



# Heat Stress Exposure Control Plan

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## REFERENCES

This Heat Stress Program incorporates the requirements of the WorkSafeBC Occupational Health and Safety Regulation Sections 7.26 to 7.32.

## BACKGROUND

Heat stress occurs when the body is unable to maintain its normal temperature due to high ambient temperatures, high humidity, and physical activity. Heat stress may occur in situations where a person's core temperature rises above 38°C. This rise in core temperature can lead to various heat-related disorders, ranging from mild heat rashes to severe conditions like heat stroke, which can be fatal. Workers at the VSB that are potentially at risk of heat stress related disorders include grounds crews, maintenance and construction trades, and building engineers. Although exposed to hot environments, education workers in schools are not expected to be impacted by heat stress related disorders. Heat issues arising in classrooms is typically a comfort related issue. To reduce the risk of heat stress related disorders, an exposure control plan is conducted to assess the risk and provide controls to workers.

## PURPOSE

The purpose of this exposure control plan is to define the roles and responsibilities in administering this plan as well as outline other requirements to eliminate or, where elimination is not practicable, minimize the risk of injury or illness related to heat exposure to workers at the Vancouver School District (VSB).

## SCOPE

This exposure control plan applies to all VSB employees who may be affected by heat stress while at VSB work sites or conducting VSB business offsite such as field trips and sports events.

## DEFINITIONS

**Acclimatization** - a process by which the body modifies its own functions to cope more effectively and efficiently with heat stress. Typically, acclimatization takes 7 to 14 days.

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**Administrative Controls** - as the provision, use, and scheduling of work activities and resources in the workplace—including planning, organizing, staffing, and coordinating, for the purpose of controlling risk. They often involve creating policies, procedures, or training programs to ensure a safer environment.

**Convection** - the transfer of heat by the bulk movement of a fluid such as water or air from a hot region to a cold region.

**Engineering Controls** - methods that will remove the hazard at the source, before it comes in contact with the worker.

**Evaporative Cooling** - when sweat (water) evaporates from the skin.

**Heat cramps** – are painful, involuntary muscle spasms that typically occur during or after intense physical activity in hot environments. They are a mild form of heat-related illness and are often caused by dehydration, electrolyte imbalances (especially low sodium), and muscle fatigue.

**Heat disorder** means a health issue resulting from heat stress. Includes heat cramps, heat exhaustion and heat stroke.

**Heat exhaustion** - is a heat-related illness caused by prolonged exposure to high temperatures and dehydration, leading to symptoms like heavy sweating, weakness, dizziness, nausea, and a rapid pulse.

**Heat Stress** - the process in which a person’s body gains heat faster than it removes heat resulting in a rise in body temperature. It is the "net heat load to which a worker may be exposed from the combined contributions of metabolic heat, environmental factors (i.e., air temperature, humidity, air movement, and radiant heat), and clothing requirements.

**Heat stroke** - is a life-threatening condition that occurs when the body’s core temperature rises above 40°C and the body can no longer regulate its heat. It is marked by symptoms such as confusion, loss of consciousness, and lack of sweating, and requires immediate medical attention.

**Hot environment** is a workplace or setting where the combination of temperature, humidity, radiant heat, and physical activity poses a risk of heat stress.

**Hot work** - means any temporary operation involving open flames or producing heat and/or sparks, such as brazing, cutting, grinding, soldering, or welding.

**Humidex** – means humidity index. It is an index number that is generated by

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combining the effect of air temperature and relative humidity to describe the average persons body's perception of a hot environment (i.e. how hot the weather feels).

**Radiant Heat** -the transfer of heat energy through space. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

**Thermal Comfort** - as a person's state of mind or perception of whether they feel too hot or too cold. Due to large variations from person to person it is difficult to satisfy everyone within the same thermal environment.

**Ultraviolet (UV) radiation** - Electromagnetic radiation with a wavelength from 10 nm to 400 nm, shorter than that of visible light but longer than X-rays.

**Unacclimatized Worker** - A worker who is not accustomed to working in a hot environment or who has been out of a hot environment for two (2) to seven (7) consecutive days.

**WBGT°C** - Wet Bulb Globe Temperature in Celsius, this unique temperature measurement unit combines air temperature, humidity, airflow and radiant heat into a single value. This measurement is used to assess the risk of heat stress disorders. A heat stress monitor is required to take the measurement.

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## RESPONSIBILITIES

### Employer/Senior Leadership Team

- Demonstrate the organization’s commitment to heat stress prevention by allocating necessary resources to maintain compliance.

### District Health and Safety

- Assess the risk of heat stress for services and activities conducted by VSB employees.
- Establish, implement and maintain appropriate heat stress procedures to eliminate or minimize the risk of injury to a worker.
- Establish and make available heat stress related training for affected workers.
- Provide training on conducting heat stress hazard identification and heat stress risk assessments to supervisors that have staff that may be exposed to heat stress and ultraviolet (UV) radiation from the sun.
- Establish and enforce clear procedures regarding heat stress management, including work-rest cycles, hydration, and emergency procedures
- Investigate and report on complaints about hot work environments.
- Communicate heat stress investigation report findings to the affected supervisor and site joint health and safety committee representative.
- Assist in investigations related to incidents resulting in heat stress related disorders.
- Identify and assess areas, tasks, and occupations where there is the potential for heat stress.
- Provide training and education regarding heat stress including early signs and symptoms of heat-related disorders.
- Maintain records of the heat stress assessments and worker training.

### Supervisors/Administrators

- Provide resources, equipment and controls (engineering, administrative, or personal protective equipment) to minimize heat stress as well as minimize ultraviolet (UV) radiation energy exposure.
- Monitor and ensure the implementation and use of safety controls.

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- Provide necessary training, instruction and resources such as water, shade, rest areas, PPE, and other equipment to prevent or minimize the potential risk of heat stress.
- Complete heat stress monitoring according to procedures specified in this program, for jobs and tasks that have been identified as posing a risk of heat stress.
- Inform workers of the outcome of the heat stress hazard identification and heat stress risk assessment for the jobs and areas in which they are working.
- Ensure the implementation of all applicable control measures as required under this program.
- Remove workers showing signs or reporting symptoms of heat stress from hot environments and provide first aid or summon medical assistance (911) as necessary.
- Address worker concerns about heat stress and contact District Health and Safety to assist in investigating any heat stress related incidents.

### **District Health and Safety Working Group**

- Review the Heat Stress Exposure Control Plan through ongoing and annual review.

### **Site Joint Health and Safety Committee**

- Assess the effectiveness of any applicable Heat Stress Risk Assessment.
- Assist workers with filing hazard reports for heat stress in OurHealth, as needed.
- Assist in investigating heat stress incidents and inspection of worksites that may pose a risk of heat stress.

### **Chargehands**

- Complete heat stress monitoring according to procedures specified in this program, for jobs and tasks that have been identified as posing a risk of heat stress.
- Inform workers of the outcome of the heat stress hazard identification and heat stress risk assessment for the jobs and areas in which they are working.
- Implement all applicable control measures as required under this program.

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- Remove workers showing signs or reporting symptoms of heat stress from hot environments and provide first aid or summon medical assistance (911) as necessary.

