Vancouver Island West School District 84

OCCUPATIONAL HEALTH & SAFETY PROGRAM

SECTION M

MUSCULOSKELETAL INJURY PREVENTION (MSIP) PROGRAM

REFERENCES

- *How to Make Your Computer Workstation Fit You* – See SD84 Health and Safety Website, Section M
- *Preventing Musculoskeletal Injury (MSI) – A Guide for Employers and Joint Committees* – As above, Section M
- *Understanding the Risks of Musculoskeletal Injury (MSI)* – See SD84 Health and Safety Website, Section M

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INTRODUCTION

Some tasks performed at School District 84 – such as lifting, reaching and repeating the same movements – can strain our bodies. In some situations, these tasks can result in an injury to the muscles, tendons, ligaments, nerves, blood vessels, and joints of the neck, shoulders, arms, wrists, legs, and back. This type of injury is called a musculoskeletal injury, or MSI.

MSI is a common type of injury in all our schools. MSI claims resulting from overexertion and repetitive motion accidents account for about one-third of claims accepted by WorkSafeBC. In some districts, this proportion is much higher.

The Occupational Health and Safety Regulation [4.49(a) to (e)] lists specific requirements to help us prevent MSI. The section provides guidance to help Schools and Operations, Joint Health & Safety Committees and Representatives, and Employer representatives implement an effective strategy to prevent MSI in the District. This section includes information that will help to:

- Identify factors that place workers at risk for MSI;
- Understand the steps in preventing MSI;
- Understand how control measures can reduce the risk of MSI;
- Investigate injuries and signs or symptoms of MSI.

RISK FACTORS

The factors that contribute to the risk of MSI are called risk factors. A risk factor is something that may cause or contribute to an injury. Two or more risk factors can be present at one time, increasing the risk of injury.

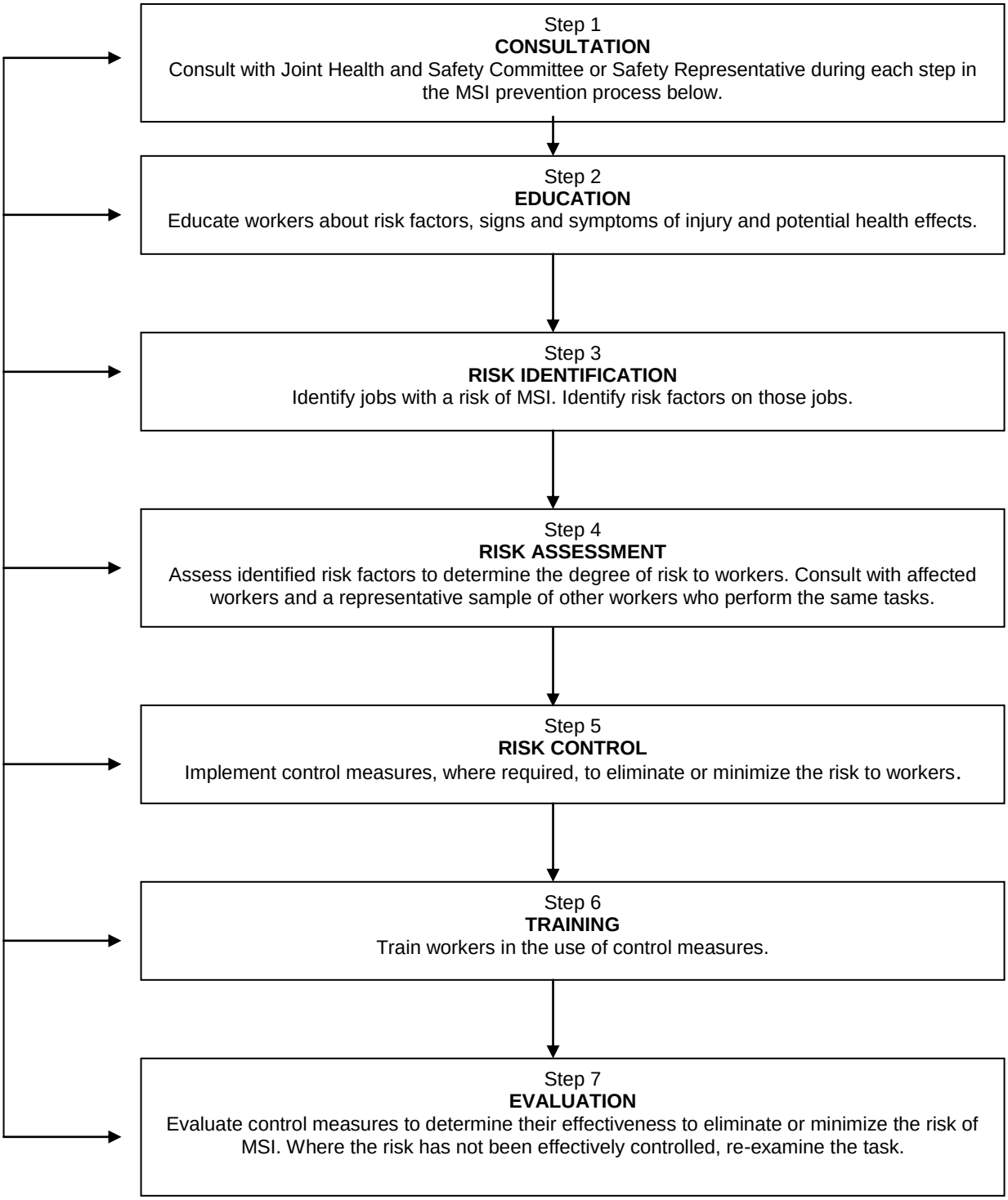
The Occupational Health and Safety Regulation requires management to consider a number of factors when identifying and assessing the risk of MSI. The primary risk factors for MSI are the physical demands of a task, including force, repetition, work posture, and local contact stress.

For a description of these risk factors, along with illustrations and examples, see the WSBC publication *Understanding the Risks of Musculoskeletal Injury (MSI): An Educational Guide for Workers on Sprains, Strains, and Other MSIs.* The publication also looks at factors that influence the physical demands, such as layout of the workplace and the organization of work tasks. In addition, this booklet provides information on the signs and symptoms of MSI and the potential health effects of these injuries. **The booklet is available on the District's OH&S website under Section M.**

The mere presence of MSI risk factors may not in itself result in an injury. It depends on the extent of exposure; for example, how great the force is and how long the worker is exposed to the risk.

Developing an MSI can also depend on individual characteristics that vary from worker to worker (such as height, gender and the body's ability to deal with the risk factors). In addition, activities outside the workplace can result in exposure to the risk factors for MSI.

STEPS IN THE MSI PREVENTION PROCESS



RISK IDENTIFICATION

School District 84 is required to identify factors in the workplace that may expose workers to a risk of MSI. This doesn't mean that you have to identify risk factors for *every* job at your workplace, just for jobs in which there is reasonable expectation of a risk of MSI. Risk identification should be conducted by people who understand both the work process and the risk factors and who have some education and training in the principles of risk assessment.

Since it is not practical to identify MSI risk factors associated with all jobs at one time, a reasonable approach is to prepare a list of jobs in order of decreasing risk and establish a plan in order of priority. To determine which jobs are at a higher risk for MSI and should be given priority, you might examine first aid records and claims history for MSI and other relevant information.

The jobs of workers who have already had an MSI or have signs or symptoms of MSI will likely have a higher risk of MSI. Therefore, priority for risk identification should be given to jobs in the following situations:

- A worker has already had a work-related MSI claim
- A worker has been injured and reports to first aid with an MSI
- A worker has reported signs or symptoms of MSI

Risk identification should also take place *before* any problems or injuries are reported so that risk factors can be eliminated or minimized and injuries prevented. To set priorities for preventive risk identification, you might, for example, interview workers, take a survey or observe workers on the job. In addition, early risk identification can help prevent injuries in the following situations:

- A worker or Principal observes high exposures to risk factors in a job – for example, during workplace inspections and observations of current work methods.
- A new job is introduced or a process changed.

After identifying particular jobs that pose a higher risk of MSI to workers, the District needs to identify the MSI factors that contribute to the risk for each of those jobs. There are several tools (such as checklists and worksheets) available. Tools to help identify jobs or tasks incorporating exposures that pose a risk of MSI can be found within this Program to help identify risk factors that require further investigation to assess the risk to workers. Some of these tools take duration and magnitude into account along with the risk factors to help you establish priorities.

Other methods can be used to identify risk factors as long as they include the risk factors listed in the Occupational Health and Safety Regulation (4.49):

> ***4.49 Risk factors***
>
> *The following factors must be considered, where applicable, in the identification and assessment of the risk of MSI:*
>
> *(a) the physical demands of work activities, including*
>
> *(i) force required,*
> *(ii) repetition,*
> *(iii) duration,*
> *(iv) work postures, and*
> *(v) local contact stresses;*
>
> *(b) aspects of the layout and condition of the workplace or workstation, including*
>
> *(i) working reaches,*
> *(ii) working heights,*
> *(iii) seating, and*
> *(iv) floor surfaces;*
>
> *(c) the characteristics of objects handled, including*
>
> *(i) size and shape,*
> *(ii) load condition and weight distribution, and*
> *(iii) container, tool and equipment handles;*
>
> *(d) the environmental conditions, including cold temperature;*

(e) the following characteristics of the organization of work:

(i) work-recovery cycles;
(ii) task variability;
(iii) work rate.

If the risk identification step reveals an obvious and effective risk control that will eliminate or minimize the risk to workers, you do not need to conduct a separate risk assessment before implementing controls. For example, if an Administrative Assistant twists her neck to view the computer monitor (which has been placed to one side), the employer may decide to alter the counter so there is room for the monitor to be placed directly in front of the worker. This control measure can be implemented without first assessing how long the worker is in that posture or how severe it is.

RISK ASSESSMENT

School District 84 must assess the degree of risk (high, moderate or low) to the workers in those jobs or tasks where exposure to risk factors has been identified. **Risk assessment will help you decide which risk factors pose a risk of injury to workers and are therefore important to control.**

For example, you may have identified an awkward stooping posture when a worker reaches to perform a task. During the risk assessment, you may find out that the worker does this task only occasionally or for a very short period of time during the day. There may be exposures to other factors (such as high force and repetition) associated with other tasks the worker performs for longer durations. In this example, force and repetition pose a greater risk and need control measures more urgently.

During risk assessment, management must consult with workers who have signs or symptoms of MSI and with a representative sample of workers who perform the tasks being assessed. The sample should include workers who represent a range of characteristics such as gender, age and height. Some situations, however, may not require a specific risk assessment. If the risk control is obvious and effective, risk identification can lead directly to risk control. In such situations, you should consult with workers at the risk identification stage.

Risk assessment should be performed by people who understand the work process, the MSI risk factors and the principles of risk assessment and control. The basic principles of risk assessment involve looking at the *extent of exposure* to assess how great the risk is. Extent of exposure includes magnitude (how much), duration (how long), and frequency (how often, how fast).

To take extent of exposure into account, consider questions such as the following:

- What is the magnitude of the exposure? For example, how much force is needed or how severe is the awkward posture?
- How long (total time) is the worker exposed to the risk? For example, is the worker exposed to the risk for a full shift or for two hours?
- How frequently is the worker exposed to the risk? For example, is the task repeated many times each shift or does it occur only occasionally?

A risk assessment should also consider the following:

- What is the combined effect of all the identified risk factors? For example, lifting heavy objects from the floor to a height above the shoulders several times a minute poses a greater risk than lifting the same objects between the knee and waist level infrequently.
- What body part is most likely to be affected? For example, when a person is working overhead, the shoulders and neck may be affected.

If risk identification revealed exposure to risk factors that should be assessed, it may be more efficient to conduct risk assessment immediately following identification. In this way, the person doing the identification can use information already gathered, ask questions, and observe workers to assess whether the exposure is significant enough or frequent enough to require risk controls.

Risk assessment tools are available in **APPENDIX 1**. These will help you assess the degree of risk (high, moderate, or low), determine where controls are needed, and establish priorities for implementing controls to prevent MSI.

RISK CONTROLS

If risk controls are needed, the next step is to look at options. The District must eliminate the risk of MSI, or, if that is not practicable, must minimize the risk. You should implement the risk controls selected without undue delay. If there will be a delay in implementing permanent controls, interim controls must be implemented without delay.

First consider engineering or administrative controls that *eliminate* the risk to workers. If this is not practicable, introduce controls that *minimize* the risk. Personal protective equipment can be used only if engineering or administrative controls are not applicable.

- **Engineering controls** are the arrangement, design or alteration of the physical work environment, equipment or materials. For example, a backpack vacuum is an engineering control that Custodians can use to reduce the risk of MSI when moving from room to room.
- **Administrative controls** include the use and scheduling of resources and staffing to improve how the work is organized and performed. For example, limiting the hours a Painter spends at a task is an administrative control that can reduce the amount of repetitive motion.
- **Personal protective equipment and clothing** may be used as a control if other controls are not practicable, or in addition to other controls. For example, workers may wear vibration-dampening gloves while using a chainsaw or wear knee pads while working on their knees to install flooring.

Some control measures will eliminate the exposure to the risk factor. Where that is not possible, the control measures should result in the extent of exposure being reduced in at least one of the following ways.

Reduced *Magnitude* of Exposure

Controls that reduce the magnitude of exposure involve, for example, reducing the force required or making the work posture more comfortable:

- Use better-designed tools to reduce the effort. For example, use a lighter tool or a suspended tool to reduce the force needed to grip the tool (engineering control).
- Redesign the work station to avoid excessive reaching. For example, change the height of the work surface to reduce the reaching distance and an awkward shoulder posture (engineering control).
- Modify the work practice. For example, use two people to lift a heavy table instead of one person (administrative control).

Reduced *Duration* of Exposure

Reduced duration of exposure to the risk over the work shift involves reducing the total time the worker is exposed to the risk:

- Use some mechanization to reduce the time spent during the day doing physical tasks(engineering control).
- Rotate jobs to reduce the time spent doing manual handling (administrative control).

