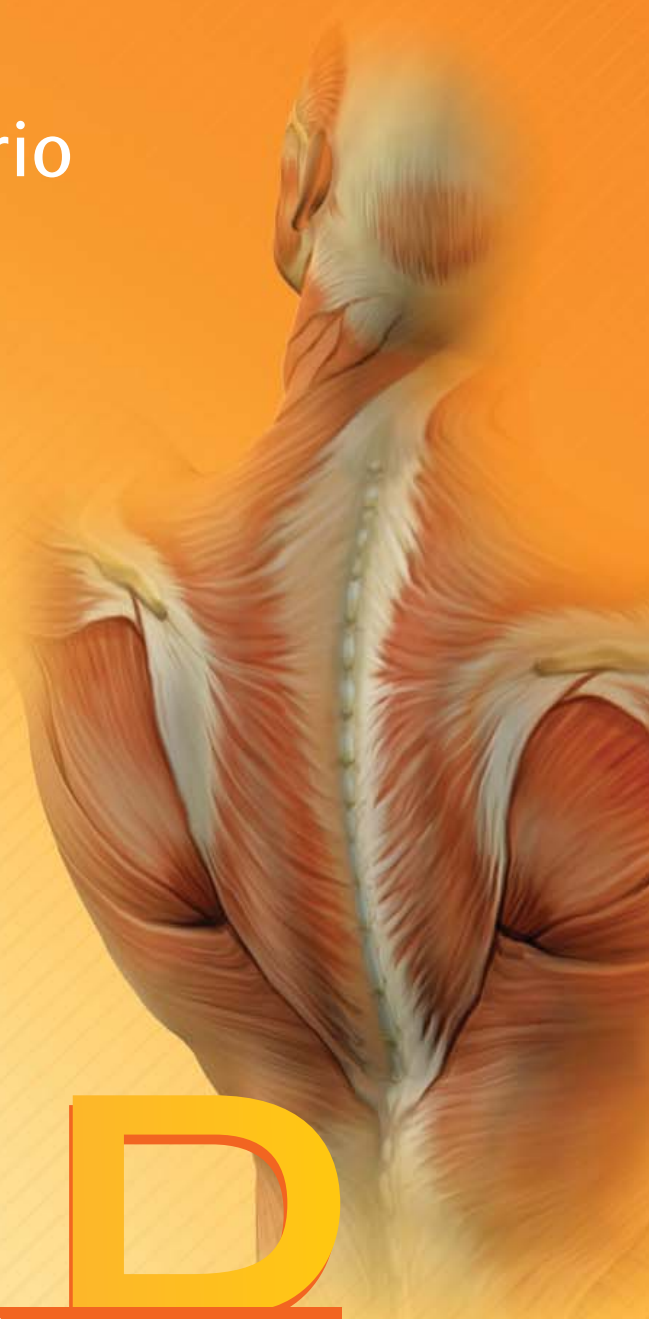


PART 1:

MSD Prevention Guideline for Ontario



MSD

MUSCULOSKELETAL DISORDERS

PREVENTION GUIDELINE

Disclaimer

The material contained in this guideline is for information and reference purposes only and not intended as legal or professional advice. The adoption of the practices described in this Guideline may not meet the needs, requirements or obligations of individual workplaces.

Use, reproduction and/or duplication of this guideline is recommended and encouraged.



5157A (02/07)

PART 1:

MSD Prevention Guideline for Ontario

Table of Contents

Acknowledgements	iii
Scope of the Guideline	iii
Section 1: Introduction	1
Purpose of the MSD Prevention Guideline for Ontario	2
Section 2: MSD Prevention—A Part of Your Occupational Health and Safety Program	3
Section 3: Establish a Foundation for Success	5
Management Commitment to MSD Prevention.....	5
Establish and Communicate a Process for Identifying and Controlling MSD Hazards	5
Ensure Worker Participation in the MSD Prevention Process	6
Encourage Early Reporting and Bringing Solution Ideas Forward	6
Develop a Culture of Open Communication and Report on MSD Prevention Efforts	6
Provide MSD Prevention Training for All Workers.....	6
Planning to Prevent MSDs	7
Section 4: Understanding MSD Hazards.....	9
Force.....	9
Fixed or Awkward Postures.....	9
Repetition	10
Other MSD Hazards and Workplace Factors	10
Section 5: Recognize MSD Hazards and Related Concerns	11
Recognize Jobs with MSD Hazards.....	11
Recognize Jobs with Known MSDs and Related Concerns.....	11
Checking whether MSD Hazards Have Been Recognized	12



