MANUAL MATERIALS HANDLING

PURPOSE AND SCOPE

This Policy is in place to protect employees from injuries resulting from manually lifting and moving material. This procedure applies to all employees and contractors at TransCanada work sites.

The procedures in this TPP will be followed during regular business activities as well as throughout an emergency (if the TPP is applicable) to ensure the employees health and safety and the environment are not compromised. For information on roles and responsibilities during an emergency, please refer to TransCanada's Emergency Management System (IMS Manual / Section 2).

DEFINITIONS

Fit to Work Assessment means a Fit to Work Assessment may be conducted prior to employment for safety sensitive positions or prior to a transfer to a safety sensitive position to determine the ability of an individual to perform the work associated with the position.

Good Faith Reporting means an open, honest, fair and reasonable report without malice or ulterior motive.

Manual Materials Handling means moving or handling things by lifting, lowering, pushing, pulling, carrying, holding, or restraining.

Personnel means full-time, temporary and part-time employees and contractors.

Revised NIOSH Lifting Equation means a tool developed by the National Institute for Occupational Safety and Health (US) to determine the recommended weight limit, for a defined set of task conditions, of the load that nearly all healthy workers could perform over a substantial period of time (up to 8 hours) without an increased risk of developing lifting related lower back pain.

TransCanada or **the Company** means TransCanada Corporation and its wholly-owned subsidiaries and operated entities.

Washington State Department of Labor and Industries Calculator for Analyzing Lifting Operations means a tool developed by the Washington State

Department of Labour which can be used to determine a lifting limit based on several variables.

Work Related Musculoskeletal Disorder (WMSDs) means work-related musculoskeletal disorders (also referred to as Repetitive Strain Injuries, Cumulative Trauma Disorders, Musculoskeletal Injuries) affect muscles, tendons, nerves, ligaments, and joints in various parts of the body. WMSDs are, by definition, work related, and many different work factors may contribute to their development. The key physical risk factors are force, posture, repetition and duration. Psychosocial risk factors, such as stress and workload also play a role.

PROCEDURES

Definition and Risk Factors for Injury

Manual materials handling (MMH) means moving or handling objects, by lifting, lowering, pushing, pulling, carrying, holding, or restraining.

MMH is always hazardous, but the level of hazard depends on the type of material you are handling, what the task is, and what the conditions are at the workplace or work site. Every worker who lifts or does other MMH tasks is at some risk for work related musculoskeletal disorders (WMSDs). The complete elimination of this risk is not realistic because of the nature of MMH, but the risk of injury can be greatly reduced by using safe work practices.

Risk factors for injury associated with MMH include:

- weight of the load lifted
- the range of the lift
- the location of the load in relation to the body
- the size and shape of the load
- the number and frequency of lifts performed
- excessive bending and twisting
- the improper selection of personal protective equipment for performing MMH tasks

Preventing Injuries-Planning Ahead

Preventing injuries from MMH must combine many approaches:

Fit to Work Assessment

- A Fit to Work Assessment may be conducted prior to employment for safety sensitive positions or prior to a transfer to a safety sensitive position to determine the ability of an individual to perform the work associated with the position.

Job Design / Redesign (including environment)

- Work Space Layout: Shape of Load and Storage of Loads

Note: The following should be considered when designing new work space layouts. Reasonable workplace modifications will be considered to reduce ergonomic risk factors.

  - Evaluate the need to do the job
  - Purchase products as they are required and in smaller quantities to avoid having to move and store large quantities of product
  - Change the shape of the load so the load can be handled close to the body
  - Ensure there is clear and easy access to the load
  - Eliminate the need to bend down by raising the storage level of the load and eliminating deep shelves
  - Eliminate the need to twist your body to get at the load by changing the workstation layout
  - Facilitate the grasping of objects by adding handles or improving coupling
  - Ensure sufficient space for the entire body to turn
  - Reduce carrying distances by changing the work space layout or installing mechanized equipment

- Work Space Layout: General

  - Have all materials at work level
  - If possible, use a work bench with adjustable height and tilt to improve working position and to allow multiple users to work comfortably
  - Locate objects within easy reach
  - Use adjustable supports or suspenders to operate heavy tools

- Temperature

  - Keep the temperature of the working area between 18° C (65° F) and 21° C (70° F) when practical

  - Refer to the Heat and Cold Stress TOP for work/rest schedules when working in conditions of extreme heat or cold
  - Guidelines for MMH tasks in extreme heat or cold:
    - Stop MMH when the temperature exceeds 40° C (104° F)
    - Stop MMH when wind chill drops to -35° C (-31° F)

- Lighting
  - Illuminate the work area for MMH tasks at the level of 200 lux.
  - Use task lights or other additional light sources to improve the ability to see clearly
  - Use angular lighting and colour contrast to improve depth perception, especially in stairways and passageways

Organization of Work Flow

- Plan the work flow in order to minimize the distance and the number of times an object must be moved

Training-Field Employees

- Participate in the Ergonomics For Field Staff training session, provided by your local Safety Resource
- Participate in the Back Injury Prevention training session, provided by your local Safety Resource

Job Safety Analysis

Identify MMH hazards while conducting a Job Safety Analysis

Preventing Injuries while Handling Loads

When it is not possible to eliminate a MMH task, take steps to reduce your risk of injury when handling a load.

