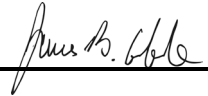




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## STANDARD OPERATING PROCEDURES

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<b>Index:</b> Training Administrative Procedures	<b>Effective Date:</b> 10/01/2023
<b>Procedure Number:</b> TAP-0001	<b>Last Review Date:</b>
<b>Subject:</b> Environmental Hazards During Training	<b>Revision Dates:</b>
<b>Owner:</b> Deputy State Fire Administrator of Training	<b>SFA Approval:</b> 

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### 1.0 Purpose

- 1.1 To provide for training participant and instructor safety from environmental hazards.

### 2.0 Scope

- 2.1 This procedure shall be applicable for any skills-based training, both to emergency response personnel and the public, occurring outside or in unconditioned interior spaces.
- 2.2 This procedure shall apply to all training, national certification testing, and Candidate Physical Ability Tests conducted by, on behalf of, or under the auspices and authority of the New York State Office of Fire Prevention and Control. This shall include training delivered under the outreach, municipal, supplemental, residential, and regional training programs.

### 3.0 Definitions

- 3.1 Advisory – Issued by the National Weather Service to advise of an active hazardous weather event which may cause inconvenience. Less severe than a warning.
- 3.2 Air Quality Index – A scale used for reporting air quality running from 0 – 500, with lower numbers equating to cleaner air. Measurement includes several pollutants, including particulate matter, ozone, carbon monoxide, sulfur dioxide, and nitrogen oxides.
- 3.3 Effective Heat Stress Index – A calculation of the apparent temperature taking into consideration the measured temperature, humidity, direct sunlight, and personal protective equipment that limits the ability of the body to express heat.
- 3.4 Intense Physical Activity – Any activity that produces large increases in breathing or heart rate resulting in not being able to say more than a few words without pausing for a breath.
- 3.5 Local Weather Station – A reliable nearby weather monitoring system designed for personal home weather monitoring or designed as an official weather station.
- 3.6 Special Weather Statement (Statement) – See “Advisory”.



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## **STANDARD OPERATING PROCEDURES**

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- 3.7 Unconditioned Interior Space – Inside of a building where the environment is not controlled through use of heating, ventilation, and air conditioning systems.
- 3.8 Warning – Issued by the National Weather Service to advise of an active hazardous weather event which may pose a threat to life or property. More severe than an advisory.
- 3.9 Watch – Issued by the National Weather Service to advise of a potential hazardous weather event which is not currently active.
- 3.10 Wind Chill Temperature – A calculation of the apparent temperature taking into consideration the measured temperature and wind speed.
- 3.11 Wireless Emergency Alerts (Emergency, WEA) – Critical hazardous weather warnings sent out by the National Weather Service.

