



**US Army Corps
of Engineers** ®
Rock Island District

Tower Times

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Spotlight on the District

Jared Miller

Crane Operator/Diver, Illinois Waterway Maintenance Structures Unit 1

Story and photo by Mark Kane

Making a living by doing what you enjoy doing may be a novel idea to some and an aspiration to others, but for Jared Miller, Illinois Waterway Maintenance Structures Unit 1, it's reality.

Miller says he's always enjoyed being outside and doing different things.

"I like the different tasks," says Miller. "One day I'll be working on wickets in Peoria and the next week I'll be doing gate work somewhere else."

Miller's job entails a lot of different duties from rebuilding lock gates and welding, to concrete work and being a deck hand.

"I'm always learning something new because I'm always doing something different all the time; there's never a dull moment," said Miller.

Miller says it's a combination of the diverse duties he's able to perform and the environment that he works in that attracted him to the Corps of Engineers.

"I grew up around Lock and Dam 21 and did a lot of boating; so I like the river and the way the Corps supports it," said Miller.

Before working for the Corps, Miller completed four years of college at Western Illinois University at Macomb, Ill, and then served four years of active duty in the Army during Desert Storm.

"I was a tank gunner," said Miller. "The experience I had in the Army was excellent, I loved every minute of it."

Miller also served in the Army Reserves, as well as the Army National

Guard after his Army active duty service ended in 1995.

Shortly after leaving the military in 1995, Miller accepted a position with the District, and coincidentally, the same agency and District where his father,

excellent source of advice," said Miller.

Having respect for people with experience doesn't come lightly to Miller, it's something he takes pretty serious.

"The people I work with are a great crew and the older guys are great mentors," said Miller. "The young guys have fresh ideas, but the guys that have been doing the job are their mentors. The dams are so old that it's amazing what it takes to keep them up. Some of the things are so old that even the guys that have been around awhile have only worked on that item once. That experience is valuable and it's really important for it to get passed down. The same will be true for the young guys that are working on the dams today. Something that we work on today might not need repair for another 20 years, and then that 20-year-old experience will be important. It's really important to pay attention to the experience these guys have and pass it on."

Miller's hobbies include working in the garage on different things, hunting (deer and squirrel) and fly-fishing. He also considers himself to be a health fanatic, as he likes weightlifting and running.

"I like to be outside a lot and being around water," notes Miller.

Miller's advice to anyone reading this article is, "Pay attention to the experienced guys that are around you and one of these days you're going to need it. Don't take things for granted and just enjoy your work." 📧



Jared Miller operates a Hammer drill during a handrail installation project at Dresden Island Lock and Dam. Also pictured is Russell Stilwell (left) and Ed Picken (center), both from Illinois Waterway Maintenance Structures Unit 2.

Marion Miller, already worked. Marion works at Lock and Dam 22 in Saverton, Mo.

"He's been an inspiration and an

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Quality Award 5 Presented to District



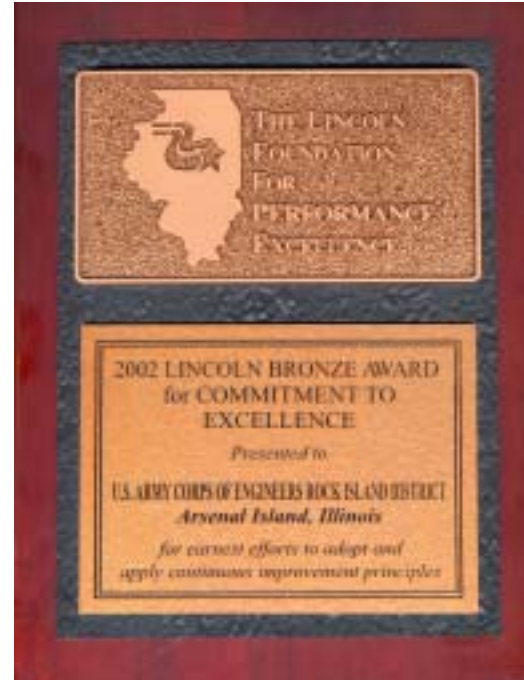
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On the Cover

A red-tailed hawk perches itself outside the Clock Tower Annex waiting for possible prey to come close enough to snatch.

Photo by Mark Kane.

Most people make some sort of New Year's resolution. But few go as far as writing them down. Fewer still have the opportunity to share them with a few hundred of their friends by publishing them.

They say, "A journey of a thousand miles begins with a single step." This is the case with each of these resolutions. We won't get the thousand-mile journey done, but we can make a few steps in the right direction.

Here are my resolutions for 2003, and I hope everyone in the District will adopt them ... or some part of them for 2003.

Begin developing a costing model for District products

This effort collects data from previous projects and will lead us to examine the

costs of typical projects and outputs so we can begin to make our products more affordable for our customers.

Measure our products and services

Part of our job is to figure out what's significant to the organization and its people and find ways together of measuring what's significant. If we can measure it, we can improve it.

Implement the Project Management Business Process

This entails several parts. First, continuing our training effort, next, providing properly scoped management plans for our projects and programs. And finally, ensuring we are ready for the new USACE project management



Determine the workforce skills and staffing to carry us toward 2010

Having the right numbers and skills in our workforce will always be a challenge. I want to create a disciplined process for determining these skills and levels.

Attract and retain the right people

I have looked at our recruiting procedures and hiring processes and have asked a number of you why you like to work in the District. I want to work on institutionalizing some of your ideas on recruiting, work some of the issues we have in extended personnel vacancies, and make our workplace a more attractive place to work.

Each of these probably has the proverbial "thousand mile journey" ahead of us. I'm asking for your help in taking a few steps down these roads in 2003. ■

software when it's ready.

Improve the District's management processes

Do we always know the top priorities? Do we always have funding for the project we need to work on today? The answers to these and similar questions should always be "Yes." Sometimes it's not. I want to answer "Yes" more often.

Develop an organized outreach program

There are water resource problems in our area that we have the authority to solve for our customers, but some of our customers don't know we can help them. This effort will tell the good news of what the Corps



District Receives Junior Achievement Diamond Award

By Justine Barati, Public Affairs

The Rock Island District received Junior Achievement's Diamond Award in December. This is the third year the District has received the award.

The Diamond Award is bestowed upon organizations that have contributed 15,000 to 24,999 points to JA. The Diamond Award is the fourth highest category of tiered giving. The District received the award for their continued support of JA by providing classroom volunteers and volunteers for JA Groundhog Job Shadow Day.

Tiered giving acknowledges the total support organizations provided to JA. This structure includes: financial support by an organization and its employees; participation by the organization's employees as classroom volunteers, Job Shadow

Day hosts, and in special events; and in-kind donations of goods and services. All participation is converted into points.

Volunteers embody the heart of JA. The continued support of the District's JA volunteers made this award possible. The 2001-2002 JA classroom volunteers were: Cliff Artis, Heather Bishop, Mike Hrzic, Kevin Landwehr, and Rick Nickel of Engineering Division; Joe Kellett of Construction Division; Damon Barati of Information Management; Jim Aidala, Sue Clevestine, Mattie Martin, and Steve Russell of Operations Division; and Gail Clingerman, Camie Knollenberg, Kraig McPeck, and Tracy Street of Programs and Project Management. Thanks also go to the numerous 2002 Job Shadow Day volunteers.

Quality Award Presented to District

By Ron Fournier, Public Affairs

The Lincoln Foundation for Business Excellence awarded the Bronze Award for Commitment to Excellence to the District in ceremonies held Dec. 10 in Chicago.

The Lincoln Bronze Award for Commitment to Excellence is bestowed upon organizations demonstrating a plan and commitment to implement key management processes to achieve performance excellence. Five Illinois organizations received recognition with either the Progress Towards Excellence or Commitment to Excellence award. The District was also awarded the Bronze Award in 2001.

"This year's applicants were all exceptional," says John L. Quick, chairman of the board of The Lincoln Foundation for Performance Excellence and corporate vice president of quality at Baxter International. "The goal of the Foundation is to assist Illinois organizations in improving their performance and to enhance the state's competitive edge and quality of life through the assessment and recognition of performance excellence. The effectiveness of our program is evidenced by the performance of these organizations and the progress they have made."

