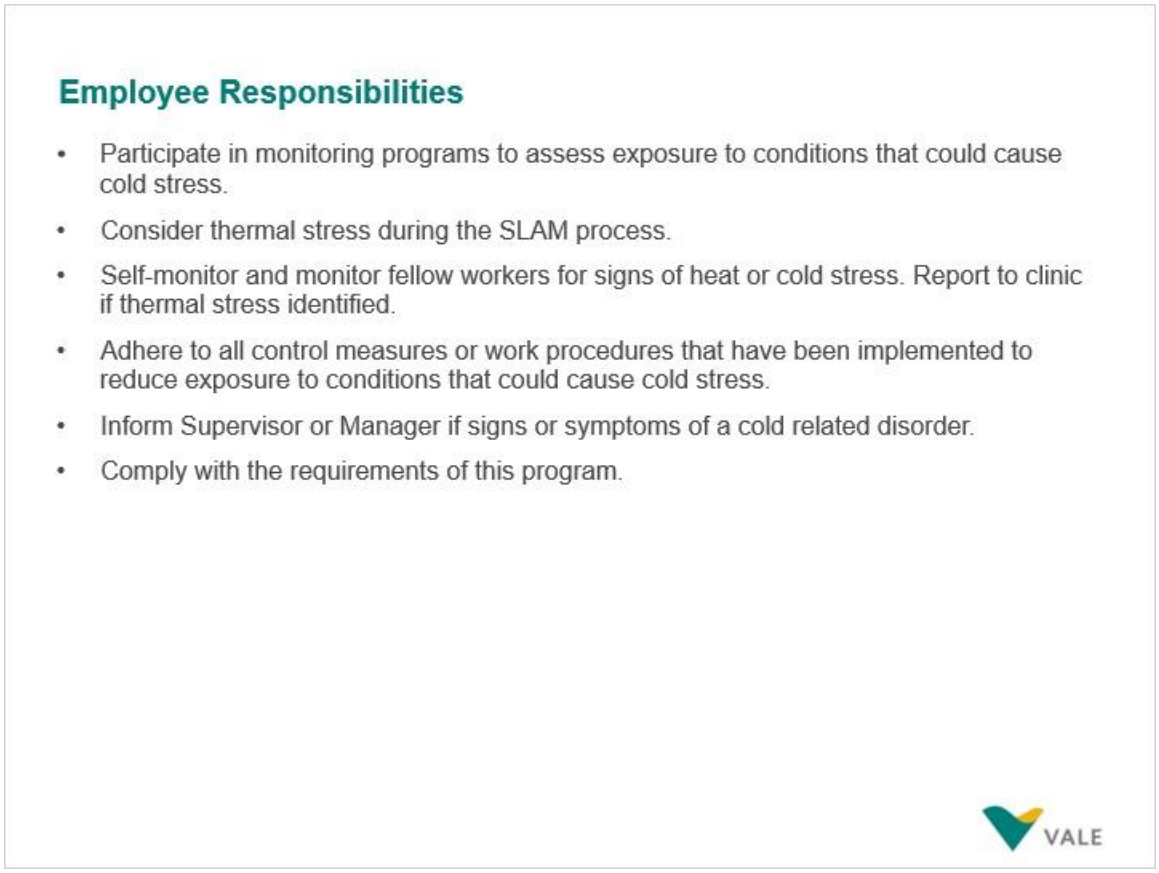
1. Thermal Stress Management Employee

1.1 Thermal Stress Management

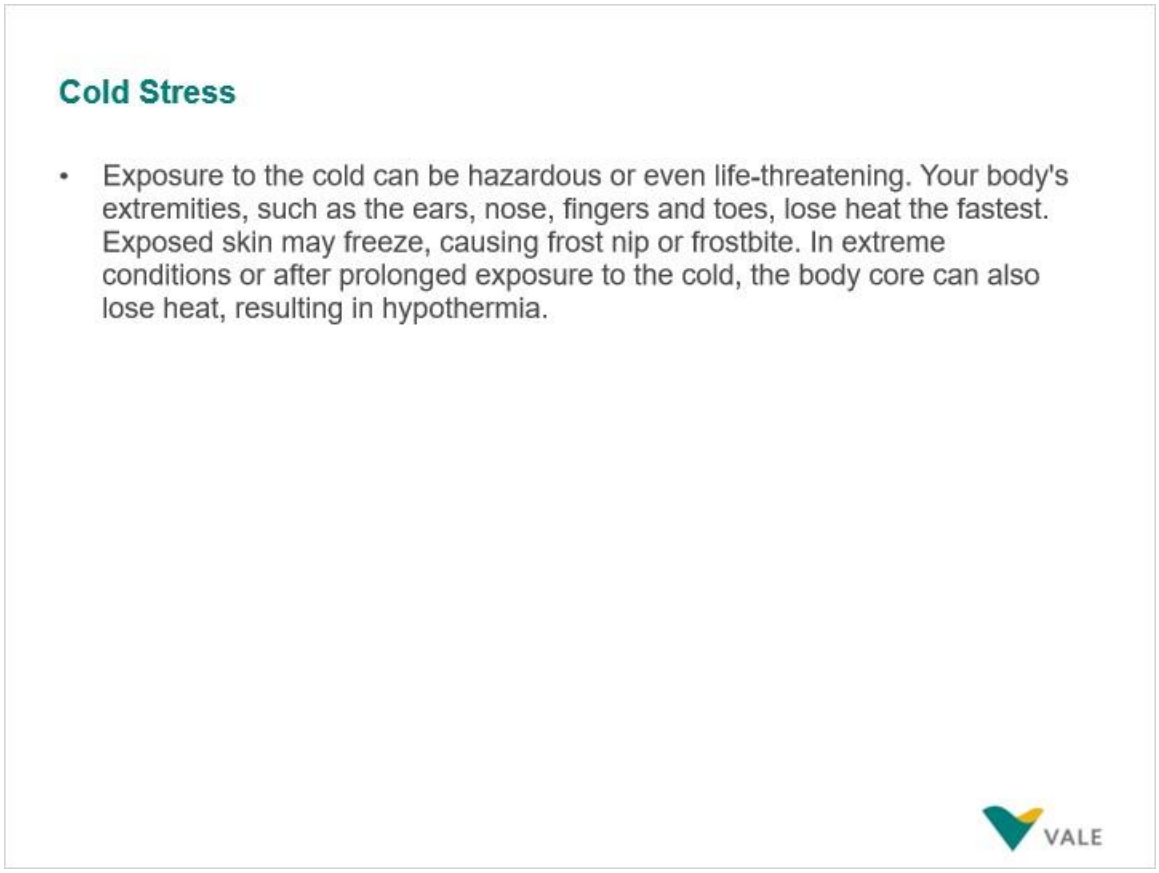