### **4.0 Procedure**

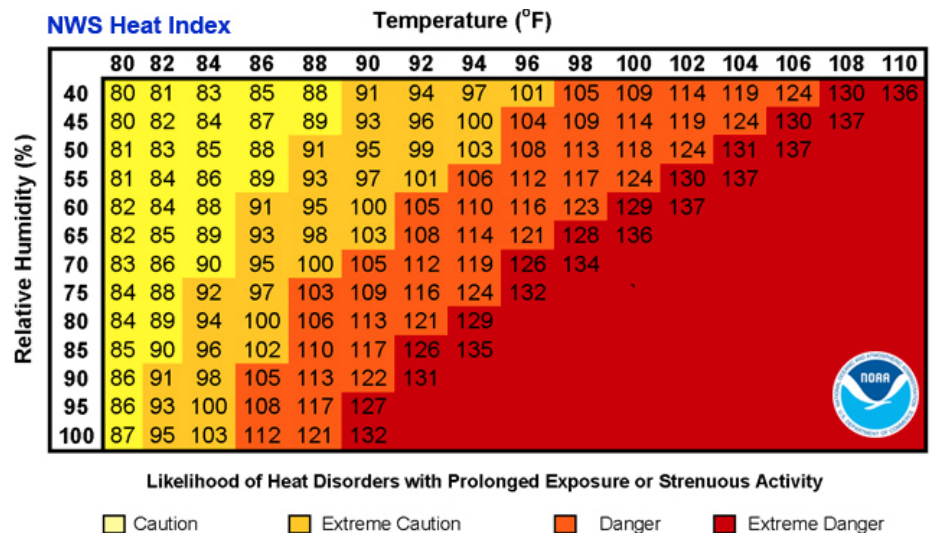
- 4.1 The following actions shall occur prior to the start of skills-based training occurring outside or in unconditioned interior spaces.
  - 4.1.1 Obtain a weather report the day prior to the start date of training.
    - 4.1.1.1 The only accepted weather report shall be from the National Weather Service, which can be found on their website at: [www.weather.gov](http://www.weather.gov)
      - 4.1.1.1.1 Monitoring of real-time weather may be via the National Weather Service or via a locally installed weather station.
    - 4.1.1.2 Enter the location where the training is scheduled to occur.
    - 4.1.1.3 Click on “Tabular Forecast”.
    - 4.1.1.4 Set the “48-Hour Period Starting” to cover the time when training is scheduled to occur.
  - 4.1.2 Obtain an Air Quality Index Forecast on the same day as training, but in advance of training beginning.
    - 4.1.2.1 The only accepted Air Quality Index Forecast shall be from AirNow, which can be found on their website at: [www.airnow.gov](http://www.airnow.gov)
    - 4.1.2.2 Enter the location where the training is scheduled to occur.



### STANDARD OPERATING PROCEDURES

- 4.1.3 Consider the guidance in Section 4.2 below and any implications of environmental hazards on participant health and safety, impacts on rest and rehabilitation, and minimum staffing requirements.
- 4.1.4 Determine whether training may safely occur or must be postponed/rescheduled.
- 4.2 The following actions shall occur during skills-based training occurring outside or in unconditioned interior spaces.
- 4.2.1 Monitor the Effective Heat Stress Index and adjust training evolutions in accordance with the procedure below anytime the temperature is at or above 60 °F.
- 4.2.1.1 The Effective Heat Stress Index shall be calculated.

- 4.2.1.1.1 The Heat Index shall be obtained from the National Weather Service as outlined in Section 4.1.1, calculated from real-time values from a locally installed weather station using the chart below, or obtained utilizing the OSHA-NIOSH Heat Safety Tool App, which can be found on their website at: [www.cdc.gov/niosh/topics/heatstress/heatapp.html](http://www.cdc.gov/niosh/topics/heatstress/heatapp.html)



- 4.2.1.1.2 The Effective Heat Stress Index shall be calculated by adjusting the Heat Index in accordance with the factors below.

- 4.2.1.1.2.1 Add 10 °F if skills are conducted in direct sunlight.



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4.2.1.1.2.2 Add 10 °F if skills are performed while wearing any of the personal protective equipment below.

4.2.1.1.2.2.1 Respiratory protection equipment.

4.2.1.1.2.2.2 Protective clothing covering the torso and/or legs.

4.2.1.2 Consider the implications of the calculated Effective Heat Stress Index on the health and safety of training participants using the chart below.

**Injuries Associated with Heat Stress Index Conditions**

Effective Heat Stress Index	Danger Category	Injury Threat
Below 80	None	Little or no danger under normal circumstances
80 to 90	Caution	Fatigue possible if exposure is prolonged and there is physical activity
90 to 105	Extreme caution	Heat cramps and heat exhaustion possible if exposure is prolonged and there is physical activity
105 to 130	Danger	Heat cramps and heat exhaustion likely and heat stroke possible if exposure is prolonged and there is physical activity
Above 130	Extreme danger	Heat stroke imminent

4.2.1.3 The following actions shall occur based on an elevated Effective Heat Stress Index.

4.2.1.3.1 For an Effective Heat Stress Index at or above 90 °F, rehabilitation must be provided, and active cooling must be made available to training participants. Consider adding additional rest breaks and/or reducing the length of time spent working. Intense physical activity shall be limited to no more than 20 minutes per hour, followed by rehabilitation.