The Lincoln Award is both a rigorous analytic process and a prestigious honor that encourages organizations to achieve their

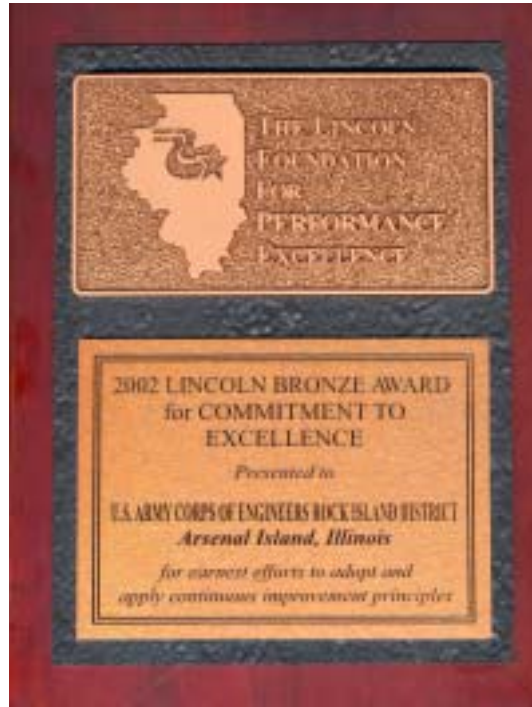
full potential. The Lincoln Award criteria provide a model for continuous improvement to organizations in search of excellence in five sectors: Industry, Service, Health Care, Education, and Government. Applicants are measured against the Foundation's

seven criteria of excellence, patterned after the Malcolm Baldrige National Quality Award: Leadership, Strategic Planning, Customer and Market Focus, Information and Analysis, Human Resource Development and Management, Process Management, and Organization Results.

"Winning the Commitment to Excellence Award for the second time acknowledges that we are on the path to permanent and continuous improvement," said Col. William Bayles, District engineer. "We are continuing to implement key business management processes that are leading us to a higher degree of business performance and support to the citizens of the Midwest."

Launched in 1995, The Lincoln Foundation for Performance Excellence is a not-for-profit organization that assists Illinois organizations to strive for performance excellence by planning and implementing sound management

processes. Each year a select Lincoln Board of Examiners and Panel of Judges review award applications and determine which applicants have earned recognition.



On the 'Net

www.lincolnaward.org



JA classroom volunteers dedicated one hour a week for five to ten weeks helping students understand the importance of free enterprise. These volunteers used JA-provided curriculum and incorporated their personal experiences to provide a firsthand example of the importance of understanding business. According to the JA 2001-2002 annual report, "An impressive 85 percent of JA in-school volunteers value the JA experience so much that they participate again after their first experience." Twelve people participated as classroom volunteers during the Fall 2002 semester, and twelve will participate during the Spring 2003 semester. Names are still being accepted for the spring semester.

Job Shadow Day volunteers spent a day giving 8th-grade

students a firsthand look at the world of work. According to the JA 2001-2002 annual report, "More than 2,900 area students were hosted by JA Job Shadow Day volunteers in 2002, receiving a day of observation, education, and inspiration. Through this experience, students are able to see how basic skills are used in the workplace." The District is conducting Job Shadow Day again this year on Feb. 4; 22 employees are participating.

If you are interested in becoming a JA volunteer, or if you would like more information about the program, please contact Justine Barati by phone at 309-794-5204 or by e-mail at Justine.A.Barati@usace.army.mil.

JA contributed to this article.

Although the Midwest has been experiencing above normal temperatures this season, winter weather poses hazards and can cause injuries even at 55 degrees Fahrenheit.

These injuries are broken down into two categories - freezing and non-freezing.

Freezing cold injuries occur whenever the air temperature is below 32 degrees Fahrenheit.



At some temperatures frostbite can occur within minutes. Note the blistering and swelling caused by tissue freezing. Severe frostbite may result in loss of fingers and toes or other exposed body parts.

Freezing limited to the skin surface is called frostnip. Frostnip involves freezing of water on the skin surface, causing the skin to become reddened and possibly swollen. Although painful, there is usually no further damage after rewarming the damaged area.

Repeated frostnip in the same area can

stiff or woody. With frostbite, the forming of ice crystals and the lack of blood flow to a frozen area damage the tissues. After thawing, swelling may occur, worsening the injury.

The Illinois Department of Public Health (www.idph.state.il.us) reports to treat frostbite; warm the affected part of the body gradually. Wrap the area in blankets, sweaters, coats, etc. If no warm wrappings are available, place frostbitten hands under the armpits or use your body to cover the affected area. And seek medical attention immediately.

Another fact reported by IDPH is not to rub frostbitten areas; the friction can damage the tissue. Also, do not apply snow to frostbitten areas, because its temperature is below freezing, and snow will aggravate the condition.

Freezing cold injuries most commonly affect the toes, fingers, earlobes, chin, cheeks and the nose - the body parts that are

often left uncovered in cold temperatures.

Non-freezing cold injuries can occur when conditions are cold and wet (air temperatures between 32 and 55 degrees Fahrenheit) and the hands and feet cannot be kept warm and dry. The most prominent non-freezing cold injuries are chilblain and trench foot.

for prolonged periods. The average duration of exposure resulting in trench foot is three days.

Often the first sign of trench foot is itching, numbness or tingling pain. Later the feet may appear swollen and the skin mildly red, blue or black. Untreated, trench foot can eventually require amputation.

Non-freezing cold injuries mostly occur in the lower limbs of the body, such as the lower legs and feet.

Ways of preventing cold-weather injuries are:

- Wear several layers of clothing, rather than one or two bulky layers. Air is trapped between these layers and acts as insulation against the cold. Clothing filled with wool, down and synthetic foams may help retain body heat.
- Always wear a hat, scarf and facemask. As much as 70 percent or more of the body's heat can be lost through radiation and convection from an uncovered head. A scarf or facemask may help prevent frostbite injuries to the nose and ears.
- Drink warm liquids like hot chocolate. Sugar contained in these beverages helps the body to generate additional heat. But avoid alcoholic and caffeine beverages, which can give people a false sense of warmth.
- Avoid wet clothing, shoes and socks.
- Insulated gloves and socks may help to prevent frostbite injuries to fingers and toes. Avoid skin contact with metal objects exposed to the cold for extended periods.

More in-depth coverage of cold weather injuries is available in the Tower Times online edition located at:

[www.mvr.usace.army.mil/
PublicAffairsOffice/TowerTimes/
TowerTimesHomePage.htm](http://www.mvr.usace.army.mil/PublicAffairsOffice/TowerTimes/TowerTimesHomePage.htm).

Marques Walker, Preventive Medicine, Walter Reed Army Medical Center, D.C., contributed to this article. ■

On the 'Net

[www.cdc.gov/nceh/hsb/
extremecold](http://www.cdc.gov/nceh/hsb/extremecold)



By Mark Kane Avoiding Cold-Weather Injuries

dry the skin, causing it to crack and become very sensitive. Frostnip should be taken seriously since it may be the first sign of frostbite.

When freezing extends deeper through the skin and flesh, the injury is called frostbite. Frostbite occurs when skin tissue and blood vessels are damaged. As frostbite develops, skin will numb and turn to a gray or waxy white color. The area will be cold to the touch and may feel

Chilblain is an inflammatory swelling or sore caused by exposure to cold and wetness. It appears as red, swollen skin, which is tender, hot to the touch, and may itch. This can worsen to an aching, prickly ("pins and needles") sensation, and then numbness. While painful, it causes little or no permanent impairment.

Trench foot is a very serious cold injury, which develops when the skin of the feet is exposed to moisture and cold

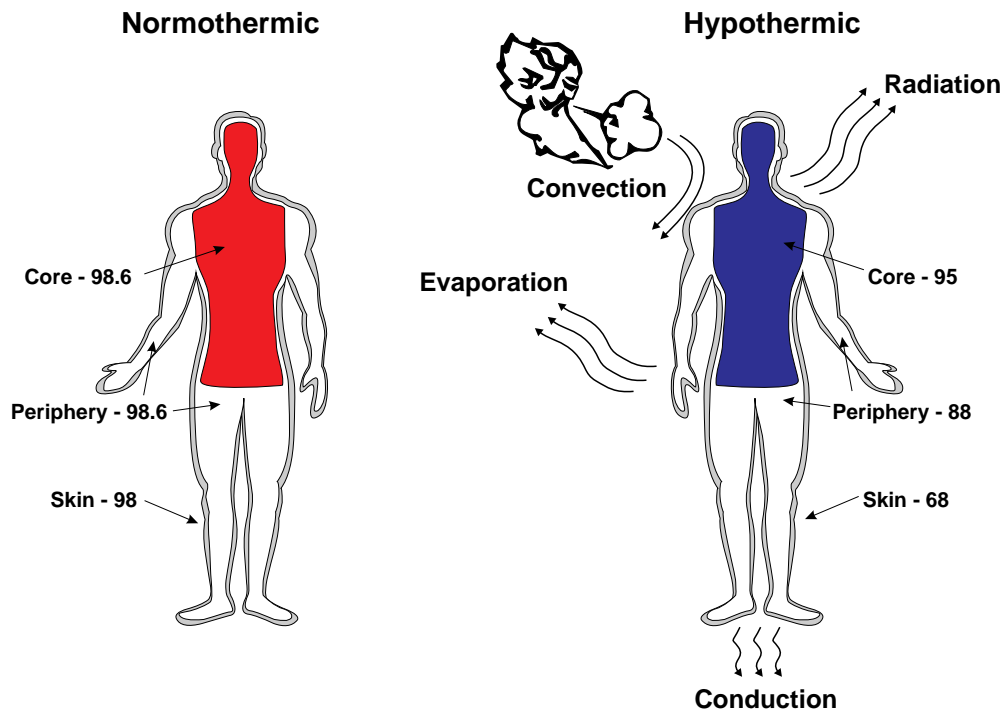


Outdoor Action Guide to Hypothermia and Cold Weather Injuries

by Rick Curtis

Traveling in cold weather conditions can be life threatening. The information provided here is designed for educational use only and is not a substitute for specific training or experience. Princeton University and the author assume no liability for any individual's use of or reliance upon any material contained or referenced herein. Medical research on hypothermia and cold injuries is always changing knowledge and treatment. When going into cold conditions it is your responsibility to learn the latest information. The material contained in this article may not be the most current. Copyright © 1995 Rick Curtis, Outdoor Action Program, Princeton University.