Reduced *Frequency* of Exposure

Reduced frequency of exposure to the risk involves reducing the number of times the task is done in a period of time:

- Use partial mechanization to reduce repetition. For example, use power tools for parts of the job and use hand tools only where power tools are not practical (engineering control).
- Combine other tasks with the job to reduce repetition. For example, a Custodian doing intense mopping should take a break to do a different task (administrative control).

Improved *Pattern* of Exposure

The pattern of exposure can be improved if the time the worker is exposed to the risk is divided into smaller blocks of time over the work shift. This control can be used where it is not practical to reduce the total duration of time on the task:

- Organize the work so that highly physically demanding tasks are interspersed with less physically demanding tasks. For example, rotate workers so that each worker does the physically demanding task in two blocks of two hours instead of one block of four hours (administrative control).

In addition, to working through the MSI prevention process, management must investigate certain situations involving MSI to determine contributory causes. An investigation must lead to risk controls that eliminate or minimize the risk to the injured worker and prevent an recurrence of similar incidents.

TRAINING

School District 84 will ensure that workers are trained to use the risk control measures. For example, if you provide a Custodian with a riding floor cleaner, the worker must be trained to use the device properly. In addition, where safe work procedures have been implemented to reduce the risk of MSI, workers must be trained and supervised in those procedures. Workers must follow the safe work procedures they have been trained to use and must use any engineering controls and required personal protective equipment and clothing.

INVESTIGATING AN MSI

School District 84 is required to conduct an investigation into the following situations associated with MSI:

- Where a worker has a work-related MSI requiring medical treatment;
- Where an incident had the potential to result in a serious MSI.

Unsafe or harmful conditions must also be reported and investigated. For example, if a worker reports persistent signs or symptoms of MSI (such as swelling or tingling), there may be an unsafe work situation that could lead to a serious MSI. The unsafe condition must be investigated.

The focus of these MSI investigations is to:

- Identify risk factors that likely contributed to the MSI or to the unsafe condition that may result in MSI;
- Implement controls to prevent the recurrence of similar injuries or to correct the unsafe condition.

To assist with the investigation process, a **General Ergonomic Risk Analysis Checklist** is provided within this Program and will be useful in correlating which risk factors might have contributed to the injury of the specific body part. The checklist can help you focus on the risk factors that may need immediate attention. You will then need to assess each applicable risk factor and eliminate or minimize its impact on the worker.

In the **MSI Risk Investigation Checklist**, each risk factor gives examples of movements or activities. Some of the examples involve more than one risk factor (such as exerting force with a bent wrist). The right side of the checklist shows the following four areas of the body:

- neck, shoulders, upper back;
- lower back;
- elbows, forearms, hands;
- hips, knees, feet.

First, choose the area of the body you are focusing on. Then look at the corresponding risk factors on the left side of the chart. For example, if you are investigating tasks performed by a worker who is experiencing lower back pain, you should look under the lower back heading. Where there is a circle, investigate the corresponding risk factors and look at the examples of movements and activities. The investigation should result in control measures that eliminate or minimize exposures to these factors.

To use this chart, the person identifying risk factors needs to observe workers, one task at a time. Only some factors from the chart will apply to each task.

EVALUATION

School District 84 will evaluate our control measures to determine how effective they are in eliminating or minimizing the risk of MSI. Some ways to evaluate the controls are:

- Interviewing workers;
- Looking for decreases in the number and severity of signs and symptoms of MSI;
- Observing a reduction in the number of risk factors or in the severity of risk factors;
- Using a checklist or other tool to compare the exposure to risk factors before and after controls are implemented.

If the risk has not been effectively controlled or if new risks have been created, re-examine the task and reconsider which controls may be needed. Additionally, the District needs to evaluate the overall MSI Program at least once a year to make sure it continues to meet the objective of eliminating or minimizing the risks to workers.

Ergonomic Program Evaluation Form

Information used to evaluate the MSIP Program can be gathered from the following sources:

Documentation

- Use the **MSI Program Evaluation Documentation Checklist** to request relevant documents, records and statistics.
- List all existing and missing information.
- Evaluate the information provided. Note content strengths and weaknesses on the **Program Evaluation Comments** sheet.
- List recommendations for upgrading MSI Program documentation on the **MSI Program Recommendations** sheets.

Questionnaires

- Program and site-specific questionnaires may need to be developed.
- If suitable, distribute questionnaires to a representative number of workers, supervisors, principals and management personnel who have MSIP Program responsibilities.
- It is not necessary for participants to sign their questionnaire.

Interviews

- Interview a representative number of workers, supervisors, management personnel, joint health and safety committee members or safety reps, etc., about the adequacy and effectiveness of the MSI Program.
- Ask interviewees how the MSI Program can be improved.

Interview Techniques

The interviewer(s) must create an atmosphere that allows for complete and open participation by the worker(s). This can be done by:

- choosing a suitable location and time;
- establishing rapport with the interviewee;
- asking open/non-leading questions rather than closed/leading questions when soliciting comments;
- probing for meaningful precise answers;
- remaining neutral and objective;
- thanking the interviewees for their cooperation.

Inspections

- Whenever possible, observe material handling activities (manual and mechanical).
- Record your observations on the **Inspection Comments** sheet. List strengths and weaknesses observed. Include unsafe acts and conditions (e.g. incorrect lifting, faulty devices, workplace design and environment, work processes and routines).

Completing and Scoring the Evaluation

Place a check mark (√) to indicate “yes”, “no” or “N/A” (not applicable) after each question in the **MSI Program Evaluation** report.

Use the **Program Evaluation Comments** sheet to reference specific program questions and to list Program strengths and weaknesses.

Use the **Inspection Comments** sheet to list strengths and weaknesses observed during the inspection.

Specify recommendations for improving the MSI Program effectiveness by completing the **MSI Program Recommendations** sheet.

An effective MSIP Program usually has the following characteristics:

1. The required program elements are sufficiently detailed in writing.
2. The program content is technically correct.
3. The program is implemented.
4. Workers (management and labour) can adequately apply the program.
5. The program is enforced.
6. The program is periodically evaluated and upgraded as required.

CORRECTIVE ACTION PLAN

Management must ensure that an action plan is developed which includes:

- the MSIP Program deficiencies to be corrected;
- specific corrective action required to eliminate the deficiencies;
- the person(s) responsible for taking corrective action;
- a completion date for correcting program deficiencies;
- submission of an action plan to WSBC (when requested by WSBC).

Follow-Up

The employer or designate must follow-up to ensure that remedial action has been taken to correct program deficiencies.

APPENDIX 1

RISK FACTOR CHECKLIST (Quick Check)

This is a method of estimating the risk of developing a repetitive strain injury from performing a specific task or job. **Each task being performed as part of an employee's job is scored separately. If more than one repetitive task is performed, the scores are additive**. Employee whose jobs have risk factors exceeding a score of 10 surpass the lower risk threshold and should be considered for further ergonomic study.

Risk Factor	<1 hr	1-4 hr	>4 hr	Cause of Risk Factor	Proposed Solution	Comment
REPETITIVE every few seconds every few minutes	0 0	1 0	3 1			
LOAD/FORCE (lift) >5-15 lbs >15-30 lbs >30-50 lbs >50 lbs**	0 1 2 3	0 1 2 3	1 2 3 3			
LOAD/FORCE (push/pull) easy moderate heavy	0 0 1	0 1 2	1 2 3			
LOAD/FORCE (carry >10ft) >5-15 lbs >15-30 lbs >30 lbs	0 0 1	0 1 2	1 2 3			
AWKWARD POSTURES: Neck/shoulder: overhead/bend Extended reach Elbow/Forearm: twist Hand/Wrist: bend/pinch Trunk: twist/bend Knee: squat/kneel	0 0 0 0 0 0	1 1 1 1 1 1	2 2 2 2 2 2			
USE POWER TOOLS	0	1	2			
CONTACT STRESS	0	1	2			
STATIC LOADING	0	1	2			
ENVIRONMENT: Cold, hot, light/glare, vibration	0	1	2			
CONTINUOUS KEYBOARD USE	0	1	2			
INCENTIVE WORK or NO WORKER CONTROL OVER JOB PACE	0	1	2			
TOTAL SCORE =10 or more						

See 'Help for Checklist' on next page.

Help for Checklist:

1. If a motion such as striking a nail is repeated more than 15 times/minute (on average) over extended periods of time, the risk should be rated as “every few seconds”. If the motion is repeated more than 20 times/hour, then the risk should be rated as “every few minutes”. Single tasks that are completed in less than two minutes but repeated several times over periods of one or more hours should be considered “repetitive”.

2. The weight of the object should be determined if possible. Push and pull force is difficult to determine without a strain gauge but can be estimated by asking employees to rate the difficulty of task of a scale of 1-10.

Easy				Moderate			Heavy		
1	2	3	4	5	6	7	8	9	10

3. Power tools impart different types of stresses to the body based on the vibration and torque they produce during use.

4. Contact stress results from the repeated or sustained contact of a hand, arm or other body part with a solid object or hard surface. This may be due to the use of a poorly designed tool such as pliers or scissors, resting an arm or palm on the edge of a desk, or repeated use of the hand as a hammer.

5. Static loading is when the worker sustains the same posture for extended periods of time. For example, jobs that are highly repetitive or require intense concentration.

6. Environmental extremes (especially cold) impair muscle and tendon function while continuous whole body vibration from operating equipment or driving fatigues muscle groups.

7. Job Pace: determined by pay incentives, machine, or quota paced jobs, etc.

RISK ASSESSMENT

Location: _____

Conducted by: _____ Date: _____

Overall Risk: _____

Hazards	Risk	Corrective Measures

Remember ……. The rules for eliminating or reducing a risk are:

- *Substitution*
- *Engineering Control*
- *Administrative Control*
- *Personal Protective Equipment*

PROPOSALS TO ELIMINATE OR REDUCE THIS RISK:

_____

_____

_____

_____

_____

_____

JOB ANALYSIS

JOB TITLE: _____

GENERAL DESCRIPTION OF JOB DUTIES:

_____

_____

_____

MACHINERY, TOOLS, EQUIPMENT, ETC., WHICH MAY BE USED:

_____

_____

_____

PHYSICAL DEMANDS IN % OF TME:

NA - Not applicable **S** - Seldom – Less than 10% of the time **O** - Occasional – Less than 30% of the time	**F** - Frequent – Less than 70% of the time **C** - Constant – Over 70% of the time **N** - Normal – Normal capabilities required

Activity	Frequency	Comments	Activity	Frequency	Comments
Sitting			Kneeling		
Standing			Squatting		
Walking			Crawling		
Driving			Reaching Above Shoulder		
Lifting_____lbs.			Repetitive Arm Movement		
Carrying_____lbs			Repetitive Hand Movement		
Pushing/Pulling			Talking		
Climbing Stairs			Seeing		
Climbing Ladders			Hearing		
Working at Heights/Balancing			Use of Right Hand/Arm		
Bending at Waist			Use of Left Hand/Arm		
Twisting at Waist			Inside Heated Worksite		
Twisting at Neck			Working Outdoors		

COMMENTS:

Completed by: _____

Title: _____

Date: _____

See over for Physician's report.

FOR PHYSICIAN'S USE ONLY:

Name of Injured Worker: _____

- ❑ The injured worker can perform this job commencing work on _____ for _____ hours per day, returning to full regular duties on _____.

- ❑ The injured worker can perform this job on a part-time basis for____hours per day. The worker can be expected to return to regular duties on_____.

- ❑ The injured worker can perform the described job but only with the described modifications:

  _____

  _____

- ❑ The injured worker cannot perform this job based on the following limitations:

  _____

  _____

Physician's Name: _____

Physician's Signature:_____

Date:_____

MSI RISK INVESTIGATION CHECKLIST

Job Title: _____ Date: _____

Work Location: _____

Work Task Being Observed: _____

Worker's Name: _____

RISK FACTOR	Check if factor applies:	Neck, shoulders, upper back	Elbows, forearms, hands	Lower back	Hips, knees, feet
FORCE REQUIRED	Does the worker grasp or handle objects… □ With a bent wrist □ Using poorly fitting gloves □ That vibrate □ Using a pinch grip □ That has a cold surface temperature □ With a cold slippery surface □ With a wide grip span □ With a hard grip				
	Does the worker lift, lower, or carry objects…. □ Such as animate objects (people, animals) □ Using awkward postures (e.g., stooped, long reach) □ Over long distances □ That are large or odd-shaped □ From a sitting position □ That are difficult to grasp or hold on to				
	Does the worker push and/or pull objects… □ With a handle height above shoulder or below waist □ Over long distances □ By sliding the load □ That are unstable □ Over uneven, sloping, slippery surfaces □ Within restricted space □ Using awkward postures □ Using visible effort				
REPETITION	Are similar motions repeated by the same body part □ Yes				
DURATION	Does the worker hold one position for a period of time… □ Resulting in localized fatigue □ Resulting in postural fatigue				
	Does the worker maintain pressure or force on an object □ Yes				

WORK POSTURE	Is the trunk of the body in an awkward posture… □ Such as twisting □ By bending (forward, back or to the side)				
	Is either shoulder in an awkward posture… □ With excessive reach, such as in front or to the side □ By reaching above the shoulder □ By reaching across or behind the body				
	Does the worker bend or twist the neck? □ Yes				
	Does the worker bend the wrist? □ Yes				
	Does the worker twist the forearm? □ Yes				
	Does the worker squat or kneel? □ Yes				
	Does the worker sit… □ Using poor posture □ For long periods □ Resulting in local contact stress □ With no back support □ Using a poorly designed or poorly adjusted chair				
	Does the worker stand… □ On a very hard surface (e.g. concrete) □ For long periods of time □ With no foot rest □ Using foot pedals continuously				
LOCAL CONTACT STRESS	Does the worker come in contact with a hard or sharp object or surface… □ With a tool or object digging into hand or arm □ When kneeling □ With a body part resting against a sharp edge				
	Does the worker use the hand or body to impact an object such as using a hand as a hammer? □ Yes				
ENVIRONMENTAL	Does the worker sit or stand on a vibrating surface? □ Yes				
	Are parts of the body cold while performing tasks? □ Yes				
	Is the lighting inappropriate to the tasks being performed such as… □ Too much glare □ Too bright □ Too dark				
ORGANIZATION	Are physically demanding tasks performed without opportunities for recovery or rest? □ Yes				
	Does the worker perform the same or a similar task throughout the full work shift? □ Yes				
	Is the worker unable to keep up with the pace or demands of the work tasks? □ Yes				

WORKSHEET "A"

MSI RISK FACTOR IDENTIFICATION

- PHYSICAL DEMANDS OF WORK -

Job Title or Task: _____

Date: _____ **Completed By:** _____
(mm/dd/yr)

The Ergonomic (MSI) Requirement of the OH&S Regulation Section 4.46 to 4.53 requires an employer to identify factors in the workplace that may expose workers to a risk of MSI (Section 4.47). This document can assist in identifying factors that pose a risk of MSI. If a risk is identified, a "moderate" or "high" risk of MSI exists and merits assessment and control. Exposures not identified by this document would be considered "low risk" and may not merit assessment and control. For a complete guide, refer to the WSBC documents*, "MSI Prevention in the Workplace: A Guide for Employers & Joint Committees"* and *"Understanding the Risks of MSI: An Educational Guide for Workers on Sprains, Strains, and other MSIs, available on the District's OH&S website, Section M.*

Instructions:

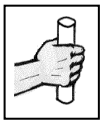
1. Document the job title or task, date and name of person(s) completing the worksheet.
2. Observe a representative sample of workers performing regular work activities.
3. Read the minimum criteria listed under each risk factor.
4. If any criteria listed are present, place a check mark in the box for that risk factor.
5. Make detailed notes for any identified risk factor to clarify the task or duty where it occurs.
6. Risk factors marked in the box merit further assessment and control.
7. When you complete risk factor identification, go to "Worksheet B - Risk Factor Assessment" and complete the "Risk Factors Summary – Moderate Risk" table and perform risk factor assessment.

