A. Lococo Wholesale Ltd.
Cold Stress Policy

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Section
Cold Stress Report

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Policy Statement

A. Lococo Wholesale Ltd. is committed to providing a healthy and safe working environment for all staff. Recognizing that Cold Stress is a significant concern in our workplace, we will demonstrate our commitment to minimizing exposures to Cold Stresses by providing financial, physical and human resources to ensure that Cold Stresses are recognized and suitable control strategies are put in place. The success of this program will rely on the full cooperation of all levels of workplace parties (employer, supervisors and staff).

This policy and its associated guidelines are intended to protect workers from potential adverse effects of overexposure to cold.

Purpose

This document is intended to provide guidance in the development of job-specific safe work procedures for the prevention of cold-stress related injuries, and assistance to supervisors and health and safety staff in addressing health and safety concerns related to cold stress.

Scope

The contents of this Cold Stress Prevention Policy apply and pertain to all departments within A. Lococo Wholesale Ltd.

Definitions

Frostbite

A cold induced condition caused by the formation of ice crystals in exposed body parts. It occurs when extremities such as the hands, feet, ears, and nose are exposed to cold for an extended period of time. Superficial frostbite is characterized by grey or yellowish patches on the affected areas. Deep frostbite is characterized by waxy and pale skin, the affected parts feel cold, hard and solid which may turn blue or purple upon thawing.

Hypothermia

A cold induced condition which results from over cooling of the body due to excessive loss of body heat.
Background Information

The management of cold stress requires an understanding of how the body regulates temperature, the contributing factors to cold stress and how cold stress may affect a worker.

How the body responds to cold.

The body is designed to work best at a constant core temperature of 38-39°C. The body maintains this temperature by gaining heat from food and muscular work or by losing it through convection, conduction, radiation and sweating.

Cold first affects the skin, cooling the blood in the peripheral capillaries. Then a complex signal is sent to brain, which initiates two processes: one to conserve heat already in body and the other to generate new heat. Heat conservation is accomplished by causing the blood vessels to the skin to constrict to reduce heat loss. Involuntary shivering, which raises the body’s metabolic rate, also begins in attempt to produce heat.

Factors contributing to Cold-Stress related injuries.

Cold-stress related injuries are caused by a combination of these factors:

- Low temperature
- Cool high winds
- Dampness
- Cold water
- Contact with cold objects, such as metal.

Wind chill, which is cooling effect of the combination of temperature and air velocity, is an important factor in the evaluation of the outdoor environment. For example, when the actual air temperature of the wind is 5°C and its velocity is 56 km/h, the exposed skin would perceive these conditions as if the equivalent still air temperature were -12°C.

Other major factors contributing to cold stress include inadequate or wet clothing, worker’s age, health, physical condition, use of medication and level of acclimatization.

Cold-Stress related injuries

Cold-stress related injury is classified as either localized, as in frostbite; or generalized, as in hypothermia. The key concern in the work environment is frostbite.

Managing Cold Stress

Various types of control measures in different combinations can be used to prevent or minimize cold-stress related injuries.
**Engineering Controls**

Engineering controls change the conditions so that the level of cold stress is reduced. They are the most effective, but sometimes the most difficult to achieve in the outdoors.

They include:

- **Redesign and/or mechanize the task.**
  - This reduces the work time in cold environments and thus exposure to cold.
- **Shield work areas from drafty or windy conditions.**
  - Where practical, provide a heated shelter for employees who experience prolonged exposure to low wind-chill temperatures.
- **Thermal insulating material on equipment.**
  - When in direct contact with skin, metal handles conduct heat away from the body and should be insulated, where practicable, when temperatures drop below -1°C. This reduces the risk of frostbite.

**Administrative Controls**

Administrative controls attempt to minimize the risks through work practices. They are relatively easy to implement.

Administrative controls include the following:

- **Limit exposure time that worker is required to work in a cold environment.**
  - Some examples for reducing exposure time include:
    - Perform partial components of a task indoors/sheltered, where feasible
    - Increase task variation and rotation
    - Assign additional relief workers
    - Routine maintenance and repair work in cold exposed environments may be scheduled for warmer days/seasons of the year, where practicable
    - Activities that minimize blood circulation such as static, cramped positions should be reduced/eliminated, where feasible.

- **Allow recovery time**
  - It is important to provide adequate recovery time from cold stress exposures. Appropriate rest breaks should be determined based on environmental conditions (i.e. temperature and wind speed). If work is performed continuously in a cold environment, determine exposure cycles. It should be noted that breaks should be taken in a warm environment/location.