## Workers

- Participate in all required training.
- Watch for early signs and symptoms of heat stress in themselves and their co-workers and respond appropriately.
- Adhere to all control measures and safe work procedures that have been designed and implemented to reduce exposure to conditions that could cause heat stress.
- If signs or symptoms of a heat-related disorder appear, inform your supervisor/administrator and take precautions to lower core temperature (drink cool liquids, seek shade, reduce physical effort, etc.).
- Participate in environmental monitoring program to assess worker exposure to conditions that could cause heat stress.
- Use or wear personal protective equipment that is provided.
- Report unsafe acts and conditions to your principal or supervisor.

## HAZARD IDENTIFICATION AND RISK ASSESSMENT

### Heat Stress Hazard Identification

The VSB will implement a process of heat stress hazard identification to identify heat sources, environmental conditions, occupations (considering level of physical exertion, equipment & PPE required), and areas that may expose workers to a risk of heat stress. Each of these factors is discussed in further details below and the Heat Stress Job Hazard Identification table identifying the positions with these hazards is located in Appendix A.

### Heat Sources

External radiant heat sources also contribute to the risk of heat stress and needs to be identified. These include (but are not limited to) items such as:

- Boilers, heaters, ovens,
- Heavy machinery,
- Solar radiation, or
- Hot materials

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## Environmental Conditions

Environmental conditions that increase the risk of heat stress include:

- High Air temperature: High air temperature increases the potential for heat related disorders by overwhelming the body's ability to regulate its internal temperature.
- High Relative humidity: High relative humidity hinders the body's ability to dissipate heat by sweating and hence increases potential for developing heat related disorders,
- Little to no Air movement: Areas or environmental conditions where there is little, or no air movement increases potential for heat related disorders by hindering the body's ability to dissipate heat through convection and evaporation.

## Occupations

Certain occupations and jobs/tasks may increase a worker's risk of heat stress because of the level of physical exertion involved, the external sources of heat and environmental conditions. Some examples of jobs that may increase a worker's risk of heat stress include (but are not limited to):

- Outdoor occupations (especially in the summer) such as Grounds workers, and various trades maintenance,
- Occupations that involve work with hot materials or radiant heat sources such as welding, plumbing & boiler maintenance.
- Jobs that require workers to wear full personal protective equipment ensemble such as hazardous materials remediation.
- Jobs or tasks that require medium to high exertion or strength such as material services, construction or labourers.
- Occupations or jobs that are performed in areas with high air temperature and relative humidity such as kitchens.
- Occupations, tasks or areas that have been identified through incident investigation reports, first aid treatment records, and records of injury and disease as potentially presenting a risk of heat stress.
- Occupations, tasks or areas about which workers have expressed concern.

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## Workload - Physical Exertion

Body temperature can be increased by the heat generated internally or gained from external sources. It is therefore important to identify the level of physical exertion involved in the job task as well as external sources of heat. Strenuous work activities involving heavy physical exertion can result in heat stress even when the air temperature is relatively low.

Light workload (light physical exertion) includes (but is not limited to):

- teaching in a classroom,
- working in an office at a desk,
- light walking.

Moderate workload (moderate physical exertion) includes (but is not limited to):

- Brisk walking or normal pace walking for prolonged period,
- Sitting with continuous arm and leg movement,
- Pushing, pulling, or lifting moderately heavy loads etc.
- Custodial work (cleaning, moving supplies, setting up rooms)
- Groundskeeping (mowing, landscaping, outdoor maintenance)
- General maintenance (repairs, light construction, moving equipment)
- Physical education teaching (supervising and demonstrating activities)

Heavy workload (Heavy physical exertion) includes (but is not limited to):

- Intense arm and trunk work such as carrying, shoveling, or manual sawing
- Pushing or pulling heavy loads for the majority of the work period
- Walking at a fast pace
- 

Very heavy workload (very heavy exertion) includes very intense activity at a fast to maximum pace.

- Emergency response activities under time constraints – trenching, sand bagging, material handling of equipment.

## Clothing and Personal Protective Equipment Requirements

The type of clothing and personal protective equipment required for the job can significantly influence the risk of heat stress posed to workers.

Personal protective equipment such as those worn by the maintenance workers, such as hard hats, coveralls, safety boots, and respirators can trap hot air next to the skin and increase the risk of heat stress disorders. Impervious (non-breathable) and semi-impervious clothing prevents easy evaporation of sweat from skin, for example Tyvek suits worn by hazardous material removal workers. This inhibits the cooling effect of sweat evaporation, which can result in elevation of core body temperature and increases the possibility of developing heat stress disorders.

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### Areas

Tree cover, foliage, and shade play crucial roles in mitigating heat stress by providing natural cooling through evapotranspiration and blocking direct solar radiation, creating cooler microclimates that can reduce ambient temperatures by several degrees.

In contrast, working on hard reflective surfaces like concrete without shade can significantly contribute to heat stress by absorbing and storing solar energy during the day, then radiating that heat back into the environment.

Concrete surfaces can reach temperatures 5-15°C higher than the surrounding vegetated areas, creating uncomfortable conditions for workers.

## HEAT STRESS RISK ASSESSMENT

A heat stress risk assessment must be completed in compliance with the requirements of WorkSafeBC Regulation 7.29(1)(a). Assessments are to be completed at the start of the shift and throughout a workday when the temperature is above 23 degrees Celsius and a risk of heat stress is identified.

### Heat Stress Monitoring

#### Monitoring Options

#### Humidex Method

The Humidex method is appropriate for work activities involving no radiant heat. Measurements are taken by trained supervisors or chargehands at the specific work location using the thermo-hydrometer and the Humidex model. Results of the heat stress risk assessment must be documented using the heat stress risk assessment worksheet in Appendix B or by using the WorkSafeBC app <https://www.worksafebc.com/heat-stress-screening-tool/> and downloading a copy of the report at the end. The steps involved in this risk assessment approach are as follows:

1. Using a thermal hygrometer available at VSB Stores, determine air temperature and relative humidity at the work location. Air temperature or relative humidity values from weather stations, media reports or other locations are not work location specific and are not to be used.
2. From Table 1, find the air temperature (left column) and relative humidity (top row). Read across both of these values to determine the humidex value.

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3. Adjust the humidex value for clothing and PPE as outlined in the risk assessment worksheet (Appendix B).
4. Determine whether the worker is acclimatized or unacclimatized to the heat. Always select “unacclimatized worker” in the assessment.
5. Determine the workload (level of physical exertion involved in work). Refer to the guideline in Appendix B Table 2 for assistance determining the workload.
6. From Table 3 (Appendix B), identify the appropriate column for an unacclimatized worker and find the adjusted humidex value under the appropriate column.
7. Ensure that the workload (level of physical exertion involved) is equal to or less than that recommended for the adjusted humidex value.
8. Identify and implement the response plan in table 3 corresponding to the humidex value and workload.

**Wet Bulb Globe Temperature (WBGT) Method**

For work activities involving significant process related radiant heat load or high relative humidity directly from industrial equipment, such as boilers and furnaces, the Wet Bulb Globe Temperature (WBGT) method will be used. District Health and Safety will conduct the measurements and assessment. Jobs that might require WBGT readings are listed in Appendix A. The WBGT measurement will be used to determine the appropriate work-rest cycle to mitigate the risk of heat stress. See Table 4 to determines work-rest cycle for unacclimatized workers while the TLV<sup>®</sup> determines the work-rest cycle for acclimatized workers.