How We Lose Heat to the Environment



1. **Radiation** - loss of heat to the environment due to the temperature gradient (this 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.
2. **Conduction** - through direct contact between objects, molecular transference of heat energy
 - a. Water conducts heat away from the body 25 times faster than air because it has a greater density (therefore a greater heat capacity). **Stay dry = stay alive!**
 - b. Steel conducts heat away faster than water
 Example: Generally conductive heat loss accounts for only about 2% of overall loss. However, with wet clothes the loss is increased 5x.

3. Convection - is a process of conduction where one of the objects is in motion. Molecules against the surface are heated, move away, and are replaced by new molecules which are also heated. The rate of convective heat loss depends on the density of the moving substance (water convection occurs more quickly than air convection) and the velocity of the moving substance.

a. Wind Chill - is an example of the effects of air convection, the wind chill table gives a reading of the amount of heat lost to the environment relative to a still air temperature.

4. Evaporation - heat loss from converting water from a liquid to a gas

a. Perspiration - evaporation of water to remove excess heat

- Sweating - body response to remove excess heat
- Insensible Perspiration - body sweats to maintain humidity level of 70% next to skin - particularly in a cold, dry environment you can lose a great deal of moisture this way
- Respiration - air is heated as it enters the lungs and is exhaled with an extremely high moisture content
- It is 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 level makes the body more susceptible to hypothermia and other cold injuries.

Response to Cold

Cold Challenge - (negative factors)

- Temperature
- Wet (rain, sweat, water)
- Wind (blowing, moving, e.g. biking)

Total = Cold Challenge

Heat Retention - (positive factors)

- Size/shape (Eskimo vs. Masai)
- Insulation (layering/type)
- Fat (as insulation)
- Shell/core (shunt blood to core) shell acts as a thermal barrier

Total = Heat Retention

Heat Production - (positive factors)

- Exercise, shivering
- Limited by:
 - Fitness
 - Fuel stores (glycogen)
 - Fluid status (efficient exercise)
 - Food intake (kindling, sticks, logs)

Total = Heat Production

Heat Retention Insulation Body Fat Surface to Vol. Shell/Core Shunt	+	Heat Production Exercise Shivering	<	Cold Challenge Temperature Wetness Wind	=	Hypothermia
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Your Body Core Temperature

1. Heat is both required and produced at the cellular level. The environment acts as either a heating or a cooling force on the body. The body must be able to generate heat, retain heat, and discharge heat depending on the body activity and ambient external temperature.
2. Body temperature is a measure of the metabolism - the general level of chemical activity within the body.
3. The hypothalamus is the major center of the brain for regulating body temperature. It is sensitive to blood temperature changes of as little as 0.5 degrees Celsius and also reacts to nerve impulses received from nerve endings in the skin.
4. The optimum temperature for chemical reactions to take place in the body is 98.6 degrees F. Above 105 F many body enzymes become denatured and chemical reactions cannot take place leading to death. Below 98.6 F chemical reactions slow down with various complications which can lead to death.
5. **Core** = the internal body organs, particularly the heart, lungs, and brain.
Periphery = the appendages, skin, and muscle tissue.
6. Core temperature is the temperature that is essential to the overall metabolic rate of the body. The temperature of the periphery is not critical.

How Your Body Regulates Core Temperature

1. **Vasodilation** - increases surface blood flow, increases heat loss (when ambient temperature is less than body temperature). Maximal vasodilation can increase cutaneous blood flow to 3000 ml/minute (average flow is 300-500 ml/minute).
2. **Vasoconstriction** - decreases blood flow to periphery, decreases heat loss. Maximal vasoconstriction can decrease cutaneous blood flow to 30 ml/minute.
3. **Sweating** - cools body through evaporative cooling
4. **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 depletion of muscle glucose and the onset of fatigue.
5. **Increasing/Decreasing Activity** will cause corresponding increases in heat production and decreases in heat production.
6. **Behavioral Responses** - putting on or taking off layers of clothing will result in heat regulation

Hypothermia

1. **Hypothermia** - "a decrease in the core body temperature to a level at which normal muscular and cerebral functions are impaired." - Medicine for Mountaineering
2. **Conditions Leading to Hypothermia**
 - Cold temperatures
 - Improper clothing and equipment
 - Wetness
 - Fatigue, exhaustion
 - Dehydration
 - Poor food intake
 - No knowledge of hypothermia
 - Alcohol intake - causes vasodilation leading to increased heat loss

3. **What are "hypothermia" temperatures**

- Below freezing
- 40 degrees
- 60 degrees - Ex. rain and high winds
- Any temperature less than 98.6 degrees can be linked to hypothermia (ex. hypothermia in the elderly in cold houses) or peripheral circulation problems such as trench foot and frostbite.

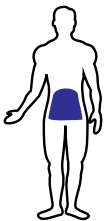
4. Signs and Symptoms of Hypothermia



- 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 - 96 degrees F
 - Shivering - not under voluntary control
 - Can't do complex motor functions (ice climbing or skiing) can still walk & talk
 - Vasoconstriction to periphery



- Moderate Hypothermia** - core temperature 95 - 93 degrees F
 - Dazed consciousness
 - Loss of fine motor coordination - particularly in hands - can't zip up parka, due to restricted peripheral blood flow
 - Slurred speech
 - Violent shivering
 - Irrational behavior - Paradoxical Undressing - person starts to take off clothing, unaware s/he is cold
 - “I don't care attitude” - flattened affect



- Severe Hypothermia** - core temperature 92 - 86 degrees and below (*immediately life threatening*)
 - Shivering occurs in waves, violent then pause, pauses get longer until shivering finally ceases - because the heat output from burning glycogen in the muscles 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 buildup 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 icebox.” 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, death

5. How to Assess if someone is Hypothermic

- If shivering can be stopped voluntarily = mild hypothermia
- Ask the person a question that requires higher reasoning in the brain (count backwards from 100 by

9's). If the person is hypothermic, they won't be able to do it. [Note: there are also other conditions such as altitude sickness that can also cause the same condition.]

- If shivering cannot be stopped voluntarily = moderate - severe hypothermia
- If you can't get a radial pulse at the wrist it indicates a core temp below 90 - 86 degrees
- The person may be curled up in a fetal position. Try to open their arm up from the fetal position, if it curls back up, the person is alive. Dead muscles won't contract only live muscles.

Stage	Core Temperature	Signs & Symptoms
Mild Hypothermia	99° - 97°F	Normal, shivering can begin
	97° - 95°F	Cold sensation, goose bumps, unable to perform complex tasks with hands, shiver can be mild to severe, hands numb
Moderate Hypothermia	95° - 93°F	Shivering, intense, muscle incoordination becomes apparent, movements slow and labored, stumbling pace, mild confusion, may appear alert. Use sobriety test, if unable to walk a 30 foot straight line, the person is hypothermic.
	93° - 90°F	Violent shivering persists, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, difficulty speaking, signs of depression, withdrawn
Severe Hypothermia	90° - 86°F	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness
	86° - 82°F	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation
	82° - 78°F	Unconscious, heart beat and respiration erratic, pulse may not be palpable
	78° - 75°F	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

Treating Hypothermia

The basic principles of rewarming a hypothermic victim are to conserve the heat they have and replace the body fuel they are burning up to generate that heat. If a person is shivering, they have the ability to rewarm themselves at a rate of 2 degrees C per hour.

Mild - Moderate Hypothermia

1. Reduce Heat Loss

- Additional layers of clothing
- Dry clothing
- Increased physical activity
- Shelter

2. Add Fuel & Fluids

It is essential to keep a hypothermic person adequately hydrated and fueled.

- Food types
 - Carbohydrates - 5 calories/gram - quickly released into blood stream for sudden brief heat surge - these are the best to use for quick energy intake especially for mild cases of hypothermia
 - Proteins - 5 calories/gram - slowly released - heat given off over a longer period

- Fats - 9 calories/gram - slowly released but are good because they release heat over a long period, however, it takes more energy to break fats down into glucose - also takes more water to break down fats leading to increased fluid loss

b. Food intake

- Hot liquids - calories plus heat source
- Sugars (kindling)
- GORP - has both carbohydrates (sticks) and proteins/fats (logs)

c. Things to avoid

- Alcohol - a vasodilator - increases peripheral heat loss
- Caffeine - a diuretic - causes water loss increasing dehydration
- Tobacco/nicotine - a vasoconstrictor, increases risk of frostbite

3. Add Heat

- Fire or other external heat source
- Body to body contact. Get into a sleeping bag, in dry clothing with a normothermic person in lightweight dry clothing

Severe Hypothermia

1. Reduce Heat Loss

- **Hypothermia Wrap:** The idea is to provide a shell of total insulation for the patient. No matter how cold, patients can still internally rewarm themselves much more efficiently than any external re-warming. Make sure the patient is **dry**, and has a polypropylene layer to minimize sweating on the skin. The person must be protected from any moisture in the environment. Use multiple sleeping bags, wool blankets, wool clothing, Ensolite pads to create a minimum of 4" of insulation all the way around the patient, especially between the patient and the ground. Include an aluminum "space" blanket to help prevent radiant heat loss, and wrap the entire ensemble in plastic to protect from wind and water. If someone is truly hypothermic, don't put him/her naked in a sleeping bag with another person.