- **Initiate a Buddy System**
  - Since individuals are less likely to notice their own symptoms, a buddy system approach would allow for earlier recognition of the risk of signs and symptoms, such as frostbite to the ears, cheeks and nose.
• **Acclimatization**
  
  o Some degree of acclimatization may be possible in cold environments. With enough exposure to cold, the body does undergo some changes that increase comfort and reduce the risk of cold-stress related injuries. People who are physically unfit, older, obese, or taking medications may not acclimatize as readily.

**Personal Protection Equipment**

• Supervisors should encourage workers to wear multiple layers of light, loose-fitting clothing consisting of:
  
  o A waterproof/water-resistant outer layer to break the wind and allow some ventilation
  o A middle layer of wool or synthetic fabric to absorb sweat and retain insulation in a damp environment
  o An inner layer of synthetic weave to allow ventilation.

• Workers should keep a change of clothing available in case work garments become wet
• If a worker becomes immersed in water, the worker should immediately change to dry clothing.
• Workers should avoid wearing down-filled garments in wet environments.
• Workers should be aware that wearing dirty or greasy clothing have poor insulating properties.
• Workers should pay special attention to protecting feet, hands, face and especially head. Up to 50% of body heat can be lost when the head is exposed.
• A wool knit cap with ear protection provides the best protection.
• For employees required to wear a hard hat, provide a liner for protection from the cold.
• Face protection that does not restrict vision should be worn.
• Workers should not wear scarves when the work performed may result in the scarves getting caught in moving parts of machinery.
• Footgear should be insulated and water-resistant to protect against cold and dampness

**Roles and Responsibilities of Workplace Parties**

All staff are expected to comply with the outlined policy and procedures.

**Employer**

- Identify jobs with a potential risk of cold stress
- Develop and maintain written job-specific safe work procedures which address this hazard inform workers and their supervisors where their work involves potential risk of cold stress
- Develop a process to ensure supervisors and workers are advised of:
  - Factors which can predispose them to cold stress
The warning signs and symptoms of cold stress conditions (frostbite and hypothermia)

The measures to be taken to protect against this hazard (e.g. wearing appropriate clothing)

The job-specific safe work procedures

- Post information on cold stress in the workplaces of employees potentially exposed to this hazard
- If uniforms or clothing are being provided by the department, ensure that clothing specifications reduce the risk of cold stress (while providing appropriate protection from other hazards, where necessary)

Managers/Supervisors

- Be familiar with all jobs under their supervision which have been identified to have potential risk of cold stress and their associated safe work procedures
- Ensure training/information sessions are provided to employees whose work places them at risk of cold stress
- Monitor environmental conditions (i.e. temperature and wind velocity and/or wind chill), as appropriate, on cold days and on days where brisk wind and cold air temperature combine to reach levels deemed as hazardous
- Implement safe work procedures established to prevent cold-stress related injuries
- Advise workers to:
  - Wear multiple layers of light, loose fitting clothing
  - Pay special attention to protecting feet, hands, face & head
  - Report to their supervisor cold stress-related symptoms in themselves or their co-workers
  - Adhere to the recommended work-warm-up schedule, established to prevent frostbite or hypothermia
  - Reinforce personal protection strategies to workers verbally, on a continual basis

Employees

- Be familiar with cold stress hazards, predisposing factors and preventative measures
- Follow safe work procedures established to prevent cold-stress related injuries
- Report to their supervisor cold stress-related symptoms in themselves or their coworkers
- Follow recommended schedule of rest breaks, as advised by supervisors, to prevent frostbite or hypothermia

Joint Health and Safety Committees

- Review incident/accident data related to Cold Stress
- Review incident/accident investigation reports
- Review policy and program annually
- Make recommendations in writing to management
• Assess the feasibility of a Cold Stress sub-committee reporting to the JHSC that would focus solely on Cold Stress prevention
• Look for Cold Stress hazards during workplace inspections

**Occupational Health and Safety Staff**

• Provide assistance in the development of safe work procedures
• Provide assistance in the provision of information sessions
• Prepare information related to cold stress
• Address cold stress concerns of employees

**Personal Prevention Strategies**

Personal prevention strategies are those actions that individuals can take to lower their risk of cold-stress related injuries. Although they are the responsibility of the individual workers, management should minimize, to the extent possible, any barriers to the use of personal prevention strategies. Workers should be advised that the following actions would be helpful in preventing cold-stress related injuries.

**Self-monitoring**

Individual workers should interrupt cold stress exposure once extreme discomfort or the initial symptoms of a cold-stress related injury are detected. Individuals should be required to report to their supervisor cold stress-related symptoms in themselves or their co-workers.