**Physiological Monitoring**

Physiological monitoring involves the continuous or intermittent observation and measurement of core body temperature and heart rate to assess worker health and detect heat stress abnormalities during high-risk work activities. When heat exposure exceeds recommended limits: If workers are exposed to heat above the Threshold Limit Values (TLVs) or Action Limits (ALs) set by the ACGIH, physiological monitoring is essential to prevent heat-related illnesses.

When Physiological Monitoring is Required

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Physiological monitoring is mandatory for work activities that have the potential to increase the body's core temperature to 38°C (100.4°F) or above. Such work includes:

- When using impermeable protective clothing: Workers wearing impermeable or semi-permeable clothing (such as Tyvek suits with respirators) should be monitored during hot weather, as their risk of heat strain is significantly higher due to limited heat dissipation.
- In high-temperature environments: If the adjusted temperature is 32°C (90°F) or above, even healthy, acclimatized workers should be monitored every 45 minutes. For those not acclimatized or wearing impermeable clothing, monitoring should occur every 15 minutes.
- For workers with personal risk factors: Individuals with medical conditions or a history of heat-related illnesses should be monitored more closely.

Example scenario: Workers wearing Tyvek suits and respirators doing emergency asbestos removal during a heat dome event would require physiological monitoring due to the combination of semi-impermeable protective equipment and extreme ambient temperatures.

### **Work Scheduling and Rescheduling**

Work that requires physiological monitoring must be rescheduled for cooler days and times of day. Contact District Health and Safety for assistance if the work cannot be rescheduled due to operational requirements.

### **Monitoring Parameters and Action Limits**

If physiological testing is required all pre-job baseline readings for each worker must be recorded.

Body Temperature:

- Measured with a thermometer
- Must remain within 36-38°C (96.8-100.4°F)
- Action required if oral temperature exceeds 37.6°C (99.6°F) - consider shorter work cycles
- Work must stop if oral temperature reaches 38.1°C (100.6°F)

Heart Rate:

- Must remain below 90 beats per minute by the third minute of a rest period

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- Action required if heart rate exceeds 110 bpm at the start of a rest period - work/rest cycles may need adjustment

Additional Indicators:

- Hydration status monitored through urine color and volume assessment

Response to Abnormal Readings

If monitoring parameters exceed the established limits at any time, additional controls must be implemented before work can continue and the situation must be reassessed. This may include:

- Extended rest periods in cool environments
- Increased hydration protocols
- Modified work/rest cycles
- Additional cooling measures
- Work cessation until conditions improve

## Heat Stress Related Disorders – signs and symptoms and treatments

Early recognition and treatment of heat related disorders is critical to prevention of long term and more serious health effects. If not recognized and treated early, heat related disorders can progress to debilitating or even fatal consequences. This section discusses the various heat related disorders, including signs and symptoms as well as treatment.

### Heat Rash

Clusters of tiny bumps appear on the skin as a result of excessive sweating during hot, humid weather. Sweat glands become blocked causing inflammation of the skin.

*Signs and Symptoms:* pimple-like bumps on skin; itchy feeling.

*Treatment:* Keep area of skin cool and dry; powders may relieve discomfort.

### Heat Cramps

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Painful muscle spasms occur as a result of loss of water and salt through heavy sweating; usually occurs in the muscles of the arms, legs and abdomen. Heat cramps are a warning sign that more serious heat related illness could occur if precautions are not taken.

*Signs and Symptoms:* Excessive sweating; muscle pain or spasms.

*Treatment:* Lay affected worker down in a cool area and remove or loosen tight clothing. Cool worker by fanning or applying wet towels to skin. Provide cold drinks (water, juice, sports drink) for worker. Caffeinated drinks (pop, soft drinks) should be avoided. Massage cramped muscles gently. Patient should be coached not to consume alcohol after shift to properly recover.

### **Heat Syncope**

Heat syncope is a fainting that occurs when blood vessels dilate and blood pools in the extremities in an attempt to cool the body thus reducing blood flow to the brain. Heat syncope is very common among workers standing or sitting in one spot for a long period of time in a hot environment.

*Signs and Symptoms:* Fainting, dizziness, light headedness.

*Treatment:* Lay affected worker down in a cool area and remove or loosen tight clothing. Cool worker by fanning or applying wet towels to skin. Provide cold drinks (water, juice, sports drink) for worker. Caffeinated drinks (pop, soft drinks) should be avoided.

### **Heat Exhaustion**

Heat exhaustion is a more serious heat related disorder than heat cramps and is caused by depletion of water and salt that occurs as a result of heavy sweating over a prolonged period of physical exertion.

*Signs and Symptoms:* In addition to symptoms of heat cramp, a worker suffering from heat exhaustion may experience rapid heart rate, shallow breathing, loss of consciousness, headache, nausea, pale skin, weakness, and fatigue.

*Treatment:* Lay affected worker down in a cool area and remove or loosen tight clothing. Cool worker by fanning or applying wet towels to skin. Provide cold drinks (water, juice, sports drink) for worker. Caffeinated drinks (pop, soft drinks) should be avoided.

Worker should seek medical treatment (i.e. transport affected worker to a medical clinic) even if symptoms have improved.

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## Heat Stroke

Heat stroke is a life-threatening condition in which the body's ability to cool has failed; body temperature continues to rise beyond 41 °C and sweating has stopped. If not treated immediately, heat stroke can result in loss of consciousness, permanent brain damage or death.

*Signs and Symptoms:* In addition to symptoms of heat exhaustion, a worker suffering from heat stroke may experience lack of sweat, elevated body temperatures, seizures, coma, confused mental state, slurred speech, shock, and cardiac arrest.

*Treatment:* Call 911 right away. Lay affected worker on their back or side in a cool area and remove or loosen tight clothing. Cool worker by fanning and applying wet towels to skin or soak clothing with cool water. Maintain breathing and circulation as required.

Worker should seek medical treatment (i.e. transport affected worker to a medical clinic) even if symptoms have improved.

## Heat Edema

Heat Edema is blood pooling in the extremities from prolonged sitting or standing in a hot environment.

*Signs and Symptoms:* Swelling in the hands, feet, and ankles.

*Treatment:* Rest and elevate the limbs, move to a cool environment and hydrate.

## Heat Tetany

Heat tetany is a decrease in carbon dioxide levels in the blood caused by over breathing in hot conditions.

*Signs and Symptoms:* Hyperventilation, respiratory problems, and muscle spasms or cramps.

*Treatment:* Move to a cooler space to rest, drink fluids (consider electrolyte replacement drinks), and take slow, controlled breathing to counteract hyperventilation.

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## HEAT STRESS EXPOSURE CONTROL

Whenever a risk of heat stress is identified measures will be implemented to control the risk to employees' health. A combination of control measures may be required to effectively mitigate the risk of heat stress and ensure exposure is below the WorkSafeBC limit for heat stress.

The preferred method for controlling the risk of heat stress is to eliminate the hazard or substitute it with a less hazardous one. When this is not practicable, engineering controls will be developed and implemented where feasible. If engineering controls are not feasible or sufficient on their own to reduce exposures below the heat exposure limits, then the district will provide additional administrative and/or personal protective equipment controls. The various control measures to mitigate the risk of heat stress are discussed below.