1.2 Untitled Slide

1.3 Employee Responsibilities



1.4 Cold Stress



1.5 Untitled Slide

Video Cold Stress

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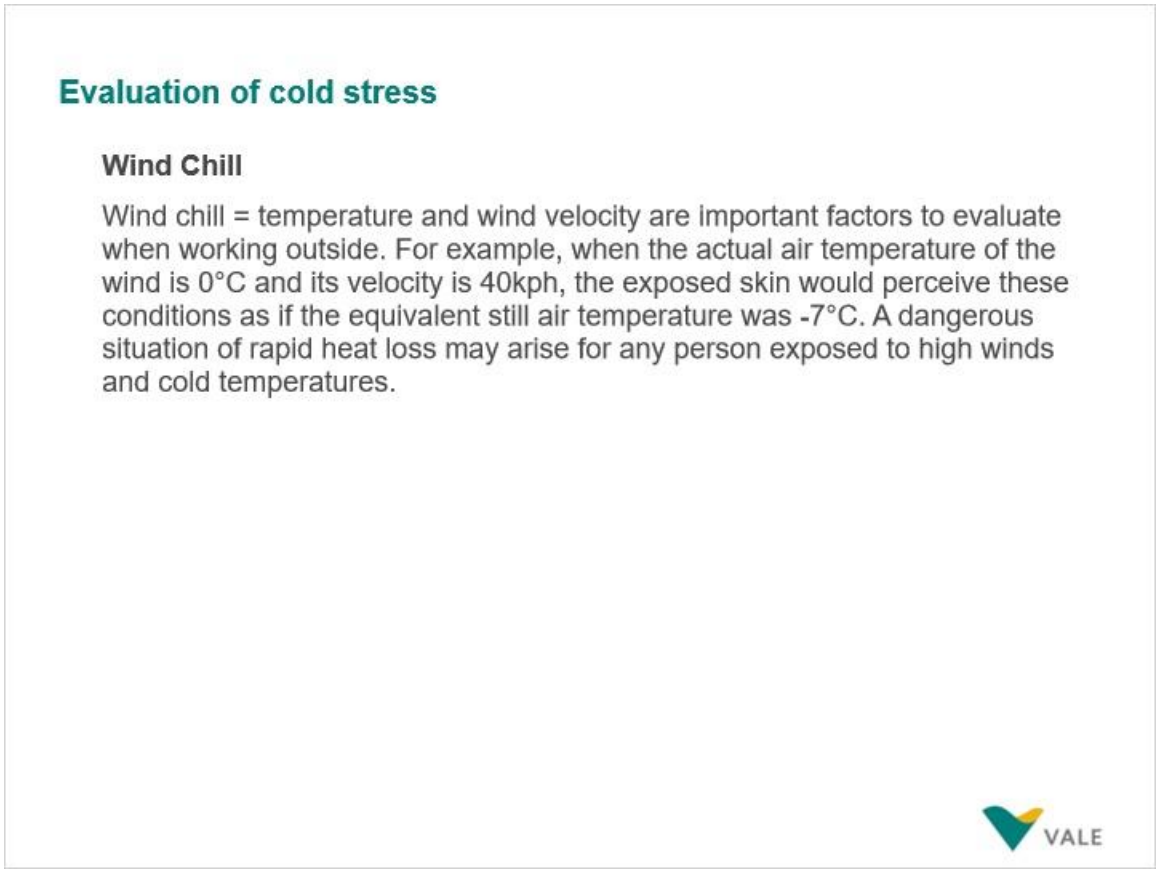
1.6 Evaluation of cold stress



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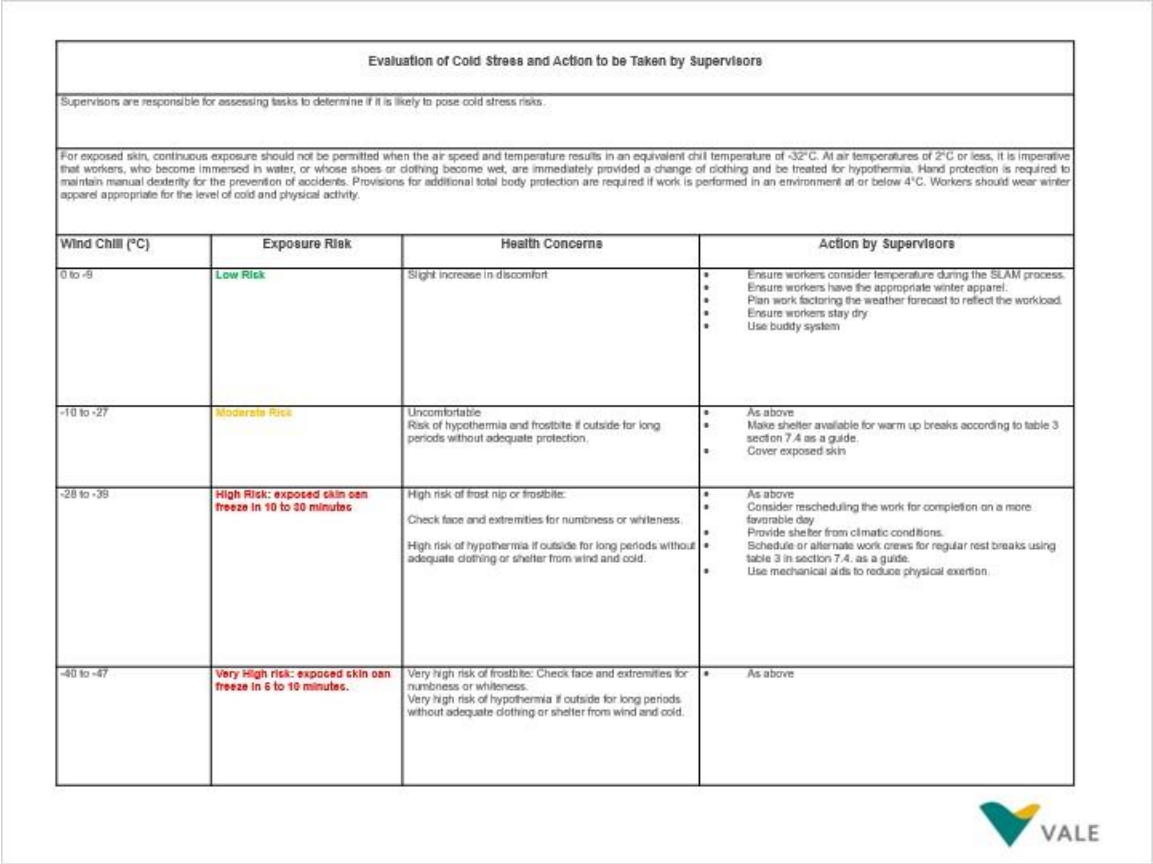

