



**Cal/OSHA, DOT HAZMAT, EEOC,
EPA, HAZWOPER, HIPAA, IATA,
IMDG, TDG, MSHA, OSHA, and
Canada OHS Regulations and
Safety Online Training**

Since 2008

This document is provided as a training aid
and may not reflect current laws and regulations.

Be sure and consult with the appropriate governing agencies
or publication providers listed in the "Resources" section of our website.

www.ComplianceTrainingOnline.com



[Facebook](#)



[LinkedIn](#)



[Twitter](#)



[Website](#)

Ohio AgrAbility Fact Sheet Series

Injury Prevention: Types of Cold Stress

S. Dee Jepsen, Assistant Professor, State Safety Leader, Agricultural Safety and Health, Food, Agricultural and Biological Engineering, The Ohio State University

Kent McGuire, Ohio AgrAbility Program Coordinator, Agricultural Safety and Health, Food, Agricultural and Biological Engineering, The Ohio State University

Danielle Poland, Student Intern, Agricultural Safety and Health, Food, Agricultural and Biological Engineering, The Ohio State University

Long exposure to cold, wet, and windy conditions can be dangerous even at temperatures above freezing. Since many tasks on the farm must be completed regardless of the weather conditions, farmers should know how to detect and respond to cold stress injuries.

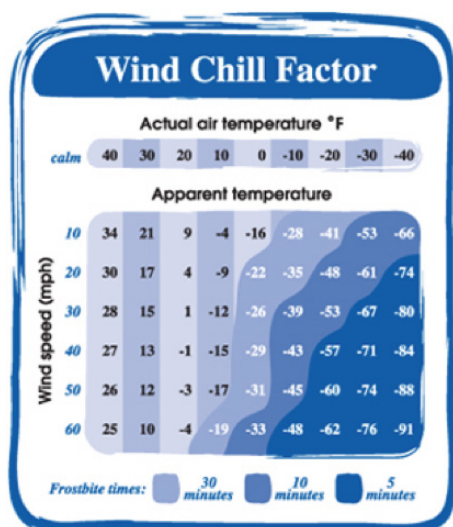
Older adults and people with a pre-existing condition are at a higher risk. Examples of high-risk conditions are the common cold, diabetes, atherosclerosis, hypothyroidism, arthritis, or using a prosthesis. Certain medicines limit the amount of heat a body

makes, making their users more susceptible to cold stress. Medications like anti-depressants, sedatives, and heart medicine are examples. Alcoholic and caffeinated beverage consumption also lowers the amount of heat a body can produce.

It is important to remember it takes even the healthiest person longer to complete simple tasks in the winter. However, people with arthritis or any form of limited mobility may be at higher risk of cold stress because of an added length of time to complete tasks, slower reaction time, or decreased balance.

Contributing factors of developing a cold stress condition are cold temperatures, high/cold winds, dampness, and exposure to cold water. Cold air, water, and snow draw heat from the body. Four specific conditions that can result from cold stress are hypothermia, frostbite, trench foot, and chilblains.

Hypothermia: The body is unable to produce heat because it used all its stored energy. Occurs more in spring and fall than winter.



Wind chill chart with relationship to frostbite

Early Symptoms

- Shivering
- Fatigue
- Loss of coordination

Late Symptoms

- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

First Aid

- Call 911
- Seek a warm room or shelter
- Remove any wet clothing
- Warm the chest, neck, head, and groin first with an electric blanket
- If able, give, consume warm beverages (not alcohol or caffeine)
- Keep dry and wrapped in a warm blanket
- Administer CPR if pulse is lost

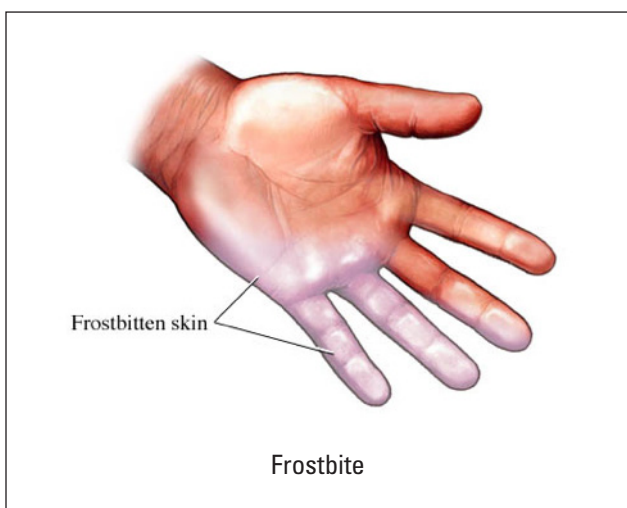
Frostbite: The skin freezes and loses water.

