Appendix 13.13-B Ergonomics Risk Assessment

TELKWA COAL
LIMITED

December 1, 2020 Total Safety Reference: 20-217 R01 Rev. 01

Telkwa Coal Limited
1410-409 Granville Street
Vancouver, BC, V6C 1T2

Email: dfarmer@allegiancecoal.com

Attention: Dan Farmer, COO

Reference: **Initial Ergonomics Assessment for the Tenas Coal Mine**

Introduction

In response to your request, TSS Total Safety Services Inc. (Total Safety) conducted an initial ergonomics assessment for the Tenas Project, a proposed surface metallurgical coal mine located in British Columbia's, Bulkley Nechako region, 25 km south of the town of Smithers and 7 km southwest of village of Telkwa.

At the time of this report, no construction has commenced for the project. It is our understanding all site buildings will be new construction and equipment sourced will be new. The mine will use open pit methods and the coal will be processed on site in a to-be-purposed built processing plant. The clean coal will be transported via truck down a haul route to the rail line (CNR), southeast of Telkwa.

Telkwa Coal Limited retained Total Safety to conduct this initial ergonomics assessment as part of the application for a *Mines Act* (*MA*) permit. *MA* permits are issued by the Ministry of Energy, Mines and Petroleum Resources (EMPR). The EMPR outlines the health and safety documents required to be submitted as part of the MA permitting phase in a document titled "Joint Application Information Requirements for *Mines Act* and *Environmental Management Act* Permits", specifically Part 8, Section 8.1.2 requires an ergonomics assessment be performed, in order to assess the potential for musculoskeletal disorders (MSD) at the proposed mine.

This assessment has considered ergonomics mainly for the design of the mine and for equipment purchasing purposes. It has taken into consideration the work environment, workstations and machinery, work equipment and tools, manual materials handling, work processes and procedures. This assessment is intended to identify potential hazards that may contribute to the risk of MSD, including whole body and hand-arm vibration.

Applicable Legislation

Applicable legislative requirements relating to health and safety are provided in the *Health Safety and Reclamation Code for Mines in British Columbia* (June 2017), referred to hereafter as the *Code.* There are several sections specific to MSD in the *Code*, including the following:

1. A Health and Safety Program (1.6.9), including:
    - "a written preventative training program, acceptable to the chief inspector, to educate OHSC members in the recognition, evaluation and prevention of adverse health effects resulting in Musculoskeletal Disorders (MSD) and in reporting related symptoms and injuries" (1.6.9 (1)(h))

2. Prevention of MSD's (2.9.1), specifically:
    - "Where the equipment, work procedure, or working condition in a work area has caused injurious inflammation of muscles, tendons, or bursae of the upper limbs of the persons doing the work, and it is demonstrated to be from repetitive or forceful use, the chief inspector shall, where practicable, require implementation of one or more of the following preventative measures
        1) Modification of work procedures or equipment to reduce physical demands on affected body areas, or
        2) A rescheduling of work to permit safe adjustment to unaccustomed task requirements".
3. Materials handling (3.3.5), specifically:
    - "Where a materials handling task endangers the safety of the persons doing the work, the manager shall ensure that
        1) The physical parameters of the handling task are redesigned, or
        2) Mechanical lifting aids or personal protective equipment is provided, or
        3) The work area where the work is carried out is redesigned to eliminate unsafe conditions relating to floor surfaces, lighting, or obstruction to materials handling, or
        4) A combination of (1), (2), or (3) is implemented".

The following sections of the *Code* don't specifically relate to MSD, but may indirectly apply:

1. A general clause requiring safe workplace conditions (1.9.1(1)),
2. A requirement for controls to ensure workers are not overexposed to any physical, chemical or radiation hazards (1.9.1(2)),
3. A requirement to report all first aid cases provided by the manager to the OHSC at the end of each month (1.9.2),
4. Employees' right to refuse unsafe work (1.10.1-1.10.7),
5. Worker training (1.11.1-1.11-2),
6. Control of workplace hazards, specifically a housekeeping program (2.2.1),
7. Suitable and adequate illumination (2.8.1),
8. Heat or cold stress (2.10.1), and
9. Working alone (3.2.3).