CONTACT STRESS	IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX →	☐ *Perform Contact Stress Assessment*
1	• Worker uses one of the following as a hammer more than 10 times per hour and for more than 2 hours total per day** – Hand (heel/base of palm), or – Knee *(An extremely severe contact stress usually results in a traumatic injury such as bruising and therefore is not considered an MSI risk factor.)*	Notes

REPETITION	IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX →	☐ *Perform Repetition Assessment*
1	• Worker repeats the same motion with the neck, shoulders, elbows, wrists, or hands every few seconds with little or no variation for more than 2 hours total per day (excluding keying activities)	Notes
2	• Worker performs intensive keying more than 4 hours total per day	

** *Note: Total time is determined by measuring the cumulative duration of a task, and considering whether the risk factor in question is a significant part of that task.*

Force	For the purposes of MSI risk identification, force can be classified as grip force, or lift/lower force

GRIP FORCE	IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX → ☐	*Perform Grip Force Assessment*
Pinch Grip**	• Pinch gripping an unsupported object(s) weighing 1 kg (2 lbs.) or more per hand for more than 2 hours total per day OR • Pinch gripping with a force of 2 kg (4 lbs.) or more per hand for more than 2 hours total per day Pinch Grip: 	Notes
Power Grip**	• Power gripping an unsupported object(s) weighing 5 kg (10 lbs.) or more per hand for more than 2 hours total per day OR • Power gripping with a force of 5 kg (10 lbs.) or more for more than 2 hours total per day Power Grip: 	

**Note: A pinch grip occurs when the force application is primarily between the fingers and thumb. A power grip occurs when the force is primarily between the fingers and the palm.*

LIFT/LOWER FORCE	IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX → ☐	*Perform Lift/ Lower Assessment*
1	• Lifting objects weighing more than 75 lbs. once per day	Notes
2	• Lifting objects weighing more than 25 kg (55 lbs.) more than 10 times per hour, more than 2 hours total per day	
3	• Lifting objects weighing > 5 kg (10 lbs.) if done more than twice per minute, more than 2 hours total per day	
4	• Lifting objects weighing more than 11 kg (25 lbs.) more than 25 times per day and – Above the shoulders, or – Below the knees, or – At arms length from the body	

AWKWARD POSTURE:	IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX → ☐	*Perform Posture Assessment*
Neck	Worker performs any minimum joint deviations: • Working with the neck bent more than 30° in any direction for more than 2 hours total per day    Side Backward Forward *(circle the appropriate movements)*	Notes

Shoulder **Back**	• Working with the hand(s) above the head more than 2 hours total per day • Working with the elbow(s) above the shoulder more than 2 hours total per day • Working with the back bent more than 30° in any direction for more than 2 hours total per day     Forward Side Backward Twisted *(circle the appropriate movements)*	
Knees	• Worker squats/ kneels more than 2 hours total per day   Squat Kneel *(circle the appropriate movements)*	

VIBRATION	**IF ANY OF THE FOLLOWING CRITERIA ARE PRESENT, MARK THE ASSESSMENT BOX** → ☐	***Perform Vibration Assessment***
1	• Worker uses high vibration tools (impact wrenches, carpet strippers, chain saws, jack hammers, scalers, riveting hammers) for more than 30 minutes total per day	Notes
2	• Worker uses moderate vibration hand tools (grinders, sanders, jig saws) that typically have moderate vibration levels more than 2 hours total per day	

WORKSHEET "B"

MSI RISK FACTOR ASSESSMENT

- TO DETERMINE HIGH RISK FROM RISK IDENTIFICATION: PHYSICAL DEMANDS OF WORK -

Job Title or Task: _____

Date: _____ **Completed By:** _____
(mm/dd/yr)

The Ergonomic (MSI) Requirements of the OH&S Regulation Sections 4.46 to 4.53 requires an employer to assess those factors that expose workers to a risk of MSI (Section 4.48). This document can be used to determine if the risk(s) identified in the document titled "Worksheet A - MSI Risk Factor Identification" pose a "high" or "moderate" risk.

Instructions:

1. Document the job title or task, date and name of person(s) completing the worksheet. Risk assessment should be performed by someone who understands the work process, the MSI risk factors, and the principles of risk assessment and control.
2. Complete the "Risk Factor Summary-Moderate Risk" from "Worksheet A – Risk Factor Identification." These risk factors are considered to pose at least a "moderate" risk of MSI.
3. Perform "Risk Factor Assessment" only on those factors identified from "Worksheet A."
4. Observe and consult with a representative sample of workers and those workers with signs & symptoms of MSI.
5. Reading across the page under each risk factor, determine if all of the conditions in that row are present in the work activities.
6. If all conditions are present, place a check mark in the box to indicate that a "high" risk of MSI exists.
7. Make any appropriate notes to clarify specific details.
8. Complete the "High Risk" column of the Risk Factor Summary Table.

Interpretation of Results

The risk factors in the "high risk" column require that controls must be implemented without undue delay. Controls should eliminate, or if that is not practicable, minimize the risk of MSI to workers. If the risk remains "moderate," controls may be merited to minimize the risk of MSI. For assistance in developing controls, refer to the WCB document, "*Common Risk Control Options.*"

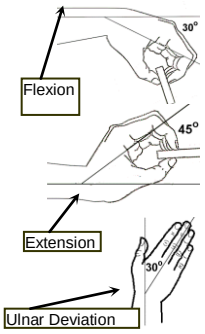
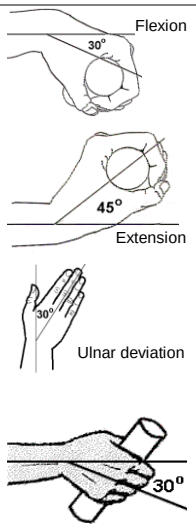
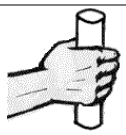
Risk Factor Summary Table

RISK FACTOR	*"Moderate Risk"* Risk Factors Identified from Worksheet "A"	*"High Risk"* Risk factors Indicated from Assessment Worksheet "B"
CONTACT STRESS	❑	❑
REPETITION	❑	❑
GRIP FORCE	❑	❑
LIFT/LOWER FORCE	❑	❑
AWKWARD POSTURE	❑	❑
VIBRATION	❑	❑

CONTACT STRESS:				Mark 3 here to indicate a High Risk of MSI
BODY PART	**PHYSICAL RISK FACTOR**	**DURATION**	***Visual Aid***	
Hands	Using the hand (heel/base of palm) as a hammer more than once per minute	More than 2 hours total per day**		❑
Knees	Using the knee as a hammer more than once per minute	More than 2 hours total per day		❑

REPETITION:				Mark 3 here to indicate a High Risk of MSI
BODY PART	**PHYSICAL RISK FACTOR**	***Combined with***	**DURATION**	
Neck **Shoulders** **Elbows** **Wrists** **Hands**	Using the same motion with little or no variation every few seconds (exclude keying activities)	No other risk factors	More than 6 hours total per day	❑ Neck ❑ Shoulders ❑ Elbows ❑ Wrists ❑ Fingers
Wrists **Hands**	Using the same motion with little or no variation every few seconds (exclude keying activities)	Wrists bent in; ≥ 30° flexion, or ≥ 45° extension, or ≥ 30° ulnar deviation, AND High forceful hand(s) exertions	More than 2 hours total per day	❑
	Intensive keying *Keying with the hands or fingers in a rapid, steady motion with few opportunities for temporary work pauses.*	Awkward wrist posture, ≥ 30° flexion, or ≥ 45° extension, or ≥ 30° ulnar deviation	More than 4 hours total per day	❑
		No other risk factors	More than 7 hours total per day	❑

** *Note: Total time is determined by measuring the cumulative duration of a task, and considering whether the risk factor in question is a significant part of that task.*

GRIP FORCE					Mark 3 here to indicate a High Risk of MSI
BODY PART	PHYSICAL RISK FACTOR	COMBINED WITH	DURATION	VISUAL AID	
Arms Wrists Hands	Pinch gripping** an unsupported object(s) • Weighing 1 kg (2 lbs) or more per hand, OR • Pinch gripping with a force of 2 kg (4 lbs) or more per hand (comparable to pinch gripping half a stack of photo-copy paper)	Highly repetitive motion	> 3 hours total per day		❑
		Wrists bent in ≥ 30° flexion, or ≥ 45° extension, or ≥ 30° ulnar deviation *(circle the appropriate movements)*	More than 3 hours total per day		❑
		No other risk factors	More than 4 hours total per day		❑
Arms Wrists Hands	Power gripping** an unsupported object(s) • Weighing 5 kg (10 lbs) or more per hand OR • Power gripping with a force of 5 kg (10 lbs) or more per hand (comparable to clamping light duty automotive jumper cables onto a battery)	Highly repetitive motion	> 3 hours total per day		❑
		Wrists bent in ≥ 30° flexion, or ≥ 45° extension, or ≥ 30° ulnar deviation *(circle the appropriate movements)*	More than 3 hours total per day		❑
		No other risk factors	More than 4 hours total per day		❑

**<u>Note</u>: *A pinch grip occurs when the force application is primarily between the fingers and thumb. A power grip occurs when the force a primarily between the fingers and the palm.*

Lift/ Lower Force Risk Assessment - to Determine High Risk

This document can be used to assess forceful exertion due to lifting/ lowering force. Weight limits in this document represent "high" risks that require controls without undue delay.

Mark one of the two boxes to indicate which assessment situation applies. _____

- ❑ With one specific lift or when repeating the same lift, use Steps 1-5 below.
- ❑ When there is a number of lifts with different weights and/or different postures, use Steps 1-5 to:
  1. Assess the two worst case lifts - the heaviest object lifted and the lift in the most awkward posture; AND,
  2. The most commonly performed lift. In Step 3, use the frequency and duration for all of the lifting done in a typical workday.

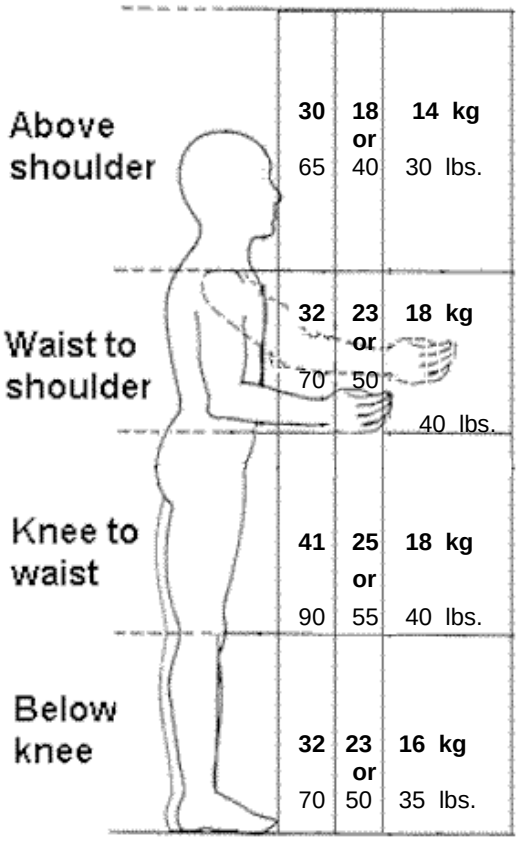
Step 1

Find the actual weight of the object that the employee lifts.

Actual Weight = _____

Step 2

Determine the Unadjusted Weight Limit. Determine where the employee's hands are at the beginning of the lift/ lower. Mark that spot on the diagram below. The number in that box is the **Unadjusted Weight Limit.**



Unadjusted Weight Limit: _____

Step 3

Find the Limit Reduction Modifier. Find out how many times the employee lifts per minute and the total number of hours per day spent lifting. Use this information to look up the **Limit Reduction Modifier** in the table below.

How Many Lift per Minute?	For How Many Hours per Day?		
	1 hr or less	1 hr to 2 hrs	2 hrs or more
1 lift every 2-5 min.	1.0	0.95	0.85
1 lift every minute	0.95	0.9	0.75
2-3 lifts every minute	0.9	0.85	0.65
4-5 lifts every minute	0.85	0.7	0.45
6-7 lifts every minute	0.75	0.5	0.25
8-9 lifts every minute	0.6	0.35	0.15
10+ lifts every minute	0.3	0.2	0.0

Note: For lifting performed less than once every five minutes, use 1.0

Limit Reduction Modifier: _____

Step 4

Calculate the Weight Limit. Start by copying the Unadjusted Weight Limit from Step 2.