4.2.1.3.2 For an Effective Heat Stress Index at or above 105 °F, all live fire training evolutions and training evolutions requiring use of chemical protective clothing shall be postponed/rescheduled. For all other training evolutions, intense physical activity shall be limited to no more than 15 minutes per hour, followed by rehabilitation, with consideration given to postponing/rescheduling training. Also, limit use of bulky PPE that restricts loss of heat as much as possible while maintaining adequate safety from other hazards.



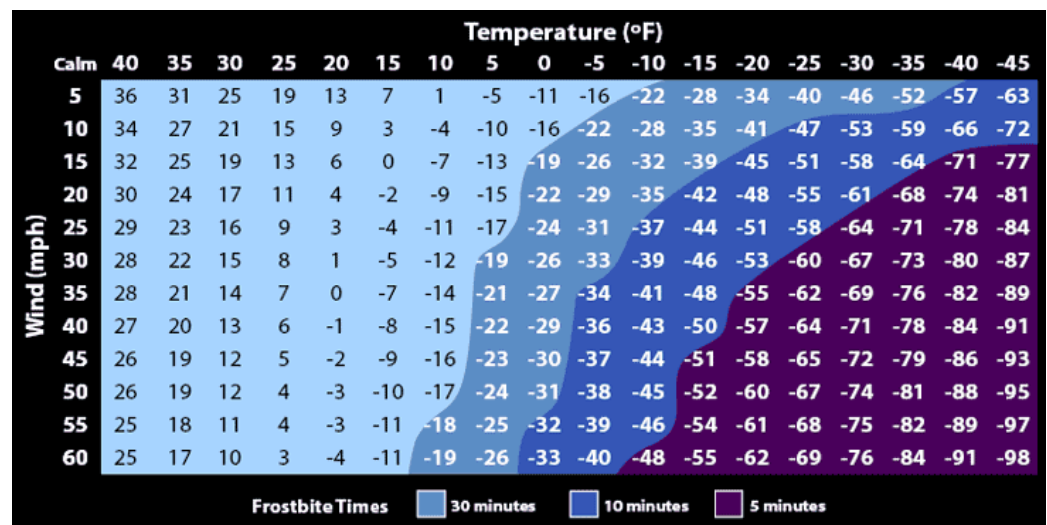
### STANDARD OPERATING PROCEDURES

4.2.1.3.3 For an Effective Heat Stress Index at or above 115 °F, all skills-based training occurring outside or in unconditioned interior spaces shall be postponed/rescheduled.

4.2.2 Monitor the Wind Chill Temperature and adjust training evolutions in accordance with the procedure below anytime the temperature is at or below 45 °F.

4.2.2.1 The Wind Chill Temperature shall be obtained from the National Weather Service as outlined in Section 4.1.1 or calculated from real-time values from a locally installed weather station using the chart below.

4.2.2.2 Consider the implications of the Wind Chill Temperature on the health and safety of training participants using the chart below.