Note that the *Code* does not specifically mention worker exposure to whole body vibration (WBV) or hand-arm vibration (HAV); however, section 1.9.1 of the *Code* would include vibration as a potentially hazardous condition that requires controls. The WorkSafeBC *Occupational Health and Safety Regulation* (*OHSR*) can be deferred to as it contains regulations for vibration, specifically Part 7, Division 2. This division includes; vibration exposure limits for both HAV and WBV (7.11), evaluation of vibration (7.12), vibration exposure control obligations (7.13), information about vibration hazards (7.14), labels for equipment that produces excessive vibration (7.15) and exposure to cold and HAV (7.16). In addition, the 1994/1995 ACGIH TLV does not include for ergonomics; however, the current version does include ergonomics and has been referenced below.

Methodology

As the mine has not yet been constructed, this initial ergonomics assessment was based on several factors but excludes a site review. We relied on our experience related to ergonomics at operating mines, particularly coal mines in British Columbia, our education and training as industrial hygienists, applicable legislation, particularly the *Code*, applicable literature, and information provided by the client.

The ergonomics assessment was done separately for each distinct area of the planned mine. Vibration hazards were also considered, where applicable.

Assessment and Recommendations

Administration Building

Office ergonomics are common concerns in mine administration buildings and other areas where workers are stationed at computers most of their shift. The administration (admin) building on site will be constructed of ATCO (or similar) trailers fitted together. Workers in this building are anticipated to have 40-hour work weeks, either five, eight-hour days or four, ten-hour days. The admin building will also house the first aid room.

Common reported ergonomic injuries or discomfort related to computer workstations include:

- Neck, lower and upper back pain from sustained awkward postures and prolonged sitting, and
- Wrist and upper extremity pain from repetitive (finger and hand) movement.

Education sessions and resources should be provided to office workers to ensure their workstations are properly setup as well as common office-related ergonomic concerns, risk factors and symptom recognition. Workers should be able to configure their computer and workstation in order to have neutral postures. Additionally, configuration should consider the type of work performed at the workstation, including on the computer such as report writing, data entry, CAD and map reading, the number of monitors used, work conducted on the worksurface (handwriting, etc.) and other tasks such as phone use. Additional details should be provided in the MSD Prevention Training Program, including self-assessment tools. No vibration concerns are anticipated for workers in the admin building.

Note that initial investment in adjustable furniture and equipment will likely result in decreased ergonomic related losses long-term. For selection of desks, chairs and other equipment, the following should be taken into consideration:

- Adjustable monitors or monitor risers i.e. ability to move up/down or on adjustable arms in order to position the top of monitors at seated eye height.
- Adjustable chairs (adjustable height, seat back angle and lumbar support).
- Sit-stand desks or desk allowing the keyboard and mouse at the same height, at seated elbow height i.e. on desk or on keyboard tray.
- Not all office equipment fits all workers (some workers are too tall, too short, too large, etc.). Modified equipment may be required, such as larger or smaller chairs, chair inserts, wedge cushions, keyboard trays, document holders, footrests, etc.
- Blinds on windows to reduce glare.

Maintenance Shop – Heavy Duty Vehicles, Light Duty Vehicles and Welding

The maintenance shop will be a standalone building to service heavy duty (HD) vehicles with an attached welding shop and warehouse, as well as an outside area to service light duty(LD) vehicles. Heavy Duty (HD) vehicles are typically diesel-powered mobile equipment on site including, but not limited to haul trucks, excavators/shovels, loaders, graders, dozers and drills. Work on HD vehicles will be conducted by HD mechanics either in the maintenance shop or out in the field. Welding work (includes welding, cutting, grinding) will be conducted by welders and may be conducted in the welding shop, in the main HD maintenance shop, in areas just outside the shop, or out in the field. Light duty vehicles typically include pick-up trucks, crew vans, busses, the ambulance or similar. The Light Duty (LD) service area is planned to be outside without a tent or cover. Workers who service the LV vehicles are LV Mechanics.

