SECTION 2 CHAPTER 7
COLD WEATHER SAFETY / COLD STRESS

Purpose

The purpose of this program is to address control measures to protect Gravity employees from stress or injuries when working in cold temperatures.

Scope

Each GRAVITY worksite shall implement a site-specific cold weather/cold stress hazard assessment and have the control plan approved by the GRAVITY Safety Manager.

In this chapter

Cold Weather Safety / Cold Stress

Safety Manager Responsibilities

- Identify and conduct an assessment of tasks and occupations where there is the potential for cold stress
- Implement and/or provide controls (engineering, administrative or personal protective equipment) to minimize cold stress
- Provide training and education regarding cold stress, including early signs and symptoms of cold-related exposure

Worker Responsibilities

- Adhere to all control measures or work procedures that have been designed and implemented to reduce exposure to conditions that could cause cold stress
- Leave cold environments if signs or symptoms of cold-related stress appear
- Wear all required cold temperature clothing and PPE
- Immediately report any signs or symptoms of cold-related stress
- To prevent dehydration workers must maintain proper hydration when exposed to cold weather temperature extremes. This can be achieved by adequate intake of liquids (e.g., water, electrolyte drinks) provided and available to employees.

Cold Temperature Procedures:

Health Effects of Cold Stress

Warning signs of hypothermia can include complaints of nausea, fatigue, dizziness, irritability, or euphoria. Workers can also experience pain in their extremities (hands, feet, ears, etc.), and severe shivering. Workers should be moved to a heated shelter and seek medical advice when appropriate.

Hazard Assessment

An assessment will be conducted by the Safety Manager to identify the types of jobs or employees who are at risk for cold exposure. Jobs that are at risk for cold exposure include, but are not limited to: field tech personnel, mechanical repair and refueling, trucking, tank setting, snow and trash removal, equipment repair and warehousing. The assessment must also consider employees who work inside but have to go outside for any portion of the shift to either perform work or to travel to transportation departure or arrival points.

Facilities

- Regularly used walkways and travel ways shall be sanded, salted, or cleared of snow and ice as soon as practicable.
- Employees will be informed of the dangers associated with working around unstable snow and ice build-ups. All employees will be informed of the dangers and destructive potential caused by unstable snow build-up, sharp icicles, ice dams and know how to prevent incidents caused by them.
- When dangerous overhead build-ups of snow or ice are present barricades will be used to prevent staff from walking or driving into potential fall zones.

Clothing, PPE and Supplies

Proper cold weather protection must be worn by employees when working in cold, wet, and windy conditions. Protective clothing is the most important way to avoid cold stress. The type of fabric also makes a difference.

Cotton loses its insulation value when it becomes wet. Wool, silk, and most synthetics, on the other hand, retain their insulation even when wet. The following are recommendations for working in cold environments:

- Wear at least three layers of clothing. An inner layer of wool, silk or

synthetic to wick moisture away from the body – a middle layer of wool or synthetic to provide Insulation even when hot - an outer wind and rain protection layer that allows some ventilation to prevent overheating.

- Wear a hat or hood. Up to 40% of body heat can be lost when the head is left exposed.
- Keep a change of dry clothing available in case work clothes become wet.
- With the exception of the wicking layer do not wear tight clothing. Loose clothing allows bettor ventilation of heat away from the body.
- Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.
- Wear insulated boots or other footwear. Felt-lined, rubber bottomed, leather-topped boots with removable felt insoles are best suited for heavy work in cold since leather is porous, allowing the boots to "breathe" and let perspiration evaporate.
- Liner socks made from polypropylene will help keep feet dry and warmer by wicking sweat away from the skin. Always wear the right thickness of socks for your boots.
- In extremely cold conditions, where face protection is used, eye protection must be separated from the nose and mouth to prevent exhaled moisture from fogging and frosting eye shields or glasses.
- Clothing must be dry. Moisture should be kept off clothes by removing snow prior to entering heated shelters.

Cold weather supplies will be regularly inspected and restocked, when necessary, by GRAVITY. Regular inspections on cold weather supplies such as hand warmers, jackets, shovels, etc. will be carried out to ensure that supplies are always in stock.

Preventative Controls That Are Implemented to Avoid Cold Induced Injuries

- Workers will be under constant protective observation by a co-worker or supervisor. GRAVITY will implement a "Buddy System" to ensure that no employee is working alone in cold work environments.
- Some preventive measures include drinking plenty of liquids, avoiding caffeine and alcohol.
- It is easy to become dehydrated in cold weather. Proper hydration encouraged and recommended to avoid dehydration.
- If possible, heavy work should be scheduled during the warmer parts of the day.
- Take breaks out of the cold.
- Try to work in pairs to keep an eye on each other and watch for signs of cold stress.
- Avoid fatigue since energy is needed to keep muscles warm.
- Take frequent breaks and consume warm, high calorie food such as pasta to maintain energy reserves.
- If a worker exposed to cold shows signs or reports symptoms of cold stress or injury the worker must be removed from further exposure and treated by an appropriate first aid attendant, if available, or a physician.
- For continuous work in temperatures below the freezing point, heated warming shelters such as tents, cabins or rest rooms should be available. The work should be paced to avoid excessive sweating. If such work is necessary, proper rest periods in a warm area should be allowed and employees should change into dry clothes.
- New employees should be given enough time to get acclimatized to cold and protective clothing before assuming a full workload.
- For work below the freezing point, metal handles and bars should be covered by thermal insulating material. Also, machines and tools should be designed so that they can be operated without having to remove mittens or gloves.

Training

GRAVITY employees who are required to work in cold weather conditions will receive initial and annual training regarding the health effects of cold exposure and proper rewarming procedures, recognition of and first aid for frostbite and hypothermia, required protective clothing, proper use of warming shelters, the buddy system, maintaining communications, vehicle

breakdown procedures and proper eating and drinking habits for working in the cold.

Health Effects

Where employees are exposed to work conditions that may present a hazard because of excessive cold GRAVITY shall ensure that a competent person provides training to ensure the employees are familiar with the signs and symptoms of cold weather induced health problems such as hypothermia, frostbite, and trench foot.

Training will include:

- Hypothermia occurs when body heat is lost faster than it can be replaced. When the core body temperature drops below the normal 98.6°F to around 95°F the onset of symptoms normally begins. The person may begin to shiver and stomp their feet to generate heat. Workers may lose coordination, have slurred speech and fumble with items in the hand. The skin will likely be pale and cold.
- Frostbite occurs when tile skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30°F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging, or aching followed by numbness. Skin color tums red, then purple, then white and is cold to tile touch. There may be blisters in severe cases.
- Trench Foot or immersion foot is caused by having feet immersed in cold water at temperatures above freezing for long periods of trine. It is similar to frostbite but considered less severe. Symptoms usually consist of tingling, itching or a burning sensation. Blisters may be present.

Workers and supervisors involved with work in cold environments should be informed about symptoms of adverse effect exposure to cold, proper clothing habits, safe work practices, physical fitness requirements for work in cold, and emergency procedures in case of cold injury. While working in cold, a buddy system should be used. Look out for one another and be alert for the symptoms of hypothermia.

First Aid Training

Employees will be trained to administer proper first aid treatment on cold induced injuries or illnesses. All GRAVITY employees who are required to perform work in cold conditions will be knowledgeable on how to administer first aid treatment on cold induced injuries or illnesses.

All training shall be documented.