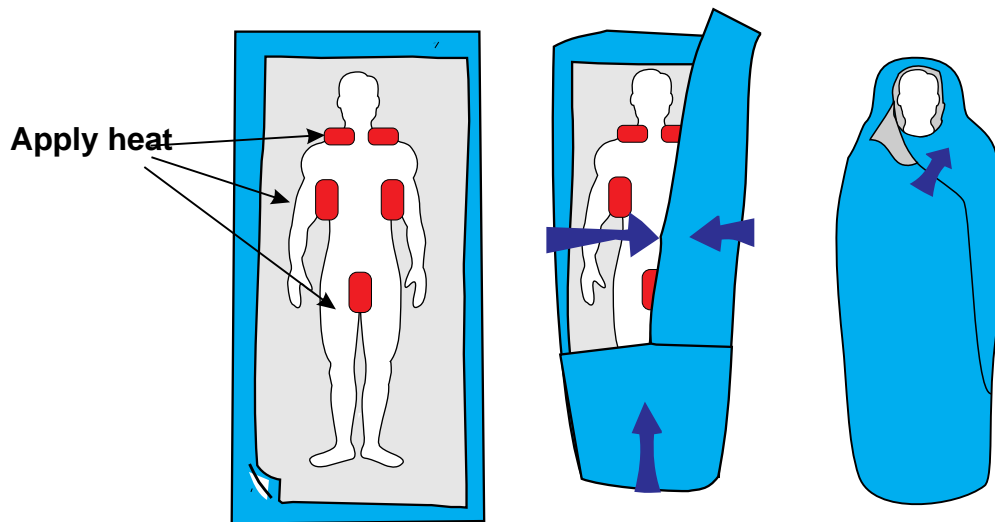
2. Add Fuel & Fluids

- **Warm Sugar Water** - for people in severe hypothermia, the stomach has shut down and will not digest solid food but can absorb water and sugars. Give a dilute mixture of warm water with sugar every 15 minutes. Dilute Jello™ works best since it is part sugar and part protein. This will be absorbed directly into the blood stream providing the necessary calories to allow the person to rewarm themselves. One box of Jello = 500 Kilocalories of heat energy. **Do not** give full strength Jello even in liquid form, it is too concentrated and will not be absorbed.
- **Urination** - people will have to urinate from cold diuresis. Vasoconstriction creates greater volume pressure in the blood stream. The kidneys pull off excess fluid to reduce the pressure. A full bladder is a place for additional heat loss so urinating will help conserve heat. You will need to help the person urinate. Open up the Hypothermia Wrap enough to do this and then cover them back up. You will need to keep them hydrated with the dilute Jello solution described above.

3. Add Heat

Heat can be applied to transfer heat to major arteries - at the neck for the carotid, at the armpits for the brachial, at the groin for the femoral, at the palms of the hands for the arterial arch.

- Chemical heat packs such as the Heat Wave™ provides 110 degrees F for 6-10 hours.
- Hot water bottles, warm rocks, towels, compresses
- For a severely hypothermic person, rescue breathing can increase oxygen and provide internal heat.



Hypothermia Wrap

Afterdrop

Is a situation in which the core temperature actually decreases during rewarming. This is caused by peripheral vessels in the arms and legs dilating if they are rewarmed. This dilation sends this very cold, stagnate blood from the periphery to the core further decreasing core temperature which can lead to death. In addition, this blood also is very acetic which may lead to cardiac arrhythmias and death. ***Afterdrop can best be avoided by not rewarming the periphery. Rewarm the core only! Do not expose a severely hypothermic victim to extremes of heat.***

CPR & Hypothermia

When a person is in severe hypothermia they may demonstrate all the accepted clinical signs of death:

- Cold
- Blue skin
- Fixed and dilated pupils
- No discernable pulse
- No discernable breathing
- Comatose & unresponsive to any stimuli
- Rigid muscles

But they still may be alive in a “metabolic icebox” and can be revived. Your job as a rescuer is to rewarm the person and do CPR if indicated. **A hypothermia victim is never cold and dead only warm and dead.** During severe hypothermia the heart is hyperexcitable and mechanical stimulation (such as CPR, moving them or Afterdrop) may result in fibrillation leading to death. As a result CPR may be contraindicated for some hypothermia situations:

1. ***Make sure you do a complete assessment of heart rate before beginning CPR.*** Remember, the heart rate may be 2-3/minute and the breathing rate 1/30 seconds. Instituting cardiac compressions at this point may lead to life-threatening arrhythmias. Check the carotid pulse for a longer time period (up to a minute) to ascertain if there is some slow heartbeat. Also, even though the heart is beating very slowly, it is filling completely and distributing blood fairly effectively. External cardiac compressions only are 20-30% effective. Thus, with its severely decreased demands, the body may be able to satisfy its circulatory needs with only 2-3 beats per minute. ***Be sure the pulse is absent before beginning CPR. You will need to continue to do CPR as you rewarm the person.***

2. Ventilation may have stopped but respiration may continue - the oxygen demands for the body have been so diminished with hypothermia that the body may be able to survive for some time using only the oxygen that is already in the body. If ventilation has stopped, artificial ventilation may be started to increase available oxygen. In addition, blowing warm air into the persons lungs may assist in internal rewarming.

3. CPR Procedures

- Check radial pulse, between 91.4 and 86 degrees F this pulse disappears
- Check for carotid pulse - wait at least a full minute to check for very slow heartbeat
- If pulse but not breathing or slow breathing, give rescue breathing (also adds heat).
- If no discernible heartbeat begin CPR and be prepared to continue - persons with hypothermia have been given CPR for up to 3.5 hours and have recovered with *no* neurological damage
- Begin active rewarming

Cold Injuries

Tissue temperature in cold weather is regulated by two factors, the external temperature and the internal heat flow. All cold injuries described below are intimately connected with the degree of peripheral circulation. As peripheral circulation is reduced to prevent heat loss to the core these conditions are more likely to occur.

1. Factors influencing cold injuries

- Low ambient temperature
- Wind chill - increases rate of freezing dramatically
- Moisture - wet skin freezes at a higher temp than dry
- Insulation
- Contact with metal or supercooled liquids (white gas)
- Exposed skin
- Vasodilation
- Vasoconstriction
- Previous cold injuries
- Constricting garments
- Local pressure
- Cramped position
- Body type
- Dehydration
- Women do better in cold than men (greater subcutaneous body fat)
- Caloric intake
- Diabetes, some medications
- Alcohol
- Caffeine, nicotine

2. Cold-induced Vasodilation - When a hand or foot is cooled to 59 degrees F, maximal vasoconstriction and minimal blood flow occur. If cooling continues to 50 degrees, vasoconstriction is interrupted by periods of vasodilation with an increase in blood and heat flow. This “hunting” response recurs in 5-10 minute cycles to provide some protection from cold. Prolonged, repeated exposure increases this response and offers some degree of acclimatization. Ex. Eskimos have a strong response with short intervals in between.

3. Pathophysiology of Tissue Freezing - As tissue begins to freeze, ice crystals are formed within the cells. As intracellular fluids freeze, extracellular fluid enters the cell and there is an increase in the levels of extracellular salts due to the water transfer. Cells may rupture due to the increased water and/or from tearing by the ice crystals. ***Do not rub tissue; it causes cell tearing from the ice crystals.*** As the ice melts there is an influx of salts into the tissue further damaging the cell membranes. Cell destruction results in tissue death and loss of tissue. Tissue can't freeze if the temperature is above 32 degrees F. It has to be below 28 degrees F because of the salt content in body fluids. Distal areas of the body and areas with a high surface to volume ratio are the most susceptible (e.g ears, nose, fingers and toes - this little rhyme should help remind you what to watch out for in yourself and others).

- Surface frostbite generally involves destruction of skin layers resulting in blistering and minor tissue loss. Blisters are formed from the cellular fluid released when cells rupture.
- Deep frostbite can involve muscle and bone

	Cold Response	Mild Frostnip	Superficial Frostbite	Deep Frostbite
Sensation	Painful	May have sensation	Numb	Numb
Feels	Normal	Normal	Soft	Hard
Color	Red	White	White	White

4. Cold Response

- Circulation is reduce to the are to prevent heat loss.
- The area may be pale, cold.
- It may have sensation or be numb.