Work in the field will typically be un-scheduled (break-down or similar where the fix is quick, or the equipment cannot be immediately brought back to the shop). In the shop, both scheduled and non-scheduled work will be conducted. Based on the expected number of different pieces of equipment/vehicles serviced and the variety of tasks to be conducted, the work required will be highly variable. Many of the tasks will require working in awkward postures, often for sustained periods and/or with excessive force.

Maintenance workers and welders are anticipated to work 12-hour shifts. See Table 1 below for common/anticipated ergonomic-related hazards and controls.

Table 1: Maintenance, HD Vehicles/LD Vehicles/Welding - Hazards and Controls (1 of 2)

Common/Anticipated Hazards	Controls
Heavy and/or large parts may require moving – doing manually puts workers at risk of injury	• Include for a crane or come-along to move large/heavy parts in the shop
Access to vehicles can be awkward, e.g. tracked dozers require stepping on tracks (poor traction) and first step on haul trucks is high	• Designate a plank or flat platform to anchor to metal tracks for a better step/standing surface • Use a wheeled step platform to access equipment with a higher first step i.e. 3-step platform for haul trucks or higher platforms for access to other higher access points (often safer and more stable than a standard ladder)
Work underneath vehicles may result in a risk of injury when getting in/out or moving position	• Use wheeled dollies or similar to work below vehicles
Sustained awkward postures, can result in MSD	• Take frequent breaks, change position when possible and/or rotate with other mechanics/welders • Consider the position to conduct the work, and if equipment can be lifted or moved to improve or reduce the awkward position required • Use knee pads or padded mat on concrete for kneeling
Poor lighting, especially under vehicles	• Supply workers with headlamps or enough task lighting, as required
Poor housekeeping – dirty/wet floor and workers tripping over hoses, tools, etc.	• Remove as much caked-on mud from vehicles/equipment as practical before entering shop/work area • Labourers or similar to regularly clean floors • Set aside time (e.g. each shift or each week) for housekeeping • Each mechanic/welder to have their own space (i.e. tool crib) to store their tools etc. • Avoid storing materials on the floor – install racks/shelving as required • Put hoses back after use – consider hose reel or similar
Thermal issues in the shop/work area(s) in the winter – workers may get cold which can increase risk of injury	• Reduce time in colder months the bay doors are open • Use heaters if required • Dress for the weather/temperature, including gloves if required • If the LV service area is located where wind becomes an issue, consider a wind break
Weather and temperature in field – muddy and wet, frozen and snowy, and/or excessive wind. This increases risk of slips or other injuries.	• Have several different sizes of plywood sheets or similar available to put down to give workers a cleaner/drier/more stable surface to work on • Use boot-clamps, or similar devices when walking on frozen ground • Block wind (e.g. with another vehicle) from workers whenever possible • Dress for the weather

Table 1 (Continued 2 of 2)

Common/Anticipated Hazards	Controls
Vibrating hand tools such as impact wrenches and grinders are used and expose workers to hand-arm vibration	• Select tools with lower known vibration levels (i.e. with built-in vibration dampening) • Provide training and education for workers on early recognition of hand-arm vibration syndrome • Ensure workers keep their hands and arms warm when using such tools – cold increases the risk of hand-arm vibration syndrome • Limit time workers use vibrating hand tools, i.e. rotate workers if possible

Warehouse

The warehouse will be attached to the maintenance shop. Workers stationed in the warehouse will include a Shipper/Receiver and Warehouse Person. Both positions will involve paperwork and work on computers as well as handling materials. Warehouse workers will likely work a 12-hour shift dayshift only, with an open warehouse on nightshift. There will be a propane or electrically powered forklift which will work in the yard and warehouse and material handling aids. No vibration issues are anticipated in the warehouse. See Table 2 below for common/anticipated ergonomic-related hazards and controls.

