

ADVATEK SYSTEMS INC.

THERMAL EXPOSURE

SECTION 15



15.1 Thermal Exposure Limits

Employees at Advatek Systems are required to be aware of the environment in which they work. During the summer Employee's are required to keep water with them at all times and are also instructed in the signs of heat exhaustion. Employees are also told to adjust their activities while outdoors or exposed to temperatures greater than 24.0 Celsius or Less than 15.0 Celsius. During the winter months Employees are required to wear clothing that adequately protects them from the cold as well as having a heated space for them to warm up in. They are also instructed in the signs of hypothermia.

15.1.1 Heat Stroke

"While symptoms can vary from person to person, the warning signs of heat stroke can include complaints of sudden and severe fatigue, nausea, dizziness, light-headedness, and may or may not include sweating. If a co-worker appears to be disorientated or confused (including euphoria), or has unaccountable irritability, malaise or flu-like symptoms, the worker should be moved to a cool location and seek medical advice. "

15.1.2 Hypothermia

"Warning signs of hypothermia can include complaints of nausea, fatigue, dizziness, irritability or euphoria. Workers can also experience pain in their extremities (hands, feet, ears, etc), and severe shivering. Workers should be moved to a heated shelter and seek medical advice when appropriate. "

Should employees be exposed to working conditions that may present a risk of exposure to extreme heat or cold Advatek Systems will ensure that.

- A Competent person measures (this can be the working employee) and records the thermal conditions at a regular interval not to exceed 1.5 hours
- Thermal condition findings will be recorded so they can be later reviewed
- The ACCGIH threshold limit values must also be adhered to (Table 1 & 2)
- Work-Rest regiments for thermal exposure will also be followed. (Table 3)
- Working out doors during spring, summer & fall SPF 30 or greater sunscreen must be used.

Even though Employees at Advatek Systems don't normally work in extreme colds the following must be done. Wind Chill must be considered at all times. Employees working in cold zones such as coolers/freezers or out doors must:

- From 10-15 Celsius Limit exposure to 2 hour before moving to a warm zone for at least 5 minutes
- From 0 to 10 Celsius Limit exposure to 1 hours before moving to a warm zone for at least 10 minutes
- From -15 to 0 Celsius Limit exposure to 30 before moving to a warm zone for at least 15 minutes
- Below -15 Celsius Limit exposure to 30 before **resting** in a warm zone for at least 15 minutes
- Below -30 no work is to be done
- When working below 0 Celsius workers must wear a winter rated jacket, gloves, hat and face protection
- When working below -15 Celsius employees are also required to wear winter pants

- When wind is an issue wind breaker clothing should also be worn, Be aware of the windchill value as this does alter the working temperature
- If working alone at temperatures below 5 Celsius you must report into base at least every hour, should you fail to report Advatek Systems will contact the worksite to locate you, and dispatch emergency services if required
- Ensure you have a warm zone to go to. This can be your company vehicle with heat running. It is preferred to be a building where you can go inside and rest.

Even though Employees at Advatek Systems don't normally work in extreme heats the following must be done. Employees working in hot zones such as near ovens or boilers or out doors must:

- Between 15-28 Celsius all work can be conduct normally while consuming plenty of water and resting at normal rate
- From 28 to 35 Celsius Limit work to medium/light duty, while drinking plenty of water and resting for at least 15 minutes every 2 hours
- From 35 Celsius and up Limit work, while drinking plenty of water and resting for at least 15 minutes every 1 hour
- Be aware of the Humidex value as this does alter the working temperature.
- Ensure you have a cool zone to go to. This can be your company vehicle with AC running. It is preferred to be a building where you can go inside and rest.
- Wear clothing appropriate to the weather while wearing appropriate PPE

Table 1 ACGIH Screening Criteria for Heat Stress Exposure (WBGT values in °C) for 8 hour work day five days per week with conventional breaks									Table 2 Humidex and Thermal Comfort	
Allocation of Work in a Work/Rest Cycle	Acclimatized				Action Limit (Un-acclimatized)				Humidex Range (°C)	Degrees of Comfort
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy		
75-100%	31.0	28.0	--	--	28.0	25.0	--	--	20 - 29	Comfortable
50-75%	31.0	29.0	27.5	--	28.5	26.0	24.0	--	30 - 39	Varying degrees of discomfort
25-50%	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5	40 - 45	Uncomfortable
0-25%	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0	46 and Over	Many types of labour must be restricted

Table 3 Canadian health and safety regulations with respect to thermal conditions in the workplace		
Jurisdiction	Regulation	Temperature
Canada, Federal	Personal service food preparation area Materials handling: operators' compartment First aid room	18°C min./29°C max. 27°C max. 21°C - 24°C ACGIH TLVs for heat stress, cold stress
Treasury Board Guidelines	Thermal conditions in office work	20-26°C Humidex 41°C max.
British Columbia	Heat Stress Regulations Indoor Air Quality Regulation, ASHRAE 55 -1992 Standard	Limits in WBGT units similar to ACGIH TLV
	Summer Indoor Winter Indoor	23.3 - 27.2°C or 74 - 81°F 20.5 - 24.4°C or 69 - 76°F
Alberta	(Guidelines only)	similar to ACGIH TLVs for heat stress and cold stress
Saskatchewan	Thermal environment	Reasonable and appropriate to nature of work
Manitoba	Thermal environment	ACGIH TLVs for heat stress, cold stress
Ontario	Construction projects:	
	Change room for underground workers Work chamber Medical locks	27°C min. 38°C max. 18°C min./27°C max.
	Enclosed workplace, Industrial Establishment Regulations	18°C min.
Quebec	Safety in mines: Dryhouse temperature Occupational exposure limits	22°C min. WBGT similar to ACGIH TLVs

New Brunswick	Enclosed place of employment:	
	Light work while sitting, mental work	20°C min.
	Light work while sitting, work with small	18°C min
	Moderate physical work, standing	16°C
	Heavy physical work	12°C min.
	Work conditions	1997 ACGIH TLVs for heat stress and cold
Nova Scotia	Construction safety regulations: Working chamber	27°C (80°F) max. ACGIH TLVs for heat stress and cold
Prince Edward Island	Enclosed workplace:	
	Light work while sitting, mental work	20°C min.
	Light work while sitting, work with	19°C
	Light work, standing	17°C
	Moderate work standing	16°C
	Heavy work	12°C min.
	Occupational exposure limit	ACGIH TLVs for heat and cold exposure
Newfoundland and Labrador	Occupational exposure limit	ACGIH TLVs for hot and cold environment
Northwest Territories	Overnight minimum temperature only,	18°C min
Nunavut	Overnight minimum temperature only,	18°C min
Yukon Territory	Thermal environment	Heat Stress limits similar to ACGIH TLVs

Assumes 8-hour workdays in a 5-day workweek with conventional breaks.

TLVs assume that workers exposed to these conditions are adequately hydrated, are not taking medication, are wearing lightweight clothing, and are in generally good health.