Unadjusted Weight Limit (Step 2)**:** **=** _____

If the employee twists more than 45 degrees while lifting, reduce the Unadjusted Weight Limit by multiplying by 0.85. Otherwise, use the Unadjusted Weight Limit

Twisting Adjustment: = _____.____

Adjusted Weight Limit: **=** _____

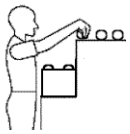
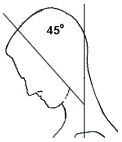
Multiply the Adjusted Weight Limit by the Limit Reduction Modifier from Step 3 to get the **Weight Limit**.

Limit Reduction Modifier (Step 3)**:** _____ **X** .___

Actual Weight = _____ **Weight Limit: =** ____

Step 5

Is this a hazard? Compare the Actual Weight lifted from Step 1 to the calculated Weight Limit in Step 4. If the **Actual Weight** (Step 1) **is greater than the Weight Limit** (Step 4), then the lift is "high" risk and requires controls without undue delay to the degree technologically and economically feasible. If the Actual Weight is below the Weight Limit, the risk is "moderate" and requires consideration for control.

AWKWARD POSTURE				Mark 3 here to indicate a High Risk of MSI
BODY PART	**PHYSICAL RISK FACTOR**	**DURATION**	**VISUAL AID**	
Knees	**Squatting**	More than 4 hours total per day		❑
	Kneeling	More than 4 hours total per day		❑
Shoulders	**Working with the hand(s) above the head or the elbow(s) above the shoulder(s)**	More than 4 hours total per day		❑
	Repetitively raising the hand(s) above the head or the elbow(s) above the shoulder(s) more than once per minute	More than 4 hours total per day		❑
Neck	**Working with the neck bent more than 45º (without support or the ability to vary posture)**	More than 4 hours total per day		❑
Back	**Working with the back bent forward more than 30º (without support, or the ability to vary posture)**	More than 4 hours total per day		❑
	Working with the back bent forward more than 45º (without support or the ability to vary posture)	More than 2 hours total per day		❑

VIBRATION RISK ASSESSMENT – TO DETERMINE HIGH RISK

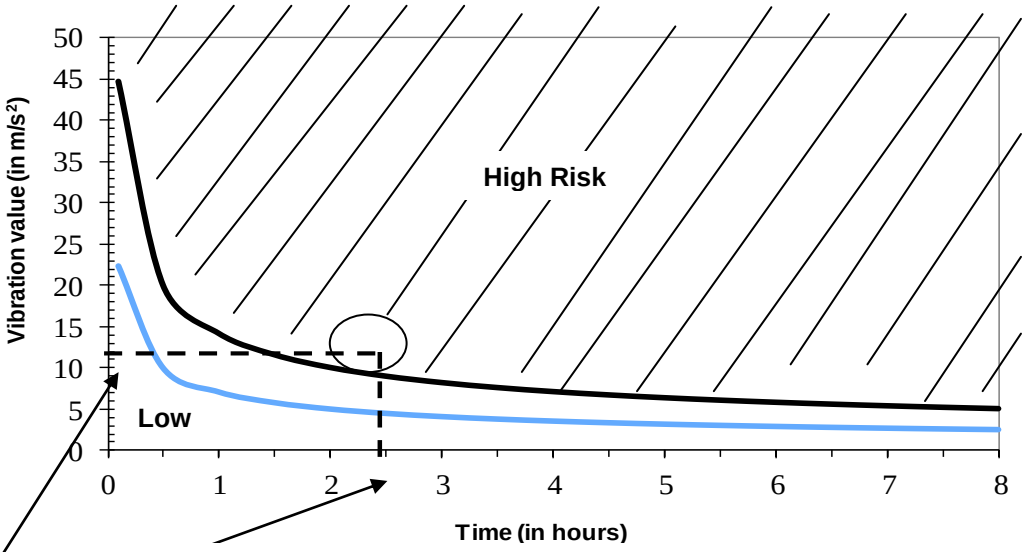
Use this document to determine if a "high" risk of MSI from hand-arm vibration exists.

Step 1 Find the vibration value for the tool. (Get it from the manufacturer, look it up at this web site: http://umetech.niwl.se/vibration/HAVHome.html, or you may measure the vibration yourself). The vibration value will be in units of meters per second squared (m/s^2). On the graph below find the point on the left side that is equal to the vibration value.

Step 2 Determine how many total hours per day the employee is using the tool and find that point on the bottom of the graph.

Step 3 Trace a line in from each of these two points until they cross.

Step 4 If that point lies in the crosshatched "High Risk" area above the upper curve, then the vibration exposure is "high risk" and requires controls without undue delay. The vibration must be reduced below the high risk level or to the degree technologically and economically feasible. If the point lies between the two curves in the "Caution" area, then the job is of "moderate risk" and may merit controls to minimize the risk of MSI. If it falls in the "Low" area below the bottom curve, then no further steps are required.



Note: The caution limit curve (bottom) is based on an 8-hour energy-equivalent frequency- weighted acceleration value of 2.5 m/s^2. The high-risk limit curve (top) is based on an 8-hour energy-equivalent frequency- weighted acceleration value of 5 m/s^2.

Example:
An impact wrench with a **vibration value of 12 m/s^2** is used for **2½ hours** total per day. The exposure level is in the High Risk area. The vibration must be reduced below the high risk level or to the degree technologically and economically feasible.

COMMON RISK CONTROL OPTIONS – WORKSHEET ***If necessary proceed to part 3***

OH&S Regulation Section 4.50 - Requires an employer to eliminate or, if that is not practicable, minimize the risk of MSI to workers. This document can be used in conjunction with the "MSI Risk Factor Identification" and "MSI Risk Factor Assessment" tools to assist in the development of those controls that will eliminate or reduce the risk of MSI to workers. For a complete guide, refer to the WSBC document, *"MSI Prevention in the Workplace: A Guide for Employers & Joint Committees"* (found on the District's OH&S website under Section M).

Job Title or Task: _____

Date: _____ **Completed By:** _____

RISK FACTOR	CONTROL OPTIONS
REPETITION	**Common Risk Control Options**
	Eliminate highly repetitious tasks through engineering controls such as mechanization (e.g., power tools) or automation. If that is not practicable: • Combine or eliminate some parts of work (e.g., job rotation or job enhancement) • Incorporate flexibility over pace (e.g., ability to take rest breaks and micro-pauses) • Use good work techniques (e.g., avoid unnecessary repetitions as with multiple scanning of grocery items or multiple turning of lumber for grading)

CONTACT STRESS:	Common Risk Control Options
	Eliminate or minimize exposure to local contact stress: • Change or modify equipment (e.g., use a long-handled screwdriver to prevent the butt from digging into palm). • Change or modify work area to prevent sharp edges from digging into skin (e.g., pad sharp or metal edges). • Minimize contact stress by improving the handle design of objects being handled. • Use personal protective equipment (e.g., use kneepads while kneeling or use padded gloves when lifting heavy objects by narrow plastic strapping). • Improve or change work practice: - Avoid resting or leaning against sharp edges - Avoid using a body part (e.g., hand or knee) as a hammer

AWKWARD POSTURE:	Common Risk Control Options
	Eliminate or minimize awkward postures by adjusting work heights, minimizing reach distances, changing orientation of work, changing layout of workstation, or using adjustable or angled tools and equipment, turntables, conveyers, tilted and spring-loaded surfaces, and proper work practices. Changing the effective height of the worker by using work platforms or recessed flooring can also be used to minimize some exposures to awkward postures, as long as they do not pose tripping or other safety hazards.
Trunk	Minimize awkward postures of the trunk: • Minimize forward bending by increasing the work height or moving objects closer (e.g., use turntables; improve layout of workspace). • Minimize side bending by reducing the reach distance or moving objects in front of the worker (e.g., improve layout of workspace; move feet). • Minimize twisting by reducing reach distance or moving objects in front of worker (e.g, improve layout of workspace; move feet).

Shoulder	Minimize awkward posture of the shoulder: • Minimize reaching forward by reducing the reach distance or lowering the work height. • Minimize reaching sideways by reducing the reach distance, lowering the work height, or moving objects in front of the body. • Minimize reaching behind by moving objects to the front of the worker. • Minimize reaching across the body by moving feet or transferring objects from one hand to another.
Wrist and Forearm	Minimize awkward posture of the wrist by selecting the required tools with appropriate handles. Minimize forearm rotation by using power tools or mechanical turners.
Knee	Minimize squatting and kneeling by raising the work.
Sitting	Minimize exposure to risk factors while sitting by selecting and using an appropriate chair that is adjusted to provide good back support, maintain comfortable and correct posture, and minimize contact stress. • Provide tilted sit-stand stool to take weight off the feet and legs while maintaining mobility.
Standing	Minimize the effects of static standing on hard surfaces by providing anti-fatigue matting. Minimize the effects from standing and operating foot pedals by providing a means to sit or sit/stand.

FORCE	**CONTROL OPTIONS**
GRIP FORCE	**Common Risk Control Options**
	Eliminate the need to manually grasp or handle objects through engineering controls. If that is not practicable, consider the following options to minimize risk: • Maintain a straight wrist (neutral position) through: - Improved design of handles (e.g., bent instead of straight handles) - Improved design of workstation (e.g., parts containers that are tilted instead of flat; use of in-line tools) - Improved work practice (conscious effort to keep wrist straight) • Use power grip to grasp through: - Improved design of objects (e.g., boxes with cut-outs to permit power grip; adding handles to objects) - Improved layout of workstation (e.g., objects positioned to permit easy access to handles) - Improved work practice (e.g., conscious effort to avoid pinch grip) 
Vibration	Avoid strong/hard grasping of vibrating objects through: • Improved design of tools (select and use tools with built-in vibration-dampening sleeve) • Improved work practice (conscious effort not to grasp too hard) • Use of PPE (good-fitting vibration-dampening gloves)
Cold Temperatures	Avoid handling objects with cold surface temperature through: • Improved work practice (e.g., at the end of the day, store the next day's supplies inside instead of keeping them outside where they will be cold by morning) • Improved work procedure (e.g., avoid skin contact by using tools or utensils for grasping; periodic use of warm water to warm hands) • Use of PPE (suitable gloves)
Slippery Objects	Improve grip while handling slippery objects by using friction-enhanced good-fitting gloves.
Gloves	Provide various sized gloves to ensure a proper fit for all workers.

Lift/Lower Force	
	Eliminate the need to manually lift, lower, or carry objects through engineering controls such as hoists, pallet jacks, carts, and conveyers. If that is not practicable, consider the following options to minimize risk: • Restrict manual handling of animate objects (people and animals) to workers who are trained in safe work procedures and are proficient in using them. • Use only established safe work procedures while handling large, odd-shaped, heavy, unbalanced objects or objects with a shifting center of gravity (such as liquids). Safe work procedures should: - Minimize the distance of the load from the worker (e.g., use turntables; move worker close to the object; don't place obstructions close to the object) - Avoid tasks below knuckle height (e.g., use scissor lifts, pallet jacks) - Avoid tasks above shoulder height (e.g., limit shelf heights; improve storage practice, raise worker) - Avoid stooped or twisted positions (e.g., provide unrestricted work space; use proper work practice) - Minimize carrying distance (e.g., have a well-designed work flow) - Avoid handling heavy or unbalanced objects while sitting down—stand so that stronger muscles are used to perform physically demanding tasks. - Avoid handling more than 4.5 kilograms (10 pounds) while sitting down.

Push/Pull Force:	Common Risk Control Options
	Eliminate the need to manually push or pull objects by using engineering controls such as conveyers, hoists, and gravity-fed systems. If that is not practicable, minimize risks by appropriate use of carts: • Use carts that are well-designed and appropriate to the task: - Handle can be grasped between waist and shoulder height (e.g., vertical handles that can accommodate workers of different heights) - Load can be secured on the cart if necessary (e.g, belts or clamps provided) - Wheel size is appropriate for the floor surface and weight carried - Moving parts are maintained (preventive maintenance) - The worker has good visibility when pushing the cart • Use in an unrestricted area: - Worker is able to push and not forced to pull the cart - Worker can assume a comfortable position to initiate and maintain movement of load - Worker is not forced to assume awkward postures because of restricted work space or poor visibility • Use in areas with proper flooring: - Clean floor (e.g., no debris or clutter on floor; good housekeeping) - Non-sloping and non-slippery floor - No thick, plush, or shag carpet

ERGONOMICS

Risks of Keyboarding

People are always being told all about how typing for long periods of time is bad for you, but have you ever wondered what really happens and if there is a real cause for alarm? Well, unfortunately, there is! Poor typing posture can cause pain and other symptoms in your:

- Back
- Neck and shoulders
- Hands and wrists
- Eyes

Back Pain

The lifetime prevalence of low back pain has been estimated at nearly 70% for industrialized countries (Anderson 1991), and much of this is related to poor posture while sitting. Back pain is certainly not limited to adults. In fact, it has been reported that approximately 23% of elementary school students complain of backache and that this percentage rises to about 33% among the secondary school population (Mierau, 1984, cited in Marschall, Harrington, and Steele, 1995). Two European studies even found that as many as 60% of school students experience back problems by the ages of 15 or 16 (Balague, 1988 and Davoine, 1991, both cited in Mandal, 1997). A study of 500 US teenagers found that 56% of the males and 30% of the females suffered from degeneration of the spine as supported by X-ray evidence (Fish, 1984, cited in Knight and Noyes 1999).