5. Frostnip

- Freezing of top layers of skin tissue
- It is generally reversible
- White, waxy skin, top layer feels hard, rubbery but deeper tissue is still soft
- Numbness
- Most typically seen on cheeks, earlobes, fingers, and toes

Treatment

- Rewarm the area gently, generally by blowing warm air on it or placing the area against a warm body part (partner's stomach or armpit)
- ***Do not rub the area*** - this can damage the effected tissue by having ice crystals tear the cell

6. Frostbite

- Skin is white and “wooden” feel all the way through
- Superficial frostbite includes all layers of skin
- Numbness, possible anesthesia
- Deep frostbite can include freezing of muscle and/or bone, it is very difficult to rewarm the append age without some damage occurring

Treatment

- Superficial frostbite may be rewarmed as frostnip if only a small area is involved
- If deep frostbite, see below for rewarming technique

7. Rewarming of Frostbite

- Rewarming is accomplished by immersion of the effected part into a water bath of 105 - 110 degrees F. ***No hotter or additional damage will result.*** This is the temperature which is warm to your skin. Monitor the temperature carefully with a thermometer. Remove constricting clothing. Place the appendage in the water and continue to monitor the water temperature. This temperature will drop so that additional warm water will need to be added to maintain the 105 - 110 degrees. ***Do not*** add this warm water directly to the injury. The water will need to be circulated fairly constantly to maintain even temperature. The effected appendage should be immersed for 25 - 40 minutes. Thawing is complete when the part is pliable and color and sensation has returned. Once the area is rewarmed, there can be significant pain. Discontinue the warm water bath when thawing is complete.
- ***Do not use dry heat to rewarm. It cannot be effectively maintained at 105 - 110 degrees and can cause burns further damaging the tissues.***
- Once rewarming is complete the injured area should be wrapped in sterile gauze and protected from movement and further cold.
- ***Once a body part has been rewarmed it cannot be used for anything. Also it is essential that the part can be kept from refreezing.*** Refreezing after rewarming causes extensive tissue damage and may result in loss of tissue. If you cannot ***guarantee*** that the tissue will stay warm, ***do not rewarm it.*** Mountaineers have walked out on frozen feet to have them rewarmed after getting out with no tissue loss. Once the tissue is frozen the major harm has been done. Keeping it frozen will not cause significant additional damage.

8. Special Considerations for Frostbite

- If the person is hypothermic and frostbitten, the first concern is core rewarming. Do not rewarm the frostbitten areas until the core temp approaches 96 degrees.
- No alcohol - vasodilation may increase fluid buildup
- No smoking - nicotine as a vasoconstrictor may increase chances for developing frostbite
- Liquids such as white gas can “supercool” in the winter (drop below their freezing point but not freeze). White gas also evaporates quickly into the air. Spilling supercooled white gas on exposed skin leads to instant frostbite from evaporative cooling. Always wear gloves when handling fuel.
- Touching metal with bare skin can cause the moisture on your skin to freeze to the metal. (In really cold conditions, metal glasses frames can be a problem). When you pull away, you may leave a layer of skin behind. Don't touch metal with bare skin.

9. Trench Foot - Immersion Foot

Trench foot is a process similar to chilblains. It is caused by prolonged exposure of the feet to cool, wet conditions. This can occur at temperatures as high as 60 degrees F if the feet are constantly wet. This can happen with wet feet in winter conditions or wet feet in much warmed conditions (ex. sea kayaking). The mechanism of injury is as follows: wet feet lose heat 25x faster than dry, therefore the body uses vasoconstriction to shut down peripheral circulation in the foot to prevent heat loss. Skin tissue begins to die because of lack of oxygen and nutrients and due to buildup of toxic products. The skin is initially reddened with numbness, tingling pain, and itching then becomes pale and mottled and finally dark purple, grey or blue. The effected tissue generally dies and sluffs off. In severe cases trench foot can involve the toes, heels, or the entire foot. If circulation is impaired for > 6 hours there will be permanent damage to tissue. If circulation is impaired for > 24 hours the victim may lose the entire foot. Trench Foot causes permanent damage to the circulatory system making the person more prone to cold related injuries in that area. A similar phenomenon can occur when hands are kept wet for long periods of time such as kayaking with wet gloves or pogies. The damage to the circulatory system is known as Reynaud's Phenomenon.

Treatment and Prevention of Trench foot

- Includes careful washing and drying of the feet, gentle rewarming and slight elevation. Since the tissue is not frozen as in severe frostbite it is *more* susceptible to damage by walking on it. Cases of trench foot should not walk out; they should be evacuated by litter. Pain and itching are common complaints. Give Ibuprofen or other pain medication.
- Prevention is the best approach to dealing with trench foot. Keep feet dry by wearing appropriate footwear. Check your feet regularly to see if they are wet. If your feet get wet (through sweating or immersion), stop and dry your feet and put on dry socks. Periodic air drying, elevation, and massage will also help. Change socks at least once a day and do not sleep with wet socks. Be careful of tight socks which can further impair peripheral circulation. Foot powder with aluminum hydroxide can help. High altitude mountaineers will put antiperspirant on their feet for a week before the trip. The active ingredient, aluminum hydroxide will keep your feet from sweating for up to a month and there are no confirmed contraindications for wearing antiperspirant. [Some studies have shown links between aluminum in the body and Alzheimers.] Vapor barrier socks may increase the possibility of trenchfoot. When you are active and you are wearing a vapor barrier sock, you must carefully monitor how you sweat. If you are someone who sweats a lot with activity, your foot and polypropylene liner sock may be totally soaked before the body shuts down sweating. Having this liquid water next to the skin is going to lead to increased heat loss. If you don't sweat much, your body may shut down perspiration at the foot before it gets actually wet. This is when the vapor barrier system is working. You must experiment to determine if vapor barrier systems will work for you.

10. Chilblains

- Caused by repeated exposure of bare skin to temperatures below 60 degrees
- Redness and itching of the effected area
- Particularly found on cheeks and ears, fingers and toes
- Women and young children are the most susceptible
- The cold exposure causes damage to the peripheral capillary beds, this damage is permanent and the redness and itching will return with exposure

11. Avoiding Frostbite and Cold related Injuries

- “Buddy system” - keep a regular watch on each other's faces, cheeks, ears for signs of frostnip/frostbite
- Keep a regular “self check” for cold areas, wet feet, numbness or anesthesia
- *If at any time you discover a cold injury, stop and rewarm the area (unless doing so places you at greater risk).*

12. Eye Injuries

a. Freezing of Cornea

- Caused by forcing the eyes open during strong winds without goggles
- Treatment is very controlled, rapid rewarming e.g. placing a warm hand or compress over the closed eye. After rewarming the eyes must be completely covered with patches for 24 - 48 hours.

b. Eyelashes freezing together

- Put hand over eye until ice melts, then can open the eye

c. Snowblindness

- Sunburn of the eyes
- Prevention by wearing good sunglasses with side shields or goggles. Eye protection from sun is just as necessary on cloudy or overcast days as it is in full sunlight when you are on snow. Snow blindness can even occur during a snow storm if the cloud cover is thin.
- Symptoms
 - Occur 8-12 hours after exposure

- Eyes feel dry and irritated, then feel as if they are full of sand, moving or blinking becomes extremely painful, exposure to light hurts the eyes, eyelids may swell, eye redness, and excessive tearing
- Treatment
 - Cold compresses and dark environment
 - Do not rub eyes

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The Wind Chill Index																					
Environmental Temperature (F°)																					
Calm	40°	35°	30°	25°	20°	15°	10°	5°	0°	-5°	-10°	-15°	-20°	-25°	-30°	-35°	-40°	-45°	-50°	-55°	-60°
Wind Speed	Apparent Temperature (F°)																				
5 MPH	35°	30°	25°	20°	15°	10°	5°	0°	-5°	-10°	-15°	-20°	-25°	-30°	-35°	-40°	-45°	-50°	-55°	-65°	-70°
10 MPH	30°	20°	15°	10°	5°	0°	-10°	-15°	-20°	-25°	-35°	-40°	-45°	-50°	-60°	-65°	-70°	-70°	-80°	-90°	-95°
15 MPH	25°	15°	10°	0°	-5°	-10°	-20°	-25°	-30°	-40°	-45°	-50°	-60°	-65°	-70°	-80°	-85°	-90°	-100°	-105°	-110°
20 MPH	20°	10°	5°	0°	-10°	-15°	-25°	-30°	-35°	-45°	-50°	-60°	-65°	-75°	-80°	-85°	-95°	-100°	-110°	-115°	-120°
25 MPH	15°	10°	0°	-5°	-15°	-20°	-30°	-35°	-45°	-50°	-60°	-65°	-75°	-80°	-90°	-95°	-105°	-110°	-120°	-125°	-135°
30 MPH	10°	5°	0°	-10°	-20°	-25°	-30°	-40°	-50°	-55°	-65°	-70°	-80°	-85°	-95°	-100°	-110°	-115°	-125°	-130°	-140°
35 MPH	10°	5°	-5°	-10°	-20°	-30°	-35°	-40°	-50°	-60°	-65°	-75°	-80°	-90°	-100°	-105°	-115°	-120°	-130°	-135°	-145°
40 MPH	10°	0°	-5°	-15°	-20°	-30°	-35°	-45°	-55°	-60°	-70°	-75°	-85°	-95°	-100°	-110°	-115°	-125°	-130°	-140°	-150°
	Little Danger of exposed flesh freezing.																				
	Increasing danger of exposed flesh freezing (flesh can freeze within 1 minute).																				
	Great danger of exposed flesh freezing (flesh can freeze within 30 seconds).																				

