



Carroll County Department of Fire and EMS

EMS Policies and Procedures

Standard Operating Procedure: 3.19	Effective Date: June 8, 2023
Subject: Fire Fighter Rehabilitation	Section: Emergency Medical Services
Authorized: Michael Stoner, Assistant Chief	Revision Date: N/A

I. PURPOSE

This policy provides the guidance for the implementation of rehabilitation (Rehab) procedures, as outlined in NFPA 1584 (2022) Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises. The purpose of this policy is to ensure the physical and emotional condition of members operating at the scene of an emergency or training exercise, or while operating in extreme weather conditions. This is accomplished through medical screening, monitoring, rest and relief, hydration, and active/passive heating or cooling, thus decreasing the probability of injury/illness and contributing to the safety and success of the operation.

II. DEFINITIONS

Abnormal vital signs- Vital signs that fall above or below what is determined to be normal, healthy values as identified in the Maryland Medical Protocol.

Active cooling- Process of using external methods or devices (hand/forearm immersion, misting fans, ice vests) to reduce elevated core body temperature.

Passive cooling- The process of using natural evaporative cooling (sweating, doffing PPE, moving to a cooler environment) to reduce elevated core body temperature.

Yellow Flag Advisory- An advisory issued by the Shift Commander that communicate that weather conditions are approaching extreme levels, either due to cold or heat.

Caution is required for outdoor activities, and modifications shall be made in accordance with this policy.

Red Flag Advisory- An advisory issued by the Shift Commander that communicates that extreme weather conditions exist, either due to cold or heat. Extreme caution is required for outdoor activities, and non-emergency outdoor activities are restricted as outlined in this policy.

Recovery – The process of returning a member’s physiological and psychological states to levels that indicate the person can perform additional emergency tasks, be reassigned, or be released without any adverse effects.

Rehabilitation (Rehab)- An intervention designed to mitigate the physical, physiological, and emotional stress of incident scene operations in order to sustain a member’s energy, improve performance, and decrease the likelihood of on-scene injury or death.

Sports Drink- A fluid replacement beverage that is between 4%-8% carbohydrate and contains between .5g and .7g of sodium per liter of solution.

Energy Drink- A type of beverage containing stimulant drugs (caffeine and other ingredients such as Taurine, Ginseng, and Guarana) that is marketed as providing mental or physical stimulation.

Tier I Rehab- Rehab for incidents up to and including a first alarm assignment, with an operational period generally less than an hour, and managed by a single EMS unit.

Tier II Rehab- Rehab for incidents greater than a first alarm and/or escalating incidents managed by a Rehab Group Supervisor with multiple dedicated resources.

Tier III Rehab- Rehab for long-term or campaign incidents managed by a Rehab Group under the Logistics Section of the Incident Management System with multiple dedicated resources.

III. PROCEDURES

A. Responsibilities

1. The **Incident Commander (IC)** shall consider the circumstances of each incident and make adequate provisions, early in the incident, for firefighter rehabilitation and recovery. These provisions shall include medical evaluation, treatment and monitoring, food and fluid replenishment, mental rest, and relief from extreme climatic conditions and the other environmental parameters of the incident.
2. All **Company Officers** shall maintain an awareness of the physical and mental condition of each member operating within their span of control and ensure adequate steps are taken to provide for each member’s safety and health.
3. All **DFEMS Personnel** operating on an emergency incident or training evolution shall maintain their hydration and advise their company officers when they believe their level of fatigue or exposure to heat or cold is approaching a level that could negatively affect them, their crew, or the operation in which they are involved.

B. Rehab for Weather Extremes and Daily Operations

1. The Station Officer, Volunteer Officers, Shift Commander and all other personnel should maintain awareness during periods of hot or cold weather
2. The Shift Commander will initiate yellow or red flag procedures, when appropriate, in accordance with Policy XXX.XX DFEMS Extreme Weather Advisories
3. Personnel shall maintain situational awareness regarding weather extremes and monitor for announcements regarding conditions
4. Personnel shall remain aware of their physical condition and that of their co-workers
5. Fluid replacement measures shall be taken in accordance with XXX.XX DFEMS Extreme Weather Advisories

C. Rehab site characteristics

1. The site shall be enough distance from the effects of the operation that members can safely remove their personal protective equipment and can be afforded physical and mental rest. It shall be large enough to accommodate multiple crews and rehab personnel, based on the size of the incident
2. The site shall provide protection from prevailing environmental conditions
3. The site shall include a medical monitoring and treatment area with access to transport personnel to a treatment facility if necessary
4. Personnel shall doff as much contaminated PPE as practical prior to entering the rehab site. After doffing PPE and prior to entering the rehab area, personnel should decontaminate affected skin by washing with soap and water or by using commercially available skin wipes made for fire service skin decontamination as available.