Table 2: Warehouse - Hazards and Controls (1 of 2)

Common/Anticipated Hazards	Controls
Manual handling of items exceeding guidance limits based on weight or storage height, tall shelving requiring ladders or similar, can result in MSD injury	• Limit manual lifting to no more than 50 lbs (23 kg) • Use a mechanical lifting aid for items over 50 lbs, for frequent lifts and or awkward lifts • A variety of wheeled carts and mechanical lifting aids to be available including hand-trucks, wheeled carts, steps, ladders • Carts and lifting aids to be easily accessible and maintained • Develop written guidance for storing materials on shelves as per the ACGIH TLVs for Lifting Tasks (Table 2 of current ACGIH TLV book) – to be outlined in detail in MSD Prevention Training Program
Aisles between racking too narrow, may reduce ability of workers to use lifting devices	• Ensure aisles are wide enough to accommodate mechanical lifting aids
Transfer of heavy/awkward items between pallets/bins, particularly in Shipping/Receiving area, can result in MSD injury	• Have a portable mechanical lifting aid in this area that is useful for transferring a variety of objects e.g. small crane, sling lift or similar • Use elevating hand-truck or similar to bring load up to near waist level for manual lifts (avoids lifting from floor height)
Poor housekeeping, may result in slips, trips or falls	• Ensure regular housekeeping is conducted • Do not store materials in aisles or on the floor around shelving • Have a designated area for temporary storage
Standing on shelves or excessive reaching for items on tall and deep shelving, can result in MSD injury	• Only use deep racking for lower shelving and/or for items on pallets that are moved by forklift • Guidance for reaching for items on shelving to be included in the MSD Prevention Training Program

Table 2 (Continued 2 of 2)

Common/Anticipated Hazards	Controls
Poor setup of computer workstations, can result in MSD injury	• Ensure workstation has enough space (depth and width) for monitor, keyboard, mouse paperwork, phone, etc. • Ensure clear leg space below the workstation • Ensure a proper adjustable chair with a back is provided
Lighting, particularly in any racking areas or yard (if applicable) during non-daylight hours	• Ensure enough lighting in all areas based on tasks performed
Thermal issues in winter– workers may get cold which can increase risk of injury	• Keep bay doors closed when not required to be open • If possible, position workstations out of direct breeze from open bay doors
Lower back, foot or leg pain from walking/standing for extended periods on concrete floors	• Shock-absorbing insoles in work-boots and shock-absorbing mats in areas where workers frequently stand, such as at service counter
Lack of or insufficient training on proper manual handling techniques and use of mechanical lifting aids, can result in MSDs	• Provide initial and periodic training for workers – to be outlined in MSD Prevention Training Manual

Coal Processing Plant - Operations

The processing plant will be a stand alone building and will be operated primarily by workers stationed in the control room. Plant workers are anticipated to work 12-hour shifts. Operations work (excluding maintenance and the lab which are covered below) is expected to include work in the control room (Operators will spend most of their time sitting in front of computer monitors), adjusting valves, cleaning activities, sampling, and unblocking occasional clogged hoses. Note that vibrating equipment in the plant may be perceived by workers as a whole-body vibration concern in areas such as catwalks and in the control room but based on assessments in other coal plants and a literature review, overexposure is unlikely. See Table 3 below for common/anticipated ergonomic-related hazards and controls.

Table 3: Plant, Operations - Hazards and Controls (1 of 2)

Common/Anticipated Hazards	Controls
Poor setup of computer workstations in Control Room, can result in injury, particularly to the neck, back, wrist and upper extremity	• Ensure workstation has enough space (depth and width) for monitors, keyboards, mouse, paperwork, phone, etc. • Monitors should be adjustable up and down so they can be positioned with the top of the monitor at worker's eye height when seated • Ensure clear leg space below the workstation • Ensure a proper adjustable chair with a back is provided
Location of valves – often installed too high/low, requiring workers to reach, or step up to adjust	• Locate valves requiring adjustments within easy reach (i.e. at eye level or lower), or provide a safe step platform for access that doesn't require leaning over or stepping onto guardrails
Hose collars located in areas difficult to access, requiring ladders or fall protection for access to unclog hoses, resulting in MSD injury	• Provide safe access to hose collars when designing the plumbing and catwalks, to avoid, whenever possible, having to use ladders or fall protection for access
Slips, trips and falls on slippery catwalks	• Select stair and catwalk surfaces with good traction