Hand/Wrist Problems

- These include Cumulative Trauma Disorders, better known as CTDs, RSIs (Repetitive Stress Injuries), OODs (Occupational Overuse Disorders), etc.
- Since the later 1980s, the incidence of CTDs has skyrocketed, especially among those performing computer intensive work. The number of repeated trauma cases increased steadily from 23,800 in 1972 to 332,000 in 1994 – a 14-fold increase (Bureau of Labour Statistics, 1995).
- Although there are few statistics on students and CTDs, with so many students starting to use computers at such an early age, there is no telling whether this may accelerate the incidence of CTDs.
- Since the average American child is currently spending one to three hours daily in front of a computer (Roper Starch, 1999), there is a great potential for injury.
- In their milder forms, CTDs may involve injury to the tendons and their sheaths within the hand and wrist area, which may cause:
    - Discomfort
    - Tenderness to touch
    - Inflammation
    - Weakening of the tendons
- The more serious CTDs may lead to the following symptoms in the hands, fingers, and arms:
    - Pain
    - Numbness
    - Tingling
    - Loss of sensation

Carpal Tunnel Syndrome (CTS)

- One of the most serious and best known CTDs.
- It results when the median nerve does not “work” properly. Usually, this is thought to occur because there is too much pressure on the nerve as it runs into the wrist through an opening called the carpal tunnel.
- Eventually, the pressure inside the tunnel reaches a point when the nerve can no longer function normally. Pain and numbness in the hand begin and progress if the cause is not eliminated.

- Repeated forceful movements made by the hands while in deviated postures (flexion, extension, ulnar radiation, and radial radiation) are known to dramatically increase the risks of developing this syndrome.
- Ulnar and radial deviation contribute to CTDs, but it is flexion and, particularly, extension that are the real culprits.
- Remember that when the wrist is in a neutral position, the carpal tunnel is as big as it can be – so the nerve has as much room as possible and injury can be prevented.

PREVENTING INJURY

When it comes to preventing injury, adults and students need to primarily:
- Keep their body and wrist posture in neutral position while sitting and keyboarding.
- Have an appropriate workstation configuration.
- Take breaks at appropriate intervals.

Neutral Keyboarding Posture

- Upper and lower back well supported by chair;
- Chair height set so that the chair seat does not compress the back of the knees;
- Feet firmly planted on a surface for support (floor or footrest);
- Head balanced on neck (not tilted back or too far forward)
- Upper arms close to body and relaxed (not abducted to the side or flexed forward);
- Sitting so that the:
- Angle formed by the shoulders, hips, and knees is >90 degrees;
- Angle formed by the shoulder, elbow, and wrist is >90 degrees;
- Angle formed by the hips, knees, and feet is .90 degrees;
- Wrists at a neutral position, level with forearm (,15 degrees deviation)
- Chair armrests not directly compressing any part of the forearms or elbows
- Moving a mouse with your forearm and not just your wrist (will reduce hand deviation). View the ideal typing posture. View 2 less-than-ideal typing postures: desktop keyboard, conventional keyboard tray.

Ideal Computer Workstation

Many people spend thousands and thousands of dollars on their computers, software, and games and then completely disregard the workstation where they sit day in and day out. But that would be like buying a Ferrari and then buying the cheapest tires possible! It just won't work in the long run – and it's the person who's going to end up hurting, literally.

1. Furniture and Equipment

    - Stable work surface.
    - Comfortable, ergonomic, adjustable chair with at least chair height and back support adjustment mechanisms. If the back tension of the chair does not adjust, make sure that the lower back is firmly supported.
    - Armrests that pivot and are height and width adjustable are also a good idea. Remember that while most adjustable features are not absolutely essential, they do assure that many people of different sizes will feel comfortable in the chair.
    - Height adjustable, negative slope keyboard tray is best for keeping the elbows at a >90 degrees and for allowing the wrists to remain in a neutral position.
    - Note: Desktop keyboards and those placed on conventional, articulating keyboard trays (those on a positive slope) do not fully allow the elbows and wrists to remain in neutral posture and actually encourage wrist extension.
    - Height adjustable, gliding mouse platform that allows the mouse to be positioned close to the side of the body, above the keyboard tray (so that the arm does not have to reach to the side).
    - It does not matter exactly what type of keyboard and pointing device you use as long as whatever you use feels comfortable, fits your hands and allows you to work in a neutral hand and body posture.

2. Normal Work Area

- The normal work area corresponds to the space and objects that can be reached by a person while sitting in front of a computer, without having to twist the body or reach far. Make sure that everything you need is within this area, including books, documents, tools, a telephone, etc.
- Be sure that the desk has a surface large enough to support all of your materials, even the ones that you are not currently using.
- If typing from a book or document, make sure that it is placed in a document holder that is placed near the screen, in order to avoid head twisting.
- The body should be centred on the alphanumeric part of the keyboard. Most keyboards are asymmetrical in design (the alphanumeric keyboard is to the left and a numeric keypad to the right). If the outer edges of the keyboard are used as landmarks for centering the keyboard and monitor, the user's hands will be deviated because the alphanumeric keys will be to the left of the user's midline.

3. Computer Monitor Position

- Monitor that is height and angle adjustable works best.
- Monitor should be placed directly in front of the user and facing the user, not angled to the left or right (to discourage neck twisting).
- Your eyes should be in line with a point on the screen that is 2 to 3 inches below the top of the monitor. If the monitor is above or below this height, your neck will be raised or lowered and the result will be neck pain.
- Monitor should be at a distance for viewing, which is usually around an arm's length (sit back, raise your arm, and your fingers should touch the screen).
- If text on the screen is too small, increase the font size – do not move the monitor closer.
- Users with bifocal glasses should tilt their monitors slightly backwards.

4. Lighting

- It should not be too bright or too dark. Always use light even though a computer screen is self-illuminating – there should not be a large contrast between the screen and the area surrounding it.
- Indirect lighting (that which illuminates the walls and ceilings), in combination with a task light, works best.
- If you do use a task light, position it as far away as possible – make sure that you cannot see the light source when you look at the screen.
- There should be no glare falling on the screen. If there is, reposition the workstation with regard to the light sources (natural or artificial). Be careful not to just move the monitor, resulting in a poor viewing angle. If repositioning alone does not work, use a good quality glass anti-glare screen. If left uncorrected, glare will cause discomfort, eyestrain, and headaches.
- Avoid very glossy work surfaces and furnishings, such as mirrors and shiny metal, which will contribute to glare.

5. Noise and Ventilation

- Work in an environment with a level of noise that is comfortable for you. Working in an uncomfortably loud environment stresses the body and, as a result, the muscles tense up. This tension accelerates injury.
- If using headphones, make sure they are at a comfortable noise level and that they fit properly.
- Workstation should be located in a well ventilated area, with adequate heating and cooling in order to minimize discomfort.

Taking Breaks if Important

The risk of problems associated with computer use depends more on the amount of time that one spends keyboarding without taking a break in one single session than on the total number of keyboarding sessions. You can regulate your own computer usage and that of your students in the following ways.

Just remember that breaks and exercises need to be combined with good workstation set-up and/or posture for them to be of most help!

- Eye Breaks**:** Looking at a computer screen for a while causes some changes in how the eyes work, causes you to blink less often, and exposes more of the eye surface to the air. Every 15 minutes you should briefly look away from the screen for a minute or two to a more distant scene, preferably something more than 20 feet away. This lets the muscles inside the eye relax. Also, blink your eyes rapidly for a few seconds. This refreshes the tear film and clears dust from the eye surface.
- Micro-breaks: Most typing is done in bursts rather than continuously. Between these bursts of activity you should rest your hands in a relaxed, flat, straight posture.
- Rest Breaks: Every 30 to 60 minutes you should take a brief rest break. During this break stand up, move around, and do something else. This allows you to rest and exercise different muscles and you'll feel less tired.
- Exercise Breaks: There are many quick stretching and gentle exercises that you can do to help relieve muscle fatigue. These should be done every 1-2 hours, depending on your needs.

Workstation Exercises (to be done at least once an hour)

1. **Deep Breathing:** Breathe in slowly through your nose. Hold for 2 seconds, and then exhale through the mouth. Repeat several times.
2. **Head and Neck:** Turn head slowly from one side to the other, holding each turn for 3 seconds. Repeat several times.
3. **Back:** Start with the arms bent, hands near chest area, and push elbows back. Hold for 5 seconds, and then relax. Repeat several times. You can also raise arms in the same fashion, this time close to the shoulders, to work out the upper back.
4. **Shoulders:** Roll shoulders slowly in a circular fashion, while trying to make the circle as big as possible. Take about 5 seconds to complete one circle. Repeat several times.
5. **Wrists:** Hold your hands out in front of you. Slowly raise and lower your hands to stretch the muscles in the forearm. Repeat several times.
6. **Fingers and Hands:** Make a tight fist. Hold for a second. Then spread your fingers apart as far as you can. Hold for 5 seconds and then relax. Repeat several times.
7. **Tendon Gliding Exercises:** These relieve tension in the tendons. Do each of the following movements slowly, but do not force any of the positions. Go as far as you comfortably can.
    a. Starting Position: Raise your arm, with the hand extended (you can also rest the elbow on a table and extend the hand).
    b. Roof: Bend your fingers down to a right angle. Return to starting position.
    c. Straight Fist: Touch your fingertips to the base of your palm, keeping the thumb straight. Return to starting position.
    d. Hook Fist: Gently make a hook. Return to the starting position.
    e. Full Fist: Make a fist. Return to the starting position.

In addition to these exercises, take short breaks (micro breaks) and to do some gentle stretching or stand up and move around during these brief pauses.

Laptops and Their Inherent "Un-Ergonomics"

- Although laptops are certainly a great invention, there is no way that they will be ergonomic (in their present design) without a little help from you.
- It usually turns out that when the screen is at a comfortable height and distance, the keyboard isn't and vice versa. The best way to avoid discomfort here is to place the keyboard at a comfortable distance and enlarge the font, which you can always reduce later.
- If you use your laptop for more than one hour at a time, consider obtaining an external keyboard and/or monitor.
- The fact that a pointing device on a laptop is almost always located in the middle may not allow you to keep your arm at a neutral position while using it. Consider purchasing a mouse or any other external pointing device.

- As in the case of a desktop keyboard, you may use a wrist rest to support your forearms while typing on the laptop keyboard.
- Avoid using your laptop on a high surface. This will cause you to abduct your shoulders and lead to shoulder and back pain.

The Real Truth About the Most Popular Ergonomic Products

- **Ergonomic Chairs:** As long as the chair has at least height and back adjustment features, it will be worth your while. These chairs can range in price from $100 or less to more than $1000 dollars, and generally the more expensive ones have more adjustment features and better construction. The greater a chair's adjustment capabilities, the greater the number of people that will be able to sit comfortably.
- **Armrests:** The best armrests will allow you to rest the area of your forearm that lies halfway between your wrist and elbow, without compressing any part of the arm. Look for those with at least height and width adjustment features. Research studies have shown that armrests provide many benefits such as:
    - Reduced postural strain to the upper body
    - Reduced muscle loads in the upper arms, shoulders, and neck
    - Reduced loads on the spine (by redistributing the weight of your upper body)
    - Reduced forearm exhaustion while typing (when your forearm gets tired, you tend to increase wrist extension)
    - Reduced key forces while typing (the amount of force with which you hit the keys plays a role in CTD development)
- **Keyboards:** Most ergonomic keyboards on the market today are split keyboards (those where the alphanumeric keys are split at an angle). These keyboards mainly address the problem of wrist ulnar deviation (side to side). However, wrist extension and flexion (vertical movement) are more important when preventing injury. There is no consistent research that shows that split keyboards offer any postural benefits, and for most people a regular keyboard design works just fine if it's placed in the proper neutral position. Some people find split keyboards to be more comfortable than traditional keyboards, so if you use one, make sure that it is not causing your shoulders to abduct (raised higher than is comfortable).
- **Keyboard Trays:** Height-adjustable, negative slope keyboard trays (those that height adjust down to your lap and allow you to tilt them away from your body) function best because they allow the body and hands to maintain the most neutral working position (see section on Neutral Keyboarding Posture). In order to be in the proper position, you should almost feel as if your keyboard is placed on your lap.
- **Pointing Devices:** There is no conclusive research that says that one type of pointing device (mouse, trackball, stylus, touch pad, joystick, etc) is better for you than another. Just make sure that when you use whichever one you choose, you are using it in a neutral position (arm relaxed, close to your body). A pointing device should also fit the hand of its user. Don't use a very large mouse if you have very small hands.
- **Mouses:** The mouse is the most popular type of pointing device and there are many types of "ergonomic" mouses out there. Before you purchase a mouse, place your hand over it. If it causes your wrist to extend up too much, then it's not really "ergonomic." One recent student showed that one particular mouse design, which is flatter and boarder than a traditional mouse, can reduce side-to-side wrist deviation.
- **Wrist Rests:** Research studies haven't demonstrated any substantial benefits for wrist rests. Some people may actually experience increased pressure in the wrist area just from using one. If you do choose to use a wrist rest, a broad, flat surface design works best. Many keyboards come with an attached or built-in plastic wrist rest, which works well if it is broad and flat. Avoid soft and squishy wrist rests (gel-filled) because these will contour to your wrist and encourage wrist twisting

movements – your hands should be able to glide over the surface of a wrist rest during typing. Using a wrist rest as forearm support can be comfortable and effective.

- **Glare Screens:** Glare screens can only reduce glare – a lot of people think that they can reduce or eliminate magnetic fields. This is simply not true, no matter what the packaging says. Any jargon on the packaging about “fields” usually refers to static electricity. Usually it is the higher quality glare screens that are worth getting. The lesser quality ones may reduce glare but may also accumulate a lot of dust, thereby obscuring the image. And remember that you may not even need a glare screen if you position your monitor in a way that does not encourage glare (refer to Lighting within Ideal Computer Workstation section).
- **Support Braces/Gloves:** There is no consistent research evidence that wearing wrist supports during computer use actually helps reduce the risk of injury. If you do like wearing a wrist support, make sure that it keeps your hand flat and straight, no bent upwards. There is some evidence that wearing wrist supports at night in bed can help relieve symptoms to those with Carpal Tunnel Syndrome.

GENERAL ERGONOMIC RISK ANALYSIS CHECKLIST

Work Area:_____ **Date:** _____

Conducted by: _____

A "yes" response indicates that an ergonomic risk factor may be present which requires further analysis.