D. Rest and Recovery

1. Any personnel requiring or requesting rest shall enter rehab for a minimum of 10 minutes and longer when practical
2. Personnel shall rest for a minimum of 20 minutes following the use of a second 30-minute or 45-minute self-contained breathing apparatus (SCBA) cylinder, a single 60-minute SCBA cylinder, or 40-minutes of intense work without an SCBA

E. Cooling and Warming

1. Personnel who feel warm or hot shall remove personal protective equipment, drink fluids, and incorporate active or passive cooling methods to reduce the elevated core temperature
2. Personnel with cold-related stress shall remove any wet or damp clothing and then add warm dry clothing, wrap themselves in blankets, or use other methods to regain normal body temperature

F. Nourishment and fluid replenishment

1. It is important to consider the fluid loss through sweat and that firefighters can lose 32 ounces of water in less than 20 minutes of strenuous firefighting activity.
2. Care should be taken with fluid replacement. Drinking too much, or too fast can cause gastric distention or discomfort, which can cause vomiting. During high-intensity, long-duration activity (longer than 1 hour), the following precautions are recommended.
 - Personnel shall consume 8 ounces of fluids after every 20-30-minute work cycle. It is recommended that the fluids contain approximately 7g of carbohydrates (CHO). Sports drinks that contain carbohydrates and electrolytes are a good resource for re-hydration.
 - Ingest 30g/hr to 60g/hr of carbohydrates. This can be found in fruit and meal replacement bars.
 - Care should be taken with fluid replacements containing Caffeine, high-fructose content, and high sugar, such as Energy drinks.
3. Fire Departments shall provide a means for personnel to wash hands and face whenever calorie replacement will be used

G. Medical Monitoring

1. EMS shall be available as part of the incident scene rehab for the evaluation and treatment of personnel.
2. Basic Life Support (BLS) shall be the minimum level of available care, however, Advanced Life Support (ALS) is recommended
3. The following vital signs shall be obtained for all members entering rehab:
 - Temperature
 - Heart rate
 - Respiratory rate
 - Blood pressure
 - Pulse oximetry
 - Personnel exposed to fire smoke shall be assessed for carbon monoxide poisoning.
4. EMS personnel shall be alert for the following:
 - Personnel complaining of chest pain, dizziness, shortness of breath, weakness, nausea, or headache
 - General complaints such as cramps, aches, and pains
 - Symptoms of heat- or -cold-related stress
 - Changes in gait, speech, or behavior
 - Alertness and orientation to person, place, and time of personnel
 - Vital signs considered to be abnormal as established by Maryland Medical Protocol (MMP)
5. If vital signs are abnormal after a 10-20 -minute rehab cycle, personnel shall not be released from rehab and shall remain in rehab until that person can fit one of the following:
 - Cleared for further incident assignment or demobilization
 - Retained in Rehab for further rest, recovery and monitoring
 - Sent for more definitive medical evaluation/ treatment

6. Personnel with continued abnormal vital signs or symptoms shall be removed from active duty until cleared by an appropriate medical provider
7. Personnel shall be evaluated at Carroll Occupational Health Services (OHS) or the appropriate medical facility as per MMP
8. The Training, Health, and Safety Officer shall be responsible for all notifications and required documentation