Evaluation of Cold Stress and Action to be Taken by Supervisors

Supervisors are responsible for assessing tasks to determine if it is likely to pose cold stress risks.

For exposed skin, continuous exposure should not be permitted when the air speed and temperature results in an equivalent chill temperature of -32°C. At air temperatures of 2°C or less, it is imperative that workers, who become immersed in water, or whose shoes or clothing become wet, are immediately provided a change of clothing and be treated for hypothermia. Hand protection is required to maintain manual dexterity for the prevention of accidents. Provisions for additional total body protection are required if work is performed in an environment at or below 4°C. Workers should wear winter apparel appropriate for the level of cold and physical activity.

Wind Chill (°C)	Exposure Risk	Health Concerns	Action by Supervisors
0 to -9	Low Risk	Slight increase in discomfort	• Ensure workers consider temperature during the SLAM process. • Ensure workers have the appropriate winter apparel. • Plan work factoring the weather forecast to reflect the workload. • Ensure workers stay dry • Use buddy system
-10 to -27	Moderate Risk	Uncomfortable Risk of hypothermia and frostbite if outside for long periods without adequate protection.	• As above • Make shelter available for warm up breaks according to table 3 section 7.4 as a guide. • Cover exposed skin
-28 to -39	High Risk: exposed skin can freeze in 10 to 30 minutes	High risk of frost nip or frostbite: Check face and extremities for numbness or whiteness. High risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold.	• As above • Consider rescheduling the work for completion on a more favorable day • Provide shelter from climatic conditions. • Schedule or alternate work crews for regular rest breaks using table 3 in section 7.4. as a guide. • Use mechanical aids to reduce physical exertion.
-40 to -47	Very High risk: exposed skin can freeze in 5 to 10 minutes.	Very high risk of frostbite: Check face and extremities for numbness or whiteness. Very high risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold.	• As above

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-48 to -54	**Severe risk: exposed skin can freeze in 2 to 5 minutes**	Severe risk of frostbite: Check face and extremities frequently for numbness or whiteness.	• As above • Essential work only – JHA required
-55 and colder	**Extreme risk: exposed skin can freeze in less than 2 minutes**	DANGER! Outdoor conditions are hazardous.	• As above • Essential work only – JHA required