Symptoms

- Reduced blood flow to hands and feet
- Numbness
- Aching
- Tingling/stinging
- Bluish or pale, waxy skin

First Aid

- Seek a warm room as soon as possible
- Avoid walking on frostbitten feet or toes
- Soak affected area in warm (not hot) water
- Do not use heating pad, fireplace, or radiator for warming
- Rubbing the area may cause more tissue damage
- Wrap in a soft cloth



Trench foot: Caused by prolonged exposure to wet and cold conditions. It can occur at 60 degrees if feet are constantly wet. It is similar to frostbite, but less severe.

Symptoms

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Tingling pain
- Blisters/ulcers
- Bleeding under the skin
- Gangrene

First Aid

- Remove shoes/boots and wet socks
- Dry feet
- Avoid walking on feet to avoid more tissue damage



Trench foot

Chilblains: Ulcers formed by damaged blood vessels in the skin from repeated exposure of skin to temperatures below 60 degrees.

Symptoms

- Redness
- Possible blistering
- Inflammation
- Possible ulceration in severe cases



Chilblains

First Aid

- Do not scratch
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
- Keep blisters and ulcers clean and covered

Acknowledgments

This fact sheet was reviewed by Karen Mancl, PhD, Professor, Food, Agricultural and Biological Engineering, The Ohio State University; and Josh Svarda, Program Coordinator, Easter Seals Work Resource Center.

References

- “Cold Stress Fact Sheet.” *Environmental Health and Safety*. Princeton University, 8 Jan. 2007. Web. 17 Aug. 2010. <http://web.princeton.edu/sites/ehs/coldstress/coldstress.htm>.
- Riess, Arnaud. Trench Foot—This PBP Was Very Wet. 2007. Photograph. Paris-Brest-Paris 2007, England. Frog on a Bike—Arnaud’s Cycling Adventures. 16 Apr. 2008. Web. 24 Aug. 2010. http://www.frogonabike.com/blog/wp-content/gallery/pbp2007/IMG_0186.JPG.
- Sapp. Wintertenen.jpg. 2007. Photograph. Wikimedia Commons. Wikipedia. Ed. Ian Dunster. 29 Dec. 2007. Web. 24 Aug. 2010. <http://en.wikipedia.org/wiki/File:Wintertenen.jpg#file>.
- United States. Department of Health and Human Services. NIOSH. *NIOSH Fast Facts: Protecting Yourself from Cold Stress*. Print. 2010-115.
- Winkyintheuk. Marg’s Fingers After the Descent of Aconcagua. 2005. Photograph. South America and Antarctica, Vancouver. Flickr. Yahoo, 29 Apr. 2005. Web. 24 Aug. 2010. <http://www.flickr.com/photos/winkyintheuk/11450664/in/set-281643/>.
- Zhao, Wei. *Preventing Cold-Related Illnesses in Agricultural Workers Fact Sheet*. New Jersey: Rutgers Cooperative Research and Extension, Jan. 1993. pdf.

About AgrAbility Based Fact Sheets

These fact sheets were developed to promote success in agriculture for Ohio’s farmers and farm families coping with a disability or long-term health condition. AgrAbility offers information and referral materials such as this fact sheet, along with on-site assessment, technical assistance, and awareness in preventing secondary injuries. Fact sheets were developed with funding from NIFA, project number OHON0006.

EMPOWERMENT THROUGH EDUCATION

Visit Ohio State University Extension’s web site “Ohioline” at: <http://ohioline.osu.edu>

Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

TDD No. 800-589-8292 (Ohio only) or 614-292-1868