H. Rehab for Incident Scene Operations

1. The Incident Commander (IC) shall initiate Rehab procedures on all incidents as needed, or any other time when operations or training exercises pose a potential safety or health risk
2. The IC will follow initial Rehab procedures in accordance with policy
3. The IC will assign a Rehab Group Supervisor for Tier II or Tier III rehab operations
4. In the absence of a Rehab Group Supervisor, EMS practitioners in Rehab shall have the authority, as delegated by the IC, to use their professional judgement to keep members in rehab or to transport them for further medical evaluation or treatment.
5. The Incident Commander should consider the use of the Rehab Unit or Canteen unit at an incident scene involving extreme weather or extended operations
6. Incident command will cycle units through Rehab if any of the above conditions are met
7. Members entering Rehab for the first time will undergo a minimum of 10 minutes of rest and rehabilitation
8. A Rehab period of 20 minutes will be conducted following the use of a second 30-minute or 45-minute self-contained breathing apparatus (SCBA) cylinder, a single 60-minute SCBA cylinder, or 40 minutes of intense work with SCBA
9. Work/Rest cycles shall be adjusted due to extreme weather per policy **XXX.XX** Extreme Weather Advisories
10. The IC, Safety Officer, Company Officer, and all other personnel shall monitor conditions and personnel to determine the need for shorter work cycles or additional rehab
11. Incident command shall be notified of any person requiring additional treatment or transport for accountability purposes
12. Personnel should initiate post-incident hydration procedures within 2 hours of clearing the incident scene
 - Drink 12 to 32 ounces of electrolytes and/or consume carbohydrates containing fluids
 - Monitor for clear and odor-free urine output
 - Continue fluid consumption to maintain adequate hydration

IV. RECISION

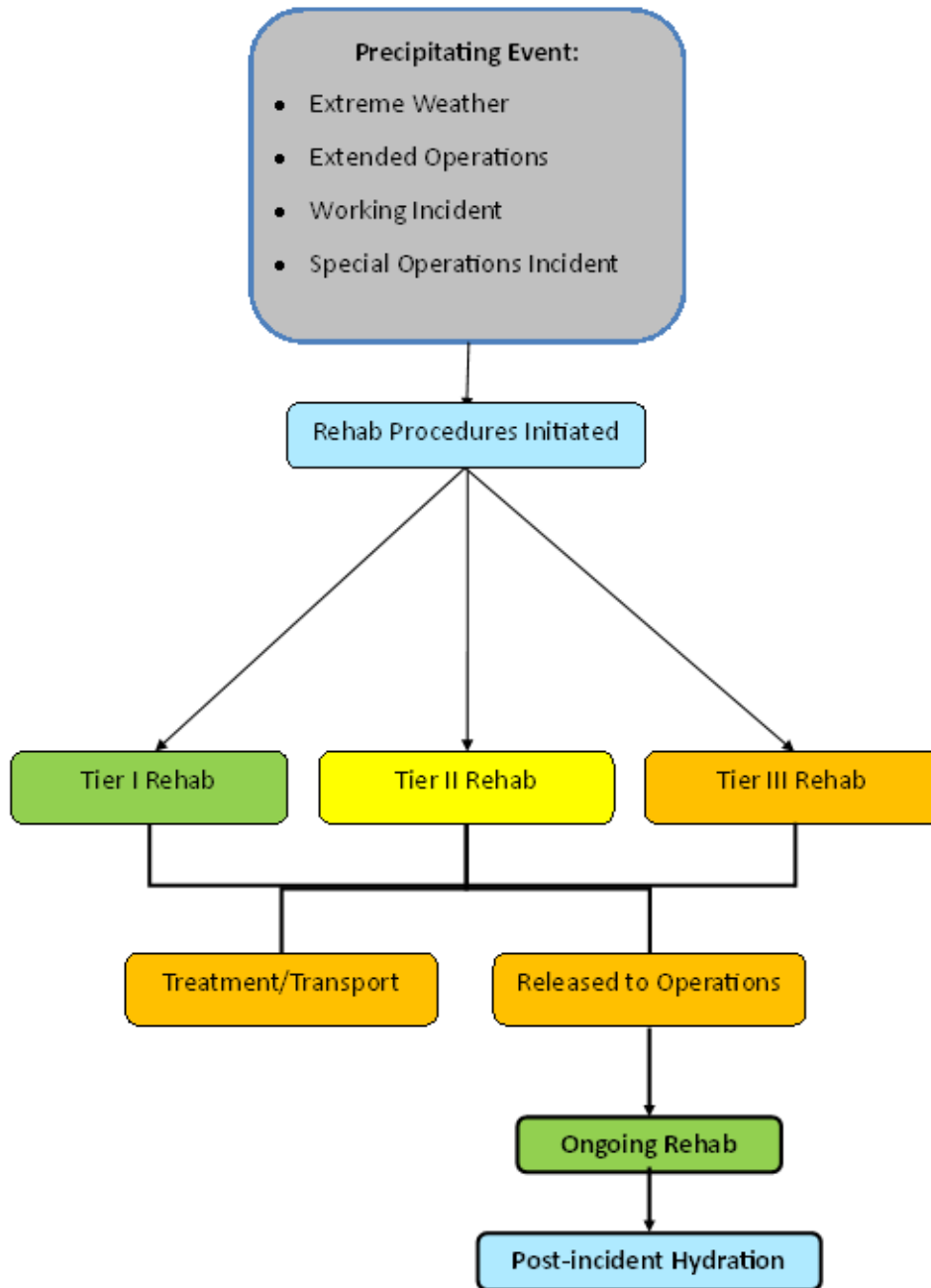
This Standard Operating Procedure rescinds all directives regarding Fire Fighter Rehabilitation or similar content previously issued for personnel of the Carroll County Department of Fire and EMS.