1.9 Thermal Stress Management

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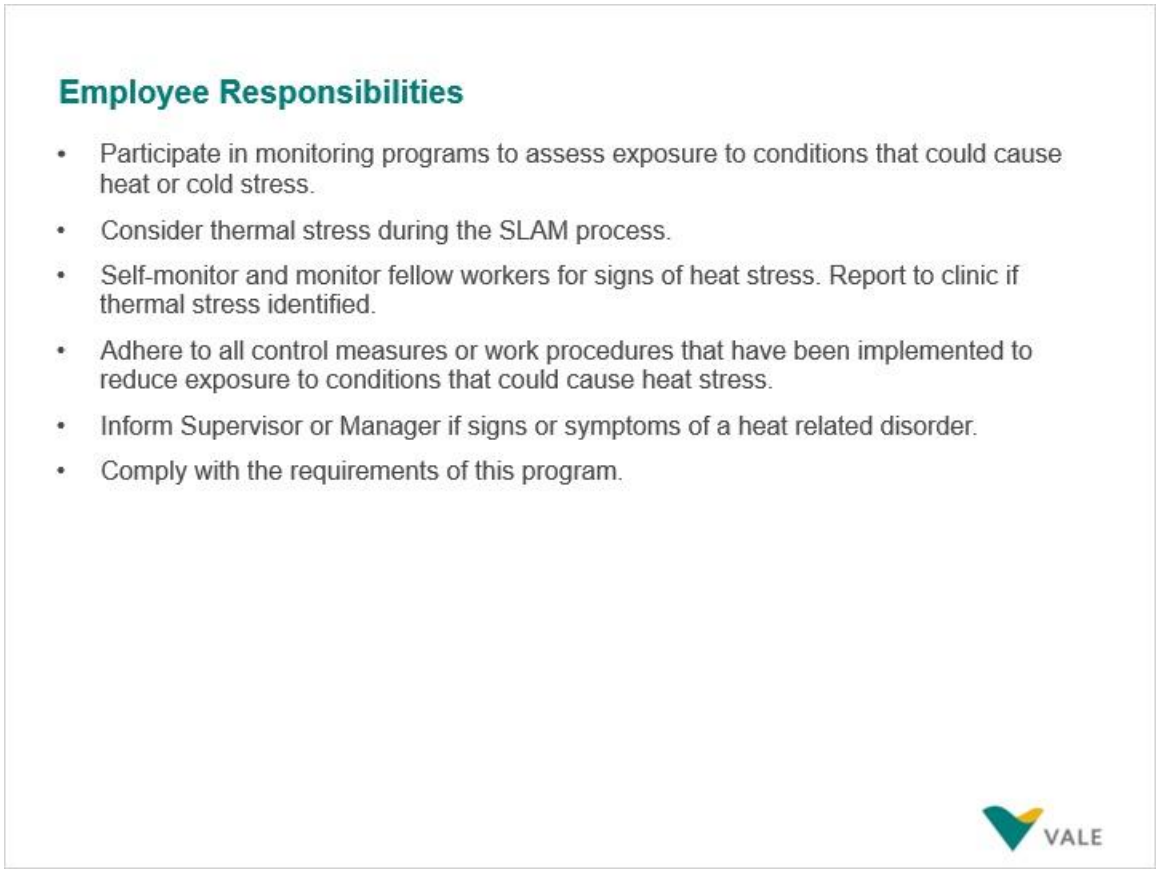
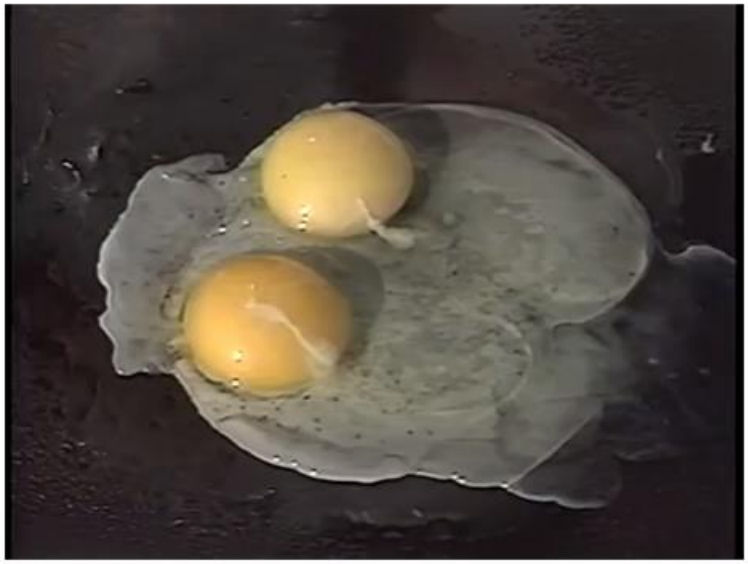
1.11 Employee Responsibilities



