1. Purpose

To provide guidelines for use by school principals when weather conditions (hot/cold) may have health implications.

2. Procedure:

2.1 School staff should encourage parents to dress children appropriately.

2.2 School staff should also educate children about the weather, appropriate clothing, and good habits for the season.

2.3 School staff should encourage children to wear the appropriate clothing during outside activities.

2.4 Cold Weather - When the wind chill approaches –20 to -25, principals must be particularly vigilant and consider keeping children indoors for recess and lunch hour.

2.5 In any extreme weather situations (freezing rain, extremely high winds, extreme cold weather in excess of –20 -25) students are to remain indoors.

3. Hot Weather Conditions:

3.1 **Heat cramps:** A heat-induced condition characterized by painful cramps in the arms, legs or stomach which can occur at work or later at home. This condition can be a warning of other more serious heat-induced illnesses.

3.2 **Heat exhaustion:** A heat-induced condition characterized by sweating, cool-moist skin, body temperature over 38°C, weak pulse, abnormal or low blood pressure.

3.3 **Heat rash:** A heat-induced condition characterized by a red, bumpy rash with severe itching.

3.4 **Heat stress:** Heat stress refers to an increase in the body's core temperature. This could be related to a variety of factors, including; high temperature, humidity, radiant heat and activity level. If a person is experiencing heat stress then serious heat-related illnesses can occur, including; heat rash, heat cramps, heat exhaustion, or heat stroke.

3.4 **Heat stroke:** A heat-induced condition characterized by high body temperature (41°C) and any one of the following;

- weakness
- confusion
- emotional upset and strange behavior
- hot, dry, red skin
- elevated pulse
- headaches and dizziness

3.5 **Humidex:** The term "humidex" is short for humidity index. Humidex is an equivalent scale intended for the public to express the combined effects of warm temperatures and humidity. Environment Canada uses humidex ratings to inform the general public when conditions of heat and humidity are possibly uncomfortable. It is used in the same way the equivalent chill temperature, or "wind chill factor", describes how cold people feel.

The humidex combines the outside temperature and the humidity (dew point) into one number to reflect the perceived temperature. It is a measure of how hot we feel. The relation between humidex and comfort is subjective and varies widely between individuals.

Environment Canada provides the following guide as a measure of discomfort relating to the humidex value.

Table 1

Humidex Range	Degree of Comfort
20-29	comfortable
30-39	some discomfort
40-45	great discomfort; avoid exertion
above 45	dangerous; heat stroke possible

Source: Warm season weather hazards. Government of Canada

Occupational Health Clinics for Ontario Workers Inc.

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Humidex Heat Stress Response Plan

Limitations: this table is based on work with **little or no radiant heat**, assuming wearing **regular summer clothing**; if your specific working conditions vary from these assumptions, see the steps 1-5 listed below to make adjustments

	Relative Humidity (in %)																	
Temp (in °C)	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%
49																			50
48	NEVER IGNORE ANYONE'S SYMPTOMS DESPITE YOUR MEASUREMENTS!!!																		49
47	Moderate Unacclimatized & Heavy Acclimatized							Moderate Acclimatized & Light Unacclimatized										50	47
46																		49	46
45																	50	47	45
44		Action															49	46	43
43	45+	only medically supervised work						50+*								49	47	45	42
42	42-44	work with 45 min/hr relief						47-49*							50	48	46	43	41
41	40-41	work with 30 min/hr relief						45-46*							48	46	44	42	40
40	38-39	work with 15 min/hr relief						43-44						49	47	45	43	41	39
39	34-37	warn for symptoms & extra water						40-42					49	47	45	43	41	39	37
38	30-33	alert for symptoms & extra water						36-39				49	47	45	43	42	40	38	36
37	25-29	water as needed						32-35			49	47	45	44	42	40	38	37	35
36	*for Humidex 45+, heat stress should be managed as per the ACGIH TLV®						50	49	47	45	44	42	40	39	37	35	34		
35							50	48	47	45	43	42	40	39	37	36	34	33	
34						49	48	46	45	43	42	40	39	37	36	34	33	31	
33					50	48	47	46	44	43	41	40	39	37	36	34	33	32	30
32			50	49	48	46	45	44	42	41	40	38	37	36	34	33	32	30	29
31	50	49	48	47	45	44	43	42	40	39	38	37	35	34	33	32	30	29	28
30	48	47	46	44	43	42	41	40	39	37	36	35	34	33	31	30	29	28	27
29	46	45	43	42	41	40	39	38	37	36	35	33	32	31	30	29	28	27	26
28	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
27	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25		
26	39	38	37	36	35	34	33	33	32	31	30	29	28	27	26	25			
25	37	36	35	34	33	33	32	31	30	29	28	27	26	26	25				
24	35	34	33	33	32	31	30	29	28	28	27	26	25						
23	33	32	31	31	30	29	28	28	27	26	25								
22	31	30	30	29	28	27	27	26	25	25									
21	29	29	28	27	26	26	25												
	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%

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4. Heat Warning

A heat warning is issued by the Medical Officer of Health when Environment and Climate Canada forecast conditions of daytime Tmax $\geq 31^0$C and nighttime Tmin $\geq 20^0$C or Humidex $\geq 40^0$C which are expected to last at least 2 days.

4.1 Steps to take when a Heat Warning is Triggered

Administrator's Actions:

- The administrator shall make announcements throughout the day reminding staff and students of hydration needs.
- A cool location should be made available in the building to allow workers to cool down during break and lunch times.
- Modify activities that involve physical exertion, exposure to sun and hot environments (rest periods, hydration, activity location change, and greater vigilance for heat stress symptoms should be considered).