Carroll County Department of Fire and EMS

Attachment A

REHABILITATION INITIATION FLOW CHART





Carroll County Department of Fire and EMS

Attachment B

Rehabilitation Procedures

- IC will initiate Rehab procedures and assign Rehab Unit/Group
- IC will determine Rehab Tier needed and request appropriate resources

Tier 1 Rehab	Tier II Rehab	Tier III Rehab
<ul style="list-style-type: none"> • Consists of a single, dedicated EMS unit • Applicable for incidents up to and including first alarm assignment • Operational period expected to be < 1 hour • Rehab handled by a single EMS or suppression unit • Managed by EMS provider • Radio designation is Unit's normal call signs, e.g. "Medic 75" 	<ul style="list-style-type: none"> • Consists of multiple, dedicated resources • Designated supervisor • Applicable to incidents greater than a first alarm, or escalating events • Rehab will be the responsibility of an ALS provider • Managed by Rehab Group Supervisor • Radio designation shall be "Rehab Group" • May include Canteen, Decon unit, or other resources as determined by IC 	<ul style="list-style-type: none"> • Consists of multiple, dedicated resources • Designated Supervisor • Applicable to long-term or campaign incidents, e.g. large brush fires or hazardous materials incidents • Managed under the Logistics Section of IMS • Radio designation shall be determined by Logistics • May include Canteen, Decon unit, or other resources as determined by IC or Logistics Section

- The Rehab Group Supervisor shall:
 - Determine an appropriate Rehab location
 - Report needs to the incident commander
 - Ensure evaluation of units assigned to rehab is completed
 - Ensure adequate Rehab supplies (blankets, fluids, snacks, medical equipment, etc.)
 - Inform IC of personnel requiring treatment or transport
 - Ensure proper documentation
- Personnel assigned to Rehab will complete the Rehab Tracking Form as companies enter and exit