Section 6: Conduct an MSD Risk Assessment.....	13
A Simple MSD Risk Assessment.....	13
Use an MSD Hazard Identification Tool.....	13
Review Hazards with Appropriate Workers.....	13
Discuss Job Demands with Appropriate Workers.....	13
Is Further Action Required?.....	14
Reach Agreement on MSD Hazards.....	14
Identify the Root Causes of the MSD Hazards.....	14
Reach Agreement on the Root Causes of the MSD Hazards.....	14
An In-depth MSD Risk Assessment.....	14
Is the Risk of MSD Increased?.....	15
Section 7: Choose and Implement MSD Hazard Controls.....	17
Understand Control Approaches for MSD Hazards.....	17
Involve Appropriate Workers.....	17
Review Identified Hazards and Discuss Priority Issues.....	18
Brainstorm Control Options and Ideas.....	18
Review and Investigate Control Options and Ideas.....	18
Choose Your Preferred Control Option(s).....	18
Implement Your Preferred Control Option(s).....	18
Section 8: Follow up on and Evaluate the Success of Implemented Controls.....	21
Evaluate the Process.....	21
Evaluate the Control.....	21
Do an Ongoing Review and Evaluation.....	22
Section 9: Communicate Results and Acknowledge Success	23
Resources	25
Selected Bibliography	27
Review Process	28

Acknowledgements

This document, the Musculoskeletal Disorder (MSD) Prevention Guideline for Ontario, is part 1 of the Occupational Health and Safety Council of Ontario's Musculoskeletal Disorders (MSD) Prevention Series. It was developed in partnership with the members of the Occupational Health and Safety Council of Ontario (OHSCO), with the support of the Centre of Research Expertise for the Prevention of Musculoskeletal Disorder (CRE-MSD), and in consultation with representatives from Ontario's labour organizations, employer associations, and individual employers and workers.

Supporting organizations include:

- Construction Safety Association of Ontario
- Education Safety Association of Ontario
- Electrical & Utilities Safety Association
- Farm Safety Association
- Industrial Accident Prevention Association
- Institute for Work & Health
- Mines and Aggregates Safety and Health Association
- Municipal Health and Safety Association
- Occupational Health Clinics for Ontario Workers
- Ontario Forestry Safe Workplace Association
- Ontario Ministry of Labour
- Ontario Safety Association for Community and Healthcare
- Ontario Service Safety Alliance
- Pulp and Paper Health and Safety Association
- Transportation Health and Safety Association of Ontario
- Workers Health and Safety Centre
- Workplace Safety and Insurance Board (Ontario)

The support and participation of everyone who contributed to the development of the MSD Prevention Guideline for Ontario and its related documents is greatly appreciated.

Scope of the Guideline

The MSD Prevention Guideline for Ontario is being made available through the partners of the Ontario health and safety system. Its primary purpose is to provide Ontario's employers and workers with information and advice on a recommended generic framework for preventing musculoskeletal disorders in the workplace.

OHSCO's MSD Prevention Series includes two related documents to support the MSD Prevention Guideline for Ontario:

- Part 2: Resource Manual for the MSD Prevention Guideline for Ontario, and
- Part 3: MSD Prevention Toolbox.

To obtain Part 2 or Part 3 of OHSCO's MSD Prevention Series contact one of Ontario's health and safety organizations (see Resources for contact information).

A wide variety of health and safety experts and associations, employers, employer associations, and unions were consulted in developing the guideline. Experience in other jurisdictions was considered, as were the opinions and advice of international experts.

The MSD prevention framework presented in this guideline is consistent with best practices and effective approaches based on current information and experience. The framework represents only one way of addressing MSDs in a workplace. Other MSD prevention processes and programs that include worker training and involvement and a process to recognize, assess and control MSD hazards (including those that may have been established through a collective agreement) may be equally effective.