4.2.2.3 The following actions shall occur based on a low Wind Chill Temperature or measured temperature.

4.2.2.3.1 For a temperature at or below 32 °F, the following precautions shall be taken.

4.2.2.3.1.1 Walking and climbing surfaces shall be monitored for slip hazards.

4.2.2.3.1.2 Students must be properly dressed for cold weather activity.

4.2.2.3.1.2.1 Recommend having extra warm, dry socks available.



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- 4.2.2.3.1.2.2 Recommend covering as much skin as possible, including hands and face.
- 4.2.2.3.1.3 Caution shall be used if training evolutions involve use of water.
- 4.2.2.3.1.4 Students shall be monitored for symptoms of cold injury, including numb, tingling, or painful hands or feet.
- 4.2.2.3.1.5 A heated area to rewarm hands and feet shall be available to training participants near the training site.
- 4.2.2.3.1.6 Consider adding additional rest breaks and/or reducing the length of time spent working, as well as providing rehabilitation.
- 4.2.2.3.2 For a temperature or Wind Chill Temperature at or below -18 °F, all skills-based training occurring outside or in unconditioned interior spaces shall be postponed/rescheduled, unless all the following requirements are met in addition to the requirements in Section 4.2.2.3.1 above.
  - 4.2.2.3.2.1 The cold weather will not affect the safe and proper function of tools, equipment, and apparatus.
  - 4.2.2.3.2.2 An adequate supply of warm liquids and/or food is available at the training site or rehabilitation area.
  - 4.2.2.3.2.3 Rehabilitation is provided in a heated area.
  - 4.2.2.3.2.4 Intense physical activity shall be limited to no more than 15 minutes per hour, followed by rehabilitation. All other activity shall be limited to no more than 30 minutes per hour, followed by rehabilitation.
- 4.2.3 Monitor surface wind and wind gusts and adjust training evolutions in accordance with the procedure below anytime surface wind or wind gusts are at or above 10 mph.
  - 4.2.3.1 Surface wind and wind gust speeds shall be obtained from the National Weather Service as outlined in Section 4.1.1 or from real-time values from a locally installed weather station.
  - 4.2.3.2 Consider the implications of elevated surface wind or wind gusts on the health and safety of training participants.



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- 4.2.3.2.1 During interior Class A live fire training evolutions, consider the risk of elevated surface wind or wind gusts causing a wind-driven fire.
- 4.2.3.3 The following actions shall occur based on elevated surface wind or wind gusts.
  - 4.2.3.3.1 For sustained surface wind speeds at or above 20 mph, all skills-based training occurring outside shall be postponed/rescheduled.
  - 4.2.3.3.2 For wind gust speeds at or above 30 mph, all skills-based training occurring outside shall be postponed/rescheduled.
- 4.2.4 Monitor for severe weather throughout training and adjust training evolutions in accordance with the procedure below when severe weather advisories, special weather statements, watches, warnings, or WEAs are issued, as well as when any direct observations are made of severe weather, lightning, or thunder.
  - 4.2.4.1 Local severe weather shall be monitored via direct observation of weather conditions and severe weather advisories, special weather statements, watches, warnings, and WEAs shall be monitored through the National Weather Service as outlined in Section 4.1.1, or obtained utilizing New York Alert, which can be found on their website at [www.alert.ny.gov](http://www.alert.ny.gov)
  - 4.2.4.2 Consider the implications of severe weather on the health and safety of training participants.
  - 4.2.4.3 The following actions shall occur based on severe weather.
    - 4.2.4.3.1 Caution shall be exercised when a severe weather advisory, special weather statement, or watch has been issued for the training location.
      - 4.2.4.3.1.1 Identify areas of safe refuge in the event of severe weather.
      - 4.2.4.3.1.2 Consider postponing/rescheduling training.
    - 4.2.4.3.2 If a severe weather warning or WEA has been issued for the training location, postpone/reschedule outdoor training activities.
    - 4.2.4.3.3 When lightning is seen or detected, or thunder is heard, move all training participants to an indoor location as immediately as is safely possible and remain indoors until one of the two conditions below are met.



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4.2.4.3.3.1 In the absence of lightning detection, wait until thunder is no longer heard and lightning is no longer seen for a period of at least 30 minutes.

4.2.4.3.3.2 If lightning detection is available, wait until the storm has passed the training location and lightning is no longer occurring within at least a 10-mile radius.

4.2.5 Monitor the Air Quality Index and adjust training evolutions in accordance with the procedure below anytime the Air Quality Index value is at or above 100.

4.2.5.1 The Air Quality Index shall be monitored from AirNow as outlined in Section 4.1.2.

4.2.5.2 Consider the implications of elevated Air Quality Index values on the health and safety of training participants using the chart below.

