



GENERAL ORDER

GENERAL ORDER 150.02

DFRS Extreme Weather Advisories

BUREAU OF OCCUPATIONAL SAFETY AND HEALTH

Issue Date: June 10, 1995

Revision Date: December 23, 2015

1 APPLICABILITY

2 All Personnel

3 POLICY

4 The Howard County Department of Fire and Rescue Services (Department) recognizes the adverse effects
5 weather extremes may have on operational personnel during emergency incidents and other Department
6 activities.

7 To reduce the incidence of weather related stress, the Department has created a policy that modifies
8 activities during times of extreme heat or cold. Adjustments shall be made for both nonessential and
9 emergency activities when conditions are severe.

10 DEFINITIONS

- 11 ➤ A **Red-Flag Extreme Weather Advisory** is an advisory issued by Department field command
12 officers that communicates that extreme weather conditions exist, either due to cold or heat.
13 Extreme caution is required for outdoor activities, and non-emergency outdoor activities are
14 restricted as outlined in this policy.
- 15
- 16 ➤ A **Yellow-Flag Extreme Weather Advisory** is an advisory issued by Department field command
17 officers that communicates that weather conditions are approaching extreme levels, either due to
18 cold or heat. Caution is required for outdoor activities, and modifications shall be made in
19 accordance with this policy.

20 PROCEDURES

21 EXTREME HOT WEATHER:

22 During periods of high heat, the **heat index** (Attachment A) will be used to determine the need to issue
23 an extreme weather advisory.

- 24 • When the heat index is between 86 and 95 degrees, a **Yellow-Flag Extreme Weather Advisory**
25 shall be issued.
- 26 • When the heat index is 96 degrees or greater, a **Red-Flag Extreme Weather Advisory** shall be
27 issued.

28 **EXTREME COLD WEATHER:**

29 During periods of severe cold, the **wind chill index and ambient temperature** (Attachment B) will be used
30 to determine the need to issue an extreme weather advisory.

- 31 • When the ambient or wind chill temperature is between 11 and 25 degrees, a **Yellow-Flag**
32 **Extreme Weather Advisory** shall be issued.
- 33 • When the ambient or wind chill temperature is 10 degrees or below, a **Red-Flag Extreme Weather**
34 **advisory** shall be issued.

35
36 **RESPONSIBILITIES:**

37 **All Operational Personnel:**

- 38 • Taking the necessary preventive steps to be prepared for and reduce the chance of heat/cold
39 related injuries.
- 40 • Taking preparatory measures to assure they have immediate access (on the unit to which they
41 are assigned) to a change of clothes, layered cold protection, and appropriate cold-winter
42 clothing/gear should outside operations become necessary. All personnel shall take personal
43 responsibility to be prepared and have appropriate resources with them.
- 44 • Advising their crew and immediate supervisor any time they believe that their level of fatigue or
45 exposure may have adverse effects on them, their crew, or the operation.
 - 46 ○ It is equally each person's responsibility to be aware of and report such conditions if
47 noticed in other members of their crew.

48
49 **Career and Volunteer Officers and Supervisors:**

- 50 • Operating in accordance with the applicable Work/Rest Cycle Guidance as defined by this policy,
51 and in accordance with the Weather Extreme Advisory "Flag" as declared for a given time period
52 by Field Battalion Chiefs.
- 53 • Maintaining an awareness of the condition of all personnel operating within their span of control
54 and ensuring that adequate measures are taken to provide for their safety and health.
- 55 • Monitor weather conditions from the National Weather Service (NWS) at [BWI Airport](#) or some
56 other more specific official government source pertinent to an incident location, or through the
57 Howard County Public Safety Answering Point emergency dispatchers (Howard Communications)
58 if necessary. It may be necessary for officers and Command to monitor weather conditions
59 continuously in order to stay informed of changing conditions.