YES	NO	
		Manual Material Handling · Is there lifting of loads, tools, or parts? · Is there lowering of tools, loads, or parts? · Is there bending at the waist to handle tools, loads, or parts? · Is there twisting at the waist to handle tools, loads, or parts? **Physical Energy Demands** · Do tools and parts weigh more than 10 lb.? · Is reaching greater than 20 inches? · Is bending, stooping, or squatting a primary task activity? · Is lifting or lowering loads a primary task activity? · Is walking or carrying loads a primary task activity? · Is stair or ladder climbing with loads a primary task activity? · Is pushing or pulling loads a primary task activity? · Is reaching overhead a primary task activity? · Do any of the above tasks require five or more complete work cycles to be done within a minute? · Do workers complain that rest breaks and fatigue allowances are insufficient? **Other Musculoskeletal Demands** · Do manual jobs require frequent, repetitive motions? · Do work postures require frequent bending of the neck, shoulder, elbow, wrist, or finger joints? · For seated work, do reaches for tools and materials exceed 15 inches from the worker's position? · Is the worker unable to change his or her position often? · Does the work involve forceful, quick, or sudden motions? · Does the work involve shock or rapid build up of forces? · Is finger pinch gripping used? · Do job postures involve sustained muscle contraction of any limb? **Computer Workstation** · Do operators use computer workstations for more than 4 hours a day? · Are there complaints of discomfort from those working at these stations? · Is the chair or desk non-adjustable? · Is the display monitor, keyboard, or document holder non-adjustable? · Does lighting cause glare or make the monitor screen hard to read? · Is the room temperature too hot or too cold? · Is there irritating vibration or noise? **Environment** · Is the temperature too hot or too cold? · Are the worker's hands exposed to temperatures less than 70 degrees Fahrenheit? · Is the workplace poorly lit? · Is there glare? · Is there excessive noise that is annoying, distracting, or producing hearing loss? · Is there upper extremity or whole body vibration? · Is air circulation too high or too low? **General Workplace** · Are walkways uneven, slippery, or obstructed? · Is housekeeping poor? · Is there inadequate clearance or accessibility for performing tasks? · Are stairs cluttered or lacking railings? · Is proper footwear worn?

		Tools • Is the handle too small or too large? • Does the handle shape cause the operator to bend the wrist in order to use the tool? • Is the tool hard to access? • Does the tool weigh more than 9 lb? • Does the tool vibrate excessively? • Does the tool cause excessive kickback to the operator? • Does the tool become too hot or too cold? **Gloves** • Do the gloves require the worker to use more force when performing job tasks? • Do the gloves provide inadequate protection? • Do the gloves present a hazard of catch points on the tool or in the workplace? **Administration** • Is there little worker control over the work process? • Is the task highly repetitive and monotonous? • Does the job involve critical tasks with high accountability and little or no tolerance for error? • Are work hours and breaks poorly organized?

COMPUTER WORKSTATION CHECKLIST

Work Area _____ **Date** _____

Conducted by: _____

"No" responses indicates potential problem areas which should receive further investigation.

YES	NO	
		1. **Does the workstation ensure proper worker posture, such as:** • horizontal thighs? • vertical lower legs? • feet flat on floor or footrest? • neutral wrists?
		2. **Does the chair:** • adjust easily? • have a padded seat with a rounded front? • have an adjustable backrest? • provide lumbar support? • have casters?
		3. **Are the height and tilt of the work surface on which the keyboard is located adjustable?**
		4. **Is the keyboard detachable?**
		5. **Do keying actions require minimal force?**
		6. **Is there an adjustable document holder?**
		7. **Are arm rests provided where needed?**
		8. **Are glare and reflections avoided?**
		9. **Does the monitor have brightness and contrast controls?**
		10. **Do the operators judge the distance between eyes and work to be**
		11. **Satisfactory for their viewing needs?**
		12. **Is there sufficient space for knees and feet?**
		13. **Can the workstation be used for either right- or left-handed activity?**
		14. **Are adequate rest breaks provided for task demands?**
		15. **Are high stroke rates avoided by:** • job rotation? • self-pacing? • adjusting the job to the skill of the worker?

HAND TOOL ANALYSIS CHECKLIST

Work Area: _____ Date: _____

Conducted by: _____

"No" responses indicate potential problem areas which should receive further investigation.

YES	NO	
		1. **Are tools selected to limit or minimize:** • exposure to excessive vibration? • use of excessive force? • bending or twisting the wrist? • hinger pinch grip? • problems associated with trigger finger?
		2. **Are tools powered where necessary and feasible?**
		3. **Are tools evenly balanced?**
		4. **Are heavy tools suspended or counterbalanced in ways to facilitate use?**
		5. **Does the tool allow adequate visibility of the work?**
		6. **Does the tool grip/handle prevent slipping during use?**
		7. **Are tools equipped with handles of textured, non-conductive material?**
		8. **Are different handle sizes available to fit a wide range of hand sizes?**
		9. **Is the tool handle designed not to dig into the palm of the hand?**
		10. **Can the tool be used safely with gloves?**
		11. **Can the tool be used by either hand?**
		12. **Is there a preventive maintenance program to keep tools operating as designed?**
		13. **Have employees been trained:** • in the proper use of tools? • when and how to report problems with tools? • in proper tool maintenance?

ERGONOMIC KEYBOARD + MOUSE SYSTEM EVALUATION FORM

Evaluator Name:	**Date:**
Platform Manufacturer:	**Model:**
Evaluation Criteria	**Marks out of 10**
A: Keyboard + Mouse Platform Adjustments	**No (0) or Yes (10)**
1. Keyboard platform only adjusts into a downward (negative) angle and prevents the user from adjusting this into an upward (positive) angle?	0----------10
2. Keyboard platform height adjustment separate from angle adjustment?	0----------10
3. Separate mouse platform approximately at or above keyboard home row?	0----------10
4. Mouse platform does not adjust into positive angle?	0----------10
5. Mouse platform can be positioned on either the left or right sides?	0----------10
	A: Keyboard + Mouse Platform Adjustments Score =
B: Keyboard Platform Comfort and Safety	**Unacceptable(0) ---- Average(5) ---- Excellent(10)**
6. Platform accommodates a range of keyboard shapes and sizes?	0-1-2-3-4-5-6-7-8-9-10
7. Keyboard platform is very stable (no wobble or bounce)?	0-1-2-3-4-5-6-7-8-9-10
8. Leg clearance under the keyboard platform? (no obstructions under platform)	0-1-2-3-4-5-6-7-8-9-10
9. Comfortable palmrest on platform? (not too hard or soft; no sharp edges; flatter rather than curved; smooth)	0-1-2-3-4-5-6-7-8-9-10
10. Ease of retracting the keyboard platform?	0-1-2-3-4-5-6-7-8-9-10
	B: Keyboard Platform Safety Score =
C: Mouse Platform Comfort and Safety	**Unacceptable(0) ---- Average(5) ---- Excellent(10)**
11. Hand moves mouse freely over the mouse platform? (no restrictive wrist rest)	0-1-2-3-4-5-6-7-8-9-10
12. Mouse platform is very stable (no wobble or bounce)?	0-1-2-3-4-5-6-7-8-9-10
13. No contact stress from edge of mouse platform? (no hard, sharp edge)	0-1-2-3-4-5-6-7-8-9-10
14. Mouse platform can be positioned comfortably close to the body?	0-1-2-3-4-5-6-7-8-9-10
15. Mouse platform cable management?	0-1-2-3-4-5-6-7-8-9-10
	C: Mouse Platform Safety Score =
TOTAL SCORE (A+B+C) =	
Comments:	

ERGONOMIC SEATING EVALUATION FORM

Evaluator Name: _____ Date: _____

Chair Manufacturer _____ Model _____

Evaluation Criteria	Marks out of 10
A: Chair Adjustments (are these available?)	**No (0) or Yes (10)**
1. Seat pan depth adjustment	0----------10
2. Back height adjustment (usable while sitting)	0----------10
3. Arm support width adjustment	0----------10
	A: Chair Adjustments Score =
B: Seat Comfort	**Unacceptable(0) ----- Average(5) ---- Excellent(10)**
4. Seat Cushion Comfort (evaluate after at least 90 min. of sitting)	0-1-2-3-4-5-6-7-8-9-10
5. Backrest Cushion Comfort (at various recline postions)	0-1-2-3-4-5-6-7-8-9-10
6. Armrest comfort (when leaning on elbow)	0-1-2-3-4-5-6-7-8-9-10
	B: Comfort Score =
C: Ease of Use	**Unacceptable(0) ----- Average(5) ---- Excellent(10)**
7. Ease of chair height adjustment	0-1-2-3-4-5-6-7-8-9-10
8. Ease of armrest height adjustment	0-1-2-3-4-5-6-7-8-9-10
9. Ease of recline (without adjustments)	0-1-2-3-4-5-6-7-8-9-10
	C: Ease-of-use Score =
D: Body Support	**Unacceptable(0) ----- Average(5) ---- Excellent(10)**
10. Back support at various recline positions (no forward push or fall back)	0-1-2-3-4-5-6-7-8-9-10
11. Lumbar support at various recline positions	0-1-2-3-4-5-6-7-8-9-10
12. Armrest height support range (drop below thigh level up to support for phone use)	0-1-2-3-4-5-6-7-8-9-10
	D: Body Support Score =
E: Overall Chair Experience	**Unacceptable(0) ----- Average(5) ---- Excellent(10)**
13. Overall ease of use of the chair	0-1-2-3-4-5-6-7-8-9-10
14. Overall appearance of the chair	0-1-2-3-4-5-6-7-8-9-10
15. Overall comfort of the chair	0-1-2-3-4-5-6-7-8-9-10
	E: Overall Chair Experience Score =
TOTAL SCORE (A+B+C+D+E) =	

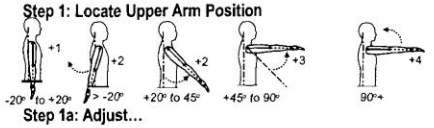
Comments:

RULA Employee Assessment Worksheet

Complete this worksheet following the step-by-step procedure below. Keep a copy in the employee's personnel folder for future reference.

A. Arm & Wrist Analysis

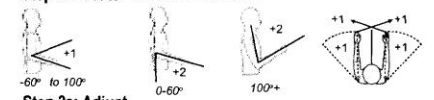
Step 1: Locate Upper Arm Position



Step 1a: Adjust...

If shoulder is raised: +1;
If upper arm is abducted: +1;
If arm is supported or person is leaning: -1

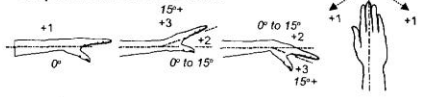
Step 2: Locate LowerArm Position



Step 2a: Adjust...

If arm is working across midline of the body: +1;
If arm out to side of body: +1

Step 3: Locate Wrist Position



Step 3a: Adjust...

If wrist is bent from the midline: +1

Step 4: Wrist Twist

If wrist is twisted mainly in mid-range =1;
If twist at or near end of twisting range = 2

Step 5: Look-up Posture Score in Table A

Use values from steps 1,2,3 & 4 to locate Posture Score in table A

Step 6: Add Muscle Use Score

If posture mainly static (i.e. held for longer than 1 minute) or;
If action repeatedly occurs 4 times per minute or more: +1

Step 7: Add Force/load Score

If load less than 2 kg (intermittent): +0;
If 2 kg to 10 kg (intermittent): +1;
If 2 kg to 10 kg (static or repeated): +2;
If more than 10 kg load or repeated or shocks: +3

Step 8: Find Row in Table C

The completed score from the Arm/wrist analysis is used to find the row on Table C

Final Upper Arm Score =

Final Lower Arm Score =

Final Wrist Score =

Wrist Twist Score =

Posture Score A =

Muscle Use Score =

Force/load Score =

Final Wrist & Arm Score =

SCORES

Table A

Upper Arm	Lower Arm	Wrist 1 Wrist Twist 1	Wrist 1 Wrist Twist 2	Wrist 2 Wrist Twist 1	Wrist 2 Wrist Twist 2	Wrist 3 Wrist Twist 1	Wrist 3 Wrist Twist 2	Wrist 4 Wrist Twist 1	Wrist 4 Wrist Twist 2
1	1	1	2	2	2	3	3	3	
	2	2	2	2	3	3	3	3	
	3	2	3	3	3	3	4	4	
2	1	2	3	3	3	4	4	4	
	2	3	3	3	3	4	4	4	
	3	3	4	4	4	4	5	5	
3	1	3	4	4	4	4	5	5	
	2	3	4	4	4	4	5	5	
	3	4	4	4	4	5	5	5	
4	1	4	4	4	4	5	5	5	
	2	4	4	4	4	5	5	5	
	3	4	4	4	5	5	6	6	
5	1	5	5	5	5	6	6	7	
	2	5	6	6	6	6	7	7	
	3	6	6	6	7	7	7	8	
6	1	7	7	7	7	8	8	9	
	2	8	8	8	8	9	9	9	
	3	9	9	9	9	9	9	9	

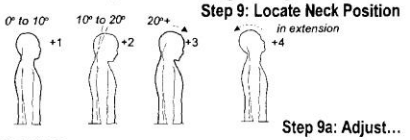
Table C

	1	2	3	4	5	6	7+
1	1	2	3	3	4	5	5
2	2	2	3	4	4	5	5
3	3	3	3	4	4	5	6
4	3	3	3	4	5	6	6
5	4	4	4	5	6	7	7
6	4	4	5	6	6	7	7
7	5	5	6	6	7	7	7
8+	5	5	6	7	7	7	7

Final Score=

B. Neck, Trunk & Leg Analysis

Step 9: Locate Neck Position

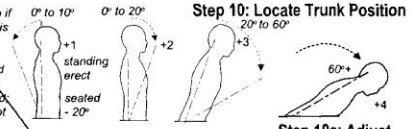


Step 9a: Adjust...

If neck is twisted: +1; If neck is side-bending: +1

=Final Neck Score

Step 10: Locate Trunk Position



Step 10a: Adjust...