Table 3 (Continued 2 of 2)

Common/Anticipated Hazards	Controls
Poor lighting, can contribute to slips and trips	• Ensure enough lighting in all areas based on tasks performed
Cleaning using a hose involves a static posture, and can result in MSD	• Vary hand and arm postures if cleaning using a hose for significant periods
Specific gravity slurry sample collection – often involves reaching into a chamber that is too high (requires reached above shoulder height or stepping up)	• If possible, install the sampling chamber at a height that requires easy worker access or provide a safe step platform for access
Sample collection – often requires carrying heavy buckets down stairs which doesn't allow for 3-pt contact and across slippery catwalks	• Consider a safe system to lower the buckets to the ground from sampling location without having to carry them i.e. block and tackle with a rope or similar. Also bucket size will be limited to 25 lbs.

Coal Processing Plant - Maintenance

The processing plant will require both unscheduled and scheduled maintenance. Most maintenance will be conducted by electricians and millwrights working 12-hour shifts. See Table 4 below for common/anticipated ergonomic-related hazards and controls.

Table 4: Plant, Maintenance - Hazards and Controls

Common/Anticipated Hazards	Controls
Access to parts/equipment/pipes requiring maintenance work – often not easily accessible, requiring ladders, fall protection and/or reaching or other awkward postures, often combined with force	• When designing the plant, take into consideration access to parts/equipment/pipes that may require maintenance. Access can be from the ground, catwalks, man-lift. Avoid, whenever possible, having to use ladders or fall protection.
Often plants are not designed for lifting heavy equipment in/out	• In the design of the plant, include for engineered anchor points and lifting plans above areas of known future maintenance involving heavy equipment
Sustained awkward postures, use of force and/or contact stress when conducting maintenance work, especially in the Plant with equipment in situ	• Take frequent breaks to change position or rotate with other mechanics • Use knee pads or padded mat on concrete/catwalks for kneeling
Vibrating hand tools may be used (impact wrenches and grinders) and expose workers to hand-arm vibration	• Select tools with lower known vibration levels (i.e. with built-in vibration dampening) • Provide training and education for workers on early recognition of hand-arm vibration syndrome • Ensure workers keep their hands and arms warm when using such tools – cold increases the risk of hand-arm vibration syndrome • Limit time workers use vibrating hand tools, i.e. rotate workers if possible

Coal Quality Laboratory

The coal quality laboratory (CQL) will be a stand alone building constructed of connected ATCO trailers, located near the plant. The laboratory staff will perform a variety of tasks pertaining to the collection of samples and their preparation (processing) for coal quality evaluations and measurements. These will be carried out mostly in a coal sample preparation room of the coal quality laboratory where the coal samples will be processed and the coal quality room where analyses will be performed. Lab workers are anticipated to work 12-hour shifts.

Periodic and regular collection of coal batch samples at designated locations typically occurs within the plant. The samples, collected in buckets in the plant, will be carried from the plant by hand then unloaded at the preparation room. In the preparation room, the following tasks will be performed:

- Bin contents will be dumped into a laboratory size jaw crusher for size reduction.
- Product from jaw crusher will be dumped into a splitter (hopper that separates the coal sample into two fractions).
- One fraction will be spread in a drying tray then placed inside the drying oven.
- The second fraction will be split three times in a smaller drying plan which is also paced inside the drying oven.
- The splitter will be cleaned with compressed air and the last fraction is placed in a small bucket.