Environmental Controls:

- Open windows and doors to allow air to circulate where effective and applicable.
- Use school purchased portable fans to assist in circulating air.
- Use blinds, curtains, or reflective coatings on windows to reduce direct sunlight.
- Relocate staff and students when necessary to a cooler location (e.g. third floor class moved to the first floor, cafeteria, library or outdoors).

Individual Controls:

- Wear loose fitting clothing that is light in weight; light colour clothing is better than dark.
- Wear clothing made of fabrics that wick sweat away from the skin and allow sweat to
- evaporate.
- Staff should alter time of day for physically demanding tasks and/or reduce pace of work.
- Alter type of physical activities for students.
- Staff and students should eat lightly and drink plenty of liquids to replace fluid loss due to heat. The Ontario Ministry of Labour recommends drinking a cup of water every 20 minutes in extreme heat. Fluids include water or fruit juice, not caffeinated drinks.
- Wear sunscreen with an SPF of 15 or higher whenever working outdoors; other protective measures are a hat and sunglasses.
- School Staff should encourage parents to remind children about safe play in hot weather at all opportunities.

4.2 Personal Risk Factors Affecting Heat Tolerance

- There are a number of factors that can affect an individual's level of heat tolerance and his/her ability to work in hot environments. These factors include but are not limited to:
  Diseases such as cardiovascular, multiple sclerosis, diabetes, etc.
  Physical conditions such as pregnancy, reduced level of fitness, and age.
- Use of therapeutic drugs and medications (e.g. Blood pressure medications, diuretics, etc.)
- It is important for individuals to seek advice from their personal physician if they are feeling the effects of heat and to identify any restrictions related to working in hot conditions. Staff should provide information about specific heat related restrictions to their supervisor.

5. Cold Weather

5.1 Wind Chill: The wind chill represents how the temperature would feel on your skin if the wind were equivalent to 4.8 km/h, an average walking pace.

5.2 Wind Chill Index:

- Is based on the loss of heat from the face, the part of the body that is most exposed to severe winter weather. The wind chill index is expressed in temperature-like units, without the degree sign because it is not the actual temperature. For example: the outdoor temperature may be –22 ˚C, but the wind chill is 30. The temperature remains at -22˚C, however, your face will feel as cold as it would on a calm day when the temperature is -30˚C.
- The higher the values of the wind chill indexes, the greater the need for precaution with respect to outdoor activity. Environment Canada has developed a chart that explains what wind chill means in terms of dress and activity.
- In Ontario, the wind chill warning levels vary with geographic locations: -35 is the warning level for outdoor activity for people who live in the more southern areas of Ontario. The chart on the following page shows that even though the temperature on the thermometer may stay the same, increasing the wind speed causes the wind chill factor to increase. The shaded areas indicate under which conditions the wind chill reaches –35 or lower.

5.3 Cold Weather and Outdoor Play

- Time spent outdoors is an integral part of the school day. Children need fresh air and exercise and time spent outside affords students an opportunity to break free from the structure of the classroom.

- When the temperature or wind chill reaches -20°C (twenty degrees below zero, Celsius), students will be granted immediate entry to school upon arrival, and students will remain indoors during nutrition breaks. When temperature thresholds are in effect, students are required to keep their outdoor coats/jackets with them throughout the instructional day, in case of a need to evacuate the school.
- When the temperature or wind chill reaches -15°C (fifteen degrees below zero, Celsius), Principals must give consideration to reducing the amount of time students will be exposed.

Consideration of other factors before sending children outside includes:

- condition of playground (ice, snow, etc.)
- location of the school (perhaps the building or trees block the wind on the
- playground)
- the age of the students
- the adequacy of student clothing

School Staff should encourage parents to dress children appropriately at all opportunities.

Table 1: Wind Chill Calculation Chart,
T air = Air temperature in ˚C and V_{10} = Observed wind speed at 10m elevation, in km/h.

T air / **V_{10}**	**5**	**0**	**-5**	**-10**	**-15**	**-20**	**-25**	**-30**	**-35**	**-40**	**-45**	**-50**
5	4	-2	-7	-13	-19	-24	-30	-36	-41	-47	-53	-58
10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63
15	2	-4	-11	-17	-23	-29	-35	-41	-48	-54	-60	-66
20	41	-5	-12	-18	-24	-31	-37	-43	-49	-56	-62	-68
25	31	-6	-12	-19	-25	-32	-38	-45	-51	-57	-64	-70
30	20	-7	-13	-20	-26	-33	-39	-46	-52	-59	-65	-72
35	10	-7	-14	-20	-27	-33	-40	-47	-53	-60	-66	-73
40	-1	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68	-74
45	-1	-8	-15	-21	-28	-35	-42	-48	-55	-62	-69	-75
50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63	-70	-76
55	-2	-9	-15	-22	-29	-36	-43	-50	-57	-63	-70	-77
60	-2	-9	-16	-23	-30	-37	-43	-50	-57	-64	-71	-78
65	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79
70	-2	-9	-16	-23	-30	-37	-44	-51	-59	-66	-73	-80
75	-3	-10	-17	-24	-31	-38	-45	-52	-59	-66	-73	-80
80	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81

Approximate Thresholds:		
Risk of frostbite in prolonged exposure: wind chill below	-25	
Frostbite possible in 10 minutes at	-35	Warm skin, suddenly exposed. Shorter time if skin is cool at the start
Frostbite possible in less than 2 minutes at	-60	Warm skin, suddenly exposed. Shorter time if skin is cool at the start