60
61 **Field Battalion Chiefs and Shift Safety Officers:**

- 62 • Continuously monitor the current Heat/Wind Chill index values throughout the shift.
- 63 • The Field Battalion Chief shall authorize the Shift Safety Officer to announce the issue or change of
64 a Department weather extreme advisory via all of the following:
 - 65 ○ A Special Information Broadcast over the radio system (0700-2300 hours)
 - 66 ○ A CAD message via Howard Communications
 - 67 ○ An email to all "Fire All Personnel"
 - 68 ○ Additional announcements throughout this time period will also be made whenever the
69 current Heat/Wind Chill index values change and necessitate a modification to the
70 weather extreme advisory.

71
72 **THE FORMAL REHABILITATION FUNCTION:**

73 As a baseline, formal incident rehabilitation shall be established upon confirmation of a working incident
74 where Department personnel will be engaged in outdoor activity for more than one hour (rescue, fire,
75 hazmat, etc.). When formal incident rehabilitation is instituted:

- 76 • A Rehab Division/Group and Rehab Supervisor shall be assigned.
- 77 • Units (crews) shall be assigned IN and OUT of the Rehab Division on a regular basis during
- 78 exposure to outdoor activities.
- 79 • A Rehab Division staging area(s) for personnel shall be set up in a sheltered or climate controlled
- 80 area(s). Crews shall be rotated and rehabilitated, and should include the opportunity for rest,
- 81 medical assessment, monitoring of vital signs and rehydration with hot/cold beverages. In cold
- 82 weather, personnel with wet clothing should change into dry clothing, if possible, before returning
- 83 outside.
- 84 • When conditions exist that require the Formal Rehabilitation Function, Incident Commanders may
- 85 alter running assignments based on available information and weather conditions.

86
87 **PREVENTIVE MEASURES:**

88 **Fluid Replacement:**

89 A cooler of fresh drinking water shall be carried on all station apparatus, excluding utility vehicles.

- 90 • Hot Weather:
 - 91 ○ A critical factor in the prevention of heat injury is the maintenance of water and
 - 92 electrolytes.
 - 93 ○ Recommended amounts of water should be consumed before, during and after becoming
 - 94 involved in any work activities (amounts vary in relation to temperature and activity level).
 - 95 ○ A general rule of thumb during times of activity and heat stress is that operational
 - 96 personnel should consume at least (1) quart of water per hour, or one cup of water every
 - 97 15-20 minutes. Water is still the choice of oral fluid replacement; however, a
 - 98 commercially prepared activity beverage served chilled or cooled is acceptable (mixed with
 - 99 50 % water).
- 100
- 101 • Cold Weather:
 - 102 ○ Operational personnel still need to maintain an appropriate level of hydration in cold
 - 103 environments, especially when moderate to heavy work is being done.
 - 104 ○ Hot drinks are not necessary but may be desirable in cold environments.

105
106 **Work/Rest Cycle Guidance:**

107 Work/Rest Cycle Guidance has been developed to assist emergency personnel and supervisors who may

108 become engaged in non-essential, non-emergency outside activities during times of environmental

109 climatic extremes. The guidance provides information that can be used as part of a mitigation strategy to

110 control the potential adverse effects of these conditions and to provide safe guidelines for personnel

111 working in the described temperatures.

112

113 This guidance is calibrated to apply to activities that are conducted while wearing the Class “C” uniform,

114 and will likely need to be adjusted if other levels of PPE are required, such as turnout gear or

115 encapsulating PPE. This guidance is modified for our application, but is based upon the threshold limit

116 values for thermal stress developed by the American Conference of Governmental Industrial Hygienists,

117 who depict four operational levels, temperatures, and the corresponding work/rest cycle that is

118 recommended.