1.12 Heat Stress

Heat Stress

- Heat Stress Video



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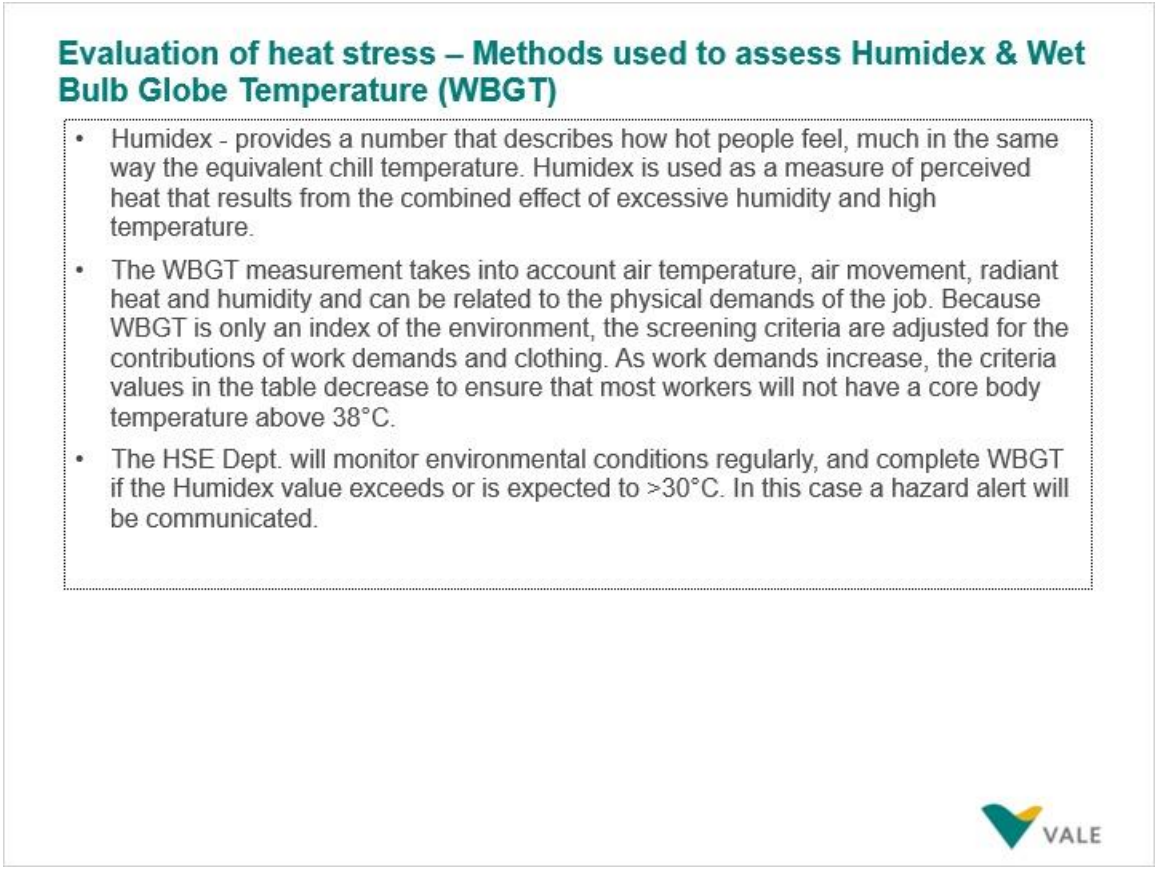
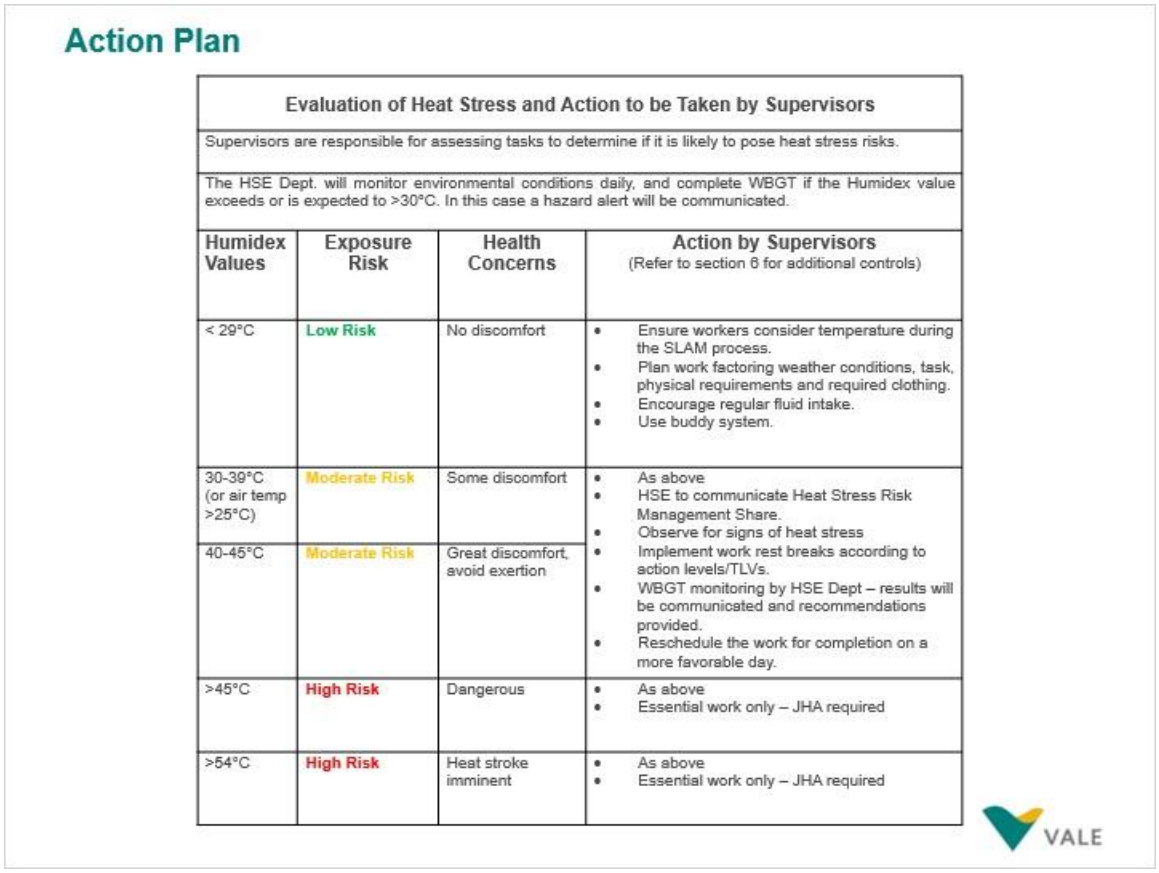
1.13 Evaluation of heat stress – Methods used to assess Humidex & Wet Bulb Globe Temperature (WBGT)



