

RACES Net Notes for January 13, 2010

News and Announcements

1) Upcoming Events

2/20 Yuma Hamfest/ARCA Meeting
2/20-21 Search and Rescue Academy, Sierra Vista
3/06 Old Pueblo 50 Miler, Santa Rita Mountains
3/13 Scottsdale Hamfest/ARCA Meeting, Ft McDowell Casino
4/24-25 La Vuelta de Bisbee

2) SAR Academy - If you are relatively new to RACES, I strongly recommend that you attend the SAR academy. It is a one time requirement but brings you up to speed on the legal basis for why the Sherriff's Office is responsible, exposes you to the common vocabulary you will hear on the radio as well as the techniques you will hear discussed on the radio. All of these will help you, the operator, react appropriately and understand what is going on during a mission. If you have attended a previous academy, a refresher every so often is also recommended. The Academy is two days long from approximately 8:30 – 5:00 with a break for lunch. It consists mostly of indoor classes but there is also an outdoor segment so dress accordingly.

Training – Hypothermia and Cold Weather Injuries. Since this is the season for cold weather injuries I thought I would borrow some material from the Search and Rescue crew for tonight's training.

We all must take precautions to stay safe in the outdoors. A lot of our missions take place at high altitudes and at night when it is the coldest. So, how do we do lose body heat to the environment? Very simple, through radiation, conduction, convection and evaporation. Let's discuss how your body actually regulates core temperature.

Radiation—loss of heat to the environment, due to the temperature gradient (occurs only as long as the ambient temperature is below 98.6). Factors important in radiant heat loss are the surface area and the temperature gradient or difference between your body temperature and the surrounding environment.

Conduction— through direct contact between objects, molecular transference of heat energy. Water conducts heat away from the body 25 times faster than air, because it has a greater density. **Staying Dry = Staying Alive!!** Normally conductive heat loss accounts for about 2% of overall loss. However, when the clothes are wet the heat loss is increased at least 5 times.

Convection – is a process of conduction, where one of the objects is in motion (wind). The Wind Chill is air convection. The wind chill table gives a reading of the amount of heat lost to the environment relative to still air temperatures. So what is Wind Chill Temperature? It is the temperature it "feels like" outside and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the wind increases, the body is cooled at a faster rate causing the skin temperature to drop. Wind Chill does not impact inanimate objects like car radiators and exposed water pipes, because these objects cannot cool below the actual air temperature. It sure can affect bare skin. I am attaching a pdf file from the National Weather Service with the revised wind-chill factors for your use.

Evaporation—Perspiration/ evaporation of water to remove excess heat.

Sweating—body response to remove excess heat

Respiration—air is heated as it enters the lungs and is exhaled with an extremely high moisture content.

It is very important to recognize the strong connection between fluid levels, fluid loss, and heat loss. As body moisture is lost through the various evaporative processes the overall circulating volume is reduced, which can lead to dehydration. This decrease in fluid levels makes the body more susceptible to hypothermia and other cold injuries.

This is how your body regulates your core temperature.

Vasodilatation—increases surface blood flow, increases heat loss (when an ambient temperature is less than body temp).

Vasoconstriction—decreases blood flow to periphery, decreases heat loss.

Sweating—cools body through evaporative cooling

Shivering—generates heat through increase in chemical reactions required for muscle activity. Visible shivering can maximally increase surface heat production by 500%. However this is limited to a few hours, because of the depletion of muscle glucose and the onset of fatigue.

Increasing/Decreasing activity—will cause corresponding increases in heat production and decrease in heat production

Behavioral response—putting on or taking off layers of clothing will result in heat regulation.

Hypothermia:

Is a decrease in the core temperature to a level at which normal muscular and cerebral functions are impaired. Conditions leading to hypothermia:

- * Cold temperatures
- Improper clothing and equipment
- Wetness
- Fatigue, Exhaustion
- Dehydration
- Poor food intake
- No knowledge of hypothermia

Alcohol intake—causes Vasodilatation leading to increased heat loss.

Hypothermia Temperatures: Below freezing: 40 degrees—wind and rain; 60 degrees—hurricanes.

Any temperature less than 98.6 degrees can be linked to hypothermia (hypothermia in the elderly in cold houses) or peripheral circulation problems such as trench foot or frostbite.

Signs and symptoms: Watch for the “**umbles**” - stumbles, mumbles, fumbles, and grumbles which show changes in motor coordination and levels of consciousness.

Mild Hypothermia—core temperature 98.6 to 96 degrees

Shivering—not under voluntary control.

Cannot do complex motor functions (ice climbing or skiing) can still walk and talk.

Vasoconstriction to periphery

Moderate Hypothermia—core temperature 95—93 degrees

Dazed consciousness

Loss of fine motor coordination—particularly in hands-can't zip up parka due to peripheral blood flow.

Slurred Speech

Violent Shivering

Irrational undressing—paradoxical undressing- persons starts to take off clothing and is unaware that he / she is cold.

I don't care attitude

Severe Hypothermia – Core temperature 92-86 degrees, life threatening.

Shivering occurs in waves, violent the pause, pauses get longer until shivering finally ceases, because the heat output from burning glycogen in the muscle is not sufficient to counteract the continually dropping core temperature, the body shuts down on shivering to conserve glucose. Person falls to the ground, can't walk, curls up into a fetal position to conserve heat. Muscle rigidity develops because peripheral blood flow is reduced and due to lactic acid and CO2 build up in the muscles.

Skin is pale

Pupils dilate

Pulse rate decreases

At 90 degrees the body tries to move into hibernation, shutting down all peripheral blood flow and reducing breathing rate and heart rate. At 86 degrees the body is in a state of "metabolic ice box." The person looks dead but is still alive.

Death from Hypothermia:

Breathing becomes erratic and very shallow

Semi-conscious

Cardiac arrhythmias develop, any sudden shock may set off Ventricular Fibrillation

Heart stops

We have found several of our winter victims in various stages of hypothermia. When we are in the field under these severe weather conditions, use the buddy system to make sure your working companion does not ever get that far advanced. Check with them periodically. This will help ensure that we continue to be part of the solution and NOT part of the problem.

Don't forget our next Net will be on January 26 at 2000 Hrs. Don't forget the CARA net on Thursday evening at 1900 hours on the 146.76 repeater. This is N7INK and the net is closed.

Bob

Robert L Hollister

Thought for the day:

Life Lesson # 40. If we all threw our problems in a pile and saw everyone else's, we'd grab ours back. - Regina Brett