DFRS Advisory	Heat/Wind Chill Index	Work/Rest Cycle Guidance
Red Flag (Cold)	10° F and below	20 +/- 5 min / 10 min
Yellow Flag (Cold)	11° F to 25° F	30 +/- 5 min / 10 min
Non-extreme	26° F to 85° F	45 +/- 5 min / 15 min
Yellow Flag (Heat)	86° F to 95° F	30 +/- 5 min / 30 min
Red Flag (Heat)	96° F and above	20 +/- 5 min / 30 min

125 *Regardless of the Work/Rest Cycle Guidance, it is imperative that individuals know their limits. The effects of heat stress,*
 126 *particularly on the un-acclimatized worker, can be severe. An objective evaluation of an individual's fatigue shall be made*
 127 *frequently by oneself as well as other members of their crew. An individual's fatigue level will always supersede any work/rest*
 128 *guidance, and earlier and extended rest periods and rehabilitation shall be initiated whenever necessary.*

129

130 **Protective Equipment:**

131 Regardless of Heat/Wind Chill Index value, all necessary protective equipment will be donned and
 132 employed in accordance with all regulations at all times (e.g. safety glasses/goggles, work gloves, etc.)

133

134 **OPERATIONAL GUIDELINES FOR DEPARTMENT EXTREME WEATHER ADVISORIES:**

135 **Red-Flag (Hot or Cold): Operations during Moderate to Severe Hot/Cold Conditions**

136 *(Wind Chill Index 10 degrees F and below or heat index 96 degrees F and above)*

137

- 138 • *Extreme Caution* should be exercised for all outside activities.
- 139 • Non-essential outside activities shall be suspended and only limited activities that are essential to
 140 maintenance, preparation, and operations of the Department shall be undertaken.
 - 141 ○ Routine duties (training, PT, maintenance, etc.) shall be confined to areas with appropriate
 142 climate controls.
 - 143 ○ Permitted activities include: snow removal, hydrant/draft tank dig out, snow chains,
 144 apparatus fueling, limited building/apparatus maintenance, as well as in-service
 145 inspections/fire hazard surveys.
- 146 • Necessary precautions to protect personnel shall be taken by emergency personnel, supervisors,
 147 and incident commanders when operating during emergency incidents and in outside
 148 environments.
 - 149 ○ Formal incident rehabilitation shall be established if operational work cycles exceed 10
 150 minutes.
 - 151 ○ Work/Rest Cycle guidance for activities performed under this advisory is a 20 +/- 5 minute
 152 work period to a 10 minute rest period. This rest period should allow for aerobic recovery,
 153 rehydration, and temperature normalization.
 - 154 ○ Cool, shaded, sheltered areas out of the elements should be used for rest areas in times of
 155 heat. Warm, heated, sheltered areas out of the elements should be used for rest areas in
 156 times of cold.
 - 157 ○ Access to hydration and drying should be facilitated in both cases.
 - 158 ○ Access to personal preparation materials should be facilitated.
- 159 • Daily uniforms shall be adjusted to provide protection or relief from weather conditions, but shall
 160 remain in compliance with Department issued/approved apparel.
 - 161 ○ Personnel operating outside should wear their class "C" uniform with optional clothing
 162 items appropriate for the level of cold or heat and physical activity that will be undertaken
 163 (e.g. for cold; long underwear, caps, gloves, insulated jackets, coveralls, insulated boots,
 164 etc.).

165

166 **Yellow-Flag (Hot or Cold): Operations during Relative Hot/Cold Conditions**

167 *(Wind Chill Index 11 degrees F to 25 degrees F or Heat Index 86 degrees F to 95 degrees F)*

