

**BY ORDER OF THE COMMANDER
507 AIR REFUELING WING**

**507TH AIR REFUELING WING
INSTRUCTION 48-106**



4 MARCH 2011

Medical/Safety

PREVENTION OF COLD INJURY

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 48-1, *Air and Space Maintenance*, and Air Force Instruction (AFI) 21-101/AFRCSUP1, *Aircraft and Equipment Maintenance Management*. It describes guidelines to aid in the management of cold weather operations at home station or at deployed locations. At deployed location, these guidelines should be followed when there are not any locally written. These policies and procedures are established for the prevention of personal injury due to cold exposure and are applicable to outside operations only. This directive is applicable to all 507 Air Refueling Wing (ARW) personnel. Refer recommended changes and question about this publication to the Office of Primary Responsibility (OPR) using the Air Force Form (AF Form) 847, *Recommendation for Change of Publications*, route AF Form 847 from the field through the appropriate functional's chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Record*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afrims/afrims/rims.cfm>.

1. POLICY: 507 ARW personnel may be subject to extreme cold weather at home station and when deployed. Low temperatures coupled with strong winds may produce cold injury to persons working outside. The policy of the Command is to continue the mission while ensuring personnel do not receive injuries when working in the cold.

2. INTRODUCTION:

2.1. Prolonged exposure to cold air, or immersion in cold water, even at temperatures above freezing can lead to dangerous hypothermia.

2.2. Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the body temperature has fallen to 35 degrees Centigrade (96.8 degrees Fahrenheit). Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences. Any of the above symptoms must be taken as a sign of danger to workers. Exposure should be immediately terminated for any workers when severe shivering occurs. Useful physical or mental work becomes limited when severe shivering occurs.

3. RESPONSIBILITIES:

3.1. It is the responsibility of each supervisor to monitor weather conditions before and during outdoor activities. Supervisors may obtain weather data from additional sources such as the Command Post, MOC, the National Weather Service, websites, local radio and television reports. If conditions appear unfavorable or deteriorating, supervisors should immediately verify the weather conditions. Any supervisor observing an outdoor operation, which is thought to be unsafe due to weather conditions, should immediately stop the operation and ask for instructions from the control center or Command Post. Supervisors will direct compliance with the policy to make certain all personnel are protected against cold weather injury.

3.2. The supervisor is responsible for training workers to observe co-workers for evidence of cold injury and to identify adverse symptoms. The buddy system will be used during periods of extremely cold weather. The work rate will not be so high as to produce sweating which would result in wet clothing.

4. EVALUATION AND CONTROL:

4.1. Recommendations given are in accordance with American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances and Physical Agent and Biological Exposure Indices.

4.2. Equivalent chill temperature (attachment 1) down to -20 degrees Fahrenheit. Supervisors should caution personnel to wear proper clothing and allow personnel the freedom to warm themselves often enough to prevent pain and without seriously detracting from operational readiness.

4.3. Equivalent chill temperature between -20 degrees F and -30 degrees F. Personnel should work in 30-minute increments. At the end of each 30-minute period, personnel should be sent to a warm area until all body areas are returned to normal temperature.

4.4. Equivalent chill temperature between -31 degrees F and -60 degrees F. Personnel should work in 15- minute increments. At the end of each 15-minute period, personnel should be sent to a warm area until all body areas are returned to normal temperature.

4.5. Equivalent chill temperature lower than -60 degrees F. All nonessential mission work will cease. Mission and essential work will continue with extreme caution. Personnel will be sent to warm areas as often as necessary to prevent frostbite and hypothermia.

4.6. These limitations are guidelines for supervisors and are to be used with discretion.

5. RECOMMENDED CLOTHING GUIDELINES:

5.1. Use of protective clothing is very important to prevent cold weather exposure. The following clothing is recommended.

5.2. Clothing should be loose fitting and layered.

5.3. Full leg, arm, and body protection with thermal underwear.

5.4. Footwear and gloves with insulating qualities sufficient to prevent against moisture and cold.

5.5. Head covering including face mask in order to protect the entire head.

5.6. Cold weather clothing is available to military personnel through individual equipment issue. (Retail Sales Section, 72 ABW/LGSME).

5.7. Civilian employees living in the area are expected to supply their own cold weather clothing adequate for completing the mission subject to conditions of employment, except as provided for by arbitration decision or authorization specified by applicable USAF Tables of Allowance. Failure to comply with the requirements may result in appropriate administrative actions.

6. Prescribed and Adopted Forms:

6.1. Prescribed Forms: None

6.2. Adopted Forms:

AF Form 847, *Recommendation for Change of Publications*

JEFFREY GLASS, Colonel, USAFR
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 48-1, *Air and Space Maintenance*, 03 Oct 2005

AFI 21-101_AFRCSup1, *Aircraft and Equipment Maintenance Management*, 13 Jan 2011

AFMAN 33-363, *Management of Record*, 01 March 2008

Abbreviations and Acronyms

ABW— Air Base Wing

ACGIH— American Conference of Governmental Industrial Hygienists

AF— Air Force

AFI— Air Force Instruction

AFMAN— Air Force Manual

AFPD— Air Force Policy Directive

ARW— Air Refueling Wing

ARWI— Air Refueling Wing Instruction

CV— Vice Commander

LGSME— Logistics Supply

MOC— Maintenance Operation Center

OPR— Office of Primary Responsibility

RDS— Records Disposition Schedule

SE— Safety

USAFR— United States Air Force Reserves

Attachment 2

COOLING POWER OF WIND ON EXPOSED FLESH

TABLE 2. Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	<i>LITTLE DANGER</i> In < hr with dry skin. Maximum danger of false sense of security				<i>INCREASING DANGER</i> Danger from freezing of exposed flesh within one minute.				<i>GREAT DANGER</i> Flesh may freeze within 30 seconds.			
	Trenchfoot and immersion foot may occur at any point on this chart.											

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

☐ Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36°C (96.8°F) per cold stress TLV.

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Cold Stress