Carroll County Department of Fire and EMS

Attachment B

Rehabilitation Procedures

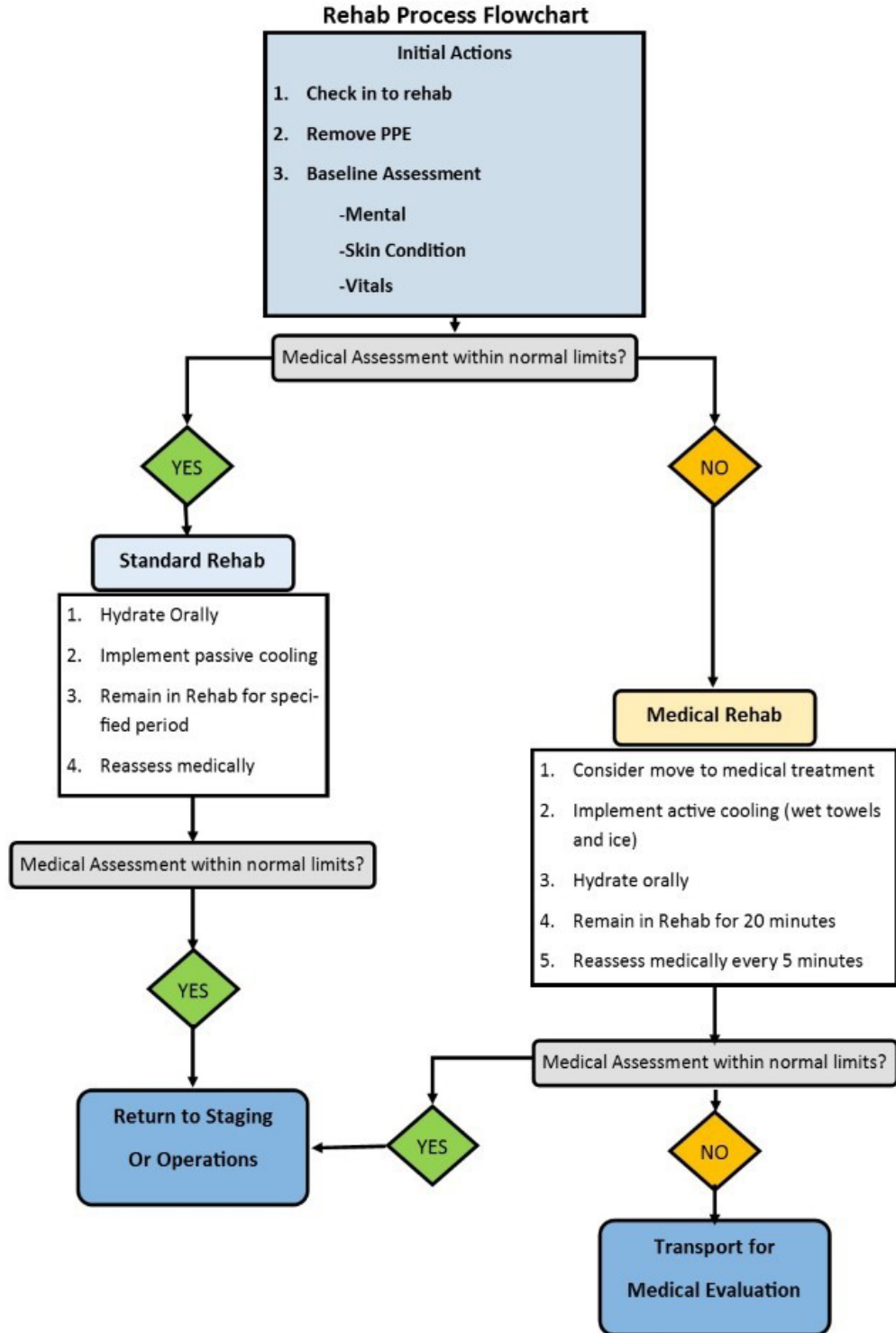
- Personnel assigned to Rehab will complete the Incident Rehabilitation Report for everyone evaluated in Rehab
- Companies will report to rehab immediately upon being assigned by the IC
- Companies will remain together to maintain accountability
- Members entering Rehab for the first time will undergo a minimum of 10 minutes of rest and rehabilitation*
- A Rehab period of 20 minutes will be conducted following the use of a second 30-minute or 45-minute self-contained breathing apparatus (SCBA) cylinder, a single 60-minute SCBA cylinder, or 40 minutes of intense work with SCBA*
- Personnel with Abnormal vital signs shall complete an additional rehab period prior to being released to the incident ground
 - ✓ Heart Rate >100
 - ✓ Respiratory Rate >20
 - ✓ Systolic Blood Pressure >160
 - ✓ Diastolic Blood Pressure >100
 - ✓ O₂ Sat <95%
 - ✓ CO >5%
- Personnel shall not return to operations if not feeling adequately rested or showing evidence of medical, psychological, or emotional distress*
- Members with abnormal vital signs or symptoms shall be removed from active duty until cleared by appropriate medical personnel*
- The presence of the following Medical Symptoms will be reported to the safety officer and further evaluation will be considered
 - ✓ Altered Mental Status
 - ✓ Chest Pain
 - ✓ Shortness of Breath
 - ✓ Weakness, clumsiness, dizziness, or fatigue
 - ✓ Sign of poor skin perfusion (blotchy or pale skin)
 - ✓ Symptoms of heat/cold-related stress
 - ✓ Low blood pressure
 - ✓ Nausea
 - ✓ Headache
 - ✓ Obvious Injury
- Personnel with chest pain, shortness of breath, or irregular heart rhythm shall be transported per medical protocol to a medical facility for treatment
- The safety officer shall be advised and act as per standard procedures, including appropriate notifications and completion of the first report of injury and other associated documentation
- Personnel shall initiate post-incident hydration within 2 hours of clearing the incident scene
 - Drink 12 to 32 ounces of electrolytes and/or
 - Consume carbohydrates containing fluids
 - Monitor for clear and odor-free urine output