Cold Weather Casualties and Injuries Chart

- Train soldiers on the proper use of cold weather clothing
- Remember the acronym C-O-L-D when wearing clothing in cold weather
(C: Keep it Clean; O: avoid Overdressing; L: wear clothing Loose and in layers; D: keep clothing Dry)
- Maintain adequate hydration and ensure nutritional requirements are met

Cold Weather Casualties and Injuries			
Chilblain			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Repeated exposure of bare skin for prolonged periods from 20°-60°F with high humidity (for those not acclimated to cold weather). 	<ul style="list-style-type: none"> ■ Swollen, red skin (or darkening of the skin in dark-skinned soldiers). ■ Tender, hot skin, usually accompanied by itching. 	<ul style="list-style-type: none"> ■ Warm affected area with direct body heat. ■ Do not massage or rub affected areas. ■ Do not wet the area or rub it with snow or ice. ■ Do not expose affected area to open fire, stove, or any other intense heat source. 	<ul style="list-style-type: none"> ■ Use contact gloves to handle all equipment; never use bare hands to handle equipment, esp. metal. ■ Use approved gloves to handle all fuel and POL* products. ■ In the extreme cold environment, do not remove clothing immediately after heavy exertion (PT); until you are in a warmer location. ■ Never wear cotton clothing in the cold weather environment.
Immersion foot (trench foot)			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Prolonged exposure of feet to wet conditions 32°-60°F. Inactivity and damp socks and boots (or tightly laced boots that impair circulation) speed onset and severity. 	<ul style="list-style-type: none"> ■ Cold, numb feet may progress to hot with shooting pains. ■ Swelling, redness, and bleeding. 	<ul style="list-style-type: none"> ■ If you suspect trench foot, get medical help immediately! ■ Re-warm feet by exposing them to warm air. ■ Do not allow victim to walk on injury ■ Evacuate victim to a medical facility. ■ Do not massage, rub, moisten, or expose affected area to extreme heat. 	<ul style="list-style-type: none"> ■ Keep feet clean and dry; change wet or damp socks as soon as possible. ■ Wet or damp socks should be dried as soon as possible to allow them to be re-used. ■ The inside of Vapor Barrier boots should be wiped dry once per day, or more often as feet sweat. ■ Dry leather boots by stuffing with paper towels.
Frostbite			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Freezing of tissue. eg.: fingers, toes, ears, and other facial parts. ■ Exposure to bare skin on metal, extremely cool fuel and POL* wind chill, and tight clothing - particularly boots - can make the problem worse. 	<ul style="list-style-type: none"> ■ Numbness in affected area. ■ Tingling, blistered, swollen, or tender areas. ■ Pale, yellowish, waxy-looking skin (grayish in dark-skinned soldiers). ■ Frozen tissue that feels wooden to the touch. 	<ul style="list-style-type: none"> ■ Frostbite can lead to amputation! Evacuate immediately! ■ Start first-aid immediately. Warm affected area with direct body heat. ■ Do not thaw frozen areas if treatment will be delayed. ■ Do not massage or rub affected areas. ■ Do not wet the area or rub it with snow or ice. ■ Do not expose affected area to open fire, stove, or any other intense heat source. 	<ul style="list-style-type: none"> ■ Use contact gloves to handle all equipment; never use bare hands to handle equipment. ■ Use approved gloves to handle fuel and POL*. ■ Never wear cotton clothing in the cold weather environment. ■ Keep face and ears covered and dry ■ Keep socks clean and dry ■ Avoid tight socks and boots.
Hypothermia			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Prolonged cold exposure and body-heat loss. May occur at temperatures well above freezing, especially when a person is wet. 	<ul style="list-style-type: none"> ■ Shivering may or may not be present. ■ Drowsiness, mental slowness or lack of coordination. Can progress to unconsciousness, irregular heartbeat, and death. 	<ul style="list-style-type: none"> ■ This is the most serious cold exposure medical emergency and can lead to death! Get the soldier to a medical facility as soon as possible! ■ Even if a victim is cold and is not breathing, never assume someone is dead until determined by medical authorities! ■ Strip off wet clothing and wrap victim in blankets or a sleeping bag. ■ Place another person in sleeping bag as an additional heat source. ■ For the person with unconsciousness and very low heartbeat, minimize handling of the victim so as to not induce a heart attack. 	<ul style="list-style-type: none"> ■ Never wear cotton clothing in the cold weather environment. ■ Anticipate the need for warming areas for soldiers exposed to cold, wet conditions.
Additional Medical Considerations in the Cold Weather environment:			
Dehydration			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Depletion of body fluids. 	<ul style="list-style-type: none"> ■ Dizziness. ■ Weakness. ■ Blurred vision. 	<ul style="list-style-type: none"> ■ Replace lost water. Water should be sipped, not gulped. ■ Get medical treatment. 	<ul style="list-style-type: none"> ■ At a minimum drink 3-6 quarts of fluid per day.
Snow Blindness			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Burning of the cornea of the eye by exposure to intense UV rays of the sun in a snow-covered environment 	<ul style="list-style-type: none"> ■ Pain, red, watery or gritty feeling in the eyes 	<ul style="list-style-type: none"> ■ Rest and total darkness; bandage eyes with gauze ■ Evacuate if no improvement within 24 hours 	<ul style="list-style-type: none"> ■ Use sunglasses with side protection in a snow-covered environment. ■ If sunglasses are not available use improvised slit glasses.
Carbon Monoxide Poisoning			
Cause	Symptoms	First-Aid	Prevention
<ul style="list-style-type: none"> ■ Replacement of oxygen with carbon monoxide in the blood stream caused by burning fuels without proper ventilation 	<ul style="list-style-type: none"> ■ Headache, confusion, dizziness, excessive yawning ■ Cherry red lips and mouth, grayish tint to lips and mouth (in dark skinned individuals) ■ Unconsciousness 	<ul style="list-style-type: none"> ■ Move to fresh air ■ CPR if needed ■ Administer oxygen if available. Evacuate 	<ul style="list-style-type: none"> ■ Use only Army approved heaters in sleeping areas and ensure that personnel are properly licensed to operate the heaters ■ Never sleep in running vehicles ■ Always post a fire guard when operating a heater in sleeping areas.

*POL – Petroleum, oil or lubricants

“We need the 'tree man' out here, right away!” was an almost constant plea from September to November from the contractors on St. Paul District's Grand Forks and East Grand Forks Levee projects. Eighteen years of schooling and a master's degree from Harvard in landscape architecture, and his credentials were reduced to a superhero-sounding title, “tree man.”

Landscape Architect Assists with St. Paul Projects

By Virginia Regorrah, St. Paul District, East Grand Forks Resident Office

But Kevin Holden, landscape architect from the Rock Island District, didn't mind. Rain, shine or snow, he was on site with the landscaping sub-contractor on a daily basis, approving tree selection, placing and planting.

With more than two thousand trees and shrubs scheduled for planting on the two projects, the St. Paul District Construction Branch decided they would need a professional at the project sites to assist the engineers with the review of submittals pertaining to the landscaping. Since some of us have a knowledge of trees, which is limited to identifying evergreens from non-evergreens, the addition of a knowledgeable professional was a welcome suggestion.

Holden responded to a Division-wide request for a landscape architect to be assigned temporary duty at Grand Forks, N.D., to assist with the projects up here. It's a good example of developing a product delivery team with experts from multiple districts to assist in the cost-effective and quality delivery of projects.

But Holden's TDY, which began in August, became much more complicated than just reviewing submittals. He was immediately asked to redesign the recreational area on the East Grand Forks project in Sherlock Park when a community group identified the exact same area of the park for their volunteer-funded playground, as was scheduled for a Corps-installed playground.

Holden redesigned trails and sidewalks, re-oriented picnic shelters, moved the Corps playground and designed a handicap accessible ramp. He also coordinated extensively with the designer for the community's playground to determine how their playground could be integrated into the Corps' design. At the same time, he was assisting the Grand Forks contractor with the selection and placement of trees.

By September, the East Grand Forks contractor was clamoring for his assistance. As late as the contractors worked, Holden would be out there with them, approving locations and planting.



Kevin Holden, right, discusses tree placement with the landscaping subcontractor. Photo by Francis Schanilec, St. Paul District, East Grand Forks Resident Office.