Plan your Action before Lifting and Carrying the Load:

- Identify the weight of the load
- Is the load too heavy?
  - For most workers, lifting loads over 20 kilograms (44 lbs) results in an increased number and severity of back injuries

  - The Revised NIOSH Lifting Equation and the Washington State Department of Labor Industries Calculator for Analyzing Lifting Operations can be used to determine if an object is too heavy to lift

- Be sure that the load is free to move
- Clear your path by removing tripping and slipping hazards, this includes grease, oil, water and litter, which can cause slips, trips and falls
- Ensure that the planned location of the load is free of obstacles and debris
- Ensure clothing is appropriate for MMH tasks:
  - Do not wear aprons, coats, clothing with exposed buttons, zippers or loose flaps
  - Ensure gloves are the appropriate size and are appropriate for the task (inappropriate gloves may increase the amount of force required to handle the load)
- Before lifting, check if mechanical aids such as hoists or dollies are available
- Consider using other employees to assist in the lift to minimize the total load of each employee:
  - Remember that the combined strength of the team is less than the sum of individual strengths
  - Assign a leader to the team and determine a set of commands to used such as lift, walk, stop, down, and follow the commands given by the team leader

Reduce your Risk of Injury when Lifting and Carrying the Load / General Guidelines on Lifting

There is no single correct way to lift because lifting can always be done in several ways. Some general guidelines for manual lifting are:

- Prepare to lift by warming up the muscles
- Avoid lifting with an extended reach by reorienting the load or reducing the size of the load
- Stand close to the load, facing the way you intend to move
- Avoid twisting by keeping your body aligned with the load
- Ensure stable footing
- Balance contents of containers
- Slide or push instead of carrying the load
- Consider using slings and hooks to move loads without handles

- Use a wide stance to gain balance
- Ensure a good grip on the load
- Keep arms straight
- Tighten abdominal muscles
- Tuck chin into the chest
- Initiate the lift with body weight
- Lift the load close to the body
- Lift smoothly without jerking
- Avoid twisting and side bending while lifting
- Keep the load tilted when setting it down to avoid bruising fingers
- Avoid jerky releases
- Stand up smoothly, easing muscles

Rest Breaks

Take rest breaks to relax tired muscles; this prevents fatigue from building up

Safety Considerations

Do not permit any person to stand under a suspended load, or near a cable, chain or rope under tension

Ensure no person is positioned between equipment and load during lifting activities

- Wear personal protective equipment when lifting or moving material:
    - Protective hand-wear (gloves) to protect hands against sharp or abrasive surfaces
    - Approved protective footwear to protect feet from injury from falling and rolling objects
    - Coveralls to protect trunk, arms, and legs from sharp edges or abrasive surfaces
- Offer assistance to coworkers when you observe they need assistance, even if they have not requested it

Back Belts

No evidence exists to support the claim that wearing back belts improves one's back safety. Back belts are not personal protective equipment and are not endorsed for use on TransCanada work sites.

Injury Response

If an injury occurs as a result of MMH, follow the Occupational Injury and Illness Response process and the Disability Management process.

COMPLIANCE

Personnel must comply with all aspects of this Policy and support others in doing so. Personnel are responsible for promptly reporting suspected or actual violation of this Policy, applicable law, or any other concern, through available channels so that it can be appropriately investigated, addressed and handled. Personnel who fail to comply, or knowingly permit Personnel under their supervision to not comply, may be subject to appropriate corrective disciplinary action in accordance with the Company's Policies and processes. Please refer to the TransCanada Corporate Policies website for more information.

NON-RETALIATION

We support and encourage Personnel to report suspected incidents of non-compliance with applicable laws, regulations, and authorizations, as well as hazards, potential hazards, incidents involving health and safety or the environment, and near hits. We take every report seriously, investigate each report to identify facts, and effect improvements to our practices and procedures when warranted. All Personnel making reports in good faith will be protected. Good Faith Reporting is intended to remove protection for Personnel making intentionally false or malicious reports, or who seek to exempt their own negligence or willful misconduct by the act of making a report. We ensure immunity from disciplinary action or retaliation for Personnel for the Good Faith Reporting of such concerns. Reports can be made to management, a compliance coordinator, or anonymously to the ethics helpline.

REFERENCES AND LINKS

- Policy Questions and Comments
- Code of Business Ethics Policy
- Work Authorization / Job Safety Analysis TOP
- Revised NIOSH Lifting Equation
- Washington State Department of Labor Industries Calculator for Analyzing Lifting Operations

- Ergonomic Hazard Control TPP
- Personal Protective Equipment TPP
- Occupational Injury and Illness Response TPP
- Disability Management Program
- Field Ergonomics - Ergonomics website
- TransCanada Ergonomics website
- CCOHS Manual Materials Handling Home Page