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good (0-50)		It's a great day to be active outside.
Moderate (51-100)	Some people who may be unusually sensitive to particle pollution.	<b>Unusually sensitive people:</b> Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. <b>Everyone else:</b> It's a good day to be active outside.
Unhealthy for Sensitive Groups (101-150)	Sensitive groups include <b>people with heart or lung disease, older adults, children and teenagers.</b>	<b>Sensitive groups:</b> Make outdoor activities shorter and less intense. It's OK to be active outdoors, but take more breaks. Watch for symptoms such as coughing or shortness of breath. <b>People with asthma:</b> Follow your asthma action plan and keep quick relief medicine handy. <b>People with heart disease:</b> Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.

4.2.5.3 The following actions shall occur based on elevated Air Quality Index values.

4.2.5.3.1 For Air Quality Index values at or above 100, notify training participants that there is an elevated Air Quality Index value and that members of sensitive groups may experience adverse health effects. Encourage training participants to notify an instructor if they are concerned about their ability to





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## STANDARD OPERATING PROCEDURES

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safely participate in training and provide an opportunity for training participants to privately inform instructors of such prior to training evolutions commencing.

4.2.5.3.2 For Air Quality Index values at or above 150, all skills-based training occurring outside shall be postponed/rescheduled.

- 4.3 If training is occurring in a location where a local policy or procedure exists, the more restrictive of the two policies or procedures shall be adhered to.
- 4.4 For any training deemed necessary to occur in violation of the safety provisions above, instructors must follow the chain of command to extend the request to the State Fire Administrator for a determination. Only the State Fire Administrator may approve training to occur in violation of the safety provisions found within this procedure.
- 4.5 Appendix A – Environmental Hazards During Training Job Aid may assist instructors with complying with the provisions of this procedure, however it is not inclusive of all requirements within this procedure and does not replace this procedure.

### 5.0 References

- 5.1 Be Aware, Be Prepared, Take Action: A Guide for Alerts and Warnings. (2021). FEMA.
- 5.2 Castellani, J.W., Eglin, C.M., Ikaheimo, T.M., Montgomery, J., Paal, P., & Tipton, M.J. (2021). ACSM expert consensus statement: Injury prevention and exercise performance during cold-weather exercise. *Current Sports Medicine Reports*, 20(11), 594-607.
- 5.3 Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. (2016). NIOSH.
- 5.4 Hostler, D, McEntire, D.J., & Rittenberger, J.C. (2016). Emergency incident rehabilitation: Resource document to the position statement of the National Association of EMS Physicians. *Prehospital Emergency Care*, 20(2), 300-306.
- 5.5 NFPA 1584: Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises. (2020). NFPA.
- 5.6 Rissanen, S., & Rintamaki, H. (2007). Cold and heat strain during cold-weather field training with nuclear, biological, and chemical protective clothing. *Military Medicine*, 172(2), 128-132.
- 5.7 Work/Rest Schedules: Using work/rest schedules can decrease the risk of heat illness. (2017). NIOSH.



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**STANDARD OPERATING PROCEDURES**

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**Index:** Training Administrative Procedures

**Procedure Number:** TAP-0001

**Subject:** Environmental Hazards During Training

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# Appendix A

## Environmental Hazards During Training Job Aid

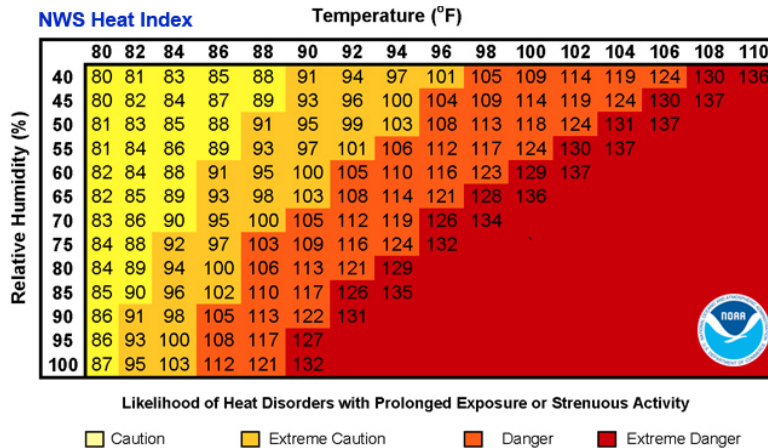


### Environmental Hazards During Training Job Aid

This job aid may be printed double sided, cut out along the dotted line, and laminated. It is meant to assist instructors with complying with TAP-0001, Environmental Hazards During Training. It is not meant to supersede or replace language found within the SOP itself. This job aid is not a replacement for the procedure.