“I didn't realize there were so many criteria for tree locations,” said Francis Schanilec, construction representative, East Grand Forks Levees project. “Having Kevin here with us really helped to refine the types of trees and the locations of plantings. He was able to help the contractors ensure the species were suited the environment and conditions here. And, he was able to adjust the tree locations based on the sites; sometimes there's an electrical line in the way, or we didn't remove as many trees as we could have. Kevin adjusted for these conditions.”

John Zavoral, secretary-treasurer of R.J. Zavoral and Sons, the sub-contractor on the East Grand Forks Levees project, expressed his admiration simply, “He sure knows his trees.” ■

Major repair work at Lock 17 at New Boston, Ill., and Lock 19, at Keokuk, Iowa, is well underway this winter.

Work started in mid-December on Lock 17 when the Mississippi River Maintenance Crew removed all four lock gates and placed them on a barge to begin their repair and rehabilitation.

The gates will be "put back in place before March 1, Bill Gretten, Mississippi River Project Office, said. "Other work at the lock will include replacement of the embedded gate anchorages in the concrete lock walls. There will be no work done on the dam this winter."

Two massive steel structures, otherwise known as Lock 19's miter gates, were also pulled out of the water. This was the first time since their installation in 1957, when the lock was upgraded to a 1,200-foot structure, that the miter gates have been taken out of the water. The gates are the first of their size on the Mississippi River.

The Mississippi River Maintenance Crew removed the gates, weighing 182 tons each, from the lock opening over a two-week period. Preparation began two years ago and culminated in the rapid removal of the gates on Dec. 26.

"They put up the steel superstructure in 2000," said Lockmaster Bill Robinson. "Then they moved in and did a little work ahead of time on Dec. 15."

The crew added a "single pick point" to each gate that then would be used by the crane to lift the structure out of the water



The original lower miter gates, resting in supports, loom over Lock 19 after being removed from the lock for the first time since 1957. The Motor Vessel Bettendorf is seen to the left. Photo by Gene Walters, assistant lockmaster, Lock and Dam 19.

waited to remove the gates until wind was clocked at less than 10 miles per hour. Once begun, it took about two hours to pull the gate.

Two years ago, cracks in the gates caused by metal fatigue were repaired while the gates were still in place. While the gates are out of the water, those repairs will be examined to see if they're holding up.

Robinson said the whole project is a lengthy process, with no definite end date

estab-
lished.
The
extent of
the repair
work
depends

on the condition of the gates. But come spring, river traffic will again be on the move, and barges will have to be able to lock through Lock 19.

Spare gates from the St. Louis District will be installed in mid-January to replace the originals. The spare gates were built to fit the three 1,200-foot locks on the Mississippi River - Lock 19 at Keokuk;

Lock 26 at Alton, Ill.; and Lock 27 at St. Louis.

Robinson said this repair project is specific for Lock 19 and has nothing to do with the wide-ranging changes proposed for the lock and dam system along the Mississippi.

"We were having problems with the gates," Robinson said. "They were starting to fail, but we were able to make them work."

The Mississippi River maintenance crews responsible for gate work have worked hard and continue to work hard to get the job done.

"Productivity has been extremely positive due to both desirable winter weather conditions and also long hours the crews have worked," said Dennis Shannon, Mississippi River Project Office. "At times, maintenance crews have been working seven days per week and they even worked on New Years Day. Their dedication to getting a quality job done in a timely and safe manner should be commendable."

Cindy Iutzi, Keokuk Daily Gate City Staff Writer, contributed to this article.

Winter Rehabilitation at Locks 17, 19

By Mark Kane

and onto the bank of the lock approach.

"To do that they had to take out a center portion of the catwalk," Robinson said. Cutting torches were used for the job, with the crew working from a barge and from the side of the lock chamber.

The crew removed the I-bars securing the miter gates to the lock wall, serving as hinges. Preparation completed, they

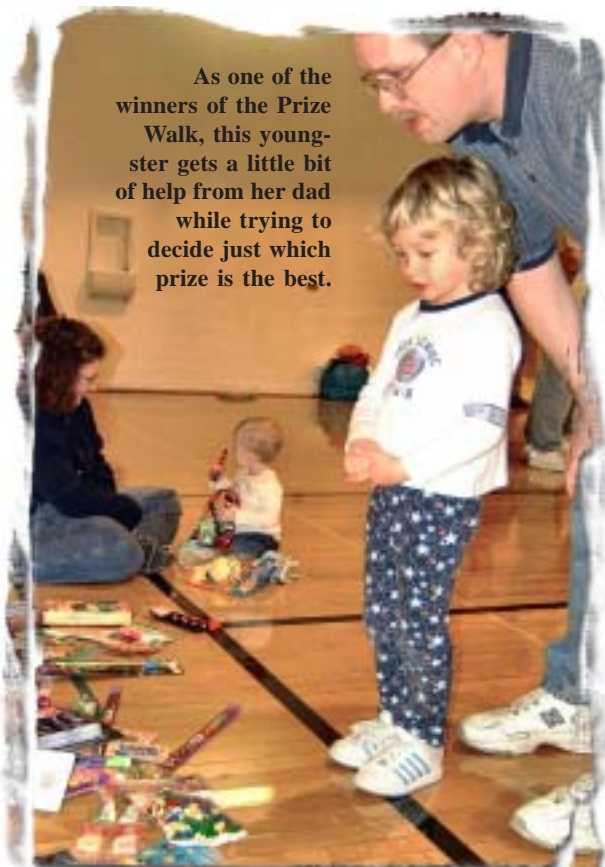
Corps Family Christmas Party



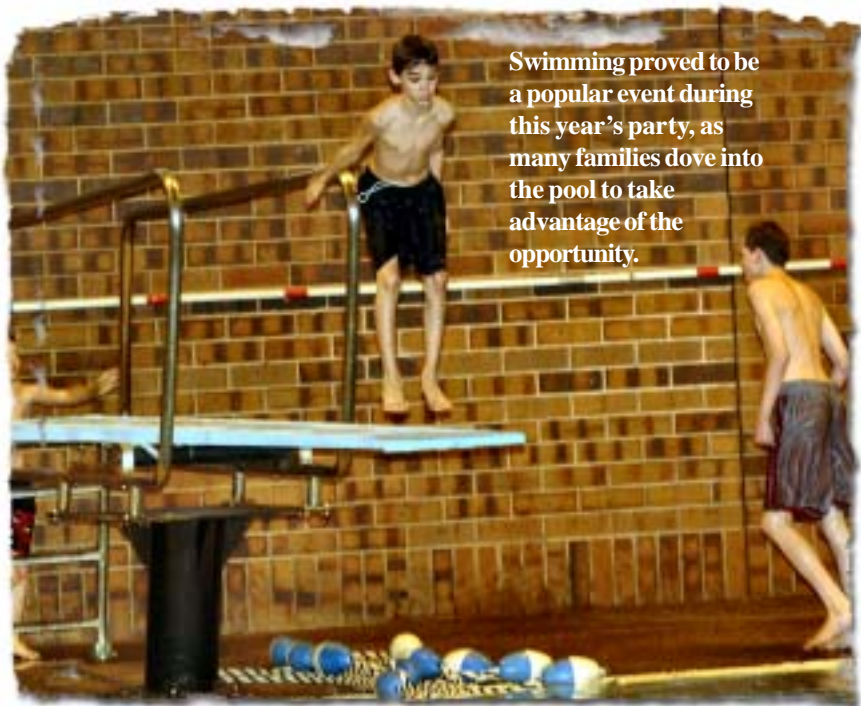
A stuffed animal is closely inspected by this tot. Shortly afterwards, she gave it a great big hug; the camera managed to miss that shot.



Santa arrives on the scene.



As one of the winners of the Prize Walk, this youngster gets a little bit of help from her dad while trying to decide just which prize is the best.



Swimming proved to be a popular event during this year's party, as many families dove into the pool to take advantage of the opportunity.

The kids were kids and the adults, when they thought no one was looking, were kids too, at the District's annual Corps Family Christmas Party held Dec. 7, at the Rock Island Fitness and Activity Center in Rock Island, Ill.

The event was sponsored by the Rock Island District Welfare Association and featured door prizes, pizza and snacks, and events such as basketball, volleyball and swimming.

The highlight of the evening took place when Santa Claus arrived with his bag of gifts. ■



Investing In Our People

Around the District

District Earns CFC Awards

After completing numerous fundraisers, turning in hundreds of pledge forms, and raising in excess of \$49,500 for the Illowa Combined Federal Campaign, the District earned three awards for everyone's participation.

The 2002 CFC awards for Highest Average Gift and Most Innovative Campaign was awarded to the District, and Col. William Bayles, District engineer, was honored with this year's Leadership Award for his support and leadership he gave to the District's CFC campaign.

This year's District CFC chair, Jody Schmitz, expressed her thanks to the District in an e-mail sent in early December.

"I want to thank all of you who contributed to CFC and to those who organized and helped run the fundraisers that additionally supported the 2002 CFC Campaign," wrote Schmitz. "I also want to give a big thanks to the keypeople for doing their part to support the campaign. Everyone's generosity for this cause is always worthwhile to help those who need a helping hand."