1.14 Action Plan



Action Plan

Evaluation of Heat Stress and Action to be Taken by Supervisors			
Supervisors are responsible for assessing tasks to determine if it is likely to pose heat stress risks.			
The HSE Dept. will monitor environmental conditions daily, and complete WBGT if the Humidex value exceeds or is expected to >30°C. In this case a hazard alert will be communicated.			
Humidex Values	**Exposure Risk**	**Health Concerns**	**Action by Supervisors** (Refer to section 6 for additional controls)
< 29°C	Low Risk	No discomfort	• Ensure workers consider temperature during the SLAM process. • Plan work factoring weather conditions, task, physical requirements and required clothing. • Encourage regular fluid intake. • Use buddy system.
30-39°C (or air temp >25°C)	Moderate Risk	Some discomfort	• As above • HSE to communicate Heat Stress Risk Management Share. • Observe for signs of heat stress
40-45°C	Moderate Risk	Great discomfort, avoid exertion	• Implement work rest breaks according to action levels/TLVs. • WBGT monitoring by HSE Dept – results will be communicated and recommendations provided. • Reschedule the work for completion on a more favorable day.
>45°C	High Risk	Dangerous	• As above • Essential work only – JHA required
>54°C	High Risk	Heat stroke imminent	• As above • Essential work only – JHA required

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