### Elimination and Substitution

Whenever possible, the hazard that poses a risk of heat stress will be eliminated or replaced with one that generates less heat. For example,

- Eliminate hot work from a job task,
- Remove unnecessary heat sources,
- Replace a hot process / material with a cooler one

### Engineering Controls

#### Air Conditioning

If available, air conditioning reduces both the air temperature and relative humidity.

#### Increased Air Movement

Moving air across the worker's body with the use of a fan produces a cooling effect by increasing the convective heat exchange and sweat evaporation rate. The faster the air motion, the greater the cooling effect experienced. However, at air temperature over 40°C, increasing air motion may increase heat stress.

#### Ventilation

Local and/or general exhaust ventilation can be employed to draw hot air and steam away from the work area. For example, range hoods over kitchen stoves draws hot steam and vapours away from the work area.

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### Reduced Humidity

If applicable, use of dehumidifier and elimination of open water baths and steam leaks reduces relative humidity and thus reduces the risk of heat stress.

### Reduced Workload / Load

Reducing the effort required reduces the metabolic heat load. Mechanization or automation can be used to minimize physical effort required. For example, power tools, hoists, lifts and other equipment can be used to reduce manual physical labour.

### Shielding

Radiant heat load from external sources such as boilers and furnaces can be reduced through shielding or insulating exterior surfaces.

Canopies or tents can be provided to provide shade from the sun (a radiant heat source). These structures could be over outdoor work, rest areas, or for open-top mobile equipment. Examples include a canopy over an outdoor work area.

Close blinds and shutters during the daytime and open them at night if the space is occupied. Open windows at night to let in cool air if applicable. Note that blinds, shutters and windows should always be closed if the space is not occupied to mitigate security risks.

## **Administrative Controls**

Administrative controls attempt to minimize risks through work practices. They may be used when engineering controls are not feasible or to supplement engineering controls. Administrative controls for reducing heat stress risk include the following:

### Training

Awareness and knowledge gained through a program of training and education is a key component in controlling the risk of heat stress. Training will be provided to workers and their supervisors about the hazards of heat stress and their prevention and cover the following broad areas:

- Heat stress hazard recognition and heat stress risk assessment
- Heat related disorders, how to recognize symptoms and treatment options
- Measures for controlling the risk of heat stress

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- Safe work procedures for minimizing risk of heat stress
- Use and limitations of protective clothing and equipment

### Safe Work Procedure

Whenever a risk of heat stress exists, safe work procedures will be provided to affected employees by their supervisor or principal. The safe work procedure must document the results of the heat stress risk assessment, the control measures to be implemented and step by step instructions to ensure the safety of the workers.

### Acclimatization

Acclimatization provides opportunity to gradually build up the body's capacity for heat stress and increases the ability to remove excess body heat. Acclimatized workers tolerate hot environments better as a result of improved cardiovascular fitness, enhanced sweating and lower salt content in sweat. Acclimatization is only achieved by continuous days of gradual exposure to the hot environment and may take up to two weeks depending on personal risk factors and physical demands of the job. It is generally recommended that workers unaccustomed to physical work in hot environments start at 20% of the workload and increase 10 – 20 % each day.

Workers returning to physical work in hot environments after an absence of more than seven days may need to work at 50% of their expected workload. Workload should increase by 10 – 20 % each day. Acclimatization can also be lost easily such as by being away from the hot work environment for a long weekend. As a result, it is not always advisable to return to a full workload in hot environments on the first day of a work cycle.

### Buddy System

Pair up workers when the risk assessment indicates a high risk of heat stress and train them to recognize the signs and symptoms of heat stress in themselves and their co-workers.

### Removal of Workers

Workers have the responsibility and the right to leave a hot environment once they notice signs and symptoms of heat stress. Workers also have a responsibility to watch for signs and symptoms of heat illness in their co-workers and ensure that co-workers exhibiting these signs and symptoms leave the hot environment. Supervisors and administrators are also responsible for removing workers exhibiting signs and symptoms of heat illness from the hot environment. Workers leaving or being removed from a hot environment as a result of

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symptoms of heat stress will be provided first aid and/or professional medical treatment.

### Work Scheduling

Work schedules can be adjusted to avoid periods and places where a hot environment may be present. The following guidelines are recommended for adjusting work schedules to avoid heat stress exposure:

- Schedule hot and physically demanding tasks for early mornings or evenings.
- Plan or schedule work for times when trees, buildings or other structures shade the work area.
- Seek cooler, breezier areas when outdoors, such as large spaces with lots of trees.
- Rotate workers between hot and cool tasks in a job.
- Schedule regular maintenance work that poses a risk of heat stress for cooler seasons of the year.
- Perform work on or near heat sources such as boilers and furnaces when they are not operational.
- Do not schedule physically demanding outdoor work during summer hot spells/heat waves.
- Re-schedule work if appropriate control measures are unavailable or cannot be implemented when a risk of heat stress is present.

### Cooling Breaks

Periods of rest away from the hot environment during a shift allows the body to dissipate excess heat and return to normal temperature.

e.g. for outdoor workers, during the hot summer months, take cooling breaks in vehicles with air conditioning.

Take shelter in the coolest part of the site/school and use a fan. Blowing a fan across an open window can create a cool breeze.

It is important to not allow a worker to spend too long in a hot environment before taking a cooling break. Allow adequate time for the body to cool down following a period of work in hot environment. Refer to Table B3 (Humidex method) or Table C1 (WBGT method), following a risk assessment as outlined above, to determine the appropriate work-rest cycle. If necessary, rotate workers to minimize time

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spent in a hot environment. A cool shaded area must be provided for rest breaks. If possible ventilated or an air-conditioned area is more effective.

Forearm cooling is an effective method to cool down quickly. Forearms immersed in cool water can lower core temperature or just provide immediate relief from the heat. Ice can be added for faster cooling effects.



Supervisors are responsible for scheduling and implementing the appropriate work-rest cycle whenever work in a hot environment presents a risk of heat stress.

#### Provide Water

Work in hot environments result in loss of water and salt through sweating and, without adequate replacement, can result in dehydration. This increases susceptibility to heat stress disorders. Provide enough cool drinking water close to the work site when work is being performed in a hot environment. The following guidelines are recommended for fluid and salt replacement when working in a hot environment.

- Drink water (~ 2 glasses) before starting work in a hot environment.
- Drink one glass every 20 minutes throughout the work shift.
- Do not wait until you are thirsty before you drink water.
- Avoid caffeinated drinks.
- Eat salty foods and snacks. Avoid salt tablets.

#### Self-Paced Work

Allowing self-paced work for the environmental conditions helps to minimize heat stress injuries. A reduced work pace decreases the metabolic heat load and enhances the body's ability to maintain a normal temperature.

#### Cool Clothing

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Workers should be reminded to wear light weight, light coloured and loose-fitting clothes when working in hot environments. Thick or tight clothing inhibits evaporation of sweat and increases the risk of heat stress. Light weight clothing includes cotton fabric or moisture wicking synthetic fabrics that allow air to pass through and enhances evaporation of sweat. In hot, sunny weather light-colored clothes help reflect radiant heat away from the body. Wide brimmed hats shade the head, face and neck area from direct sunlight. Similarly, attaching a piece of light-colored cloth to the back and side rims of hardhats provide shade to the neck area.