In the coal quality room, the following will be conducted:

- Samples received from the prep lab drying oven will be pushed through a sieve, then fed into a splitter.
- The fractions will then be processed in a pulveriser.
- Finally, coal products produced from the pulveriser will be spilt into samples then weighed in a pre-weighed crucible prior to being inserted in an oven for ash or other instruments for sulphur, moisture, and free swelling index.
- Final weights and values will be measured and entered into a computer.

Vibration is not anticipated to be a significant concern for lab workers. See Table 5 below for common/anticipated ergonomic-related hazards and controls.

Table 5: Coal Quality Laboratory - Hazards and Controls (1 of 2)

Common/Anticipated Hazards	Controls
Slips, trips and falls while holding sampling buckets, including in the plant (down stairs, across catwalks, on plant floor) and from plant to lab	• Consider a safe system to lower the buckets to the ground from sampling location without having to carry them i.e. block and tackle with a rope or similar. Also bucket size will be limited to 25 lbs. • Have a path in the Plant from the collection points to the exit door that is free of excessive water and muck – it may need to be raised • Watch footing and use cleats on boots outdoors when the ground is frozen
Carrying heavy buckets full of sample material, increasing risk of MSD	• Limit weight of filled buckets to no more than 25 lbs, depending on frequency, height and distance from body of lifts (per the ACGIH Lifting TLV criteria) • Ensure buckets have padded handles to avoid contact stress on hands while carrying

Table 5 (Continued 2 of 2)

Common/Anticipated Hazards	Controls
Splitters located too high or too low, increasing risk of MSD	• Ensure splitters are located on working surfaces preferably between worker's mid-thigh to chest height
Poor setup of computer workstations, can result in injury, particularly to the neck, back, wrist and upper extremity	• Ensure workstation has sufficient space (depth and width) to accommodate monitors, keyboards, mouse, paperwork, etc. • Monitors should be adjustable up and down so they can be positioned with the top of the monitor at worker's eye height when seated • Ensure clear leg space below the workstation • Ensure a proper adjustable chair with a back is provided

Mine Operations (Pit) – Vehicles

Pit vehicles are typically all diesel powered and will include, but may not be limited to haul trucks, excavators/shovels, loaders, graders, dozers and drills. Note that loaders are also used in other areas such as outside the Plant. Workers in the pit are anticipated to work 12-hour shifts and typically switch between vehicles from one shift to the next. See Table 6 below for common/anticipated ergonomic-related hazards and controls.

Table 6: Mine Operations, Vehicles - Hazards and Controls (1 of 2)

Common/Anticipated Hazards	Controls
Access to vehicles - requires negotiating steps/stairs that are often icy, muddy or wet, and first step is often high (e.g. haul trucks), can result in falls or other injuries	• Do not jump from any step/stair • When first step/stair height exceeds 28" from the ground (max height based on ISO 2867:1994), install a lower step if possible • Use available handrails/hold points when accessing or egressing vehicles, always ensuring 3-pt contact (note may require backpack or similar when transporting items up/down) • Always face stairs when going up down • Park in an area that if possible is flat and free of significant mud, puddles, ice, rocks or other hazards
Drivers may drive too fast, hitting bumps faster (increased risk of vibration), increasing risk of hitting other vehicles/equipment etc.	• Enforce speed limits (e.g. over-speed monitors) • Educate workers on driving at a safe speed limit for the road and weather conditions, particularly on uneven roads • Ensure there is not a push for productivity when safety could be compromised
Road conditions – muddy, large holes, obstacles, can increase the chance of accidents	• Fill large holes and grade as required • Move fallen rocks or other debris off roads/other driving areas • Flag holes, rough spots, etc. until they can be fixed
Workers have the music too loud to hear horns and other signals properly, may increase potential for accidents.	• Include worker education on not having the radio/music so loud it creates a safety concern
Air suspension (air ride) seats not adjusted properly to reduce whole body vibration and posture concerns (more likely too low).	• Educate workers on how to properly adjust air ride seats ○ E.g. Heel of pedal-operating foot/feet should rest on ground, with both feet reaching ground with knees at 90°, hips between 90°-120° and knees at same height or slightly lower than hips. • Note most earth moving vehicles have air ride seats, but ensure they do prior to purchase.