If trunk is twisted: +1; If trunk is side-bending: +1

= Final Trunk Score

Step 11: Legs

If legs & feet supported and balanced: +1;
If not: +2

= Final LegScore

Table B

	Trunk Posture Score 1		2		3		4		5		6	
	Legs		Legs		Legs		Legs		Legs		Legs	
Neck	1	2	1	2	1	2	1	2	1	2	1	2
1	1	3	2	3	3	4	5	5	6	6	7	7
2	2	3	2	3	4	5	5	5	6	7	7	7
3	3	3	3	4	4	5	5	6	6	7	7	7
4	5	5	5	6	6	7	7	7	7	7	8	8
5	7	7	7	7	7	8	8	8	8	8	8	8
6	8	8	8	8	8	8	8	9	9	9	9	9

Step 12: Look-up Posture Score in Table B

Use values from steps 8,9,& 10 to locate Posture Score in Table B

= Posture B Score

Step 13: Add Muscle Use Score

If posture mainly static or;
If action 4/minute or more: +1

= Muscle Use Score

Step 14: Add Force/load Score

If load less than 2 kg (intermittent): +0;
If 2 kg to 10 kg (intermittent): +1;
If 2 kg to 10 kg (static or repeated): +2;
If more than 10 kg load or repeated or shocks: +3

= Force/load Score

Step 15: Find Column in Table C

The completed score from the Neck/Trunk & Leg analysis is used to find the column on Chart C

= Final Neck, Trunk & Leg Score

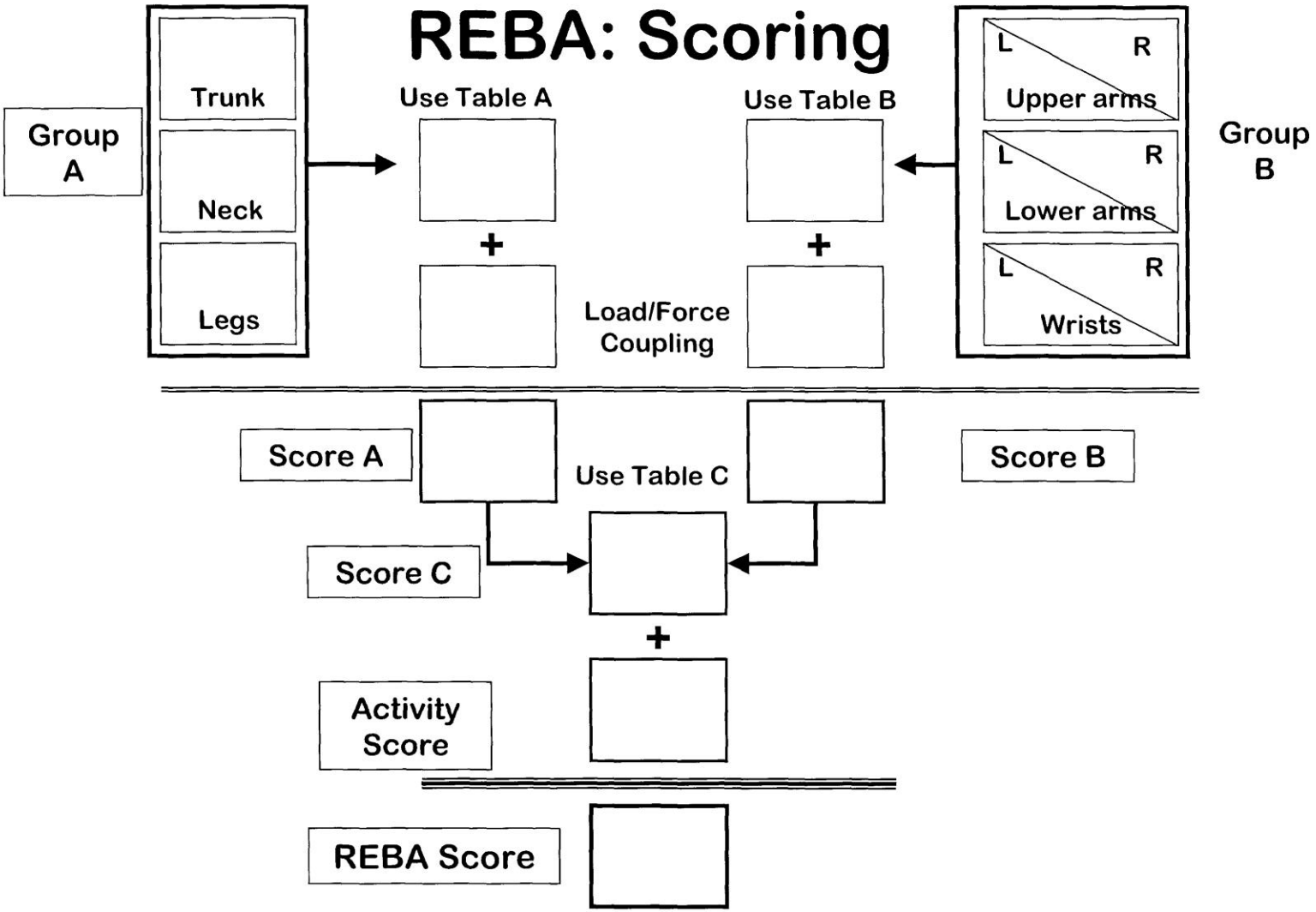
Subject: _____ Date: __/__/__

Company: _____ Department: _____ Scorer: _____

FINAL SCORE: 1 or 2 = Acceptable; 3 or 4 investigate further; 5 or 6 investigate further and change soon; 7 investigate and change immediately

Source: McAtamney, L. & Corlett, E.N. (1993) RULA: a survey method for the investigation of work-related upper limb disorders, Applied Ergonomics, 24(2) 91-99.

REBA: Scoring



Source: Hignett, S., McAtamney, L. (2000) Applied Ergonomics, 31, 201-5.

Job Strain Index Worksheet

	Intensity of Exertion (IE)	Duration of Exertion (DE)	Efforts/ Minute (EM)	Hand/Wrist Posture (HWP)	Speed of Work (SW)	Duration per Day (DD)
Exposure data						
Ratings						
Multipliers						
SI Scores						

$$JSI = IE \times DE \times EM \times HWP \times SW \times DD$$

Moore, J.S. and Garg, A. (1995) American Industrial Hygiene Journal 56:443-58.

Table of Exposure Scores

Exposure to the **Back**

	A1	A2	A3	Score 1	B1	B2	B3	Score 2	b1	b2	b3	Score 3
a1	2	4	6		2	4	6		2	4	6	
a2	4	6	8		4	6	8		4	6	8	
a3	6	8	10		6	8	10		6	8	10	
a4	8	10	12		8	10	12		8	10	12	

				Score 4				B4	B5	Score 5	Total score for the back = Sum of scores 1 to 5
b1	2	4	6		2	4	6	2	4		
b2	4	6	8		4	6	8	4	6		
b3	6	8	10		6	8	10	6	8		

Exposure to the **Shoulder/arm**

	C1	C2	C3	Score 1	D1	D2	D3	Score 2	b1	b2	b3	Score 3
a1	2	4	6		2	4	6		2	4	6	
a2	4	6	8		4	6	8		4	6	8	
a3	6	8	10		6	8	10		6	8	10	
a4	8	10	12		8	10	12		8	10	12	

				Score 4				Score 5	Total score for shoulder/arm = Sum of scores 1 to 5
b1	2	4	6		2	4	6		
b2	4	6	8		4	6	8		
b3	6	8	10		6	8	10		

Exposure to the **Wrist/hand**

	F1	F2	F3	Score 1	E1	E2	Score 2	b1	b2	b3	Score 3
c1	2	4	6		2	4		2	4	6	
c2	4	6	8		4	6		4	6	8	
c3	6	8	10		6	8		6	8	10	

				Score 4			Score 5	Total score for the wrist/hand = Sum of scores 1 to 5
b1	2	4	6		2	4		
b2	4	6	8		4	6		
b3	6	8	10		6	8		

Exposure to the **Neck**

	G1	G2	G3	Score 1	e1	e2	Score 2	Total score for the neck = Scores 1+ 2
b1	2	4	6		2	4		
b2	4	6	8		4	6		
b3	6	8	10		6	8		

Worker's evaluations

TASK HAZARD ANALYSIS WORK SHEET

Job: **Task:**

What to do Steps in Sequence	How to do it Instructions	Items to be emphasized Safety is always a key point

Prepared by: **Date:**

APPENDIX 2

MUSCULOSKELETAL INJURY PREVENTION PROGRAM EVALUATION QUESTIONNAIRE

Musculoskeletal Injury Prevention (MSIP) Program
Evaluation Questionnaire

Musculoskeletal Injuries (MSIs) can be defined as disorders of muscles, tendons, ligaments, nerves, joints, bones and supporting vasculature in either the upper or lower extremities, including the back. Examples include sprains, strains, inflammations, irritations, and dislocations.

The questionnaire is primarily intended to help:

- gather information about the incidence and causes of MSIs related to manual and mechanical handling of inanimate objects;
- evaluate MSI prevention initiatives at your workplace; and,
- establish recommendations for the prevention of MSIs.

The questionnaire can either be completed by designated MSI prevention program evaluators during interviews with workers or, individually and privately by selected staff.

Please complete the questionnaire as fully and accurately as possible. Some questions require a written answer, others require a check mark ☑ in the appropriate spaces after each question.

Completed questionnaires will be kept confidential. It is not necessary to put your name on the questionnaire. Individual answers will only be known by the MSI prevention program evaluators.

Musculoskeletal Injury Prevention Program
Evaluation Questionnaire

---

1. **Worker Background**

1.1 Occupation: _____

1.2 Duties: _____

_____

1.3 Years Experience This Occupation: _____

1.4 Worksite: _____

1.5 Age (years):

20 - 24	_____
25 - 29	_____
30 - 34	_____
35 - 39	_____
40 - 44	_____
45 - 49	_____
50 - 54	_____
55 - 59	_____
60 - 64	_____
65 +	_____

1.6 Female: _____ Male: _____

1.7 Work Schedule (check applicable):

- o Continuing/Regular Full-Time
- o Continuing/Regular Part-Time
- o Temporary or On-Call
- o Hours Per Shift
- o Split Shift

2. **Written Practical Safe Work Procedures ("DK" means "Don't Know")**

2.1 Have written practical safe work procedures been established for:

a)	Handling tasks (e.g. lifts, transfers)	Yes: ____	No: ____	DK: ____
b)	Material/equipment handling tasks	Yes: ____	No: ____	DK: ____

2.2 Are safe work procedures for materials handling:

a)	Adequate for your use	Yes: ____	No: ____	DK: ____
b)	Readily available	Yes: ____	No: ____	DK: ____
c)	Based on task hazard analysis	Yes: ____	No: ____	DK: ____
d)	Periodically revised as needed	Yes: ____	No: ____	DK: ____

3. **Training of Workers**

3.1 Has the School District provided you with adequate instruction and training about:

a) Identification of risks that can cause musculoskeletal injuries (MSIs) from manual handling of materials Yes: ____No: ____
b) Assessment of identified risks that can cause MSIs Yes: ____No: ____
c) Control of risks that can cause MSIs Yes: ____No: ____
d) Material handling hazards Yes: ____No: ____
e) Safe handling methods and procedures Yes: ____No: ____
f) Use of material handling devices/equipment Yes: ____No: ____

3.2 Is instruction and training about safe handling of materials provided to workers:

a) When employment commences Yes: ____No: ____
b) When new material handling hazards are identified Yes: ____No: ____
c) When new job procedures for equipment handling are implemented Yes: ____No: ____
d) when new lift devices are provided Yes: ____No: ____

3.3 Do training sessions regarding materials handling include practical:

a) Simulation workshops Yes: ____No: ____
b) On-the-job training Yes: ____No: ____

3.4 Do you receive periodic re-training about the prevention of musculoskeletal injuries?

Yes: ____No: ____

3.5 When did you last receive instruction/training about prevention of musculoskeletal injuries?

< 6 months _____
6-12 months _____
1-2 years _____
> 2 years _____

4. **Supervision of Workers**

4.1 Does your Supervisor/Principal promote safe material handling procedures?

Yes: ____No: ____

4.2 If yes, do promotional activities include:

a) modelling (setting a good example) Yes: ____No: ____
b) encouraging proper safe handling/lifting techniques Yes: ____No: ____
c) correcting unsafe handling/lifting techniques? Yes: ____No: ____
d) staff meetings Yes: ____No: ____
e) adequate staffing (e.g. 2 person lifts) Yes: ____No: ____
f) work organization that minimizes the risk of injury Yes: ___ No: ____

4.3 Are there consequences for repeatedly not applying safe handling/lifting procedures?

Yes: ____ No: ____

If yes, please explain: _____

_____

5. **Inspections/Maintenance**

5.1 Are material handling devices inspected for deficiencies by:

a)	Supervisors/Principals	Yes: ____	No: ____	DK: ____
b)	Maintenance Workers	Yes: ____	No: ____	DK: ____
c)	OS&H Committee Members	Yes: ____	No: ____	DK: ____

5.2 Are Inspection Reports generated? Yes: ____ No: ____ DK: ____

5.3 Do you report unsafe materials /handling equipment? Yes: _____ No: _____
If yes, to whom do you report?

_____

5.4 Is there a mechanism for workers to report unsafe acts/conditions? Yes: _____ No: ____
If yes, please explain.

_____

_____

_____

5.5 Are identified hazards promptly controlled? Yes: ____ No: ____

5.6 Is routine maintenance done to ensure material handling devices (including adjustable hoists, wheels, etc.) are maintained in good working order?
Yes: ____ No: ____ DK: ____

6. **Accidents**

6.1 Have you ever had a work-related strain injury (injuries) from handling:

a)	Materials	Yes: ____	No: ____
b)	Equipment	Yes: ____	No: ____

If yes, please answer questions 6.2 to 6.21. If no, go to question 6.22.