Carroll County Department of Fire & EMS

Attachment C

REHAB PROCESS FLOWCHART





Carroll County Department of Fire and EMS

Attachment E

FIRE FIGHTER REHABILITATION FORM

USFA & NFPA 1584

FIREFIGHTER REHABILITATION FORM

LEGAL DOCUMENT – DO NOT DISCARD

Incident Name: _____

Date: ____ / ____ / ____

FIREFIGHTER INFORMATION

Name: _____

Log-In Time: ____ : ____ Log-Out Time: ____ :

Unit: _____ Agency: _____

PPE Level: Duty Uniform Structure Wildland Radio #: _____

Comments, Medical Concerns, Allergies

Age: _____

Male Female

Heat Symptoms

- Nausea Weakness Headache Sunburned
 Cramping Seizure Flushed Skin Exhaustion
 Dehydration Mental Confusion Absence of Sweating
 Shortness of Breath Rapid Heart Rate

Cold Symptoms

- Headache Low BP Numbness Blisters
 Dehydration Muscle Rigidity Mental Confusion
 Slow Pupil Response Waxy Pale Skin

Vital Signs

Time	B/P	Pulse	Respiration	Temperature

NFPA 1582 - 9.4.20.1 Uncontrolled Hypertension

Defined as

- Systolic Pressure >180 mm Hg
 Diastolic Pressure >100 mm Hg
 Hypertension with the presence of target organ damage
 Compromises the member's ability to safely perform essential job

Oral Intake

Electrolyte _____ oz Water _____ oz Food

Weather

Temp	Wind Chill	Humidity	Heat Index

Carbon Monoxide Exposure Assessment

Was Firefighter Exposed to Smoke? Yes No

Initial Carbon Monoxide Assessment Parameters

- 0 – 5% Normal
 5 – 10% Normal in a Smoker
 >10% Abnormal – Consider High Flow Oxygen
 >15% Significantly Abnormal – Treatment Mandatory
 Initial Carbon Monoxide Reading SpCO% = _____

Carbon Monoxide Reassessment Parameters

- 0 – 5% Acceptable
 5 – 10% Consider High Flow Oxygen Until <5%
 >10% Abnormal - Assess Symptoms – High Flow Oxygen
 >15% Significantly Abnormal – Treatment Mandatory
 Carbon Monoxide Reassessment Reading SpCO% = _____

CO / Oximetry Readings

Time	SpO2	SpCO		

Rehabilitation Procedure

NFPA 1584 – Chapter 6

6.1.1 Rehabilitation operations shall commence whenever emergency operations or training exercises pose a safety or health risk to members

6.1.4 Members shall undergo rehabilitation following:

- The use of a 2nd 30-minute SCBA
 A single 45-minute SCBA
 A single 60-minute SCBA
 40 Minutes of intense work without an SCBA

6.2.2.1 Members entering rehabilitation for the first time shall rest for a minimum of 10 minutes and longer where practical

6.2.2.2 Members shall rest for a minimum of 20 minutes following:

- The use of a 2nd 30-minute SCBA
 A single 45-minute SCBA
 A single 60-minute SCBA
 40 Minutes of intense work without an SCBA

6.2.2.2.2 The member shall not return to operations if he/she does not feel adequately rested

1. Rest: Yes No Minutes: _____
 2. Hydration: Yes No
 3. Cooling: Yes No Active Passive
 4. Warming: Yes No
 5. Medical Monitoring: Yes No
 6. Relief from Climate: Yes No
 7. Calorie & Electrolyte Replacement: Yes No
 8. Emergency Medical Care Provided Yes No
 9. Accountability Documentation Completed: Yes No