### Supervision

Adequate supervision of workers in hot environments ensure that heat stress hazard, risk factors and symptoms are promptly identified and controlled or treated. Supervisors must ensure that workers are made aware of heat stress hazard and implement necessary control measures including first aid and emergency procedures.

Supervisors need to remind workers to drink water and ensure their workers have access to cool water.

### Signage

Heat stress warning signs will be posted in work areas and at entrances to work areas where a risk of heat stress has been identified. See Appendix D for sample signage.

## **Personal Protective Equipment**

Personal protective equipment is the least preferred means of controlling hazardous exposures. It is generally not anticipated that personal protective equipment will be required to control exposure to heat stress at the Vancouver School District work sites. However, they will be provided where engineering or administrative controls are not practicable or not sufficient to control the heat stress exposure. Examples of personal protective equipment that may be provided for controlling heat stress exposure may include cooling wear. A proper assessment of the heat source is required to determine which personal protective clothing, if required, is suitable for controlling the risk of heat stress at the work site. Workers must be trained in the proper use, maintenance and limitations of any personal protective equipment they are required to use.

Cooling wear, if required by a risk assessment, can be purchased to provide additional cooling for workers. Cooling wear includes vests, neck shades, towels, headwear and bandanas which either work on the principle of evaporative cooling or use built in replaceable ice/cooling packs.

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Protect yourself from the sun by staying in the shade, avoiding direct sun mid-day, wearing a hat or headwear coverings and protective clothing, using sunscreen and wearing UV-protective eyewear.

## **THERMAL COMFORT**

Thermal comfort can be defined as a person's state of mind or perception of whether they feel too hot or too cold. Due to large variations from person to person it is difficult to satisfy everyone within the same thermal environment.

### **Factors affecting thermal comfort**

The most important factors contributing to thermal comfort are:

- Air temperature
- Radiant heat
- Humidity
- Air velocity
- Amount of physical activity and,
- Amount and type of clothing worn.

There is no legislation that specifies maximum and minimum temperatures in the workplace. The recommended temperature range to optimize indoor thermal comfort for most people is 20 °C to 27 °C. This temperature range is appropriate for the sedentary or near sedentary physical activity levels that are typical of general office work and school associated work activities. This recommendation assumes that people dress appropriately to the external seasonal demands.

### **Possible health effects of thermal discomfort**

There are no known health effects from thermal discomfort. However, extremes in air temperature may have adverse effects on productivity.

### **Thermal comfort versus heat stress**

There is a significant difference between thermal discomfort and heat stress. Heat stress may occur in situations where a person's core temperature rises above 38°C.

Heat stress may occur in environments where there is extremely high temperature, radiant heat, or humidity, a high level of physical activity or

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excessive or impervious clothing. Under these conditions heat loss may no longer be in balance with heat production and heat-related illnesses such as heat cramps, heat exhaustion or heat stroke may occur.

## Recommendations for optimizing thermal comfort

### Hot Weather

- Wear clothing appropriate to the external climate.
- Drink cool water frequently, even if you are not thirsty.
- Try to increase air movement to allow evaporation of sweat by opening windows and doors where practical and with the use of personal or ceiling fans.
- Use blinds (external and internal), and curtains to decrease radiant heat from the outside environment.
- Take breaks in cooler and/or less humid areas or transfer some work to cooler and/or less humid areas.
- Alter working hours so that work can be done in the cooler parts of the day such as early morning.

## TRAINING REQUIREMENTS

The following is a general guideline of heat stress awareness training to be provided to all at-risk workers.

### Goal

To ensure that the Vancouver School District workers at risk of heat stress are aware of the dangers of heat related disorders and the measures to mitigate the risk.

### Objectives

As a result of this training workers will be able to:

- Identify hazards associated with a hot work environment.
- Identify environmental, job and personal risk factors that contribute to heat stress.
- Complete a heat stress risk assessment.
- Determine and implement appropriate heat stress control measures.
- Recognize the signs and symptoms of heat stress related disorders.
- Know the procedures to follow when someone shows signs and symptoms

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of heat stress related disorders.

## Summary of Training

The heat stress awareness training includes, but is not limited to, the following topics:

- Heat sources (including the significance of external and internal sources)
- Effect of environmental factors on heat stress; air temperature, relative humidity, air velocity, radiant heat from the sun or heat sources
- Mechanisms by which the body controls its temperature (thermoregulation)
- Health effects of excessive heat exposure (heat related disorders)
- Signs and symptoms of heat related disorders and treatment options
- Personal factors that may contribute to the risk of heat stress including:
  - lack of acclimatization
  - poor physical fitness
  - obesity
  - increased age
  - dehydration
  - pre-existing medical conditions and treatment (for example, diabetes or hyperthyroidism)
  - short-term disorders and minor illnesses (for example, cold, flu, or diarrhea)
  - chronic skin disorders (for example, rashes or dermatitis)
  - use of medication that may inhibit sweating, reduce blood flow or cause dehydration (for example antihistamines)
  - alcohol abuse and recreational drugs
  - previous heat illness
- Heat stress risk assessment methods (humidex, and WBGT methods)
- Effect of clothing (e.g. protective clothing) on the risk of heat stress
- Control measures for mitigating the risk of heat stress
- Importance of and how to ensure adequate hydration (fluid replacement)
- Job specific step by step instructions (work procedure) to be followed to minimize the risk of heat stress including procedures for reporting signs and symptoms of heat related disorders.
- Proper use and limitations of personal protective equipment for controlling heat stress, if required.

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Refresher training will be provided annually to all workers exposed to environments that could cause heat stress.

All heat stress awareness training will be documented.

## DOCUMENTATION

The Vancouver School District will maintain records of the following in Our Health and/or SharePoint Teams:

- Heat Stress Exposure Control Plan
- Heat Stress Hazard Identification & Risk Assessments
- Worker Education and Training
- Safe Work Procedures
- Heat Stress Hazard Warning Signs
- Heat Stress Incident Investigations
- Heat Stress Program Review

## PROGRAM REVIEW

Programs within the VSB Safety Management System are reviewed periodically by the District Health and Safety Working Group.

The Heat Stress Program will be reviewed annually and updated as necessary, in consultation with the Joint Health and Safety Committee. The following elements will be included in the review:

- Responsibilities
- Hazard identification and risk assessment
- Exposure control measures
- Education and training
- Safe work procedures
- Heat related incidents
- Documentation

## REFERENCES

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WorkSafeBC OHS Regulation Part 7, Sections 7.26 to 7.32. Available at:  
<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-07-noise-vibration-radiation-and-temperature>

WorkSafeBC OHS Guidelines G7.27(1) – G7.30-3. Available at:  
<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-07>

WorkSafeBC Booklet *Preventing Heat Stress at Work* (2007). Available at:  
<https://www.worksafebc.com/en/resources/health-safety/books-guides/preventing-heat-stress-at-work>

WorkSafeBC Heat Stress Planning Tool Available at:  
<https://www.worksafebc.com/heat-stress-screening-tool/Plan/Step1>

NIOSH Heat Stress Website: <https://www.cdc.gov/niosh/topics/heatstress/>

NIOSH [2016]. NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106. Available at: <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>