6.2 If your injury or injuries resulted from handling materials/equipment, were any of the following factors contributory because the material/equipment was:

a)	Heavy	Yes: ____	No: ____
b)	Bulky/Awkward	Yes: ____	No: ____
c)	Slippery	Yes: ____	No: ____
d)	Unstable	Yes: ____	No: ____
e)	Hot/Cold	Yes: ____	No: ____
f)	Sharp-edged	Yes: ____	No: ____
g)	Visually Obstructive	Yes: ____	No: ____
h)	In poor working condition (defective)	Yes: ____	No: ____
i)	Other (please specify:) _____		

6.3 What were you doing when you were injured?

○ Lifting	○ Twisting	○ Walking	○ Carrying
○ Lowering	○ Sitting	○ Climbing	○ Stopping
○ Pushing	○ Squatting	○ Standing	○ Holding
○ Pulling	○ Kneeling	○ Bending	○ Assisting

Other (please specify): _____

6.4 Did your injury or injuries result from an act of force or violence by another person?

Yes: ____ No: ____

6.5 What body part(s) were injured? (Put a ☑ beside the applicable words).

Upper Back	_____	Neck	_____
Lower Back	_____	Shoulder	_____
Thigh/knee	_____	Elbow/forearm	_____
Lower leg	_____	Hand/wrist	_____
Ankle/foot	_____	Fingers	_____

6.6 Was the workplace design (e.g. layout, space) a contributory factor? Yes: ____ No: ____
If yes, please explain:

_____

_____

6.7 Were floor/walk surface conditions (e.g. slippery) contributory factors? Yes: ____No: ____
If yes, please explain:

_____

_____

6.8 Did you use a mechanical device to assist you? If no, please explain why. Yes: ___ No:___

_____

_____

6.9 Was such a device:

a) readily available for use Yes: ____ No: ____DK: ____
b) in good working condition Yes: ____ No: ____DK: ____

6.10 For the device used:

a) was it suitable for the application? Yes: ____ No: ____DK: ____
b) was it readily available? Yes: ____ No: ____DK: ____
c) was it easy to use? Yes: ____ No: ____DK: ____
d) were you adequately trained in its use? Yes: ____ No: ____DK: ____
e) did you use it in accordance with manufacturer's instructions?
Yes: ____ No: ____DK: ____

6.11 Did you request the assistance of another worker? Yes: ____ No: ____

6.12 Did you use the assistance of another worker? Yes: _____No: ____

6.13 Was the full staff compliment on duty? Yes: ____ No: ____

6.14 If yes, did the following factors contribute to your injury or injuries:

a) Inadequate pre-planning of the movement (e.g. lift, transfer, push, pull)
Yes: ____ No: ____
b) Uncoordinated movement (e.g. inadequate communication)
Yes: ____ No: ____
c) Inadequate instruction/training Yes: ____ No: ____
d) Other (please explain): _____

6.15 If no to 6.12, was another worker available to assist you? Yes: ____ No: ____DK: ____

6.16 Did you report your accident? Yes: ____ No: ____

6.17 Was the accident investigated? Yes: ____ No: ____DK: ____

6.18 Was corrective action taken? Yes: ____ No: ____DK: ____

6.19 If yes, what corrective action was taken?

_____

_____

6.20 If applicable, was the corrective action adequate? Yes: ___ No: ____ DK: _____

6.21 What recommendations do you have for preventing strain injuries from handling materials/equipment in your workplace?

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you.

MUSCULOSKELETAL INJURY PREVENTION PROGRAM EVALUATION REPORT

WORKSITE: _____

DATE: _____

PREPARED BY: _____

1. **Program Evaluation Participants:**

Name Title

Management: _____

_____

_____

_____

Workers: _____

_____

_____

_____

* WSBC Officer(s):_____

** Applicable when initiated by the WSBC*

2. **Activities and Dates:**

a) Collection and review of documents, statistics and records: Date(s): _____
By whom: _____

b) Questionnaires: Yes_____ No_____
If yes: Distribution Date(s): _____
Collection Date(s): _____

c) Interview protocol discussed: Yes_____ No_____

d) Inspection protocol discussed: Yes_____ No_____

3. **Program Review and Evaluation Report:**

a) Presentation Date:_____

b) Copies of report provided to:

- Supervisor(s) Yes ____ No ____
- Occupational Health and Safety Coordinator Yes ____ No ____
- Occupational Health and Safety Committee Yes ____ No ____
- Workers Yes ____ No ____

c) Presentation meeting participants:

Name	Title
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. **Action Plan**

a) Discussed requirements to develop a written action plan for correcting any program deficiencies. Yes_____ No_____

b) Plan to be developed by :

Name	Title	Date
_____		
_____		
_____		
_____		

c) Action Plan to be submitted to the District Health & Safety Committee by:

_____ on _____
Name Date

5. **Implementation Plan**

Plan to be implemented by:

Name	Title	Date
_____		
_____		

6. **Follow - up**

a) Follow-up of the implementation plan by:

Name	Title	Date
_____		
_____		

b) Written progress reports to be submitted to the District Health and Safety Committee by:

Name / Title:_____

Dates:_____

_____

7. **Written Practical Safe Work Procedures**

a. Sufficient general written safety rules / procedures have been established for:

i) physical handling of devices Yes___ No___ N/A___
ii) physical handling of materials Yes___ No___ N/A___
iii) mechanical handling of materials Yes ___ No___ N/A___

b. Sufficient specific safety rules and procedures have been written regarding the use of mechanical handling equipment such as:

i) mobile hoists Yes ___ No___ N/A___
ii) fixed hoists Yes ___ No___ N/A___
iii) other devices (specify):_____ Yes ___ No___ N/A___

c. Rules and procedures regarding materials handling are readily available to all workers: Yes ___ No___ N/A___

d. Written procedures / guidelines have been established regarding enforcement of rules and procedures pertaining to material handling: Yes ___ No___ N/A___

e. Enforcement procedures / guidelines are sufficiently communicated to workers: Yes ___ No___ N/A___

f. There is sufficient evidence to support actual enforcement of rules / procedures for safely performing material handling tasks: Yes ___ No___ N/A___

8. **Training of Workers and Supervisors**

a. The MSI prevention program specifies:

i) Who is responsible for instruction and training Yes ___ No___
ii) What qualifications the instructor / trainer must have Yes ___ No___
iii) What workers must be trained / retrained Yes ___ No___
iv) When workers must be trained / retrained Yes ___ No___
v) What instructions and training topics must be included Yes ___ No___
vi) What proficiency (skills and knowledge) must be achieved Yes ___ No___

vii) What evaluation criteria are used to ensure:
  1) learners are able to apply the training program content Yes ___ No___
  2) the training program is effective Yes ___ No___
viii) What information must be included on worker training records Yes ___ No___

b. Instruction and training about MSI prevention is provided to:
  i) Managers Yes ___ No___
  ii) Supervisors Yes ___ No___
  iii) Coordinators Yes ___ No___
  iv) Workers (full-time, part-time, casual, volunteers) Yes ___ No___

c. Instruction and training about MSI prevention is provided:
  i) before new employees begin employment duties requiring materials handling Yes ___ No___
  ii) types of overexertion injuries (e.g. muscle/ligaments) Yes ___ No___
  iii) correct posture Yes ___ No___
  iv) correct body mechanics Yes ___ No___
  v) fitness / exercise Yes ___ No___
  vi) risk identification Yes ___ No___
  vii) risk assessment Yes ___ No___
  viii) risk control such as:
    1) mechanical handling equipment and techniques Yes ___ No___
    2) physical handling techniques Yes ___ No___
    3) ergonomics Yes ___ No___
    4) lift coordination / communications Yes ___ No___
    5) work organization Yes ___ No___
  ix) legal requirements Yes ___ No___

d. Supervisors receive specific instruction and training regarding techniques of effective:
  i) communication (e.g. group meetings, key-point tipping) Yes ___ No___
  ii) motivation Yes ___ No___
  iii) employee orientation Yes ___ No___
  iv) job instruction and training Yes ___ No___
  v) supervision Yes ___ No___
  vi) inspection Yes ___ No___
  vii) accident investigation Yes ___ No___
  viii) record keeping Yes ___ No___
  ix) risk identification Yes ___ No___
  x) risk assessment Yes ___ No___
  xi) risk control Yes ___ No___

e. People responsible for purchasing mechanical lift devices and other equipment have been instructed and trained how to select equipment that is ergonomically suitable Yes ___ No___

f. People responsible for facilities design have been instructed and trained about the ergonomic requirements of the workplace Yes ___ No___

g. Inspection team members have been adequately instructed and trained about:
  i) risk identification, assessment and control Yes ___ No___
  ii) applicable regulations Yes ___ No___
  iii) duties and responsibilities Yes ___ No___
  iv) inspection recording and reporting Yes ___ No___

h. Accident investigators are adequately instructed and trained in:

i)	the causes of MSIs	Yes ___ No ___
ii)	principles of accident investigation	Yes ___ No ___
iii)	evidence gathering	Yes ___ No ___
iv)	information analysis to determine direct and indirect causes	Yes ___ No ___
v)	accident report writing	Yes ___ No ___
vi)	site-specific investigation procedures (e.g. who initiates MSI accident investigations)	Yes ___ No ___
vii)	the Committee's purpose, duties, and responsibilities	Yes ___ No___
viii)	health and safety regulations	Yes ___ No___
ix)	workplace inspections	Yes ___ No___
x)	accident investigations	Yes ___ No___
xi)	problem solving / complaint resolution	Yes ___ No___
xii)	effective communication	Yes ___ No___

9. **Supervision of Workers**

a. The MSI Prevention Program clearly specifies management responsibilities and accountability for program:

i)	coordination	Yes ___ No___
ii)	implementation	Yes ___ No___
iii)	enforcement	Yes ___ No___
iv)	evaluation	Yes ___ No___
v)	review	Yes ___ No___
vi)	revision	Yes ___ No___

b. Regarding the MSI prevention program, senior management enforces supervisor accountabilities and responsibilities for:

i)	ensuring worker orientation is done	Yes ___ No___
ii)	ensuring workers are adequately instructed and trained about safe handling of people and materials	Yes ___ No___
iii)	conducting staff meetings	Yes ___ No___
iv)	conducting formal inspections	Yes ___ No___
v)	conducting accident investigations	Yes ___ No___
vi)	maintaining records (e.g. training, inspection, talks)	Yes ___ No___

c. Management and supervisors periodically meet to:

i)	discuss MSI trends	Yes ___ No___
ii)	develop strategies for minimizing MSIs	Yes ___ No___
iii)	evaluate the MSI Prevention Program	Yes ___ No___

d. In general, management are aware of their responsibilities and accountability regarding the MSI Prevention Program Yes ___ No___

e. In general, supervisors are aware of their responsibilities and accountability regarding the MSI Prevention Program Yes ___ No___

f. Management ensures that the MSI Prevention Program is consistently applied in all worksites Yes ___ No___

g. In general, supervisors correct workers who do not follow established people/materials handling techniques by:

i) modelling (e.g. setting a good example) Yes ___ No___
ii) supporting (e.g. positive reinforcement when proper handling techniques are used) Yes ___ No___
iii) correcting (e.g. correcting unsafe behaviour) Yes ___ No___

INSPECTION COMMENTS

LIST STRENGTHS AND WEAKNESSES FOUND DURING INSPECTION TOUR:

Department / Location	Observations

PROGRAM EVALUATION COMMENTS

LIST PROGRAM STRENGTHS AND WEAKNESSES:

Question Referenced	Comments

MSIP PROGRAM RECOMMENDATIONS

RECOMMENDATIONS	THIS SECTION COMPLETED BY MANAGEMENT	
	Action by:	Completion date:

APPENDIX 3

MSIP PROGRAM REVIEW AND EVALUATION

1. Responsibilities for formally reviewing the MSI prevention program are specified in writing
   Yes ___ No ___
2. The purpose and guidelines for reviewing the program are established in writing including dates for annual review Yes ___ No ___

> Note: If the MSI Prevention Program has never been formally reviewed to determine its effectiveness, place a check mark after the " NO " for each of the following statements

3. The program evaluation includes a critical review of all program elements including:
   a) The MSI prevention policy Yes ___ No ___
   b) Written practical safe work procedures Yes ___ No ___
   c) Training of workers and supervisors Yes ___ No ___
   d) Supervision of workers Yes ___ No ___
   e) Regular Inspection and monitoring Yes ___ No ___
   f) First aid treatment Yes ___ No ___
   g) Investigations of accidents and diseases Yes ___ No ___
   h) OSH committee Yes ___ No ___
   i) Records and statistics Yes ___ No ___

4. The program review and evaluation:
   a) is documented in writing Yes ___ No ___
   b) includes recommendations for eliminating program deficiencies Yes ___ No ___
   c) is submitted to management for review Yes ___ No ___
   d) is submitted to the District OH&S Committee for review Yes ___ No ___

5. Upon review of the report, management:
   a) sets an action plan to correct program deficiencies Yes ___ No ___
   b) assigns accountability for ensuring program deficiencies are corrected Yes ___ No ___
   c) follows up to ensure program deficiencies are adequately corrected Yes ___ No ___

MSIP PROGRAM EVALUATION

DOCUMENTATION CHECKLIST

To assist with the MSIP Program Evaluation, please complete this documentation checklist by placing a check mark (√) in the appropriate space after each item.

	Document	**Provided**
1.	MSIP Program Policy	Yes___ No____
2.	Written practical safe work procedures	Yes___ No____
3.	Training of workers and supervisors (e.g. Instruction and training records)	Yes___ No____
4.	Regular inspection and monitoring:	
	i) inventory list of handling devices / equipment	Yes___ No____
	ii) equipment inspection records	Yes___ No____
	iii) preventative maintenance schedules(e.g. for mechanical devices)	Yes___ No____
	iv) equipment maintenance / service records	Yes___ No____
	v) other (specify): _____	Yes___ No____
5.	First aid services and equipment (e.g. first aid employee incident records)	Yes___ No____
6.	Investigation of accidents and disease:	
	i) incident / accident investigation records related to MSIs	Yes___ No____
	ii) specific MSI injury and claims statistics (i.e. frequency, severity, costs, occupation, location, etc.)	Yes___ No____
7.	Joint Occupational Health and Safety Committee	
	i) joint committee minutes regarding MSI prevention	Yes___ No____
	ii) local committee minutes regarding MSI prevention	Yes___ No____
8.	Minutes of staff meetings regarding MSI prevention	Yes___ No____
9.	Minutes of management meetings regarding MSI prevention	Yes___ No____

Other relevant documents provided or available for review (please list):

_____

_____

_____

Comments:

_____

_____

_____