### Environmental Hazards During Training Job Aid

#### HEAT



Effective Heat Stress Index = Heat Index plus...

Add 10 °F when training in direct sunlight

Add 10 °F when training in SCBA or PPE

**Effective Heat Stress Index ≥ 90 °F** – Provide rehab and active cooling. Consider additional rest breaks/ reducing time spent working. Intense physical activity ≤ 20 min/hr followed by rehab.

**Effective Heat Stress Index ≥ 105 °F** – No live fire training or training in CPC. Intense physical activity ≤ 15 min/hr followed by rehab. Consider postponing/rescheduling training. Limit use of bulky PPE when possible.

**Effective Heat Stress Index ≥ 115 °F** – Postpone/ reschedule training

#### Injuries Associated with Heat Stress Index Conditions

Effective Heat Stress Index	Danger Category	Injury Threat
Below 80	None	Little or no danger under normal circumstances
80 to 90	Caution	Fatigue possible if exposure is prolonged and there is physical activity
90 to 105	Extreme caution	Heat cramps and heat exhaustion possible if exposure is prolonged and there is physical activity
105 to 130	Danger	Heat cramps and heat exhaustion likely and heat stroke possible if exposure is prolonged and there is physical activity
Above 130	Extreme danger	Heat stroke imminent

#### WIND

*\*Consider risk of wind-driven fires\**

**Sustained Winds ≥ 20 mph** – Postpone/reschedule training.

**Wind Gusts ≥ 30 mph** – Postpone/reschedule training.

#### SEVERE WEATHER

**Advisory, Statement, Watch** – Identify safe refuge, monitor the weather, consider postponing/rescheduling.

**Warning, WEA** – Postpone/reschedule training.

**Lightning** – Move indoors immediately! Resume when no thunder ≥ 30 min or storm has passed and lightning ≥ 10 miles away on lightning detection.



### COLD

		Temperature (°F)																		
		Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	
		Frostbite Times																		
		30 minutes						10 minutes						5 minutes						

**Temp ≤ 32 °F** – Check slip hazards. Check students clothing (warm dry socks, covered faces and hands). Check for cold injuries. Heated area available. Consider additional rest breaks/reducing time spent working. Consider rehab.

**Wind Chill ≤ -18 °F** – Postpone/reschedule training unless all above & below met: Tools, equip., and apparatus not impacted by cold. Warm liquids/food available. Rehab provided. Intense physical activity ≤ 15 min/hr and other activity ≤ 30 min/hr, both followed by rehab.

### AIR QUALITY

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good (0-50)		It's a great day to be active outside.
Moderate (51-100)	Some people who may be unusually sensitive to particle pollution.	<b>Unusually sensitive people:</b> Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. <b>Everyone else:</b> It's a good day to be active outside.
Unhealthy for Sensitive Groups (101-150)	Sensitive groups include <b>people with heart or lung disease, older adults, children and teenagers.</b>	<b>Sensitive groups:</b> Make outdoor activities shorter and less intense. It's OK to be active outdoors, but take more breaks. Watch for symptoms such as coughing or shortness of breath. <b>People with asthma:</b> Follow your asthma action plan and keep quick relief medicine handy. <b>People with heart disease:</b> Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.

**AQI ≥ 100** – Notify students of high AQI. Advise them to tell an instructor if they have concerns. Provide time for them to notify instructors in private.

**AQI ≥ 150** – Postpone/reschedule training.

10/01/2023