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## Appendix A - Table 1. VSB Positions and Tasks at Risk for Heat Stress and Required Measuring Instruments

Work Condition or Setting	COR* Departments Affected	Groups Affected	Description	Type of Measuring Method Required
Workplace – general during a Heat Dome event	All	All	Not all buildings have air conditioning	Humidex
Boiler work	Trades	Plumbers	Boiler refractory work when boiler off	Humidex
Hazardous Materials Abatement	Trades	Hazardous Materials	Asbestos removal	Humidex. If outside in hot weather or sun or near radiant heat source use WBGT
Welding	Trades	Sheet metal	Welding operations, metal	Humidex. If outside in hot weather or sun or near radiant heat source use WBGT
Servicing buildings and grounds	Trades	Grounds	Working outside grounds work	Humidex
Servicing buildings and grounds	Trades	Electricians	Pulling wire in attic or crawl spaces with little air movement	Humidex
Kitchen elements	Secondary & VASS; Elementary	Kitchen staff	Ovens and stove heat sources	Humidex
Classrooms, gymnasiums, outdoors	Secondary & VASS; Elementary	All	Schools without air conditioning	Humidex

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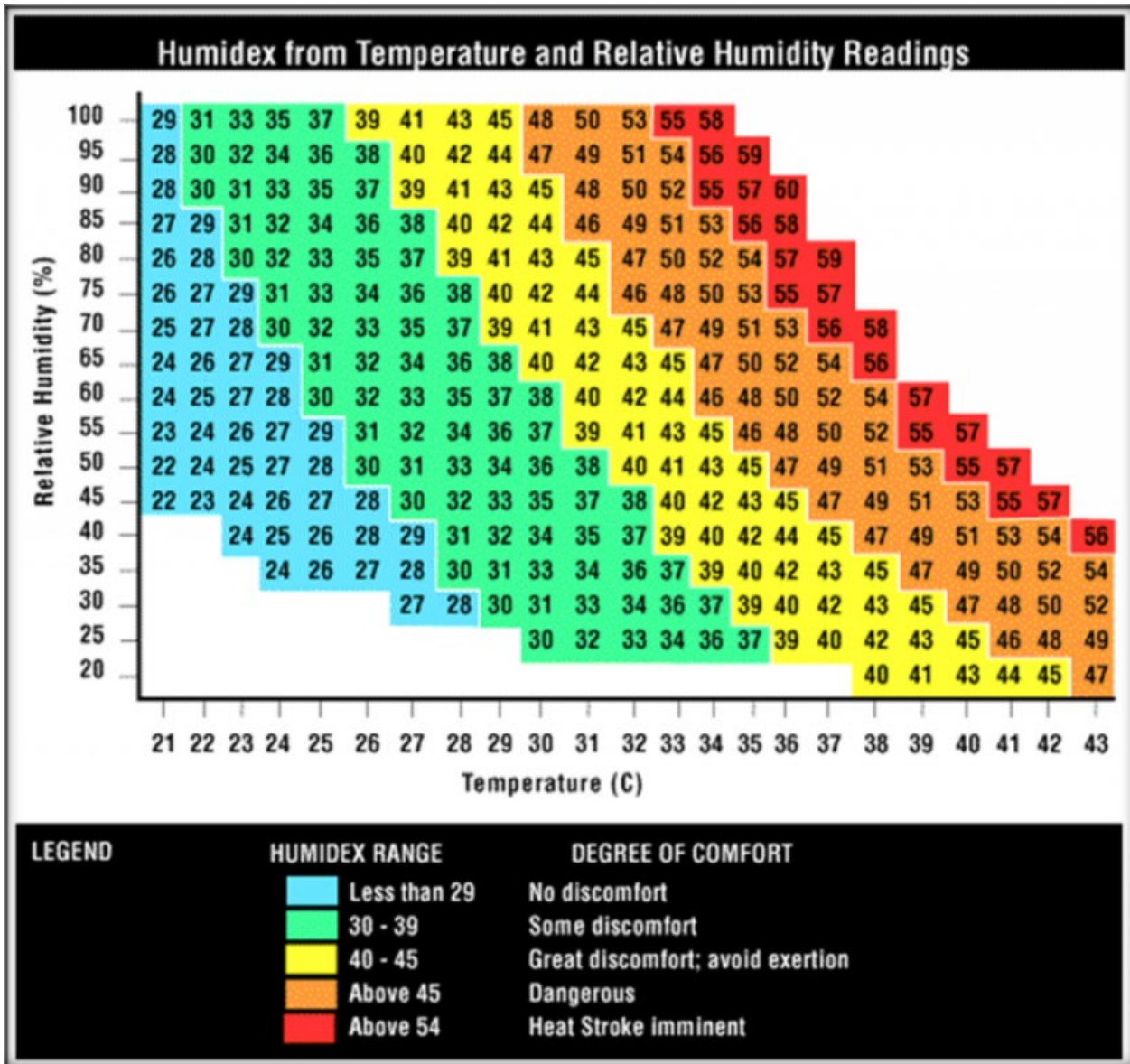
## Appendix B – Heat Stress Risk Assessment Worksheet

**Instructions:** Complete the worksheet below and then determine the appropriate Heat Response Plan from Table 3.

Heat Stress Risk Assessment – Humidex	
Air Temperature	
Relative Humidity	
Humidex Value (use Table 1 or use the <a href="#">Humidex-based</a> )	
Check all items that apply to the workers:	
Coveralls worn: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 5)	
Hardhats worn: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 1)	
Gloves worn: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 1)	
Apron / Vest worn: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 2)	
Direct sunlight: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 2 - 3)	
Indoor heat source: <input type="checkbox"/> No <input type="checkbox"/> Yes (add 2 - 3)	
Adjusted Humidex Value	
Worker Acclimatized? Select “no” as VSB employees are typically not acclimatized.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Workload (physical exertion) (refer to Table 2 to determine the workload)	<input type="checkbox"/> Light <input type="checkbox"/> Moderate <input type="checkbox"/> Heavy <input type="checkbox"/> Very Heavy

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Heat Stress Risk Assessment Worksheet - **Table 1:** Humidex Values



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Heat Stress Risk Assessment Worksheet - **Table 2:** Guidelines for Determining Workload

<b>Determine Workload of Work Activities</b>			
<b>Workload of Work Activities</b>			
<b>Classification of Workload</b>	<b>Types of Activity</b>	<b>Examples of Activity</b>	<b>Check Appropriate Box</b>
<b>Light</b> Work that generates a metabolic rate of less than 200 kcal/hr	Sitting, with moderate movement of arms and legs Driving Standing doing light work, with mostly arm movement Casual walking	Desk/Office work; typing; Driving in traffic Teaching a class Supervising a worksite	<input type="checkbox"/>
<b>Moderate</b> Work that generates a metabolic rate of between 200 and 350 kcal/hr	Brisk walking Sitting, with vigorous arm and leg movements Standing, doing light to moderate work, including some walking Moderate lifting or pushing and pulling	Driving heavy machinery Tending shrub beds/grass cutting Warehouse work; loading and unloading of trucks	<input type="checkbox"/>
<b>Heavy</b> Work that generates a metabolic rate of greater than 350 kcal/hr	Construction tasks Intermittent heavy lifting, pushing or pulling of heavy loads Climbing stairs with heavy gear or load Walking at a fast pace	Manual sawing; digging; shoveling; sledgehammer work; roofing	<input type="checkbox"/>
<b>Very Heavy</b>	Continuous heavy lifting, pushing or pulling of heavy loads, climbing stairs, construction work Running	Very intense activity at fast to maximum rate	

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**Table 3.** Humidex Based Heat Response Plan for Light, Moderate to Heavy Activity using the adjusted Humidex for acclimatized and unacclimatized workers.