Released By: _____

Print Name

Signature: _____ Time: ____ : ____



Carroll County Department of Fire and EMS

Attachment F

HEAT RELATED REFERENCE SHEETS

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	Temperature (°F)															
	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

Relative Humidity (percent)	Air Temperature (°F)										
	70	75	80	85	90	95	100	105	110	115	120
	Apparent Temperature (°F)										
0	64	69	73	78	83	87	91	95	99	103	107
10	65	70	75	80	85	90	95	100	105	111	116
20	66	72	77	82	87	93	99	105	112	120	130
30	67	73	78	84	90	96	104	113	123	135	148
40	68	74	79	86	93	101	110	123	137	151	
50	69	75	81	88	96	107	120	135	150		
60	70	76	82	90	100	114	132	149			
70	70	77	85	93	106	124	144				
80	71	78	86	97	113	136	157				
90	71	79	88	102	122	150	170				
100	72	80	91	108	133	166					

Apparent Temperature (°F)	Danger Category	Injury Threat
Below 80	None	Little or no danger under normal circumstances
80-90	Caution	Fatigue possible if exposure is prolonged and there is physical activity
91-105	Extreme Caution	Heat cramps and heat exhaustion possible if exposure is prolonged and there is physical activity
106-130	Danger	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity
Above 130	Extreme Danger	Heat stroke imminent!



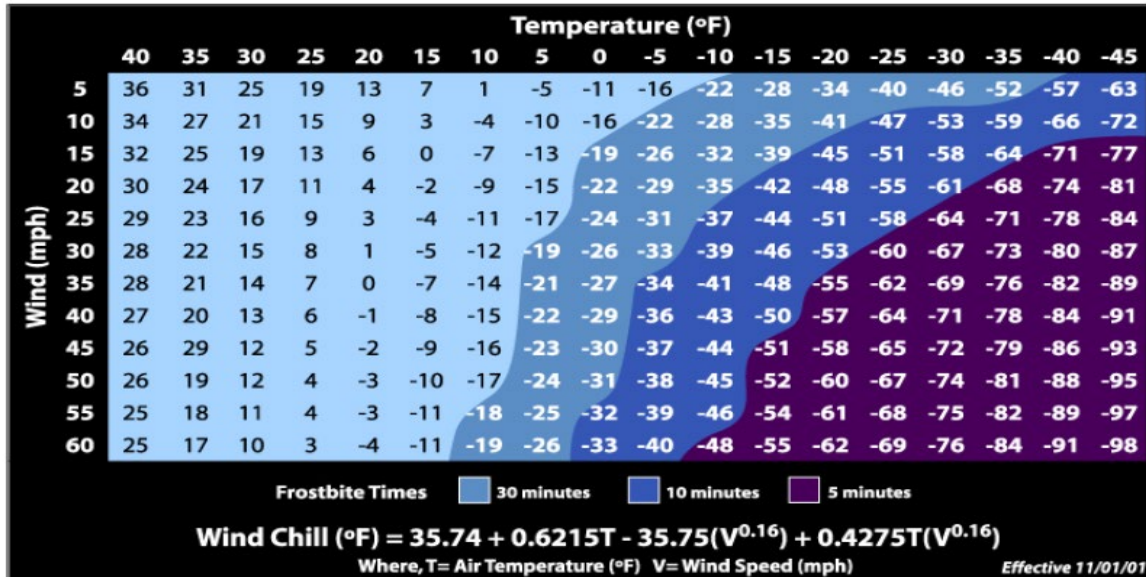
Carroll County Department of Fire and EMS

Attachment G

COLD / BLOOD CO REFERENCE SHEET



Wind Chill Chart



CO Blood Level (COHb)	Symptoms
5 to 14%	Asymptomatic or mild symptoms
15% to 29%	Headache, nausea/vomiting, shortness of breath, chest pain, loss of judgment
30% to 40%	Dizziness, weakness, vision problems, confusion, increased heart rate, increased breathing rate
>40%	Arrhythmias, seizures, coma, death