**Fluid Replacement**

Warm, non-caffeinated, non-alcoholic drinks should be consumed frequently. Caffeine is a diuretic and causes dehydration, which is linked to heat loss. Alcohol causes dilation of the blood vessels near the skin causing heat loss to the body's core and its consumption at work is prohibited, however, this should be kept in mind for off-work activities.

**Lifestyle and Diet**

Practicing a generally accepted healthy lifestyle greatly reduces the risk of cold-stress related injuries. This includes getting adequate sleep, limiting non-work exposure to cold, exercising, not using alcohol or drugs, and eating a well balanced diet. Nicotine should be avoided because it increases constriction of peripheral blood vessels and can increase the risk of frostbite.

**Health Status**

Many conditions predispose individuals to cold-stress related injuries. It is suggested that employees discuss their medical history and have a physical examination with their physician in order recognize their risk factor(s) and thereby help prevent cold-stress related injuries. People taking certain medications may have inhibited circulation and should consult their physician.
Warm-up Stretched

Working in cold environments may increase the risk of back injuries and other musculoskeletal injuries. Workers should perform warm-up stretching exercises before handling heavy equipment and material. Workers should consult with their family physician to determine appropriate exercises.

Elements of the Cold Stress Program

- Train all management, supervisors, and employees on Cold Stress awareness, hazards, and how to recognize and report Cold Stress hazards
- Train specialized staff JHSC members and others involved directly in Cold Stress prevention efforts on Cold Stress assessment methods and control approaches
- Orientate all new staff on the Cold Stress program
- Establish an Cold Stress hazard/incident reporting system
- Provide a Cold Stress hazard identification tool
- Assess jobs/tasks where Cold Stress hazards are present
- Implement well-designed controls to reduce the risk of Cold Stresses
- Establish a safe purchasing policy for consideration of Cold Stress prevention in all purchasing decisions
- Track and report on Cold Stresses
- Proactively integrate Cold Stress hazard controls into design

Procedures

Joint Health & Safety Committee

Will incorporate Cold Stress hazard recognition in monthly workplace inspections, and make recommendations.

Orientation

Ensure Cold Stress education for all workers. Education includes awareness, Cold Stress definitions, and reporting of incidents and risks. Department specific orientation will include specific Cold Stress hazards, proper use of equipment, set-up of workstations and work organization strategies.

Cold Stress Hazard Reporting

As per the Human Resources policy, employees are to report Cold Stress hazards, and ensure Cold Stress incident reporting is consistent.

Cold Stress Incident Reporting

Ensure positive reinforcement of workers reporting Cold Stress signs and symptoms.

Ongoing Cold Stress Inspections

Managers are to include Cold Stress hazard identification in their routine inspections.
Cold Stress Investigation
Managers are expected to incorporate Cold Stress prevention within the investigation process for MSD incidents.

Simple Cold Stress Risk Assessment
When Cold Stress hazards are identified, whether through investigations, inspections, or reports from supervisors and workers, with the assistance of the JHSC/H&S rep as required, will conduct a simple Cold Stress risk assessment and seek to identify and implement required Cold Stress hazard controls.

Referral for Cold Stress risk assessment
If a simple Cold Stress risk assessment is not adequate for identifying specific Cold Stress hazards or suitable hazard controls, an in-depth Cold Stress risk assessment is to be requested in writing from the occupational health & safety manager.

Purchasing
As appropriate, worker input and Cold Stress features are to be considered in all decisions about the purchase of new equipment or new uniforms. Whenever possible, items should be trialed to ensure Cold Stress hazards are identified and controlled. Visits to other sites where the equipment/items are in use can also provide valuable information about Cold Stress risk prior to purchase.

Building design
Whenever the workplace is being redeveloped, Cold Stress considerations are to be integrated into the design of the new work environment.

Equipment design
Whenever equipment, machines and tools, are modified, redesigned, installed or purchased. Cold Stress considerations are to be integrated into the design.

Maintenance of equipment
Equipment is to be kept in safe operating condition. Complete and accurate documentation of preventive maintenance is required.

Education

Orientation
Ensure Cold Stress education for new workers

Ongoing
Department-specific annual review of Cold Stress hazards and controls are to be reviewed with staff. Education should include Cold Stress awareness, hazards, and signs and symptoms.
Evaluation

The Cold Stress program will be evaluated at least annually and will consider the following indicators:

- Incident reports
- Absenteeism reports
- JHSC minutes
- Physical demands analysis
- Cold Stress hazard inspections
- Cold Stress risk assessments
- Cold Stress awareness questionnaire
- Cold Stress hazard controls implemented
- Cold Stress hazard control evaluation results

Any changes to the program will be documented and communicated immediately to all staff and management.
Appendix A: The Equivalent Chill Temperature Chart

The equivalent chill temperature (ECT) chart relates the actual dry bulb temperature and the wind velocity. The ECT, often called the wind chill temperature, is a crucial factor to evaluate when working outside. It should be used when estimating the combined cooling effect of wind and low air temperature on exposed skin or when determining clothing insulation requirements.