Work Rate	Humidex		Response
	Acclimatized	Unacclimatized	
Heavy	25 - 29		Supply water to workers on an "as needed" basis
Moderate	32 - 35	25 -29	
Light		32 - 35	
Heavy	30 - 33		Post Heat Stress Safety Notice; encourage workers to drink extra water; start recording hourly temperature and relative humidity (see Appendix G)
Moderate	36 - 39	30 - 33	
Light		36 - 39	
Heavy	34 - 37		Post Heat Stress Safety Alert; notify workers that they need to drink extra water; ensure workers are trained to recognize symptoms
Moderate	40 - 42	34 - 37	
Light		40 - 42	
Heavy	38 - 39		Post Heat Stress Safety Alert; notify workers that they need to drink extra water; ensure workers are trained to recognize symptoms Work with 15 minutes relief per hour can continue; provide adequate cool (10-15°C) water; at least 1 cup (240 mL) of water every 20 minutes. Worker with symptoms should seek medical attention
Moderate	43 - 44	38 - 39	
Light		43 - 44	
Heavy	40 - 41		Post Heat Stress Safety Alert; notify workers that they need to drink extra water; ensure workers are trained to recognize symptoms Work with 30 minutes relief per hour can continue in addition to the provisions listed previously
Moderate	45 - 46*	40 - 41	
Light		45 - 46*	
Heavy	42 - 44		Post Heat Stress Safety Alert; notify workers that they need to drink extra water; ensure workers are trained to recognize symptoms If feasible, work with 45 minutes relief per hour can continue in addition to the provisions listed above
Moderate	47 - 49*	42 - 44	
Light		47 - 49*	
Heavy	45* or over		Only medically supervised work can continue
Moderate	50* or over	45* or over	
Light		50* or over	

**Wet Bulb Globe Temperature.**

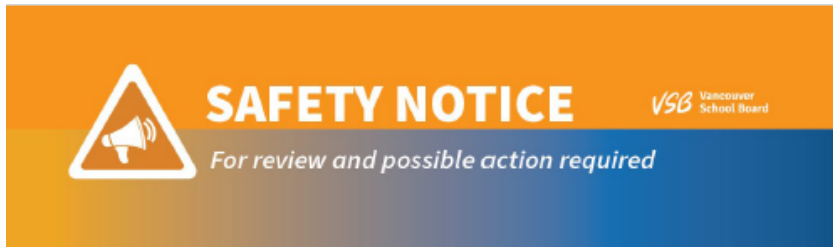
**Table 4.** Screening Criteria for Heat Stress Exposure from ACGIH, to be used when work is, or near radiant heat sources. Health and Safety will conduct this monitoring. Table 4 displays the required work-rest cycles for workers when their work is outdoors in temperatures exceeding 35°C, or near radiant heat sources (e.g. boilers or furnaces). The WBGT is a measure of the risk of heat stress in direct sunlight, which considers: temperature, humidity, wind speed, sun angle and cloud cover (solar radiation).

	TLV* (Acclimatized worker)				Action Limit (Unacclimatized Worker)			
	WBGT (°C)							
Work-Rest Cycle (each hour)	Light Work	Moderate Work	Heavy Work	Very Heavy Work	Light Work	Moderate Work	Heavy Work	Very Heavy Work
75 – 100% Work	31	28	-	-	28	25	-	-
50 - 75% Work	31	29	27.5	-	28.5	26	24	-
25 - 50% Work	32	30	29	24.5	29.5	27	25.5	24.5
0 - 25% Work	32.5	31.5	30.5	27	30	29	28	27

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## Appendix C – Signage

### Heat Stress Safety Notice



# HEAT STRESS

Current environmental conditions require the activation of the VSB Heat Stress Exposure Control Plan.

#### Recommended Actions for all workers:

- Stay hydrated – water or electrolyte formulated drinks.
- Wear lightweight, looser fitting or comfortable clothing.
- Minimize strenuous activities, reschedule to cooler parts of the day.
- Monitor for symptoms of heat related disorders.
- Report all heat related disorders to the First Aid Attendant.

#### Additional recommendations for those working outside:

- Wear a hat with additional sun protection.
- Take breaks in the shade or cooler environments.
- Re-schedule strenuous or heavy manual labour to cooler parts of the day.
- Monitor work locations hourly for temperature and humidity.

For more information on the Heat Stress Exposure Control Plan visit the Health and Safety Hub.



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Heat Stress Safety Alert



# HEAT STRESS

Current environmental conditions require the activation of the VSB Heat Stress Exposure Control Plan.

**Required Actions for all workers:**

- Stay hydrated – water or electrolyte formulated drinks.
- Wear lightweight, looser fitting or comfortable clothing.
- Minimize strenuous activities, reschedule to cooler parts of the day.
- Monitor for symptoms of heat related disorders.
- Follow appropriate work/rest schedules.
- Report all heat related disorders to the First Aid Attendant.

**Additional requirements for those working outside:**

- Wear a hat with additional sun protection
- Take breaks in the shade or cooler environments
- Re-schedule strenuous or heavy manual labour to cooler parts of the day.
- Monitor work locations hourly for temperature and humidity.

For more information on the Heat Stress Exposure Control Plan visit the Health and Safety Hub.



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Heat Stress Safety Alert for designated heat stress areas.



# HEAT STRESS AREA

Working in this area for more than \_\_ hour requires the activation of the VSB Heat Stress Exposure Control Plan.

**Required actions for all workers:**

- Monitor environmental conditions frequently.
- Follow defined work/rest schedules.
- Monitor for symptoms of heat related disorders.
- Wear required task specific personal protective equipment.
- Stay hydrated – water or electrolyte formulated drinks.
- Report all heat related disorders to the First Aid Attendant.

**Area specific details:**

Location:

Hazard Information:

For first aid call:

For more information on the Heat Stress Exposure Control Plan visit the Health and Safety Hub.