Table 6 (Continued 2 of 2)

Common/Anticipated Hazards	Controls
Workers not adjusting seats properly to safely access/use controls, can result in MSD injuries	• Educate workers to adjust seats so controls are within arm's reach, with elbows below the shoulders and close to the body • For vehicles with joystick controls, adjust so body parts are in neutral posture, particularly wrists. Use as little force as possible.

Most mining vehicles expose workers to whole body vibration and mechanical shock	• As per above,
	  ○ Educate and train workers on how to properly adjust air ride seats
	  ○ Maintain roads, filling and grading as required
	  ○ Educate on and enforce lower driving speeds
	• Educate workers about early detection of symptoms related to whole body vibration
	• Encourage workers to stand and stretch periodically during their shift
	• Cross train workers to drive different types of machinery and rotate workers out of vehicles with particularly high whole-body vibration levels (e.g. ripping rock/coal)
	• Maintain seat suspension, repairing when required and replacing when they reach their maximum hours driven or earlier
	• Encourage use of mirrors instead of twisting to look behind out window, particularly while moving
	• For vehicles used for training, place an air ride seat on the passenger/secondary seat whenever possible

Haul trucks – Loaders/excavators/shovels dropping large rocks/clumps into truck bed creates impact hazards (jolts etc.)	• If possible, load trucks with finer material before heavier/larger material • Break up large rocks/clumps prior to loading, and/or place gently in bed, minimizing drop distance • Loader/excavator/shovel operator to warn driver before dropping a load, so driver can prepare and face forward if possible • Adjust blast pattern, if possible, to reduce rock size (also reduces risk (strain) to loader/excavator/shovel operators)
Insufficient maintenance of mobile equipment, can increase vibration and impact hazards	• Conduct proper maintenance on vehicle/equipment suspension, belts, transmission, and other components, particularly as vehicles/equipment age

Conclusions

Ergonomics related injuries are common on mine sites, many of which can be reduced or prevented through proper design of workstations, work areas and buildings, and equipment selection, use and maintenance. Workers should receive initial and ongoing training related to ergonomics specific to their job and work area, including prevention, symptom recognition and reporting. As required by the *Code*, First Aid reports should be reviewed monthly by the OHSC in order to identify suspected MSDs and an MSD Prevention Training Program should be developed and implemented.

This report is an initial assessment prior to the actual development of the mine. During development/implementation and once the mine has been commissioned, the ergonomics hazards should be reviewed and re-assessed .

Limitations

This report has been prepared in accordance with established Industrial Hygiene practices. It is intended for the exclusive use of Telkwa Coal Limited to assist them in complying with the *Health, Safety and Reclamation Code for Mines in British Columbia*. The use of this document for any other purposes is at the sole risk of the user.

Statement of Qualifications

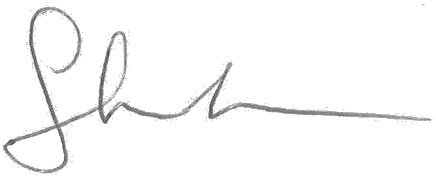
Total Safety has been providing consulting services in the environmental and industrial hygiene fields in British Columbia, since 1990. Our personnel include the following:

- Industrial Hygienists (CIH, ROH)
- Canadian Registered Safety Professionals (CRSP)
- Occupational Health and Safety Consultants

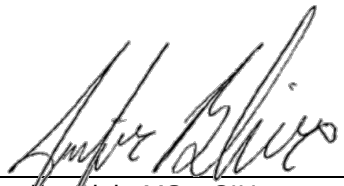
Our company also carries Comprehensive General Liability and Environmental Errors & Omissions Liability Insurance.

Yours truly,

Total Safety



Shannon McIntosh, BSc, CIH, CRSP
Manager, Industrial Hygiene
Report



Jennifer Blair, MSc, CIH
Manager, Industrial Hygiene
Report Review

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