<table>
<thead>
<tr>
<th>Estimated wind speed (in km/h)</th>
<th>Actual temperature reading (°C)</th>
<th>Equivalent chill temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (Calm)</td>
<td>10  5  0  -5  -10  -15  -20  -25  -30  -35  -40  -45  -50</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9    3    -2    -7   -12   -18   -23   -28   -33   -38   -44   -49   -54</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>4    -2   -7   -14   -20   -27   -33   -38   -45   -50   -57   -63   -69</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>0    -7   -14  -21   -28   -35   -42   -50   -56   -64   -71   -78   -84</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>-1   -8   -16  -24   -31   -38   -46   -53   -60   -67   -76   -82   -90</td>
<td></td>
</tr>
</tbody>
</table>

(Wind speeds greater than 64 km/h have little additional effect.)

LOW HAZARD
Risk of exposed, dry skin being affected in less than one hour. Awareness of hazard low.

INCREASING HAZARD
Danger from freezing of exposed flesh within one minute.

HIGH HAZARD
Flesh may freeze within 30 seconds.

(Source: British Columbia’s Cold Stress Regulation, Part 7)

The table was originally developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA, and is adapted from the 1995-1996 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, published by the ACGIH. The ACGIH publication provides the equivalent table with temperature in degrees Fahrenheit and wind speed in mph.

Equivalent chill temperatures for actual temperatures and wind speeds not listed in this chart may be calculated by interpolation. For example, at a wind speed of 16 km/h, an actual temperature reading of -23°C (3/5 of the difference between -20°C and -25°C) produces an equivalent chill temperature of -36°C (3/5 of the difference between -33°C and -38°C).
Appendix B: Work-Warming Schedule

If work is performed continuously in low temperatures and high wind conditions, the Threshold Limit Values (TLVs) of Work/Warm-up Schedule should be consulted to determine the maximum length of a work period and number of work breaks.

<table>
<thead>
<tr>
<th>Air Temperature—Sunny Sky</th>
<th>No Noticeable Wind</th>
<th>8 km/hr Wind</th>
<th>16 km/hr Wind</th>
<th>24 km/hr Wind</th>
<th>32 km/hr Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>-26 to -28</td>
<td>(Norm. Breaks) 1</td>
<td>75 min</td>
<td>2</td>
<td>55 min</td>
<td>3</td>
</tr>
<tr>
<td>-29 to -31</td>
<td>(Norm. Breaks) 1</td>
<td>75 min</td>
<td>2</td>
<td>55 min</td>
<td>3</td>
</tr>
<tr>
<td>-32 to -34</td>
<td>75 min</td>
<td>2</td>
<td>55 min</td>
<td>3</td>
<td>40 min</td>
</tr>
<tr>
<td>-35 to -37</td>
<td>55 min</td>
<td>3</td>
<td>40 min</td>
<td>4</td>
<td>30 min</td>
</tr>
<tr>
<td>-38 to -39</td>
<td>40 min</td>
<td>4</td>
<td>30 min</td>
<td>5</td>
<td>Non—emergency work should cease</td>
</tr>
<tr>
<td>-40 to -42</td>
<td>30 min</td>
<td>5</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
</tr>
<tr>
<td>-43 &amp; below</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
<td>Non—emergency work should cease</td>
</tr>
</tbody>
</table>

(Source: 1999 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, published by the ACGIH)

This schedule was developed by the Occupational Health and Safety Division of the Saskatchewan Department of Labour and adopted by the American Conference of Governmental Industrial Hygienists (ACGIH).

Notes:

1. Schedule applies to any 4-hour period with moderate to heavy work activity, with warm-up periods of 10 minutes in a warm location and with an extended break (e.g., lunch) at the end of the 4-hour work period in a warm location. For Light-to-Moderate Work (limited physical movement), apply the schedule one step lower. For example, at -35°C (-30°F) with no noticeable wind, a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period.

2. The following is suggested as a guide for estimating wind velocity if accurate information is not available:
   - 8 km/hr: light flag moves; 16 km/hr: light flag fully extended; 24 km/hr: raises newspaper sheet; 32 km/hr: blowing and drifting snow

3. TLVs apply only for workers in dry clothing.