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## Appendix D Heat Related Disorders, Treatments and Prevention

Heat Related Disorders				
CONDITION	CAUSE	SYMPTOMS	TREATMENT	PREVENTION
Heat Rash	Hot, humid environment; plugged sweat glands	Red bumpy rash with severe itching	Change into dry clothes and avoid hot environments. Rinse skin with cool water.	Wash regularly to keep skin clean and dry.
Heat Cramps	Heavy sweating drains a person body of salt, which cannot be replaced just by drinking water.	Painful cramps in arms, legs or stomach which occur suddenly at work or later at home. Cramps are serious because they can be a warning of other more dangerous heat-induced illnesses.	Move to a cool area, loosen clothing and drink cool, salted water (1 Tbsp salt per gallon of water) or commercial fluid replacement beverage. If the cramps are severe or don't go away, seek medical aid.	When working in the heat, workers should put salt on their food (if on a low salt diet, this should be discussed with a Doctor). This will give the body all the salt it needs. Do not take salt tablets.
Fainting	Not enough blood flowing to the head, causing loss of consciousness.	Sudden fainting after at least two hours of work, cool moist skin, weak pulse.	Fainting may be due to a heart attack or other illness. GET MEDICAL ATTENTION. Assess need for CPR. Move to a cool area; loosen clothing; make person lie down and if the person is conscious, offer sips of cool water.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms which often precede heat stroke.
Heat Exhaustion	Inadequate salt and water intake causes a person's body's cooling system to start to break down.	Heavy sweating; cool, moist skin; body temperature over 38C; weak pulse; normal or low blood pressure; person is tired, weak, clumsy, upset or confused; is very thirsty or is panting or breathing rapidly; vision may be blurred.	GET MEDICAL AID. This condition can lead to heat stroke, which can kill. Move the person to a cool shaded area; loosen or remove excess clothing; provide cool water to drink (salted if possible); fan and spray with cool water.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms which often precede heat stroke.
Heat Stroke	If a person's body has used up all its water and salt, it will stop sweating. This can cause body temperature to rise.	High body temperature (over 40C) and any one of the following: the person is weak, confused, upset or acting strangely; has hot, dry, red skin; a faint pulse; a headache or dizziness; in later stages, a person may pass out and have convulsions.	CALL AMBULANCE. This condition can kill a person quickly; remove excess clothing; fan and spray the person with cool water; offer sips of cool water if the person is conscious.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms which often precede heat stroke.

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## Appendix E Heat Stress Safety - Crew Talk (Outdoor Workers)

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Supervisor: \_\_\_\_\_

Attendance:

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### Why This Matters

Working outdoors puts us at risk for heat-related illnesses that can be serious or even life-threatening. Heat stress doesn't just happen on the hottest days - it can occur when temperatures are in the 20s if humidity is high or you're doing heavy work. Your body's ability to cool itself can be overwhelmed, leading to dangerous situations.

### The Three Stages of Heat Illness

#### Heat Exhaustion (Early Warning Signs)

- **Heavy sweating** or suddenly **stopping sweating**
- **Weakness or fatigue** - feeling drained or unusually tired
- **Dizziness or lightheadedness**
- **Nausea or vomiting**
- **Headache**
- **Muscle cramps**
- **Cool, moist, pale skin**
- **Fast, weak pulse**

#### Heat Stroke (Medical Emergency)

- **High body temperature** (above 39°C)
- **Hot, dry skin** OR **hot, wet skin**
- **Rapid, strong pulse** that then becomes weak
- **Confusion, altered mental state, or irritability**
- **Loss of consciousness or fainting**
- **Seizures**

Heat stroke can kill or cause permanent disability. Call 911 immediately if you see these signs.

### **Who's at Higher Risk**

- Unacclimatized workers such as new workers or those returning after time off who haven't adjusted to the heat
- Workers over 65 or those with medical conditions
- Anyone taking medications that affect sweating or heart rate
- Workers who are dehydrated or hungover

### **Prevention is Key**

**Hydrate Smart:** Drink water before you feel thirsty. Aim for a cup every 15-20 minutes during hot weather work. Avoid alcohol and excessive caffeine.

**Take Breaks:** Use scheduled rest periods in shade or air conditioning. Don't push through if you're feeling heat symptoms.

**Know Your Limits:** Heat tolerance varies by person and changes day to day. Speak up if you're struggling.

**Watch Your Teammates:** Use the buddy system. Check on each other regularly and don't ignore warning signs in others.

**Dress Right:** Wear light-colored, loose-fitting, breathable clothing. Use cooling towels and proper PPE designed for hot weather.

### **What to Do If Someone Shows Heat Illness Signs**

1. **Move them to shade or air conditioning immediately**
2. **Remove excess clothing**
3. **Apply cool water to skin or use wet towels**
4. **Give small sips of water if they're conscious and not vomiting**
5. **Call for medical help if symptoms worsen or don't improve quickly**
6. **For heat stroke symptoms, call 911 immediately**

### **Remember**

Heat illness is preventable, but it requires all of us to stay alert and look out for each other. Don't tough it out - heat stress isn't about being weak, it's about being smart and staying safe. If you're feeling any heat stress symptoms, tell your supervisor immediately.

**Questions? Concerns? Let's discuss them now before we head out.**

## Appendix F – Heat Stress Memo



### Heat Stress Planning Quick Guide

## May and June means increased temperature variability; are you ready?

### Managing the indoor environment



**Open windows in the morning and close them as the outside temperature increases**



**Open interior doors to allow the air to flow throughout the building.**



**Keep blinds closed to minimize solar loading in your workspace.**



**Where possible during predicted extreme heat days, Facilities and Operations will operate the building's fresh air fans in the early morning to bring in the coolest air into the building.**

### Managing yourself and others



**Stay hydrated:** Bring a water bottle, drink plenty of liquids, and provide access to water fountains/filling stations to students.



**Dress appropriately:** Wear light-colored, loose-fitting clothing that allows for air circulation. Avoid heavy or tight clothing. Wet a cloth, bandana, or light scarf.



**Reduce activity:** If you are overheating, avoid high intensity physical activity and reduce all strenuous physical activities if you are not able to take breaks in a cooler environment.



**Seek shade:** When outside, stay in the shade as much as possible.



**Monitor for symptoms:** *Heat exhaustion* symptoms include heavy sweating, weak but faster pulse, cold clammy skin, nausea, fatigue, and headache. *Heat stroke* symptoms include dry skin, elevated body temperature, hot red dry, or wet skin.

It takes time for our bodies to adapt to the changes in temperature that come with the lead into summer. If you identify extreme heat hazards in your workplace, submit a Hazard Report through [OurHealth](#). Contact [healthandsafety@vsb.bc.ca](mailto:healthandsafety@vsb.bc.ca) if you have any questions.

Follow Us: @VSB39



Vancouver School District  
1580 West Broadway  
Vancouver, B.C. V6J 5K8

vsb.bc.ca  
info@vsb.bc.ca  
604-713-5000





## Revision Log

REVISION DATE	CHANGE MADE	ACKNOWLEDGEMENTS / AUTHOR
June 28, 2022	Initial release - Revised risk assessment process	Nicole Horspool
May 13, 2024	Addition of thermal comfort, heat stress memo, updated definitions	Warren Ko
June 14, 2024	Revised background and scope, added responsibilities, low risk physical exertion and signs and symptoms of heat stress, updated posters, clarified physiological monitoring and deleted dry bulb method risk assessment	Nicole Horspool
July 15 2025	Revision 2. Changed District Joint Health and Safety Committee to new name District Health and Safety Working Group, added a crew talk on Heat Stress Safety Appendix E, added definitions for heat cramps, heat stroke, hot environment.,	Nicole Horspool, Hans Loeffelholz
August 21, 2025	Revision 3. Updated humidex risk assessment procedures using on site measurement tools. Change Table 3 in Appendix B. Added Chargehand responsibilities	Nicole Horspool, Hans Loeffelholz
08-Sep-2025	Revision 4. Updated Table 3 again for clarification purposes. The previous adjustment did not differentiate between Light, Moderate, or Heavy workload. Updated the notification postings for heat stress. Made minor edits to text. Updated posters and added Appendix G.	Nicole Horspool, Hans Loeffelholz