



# Tailgate Safety Training for Landscaping and Horticultural Services

Agricultural Safety Program, 590 Woody Hayes Drive, Columbus, OH 43210

## Hypothermia, Frostbite, and Trench Foot

**Objective: Identify the symptoms of and treatment for hypothermia, frostbite, and trench foot.**

### *How to Use This Module*

Workers are often exposed to cold, windy, wet conditions that can lead to serious injuries. For this module:

- If possible, get a copy of the Cold Stress Card from the Occupational Safety and Health Administration (OSHA) web site.
- Read the information below on hypothermia, frostbite, and trench foot.
- Discuss cold-related stresses with others.
- Review the important points.
- Take the True/False test to check your learning.

### Background

Workers need to be aware of cold weather and its effects on the body, including symptoms and treatment. The harmful effects of hypothermia, frostbite, and trench foot may arise for any worker exposed to high winds and cold temperatures. More than 700 people die of hypothermia every year in the United States.

<b>Hypothermia</b>	
<b>Causes</b>	<ul style="list-style-type: none"> <li>• Freezing temperatures.</li> <li>• Any climate that makes body temperatures fall below 98.6°F.</li> <li>• Being in a cold building.</li> <li>• Older workers are especially at risk.</li> </ul>
<b>Symptoms (by body temperature)</b>	<ul style="list-style-type: none"> <li>• Around 95°F (35°C): shivering, lethargy, and mild confusion.</li> <li>• From 90°F (32°C) to 95°F (35°C): dazed consciousness, slurred speech, and irrational behavior.</li> <li>• Below 90°F (32°C): hibernation, slowing the heart rate, blood flow, and breathing; possible unconsciousness and full heart failure.</li> </ul>

<b>Hypothermia (continued)</b>		
<b>Treatment</b>	<b>On Land</b>	<b>In the Water</b>
	<ul style="list-style-type: none"> <li>• Call 911 or ambulance.</li> <li>• Move to a warm, dry area.</li> <li>• Remove any wet clothing and replace with warm, dry clothing or blankets.</li> <li>• Drink warm, sweet drinks such as sugar water or sports-type drinks. Avoid drinks with alcohol or caffeine like coffee, tea, or hot chocolate.</li> <li>• Move arms and legs to generate muscle heat or place warm bottles or hot packs in the armpits, groin, neck, and head areas.</li> <li>• Do <b>not</b> massage the body or get in warm water because it may stop the heart.</li> </ul>	<ul style="list-style-type: none"> <li>• Call 911 or ambulance.</li> <li>• Get out of the water fast. Do not try to swim without a floating device or any help because swimming requires body heat, which reduces survival time by 50 percent.</li> <li>• Do <b>not</b> remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods to slow the loss of heat by trapping water closest to the body.</li> <li>• If you cannot get out of the water, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles, or huddle with others with chests close together.</li> </ul>

<b>Frostbite</b>	
<b>Causes</b>	When the temperature or wind chill falls below freezing, skin tissue can actually freeze.
<b>Symptoms</b>	<ul style="list-style-type: none"> <li>• Uncomfortable sensations of coldness.</li> <li>• Tingling, stinging, or aching feeling.</li> <li>• Exposed body parts such as ears, fingers, toes, cheeks, and nose become pale, waxy-white, hard, and numb.</li> </ul>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Cover the frostbitten parts with dry, sterile gauze or soft, clean cloth bandages.</li> <li>• Do not massage the frostbitten tissue because it could cause more serious injury.</li> <li>• Smoothly place the frostbitten parts in warm water (105°F).</li> <li>• Do not pour warm water directly on the affected parts because of potential tissue damage.</li> <li>• After warming the frostbitten parts between 25 and 40 minutes, keep them dry and wrapped.</li> <li>• Seek medical assistance fast.</li> </ul>
<b>Note</b>	If there is a possibility that the frostbitten parts may get cold again, do not warm them to avoid greater damage.

<b>Trench Foot</b>	
<b>Causes</b>	<ul style="list-style-type: none"> <li>• Long, continuous exposure to a wet, cold environment.</li> <li>• Actual immersion in water.</li> </ul>
<b>Symptoms</b>	<ul style="list-style-type: none"> <li>• A tingling/itching sensation, burning, pain, and swelling.</li> <li>• Blisters in serious cases.</li> </ul>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Move to a warm, dry area.</li> <li>• Treat the affected tissue with careful washing and drying, rewarming, and slight elevation.</li> <li>• Seek medical assistance fast.</li> </ul>

## Review These Important Points

- Do not massage the frostbitten tissue because it could cause more serious injury.
- If there is a possibility that the frostbitten parts may get cold again, do not warm them to avoid greater damage.
- In case of hypothermia on land, replace any wet clothing with warm, dry clothing. However, do not remove any clothing in the water.

## About These Modules

The author team for the training modules in the landscape and horticultural tailgate training series includes Dee Jepsen, Program Director, Agricultural Safety and Health, Ohio State University Extension; Michael Wonacott, Research Specialist, Vocational Education; Peter Ling, Greenhouse Specialist; and Thomas Bean, Agricultural Safety Specialist. Modules were developed with funding from the Occupational Safety and Health Administration, U.S. Department of Labor, Grant Number 46E3-HT09.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture or the U.S. Department of Labor.

Answer Key: 1 = F, 2 = F, 3 = T, 4 = T, 5 = F.

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*Name* \_\_\_\_\_

### True or False?

1. If body temperatures fall below 90°F (32°C), it can cause mild confusion. T F
2. Massage frostbitten tissue to cause muscle heat. T F
3. Drinking coffee is not good to treat hypothermia. T F
4. Being in a cold building can cause general hypothermia to the elderly. T F
5. Pour warm water directly on the frostbitten parts. T F