- 168 • *Caution* should be exercised for all outside activities.
- 169 • Non-essential outdoor activities shall be kept to a minimum, limited in duration, and should be
170 limited to those classified with a light to moderate workload.
 - 171 ○ All outside activities are permitted.
 - 172 ○ Formal incident rehabilitation shall be established if operational work cycles exceed 15
173 minutes.
 - 174 ○ Outdoor training is permitted, but supervisors and training event commanders shall
175 institute appropriate strategies to mitigate increased risk of exposure injury, which shall
176 include a formal incident rehabilitation process during training exercises. Adjustment of
177 the training event may be necessary.
 - 178 ○ Emergency personnel are encouraged to work in climate-controlled areas when possible.
 - 179 ○ Outdoor physical training during this time should be limited in nature.
- 180
- 181 • Necessary precautions to protect personnel shall be taken by emergency personnel, supervisors,
182 and Incident Commanders when operating during emergency incidents and in outside
183 environments.
 - 184 ○ Work/Rest Cycle guidance for activities performed under this advisory is a 30 +/- 5 minute
185 work period to a 10 minute rest period. This rest period should also allow for re-warming
186 (heated area or shelter to break the wind) and a change of clothing if needed.
 - 187 ○ Operational Personnel should ensure a satisfactory level of hydration before and during all
188 activities.
- 189
- 190 • Daily uniforms may be adjusted at the discretion of the Field Battalion Chief or Incident
191 Commander in order to provide protection or relief from weather conditions, but shall remain in
192 compliance with Department issued/approved apparel.
 - 193 ○ Personnel operating during this time should wear their class “C” uniform with optional
194 approved clothing items appropriate for the level of cold and physical activity that will be
195 undertaken.

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197 **Non-Extreme Weather Conditions: Operations during Normal to Mild Heat and Cold Conditions**

198 *(Wind Chill/Heat Index values of 26 degrees F to 85 degrees F)*

- 199 • All personnel, especially officers and supervisors, should be aware that prolonged exposure, even
200 to non-extreme weather conditions, can result in injury, especially when personnel are wet. Care
201 must be taken, both at an individual and supervisory level, to be accountable for adequate and
202 appropriate preparation for operating in whatever outside conditions might occur.
- 203 • No prescribed limitations for activities.
- 204 • All outside activities are permitted.
- 205 • Work/Rest Cycle guidance for activities performed under this advisory is a 45 +/- 5 minute work
206 periods to a 15 minute rest period each hour. The rest period should be taken in well-ventilated
207 shaded areas and include fluids for re-hydration.
- 208 • Daily uniforms and clothing for personnel operating during this time should be their class “C”
209 uniform with optional approved clothing items appropriate for the physical activity that will be
210 undertaken.

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REFERENCES

- 214 • National Fire Protection Agency 1500: Standard on Fire Department Occupational Safety and
215 Health Programs (2013).
- 216 • American Conference of Governmental Industrial Hygienists (ACGIH): Documentation of the
217 Threshold Limit Values and Biological Exposure Indices (1996).
- 218 • National Institute for Occupational Safety and Health: Criteria for a Recommended Standard-
219 Occupational Exposure to Hot Environments (1986).
- 220 • U.S. Fire Administration: Emergency Incident Rehabilitation (February 2008), available
221 at: https://www.usfa.fema.gov/downloads/pdf/publications/fa_314.pdf.

222

SUMMARY OF DOCUMENT CHANGES

- 223 Established red and yellow flag alerts for cold emergencies
- 224 Adjusted the title
- 225 Added Non-Essential, Non-Emergency Work/Rest Cycles.
- 226 Established NWS as the official temperature source, and BWI as the default location

227

FORMS/ATTACHMENTS

- 228 • Attachment A: Heat Stress Index and Injury Threat Chart
- 229 • Attachment B: Wind Chill Chart with Frostbite Injury Times
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APPROVED

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 John S. Butler, Fire Chief
 Office of the Fire Chief

Author:


 Joann Rund, Assistant Chief
 Bureau of Occupational Safety and Health

Heat Stress Index and Injury Threat Chart

NOAA's National Weather Service

Heat Index

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					
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75	84	88	92	97	103	109	116	124	132							
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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

Wind Chill Chart with Frostbite Injury Times



Wind Chill Chart