The Illowa CFC campaign raised more than \$488,000 that was contributed to the national Combined Federal Campaign for dispersal to designated charities locally and around the world.

District Commander's Award

Jacqueline Peterson and **Diana Helke**, Operations Division, received the District Commander's Award for October, from Col. William Bayles, District engineer.

Peterson and Helke earned the award for simultaneously training their replacements, learning their new jobs, as well as successfully navigating through the Fiscal Year 2002 closing process.

Some of the duties included the completion of the office's timekeeping, travel orders, and many other office procedures.

Congrats ...

Congratulations to **Tony and Anne Zemo**, Operations Division, on the birth of a boy, Kane Robert, Dec. 9. He weighed 6 pounds, and 1 ounce, and was 18.5 inches long.

Recent Retirements ...

Roy Chapman, lockmaster, Dresden Island Lock and Dam, Operations Division, retired Jan. 3, after dedicating 30 years and eight months to the federal government.

Gerald Dowell, operations manager, Lake Red Rock, Operations Division, retired Jan. 3, after dedicating 33 years and 11 months to the federal government.

James Farris, construction representative, Eastern Area Office, Construction Division, retired Jan. 3, after dedicating 30 years and 10 months to the federal government.

Thomas Fratzke, small business specialist, Construction Division, retired Jan. 3, after dedicating 30 years and four months to the federal government.

Ted Hinds, engineering equipment operator supervisor, Project Maintenance Unit, Maintenance Section, Illinois Waterway Project Office, Operations Division, retired Jan. 3, after dedicating 38 years and eight months to the federal government.

Robert (Mike) Thomas, civil engineering technician, Project Management Branch, Programs and Project Management, retired Jan. 3, after dedicating 36 years to the federal government.

Sympathy ...



Daniel Wolfe Jr., 69, Moline, Ill., died Dec. 27, at his home.

Wolfe had worked for the District for 35 years. He was the clock master and building superintendent.

Wolfe also served in the Army during the Korean War.

Kurt Clasen, 41, Harvest, Ala., formerly of Bellevue, Iowa, died Dec. 11, after a brief illness.

Clasen was previously employed by the District as a safety specialist.



Francis Berry, 80, Keithsburg, Ill., died Dec. 9, at his home.

Berry had worked for the District and was also employed as a surveyor by Byrne Construction Co. in Lockport, Ill. He later owned and operated his own heavy-equipment construction company, retiring in 1979.

Notes from the Mississippi*

Lock and Dam 11, Dubuque, Iowa

- ✓ Upper tow-haulage unit brake repaired.
- ✓ Life-ring buoy boxes cleaned.
- ✓ Dam safety-block lines removed.

Lock and Dam 12, Bellevue, Iowa

- ✓ Bulkhead winch covers constructed.
- ✓ Upstream bumper blocks added on gate pans.

Lock and Dam 13, Fulton, Ill.

- ✓ Sprinkler system winterized.
- ✓ Lock-machinery covers cleaned and painted.
- ✓ Entryway brush cut down.

Locks and Dam 14, Le Claire, Iowa

- ✓ Snow removal equipment prepared for winter.
- ✓ Parking lot improvement completed.

Locks and Dam 15, Rock Island, Ill.

- ✓ Snow blower blades installed.
- ✓ Bulkheads placed in number four and five rollers for winter.
- ✓ New jib crane installed.

Lock and Dam 16, Muscatine, Iowa

- ✓ Attic floor cleaned and painted.
- ✓ Electronic and computer equipment cleaned.

Lock and Dam 17, New Boston, Ill.

- ✓ Auxiliary lock gates and river wall washed.
- ✓ Upper-haulage unit cable replaced.
- ✓ Water heater repaired.

Lock and Dam 18, Gladstone, Ill.

- ✓ Pontoon motor deck rebuilt and reinstalled.
- ✓ Mailbox relocated.

Lock and Dam 19, Keokuk, Iowa

- ✓ Grout sealer injected into cracks above lower-land electric room.
- ✓ Annual property inventory completed.

Lock and Dam 20, Canton, Mo.

- ✓ All overhead furnaces serviced.
- ✓ Heat tape and insulation installed on bubbler pipes.
- ✓ Parking lot path lights repaired.

Lock and Dam 21, Quincy, Ill.

- ✓ Gage-well heat lamps installed.
- ✓ Upper handrails welded.

Lock and Dam 22, Saverton, Mo.

- ✓ Tractor snow blades and chains installed.
- ✓ Number four miter gate grating and catwalk repaired.

*This is a small sample of work completed at District locks and dams throughout the month.

Speakers Bureau

By Shannan Walsten, Public Affairs

On Nov. 14, **Donna Jones**, Operations Division, spoke to more than 50 members of the North East Missouri Planning Commission in Memphis, Mo. Introduction to the regulatory program was the topic of her speech.

Heather Anderson, Engineering Division, spoke with more than 120 members of a local Girl Scout troop about her career in engineering on Nov. 16, in Bettendorf, Iowa.

Bridges and their structures was the topic of discussion when **Scott Becker**, Rock Island Project Office, spoke with more than 90 2nd and 3rd graders at Hayes Elementary School in Davenport, on Nov. 18. Scott also spoke with more than 60 3rd and 4th graders at Sacred Heart Elementary School in Davenport, on the same subject on Dec. 6.

On Nov. 21, an Erie Community High School student interested in environ-

mental engineering, job shadowed **Bob Hoffman** and **Alaena Ensey**, Engineering Division.

Bill Riebe, Engineering Division, presented "Railroad Right of Way Research and Surveys" to more than 90 surveyors at the Southeast Iowa Land Surveyors Society annual meeting Dec. 13, at Fairfield, Iowa. He also participated in a round table discussion regarding the use of the Global Positioning System by surveyors in the government and in private practice.

On Jan. 13, **Steve Vacek**, Mississippi River Project, spoke with more than 100 students at Eagleridge Elementary School in Silvis, Ill., on the topic of eagles.

A special thanks goes out to the Fall 2002 Junior Achievement classroom volunteers. They are: **Janel Schaeffer**, Emergency Management/Security Office; **Cliff Artis**, **Tom Heinold**, and

Toby Hunemuller, Engineering Division; **Damon Barati** and **Mike Mullinnix**, Information Management; **Jim Aidala**, **Mattie Martin**, and **Steve Russell**, Operations Division; **Camie Knollenberg** and **Tracy Street**, Program and Project Management; and **Debi VanOpdorp**, Real Estate.

The Speakers Bureau is part of the District's outreach program. Through these programs, employees work to foster positive relations between the community and the Corps. Contact with our public provides an opportunity to reaffirm the importance of the District's role in our communities, the Midwest and the nation. District employees interested in these outreach opportunities can learn more by visiting our website at www.mvr.usace.army.mil/PublicAffairsOffice/CommunityRelations.htm or by contacting Justine Barati at ext. 5204. ■

SALARY TABLE 2003

Incorporating the 3.10% General Schedule Increase and a Locality Payment of 8.64%
for the Locality Pay Area of Rest of U.S. Effective January 2003
(Net Increase: 3.10%)

Annual Rates by Grade and Step

GRADE

	1	2	3	4	5	6	7	8	9	10
1	16,528	17,080	17,630	18,177	18,727	19,051	19,592	20,140	20,162	20,675
2	18,584	19,025	19,641	20,162	20,388	20,988	21,588	22,188	22,787	23,387
3	20,277	20,952	21,628	22,304	22,980	23,655	24,331	25,007	25,682	26,358
4	22,762	23,521	24,279	25,037	25,795	26,554	27,312	28,070	28,829	29,587
5	25,467	26,316	27,164	28,013	28,861	29,710	30,558	31,407	32,255	33,104
6	28,388	29,334	30,280	31,226	32,173	33,119	34,065	35,011	35,958	36,904
7	31,546	32,597	33,649	34,701	35,752	36,804	37,856	38,907	39,959	41,011
8	34,936	36,101	37,266	38,430	39,595	40,760	41,924	43,089	44,253	45,418
9	38,588	39,874	41,160	42,447	43,733	45,019	46,306	47,592	48,878	50,165
10	42,495	43,911	45,328	46,745	48,161	49,578	50,995	52,411	53,828	55,245
11	46,689	48,246	49,803	51,360	52,916	54,473	56,030	57,587	59,144	60,700
12	55,958	57,824	59,689	61,554	63,420	65,285	67,150	69,016	70,881	72,746
13	66,543	68,762	70,980	73,198	75,417	77,635	79,854	82,072	84,291	86,509
14	78,635	81,256	83,878	86,499	89,121	91,742	94,364	96,985	99,607	102,228
15	92,496	95,579	98,663	101,746	104,829	107,912	110,995	114,079	117,162	120,245

The Wage Grade Salary Tables are not available at this date. These salary tables can be accessed from the Internet at www.cpms.osd.mil/wage, once they become available. From that page choose Appropriated Fund Pay Schedules. Most of the Rock Island District falls within area 53, which shows up under Iowa, otherwise pick your state and county.

Special salary rate tables for engineers and information technology career fields can be found on the Internet at www.opm.gov/oca/03tables/SSR.



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