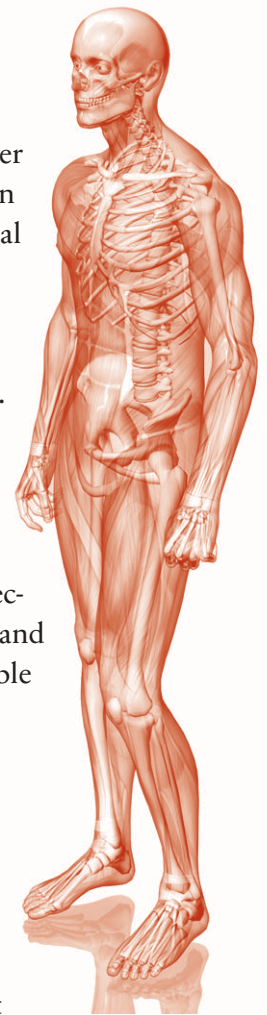
The MSD prevention framework is consistent with the requirements for an effective health and safety program. Therefore, workplace MSD prevention efforts can and should be fully integrated into an existing health and safety program where possible and practical.

The information in the MSD Prevention Guideline for Ontario and its related documents is generic and not targeted at any specific type of workplace, industry sector or work task. Although the particular hazards and jobs or tasks present in different workplaces vary, the hazards that can lead to MSD are the same for all workplaces.

The MSD Prevention Guideline for Ontario and its related materials:

- do not describe all elements of an effective health and safety management system that should be implemented in all workplaces
- do not cover all of the legislated workplace health and safety requirements
- do not specifically apply to Early and Safe Return-to-Work programs
- do not address issues related to personal wellness, fitness, diet or lifestyle, and
- do not describe the full scope of workplace ergonomics.

The primary audience for the MSD Prevention Guideline for Ontario and the related materials are the workplace parties including employers, managers, supervisors, workers, joint health and safety committee (JHSC) members, health and safety representatives (H&S reps) and workplace union representatives. Unions, employer associations, health and safety professionals, health and safety associations, ergonomists, etc., may also find the information useful when helping workplaces.



Section 1: Introduction

Musculoskeletal disorders (MSDs) are the number one type of work-related lost-time claim reported to the Workplace Safety and Insurance Board (WSIB) in Ontario. MSDs:

- cause pain and suffering for thousands of workers every year, and
- cost Ontario's workplaces hundreds of millions of dollars due to absenteeism and lost productivity.

MSD FACTS



In Ontario, MSDs account for:

- 42% of all lost-time claims
- 42% of all lost-time claim costs, and
- 50% of all lost-time days.

(Averages for 1996–2004)



DEFINITION OF MSD

MSDs are injuries and disorders of the musculoskeletal system. They may be caused or aggravated by various hazards or risk factors in the workplace.

The musculoskeletal system includes:

- muscles, tendons and tendon sheathes
- nerves
- bursa
- blood vessels
- joints/spinal discs, and
- ligaments.

MSDs do not include musculoskeletal injuries or disorders that are the direct result of a fall, struck by or against, caught in or on, vehicle collision, violence, etc.

MSD is an umbrella term for a number of injuries and disorders of the muscles, tendons, nerves, etc. Other terms that mean the same include:

- repetitive strain injury (RSI)
- cumulative trauma disorder (CTD)
- work-related musculoskeletal disorder (WMSD)
- musculoskeletal injury (MSI, MSK)
- occupational overuse syndrome (OOS), and
- sprain and strain.

MSDs are strongly linked to known risk factors or hazards in the workplace. We can take action to prevent MSDs in Ontario.

Purpose of the MSD Prevention Guideline for Ontario

The purpose of the MSD Prevention Guideline for Ontario is to provide Ontario employers and workers with information and advice on a recommended generic framework for preventing MSDs in the workplace.

For workplaces that already have an MSD prevention program in place, the MSD Prevention Guideline for Ontario and related materials may be helpful when considering whether existing program elements can be modified or improved.

For workplaces that do not have an existing MSD prevention program, the guideline and related materials can be used to implement an effective MSD prevention framework and/or integrate MSD prevention into the existing health and safety program.

The *Resource Manual for the MSD Prevention Guideline for Ontario*, part 2 of the Occupational Health and Safety Council of Ontario's Musculoskeletal Disorders (MSD) Prevention Series provides detailed information and advice on how to implement the framework to prevent MSDs.

The *MSD Prevention Tool Box*, part 3 of the Occupational Health and Safety Council of Ontario's Musculoskeletal Disorders (MSD) Prevention Series, contains examples of worksheets, surveys and hazard identification tools that the workplace parties can use to help them in their MSD prevention efforts. Guidance on MSD risk assessment methods is also included. To obtain either of the above two documents contact one of Ontario's health and safety organizations (see Resources for contact information).



POINT TO REMEMBER

Controlling MSD hazards in a workplace is not only the right thing to do; **it is the law.**

Section 2: MSD Prevention—A Part of Your Occupational Health and Safety Program

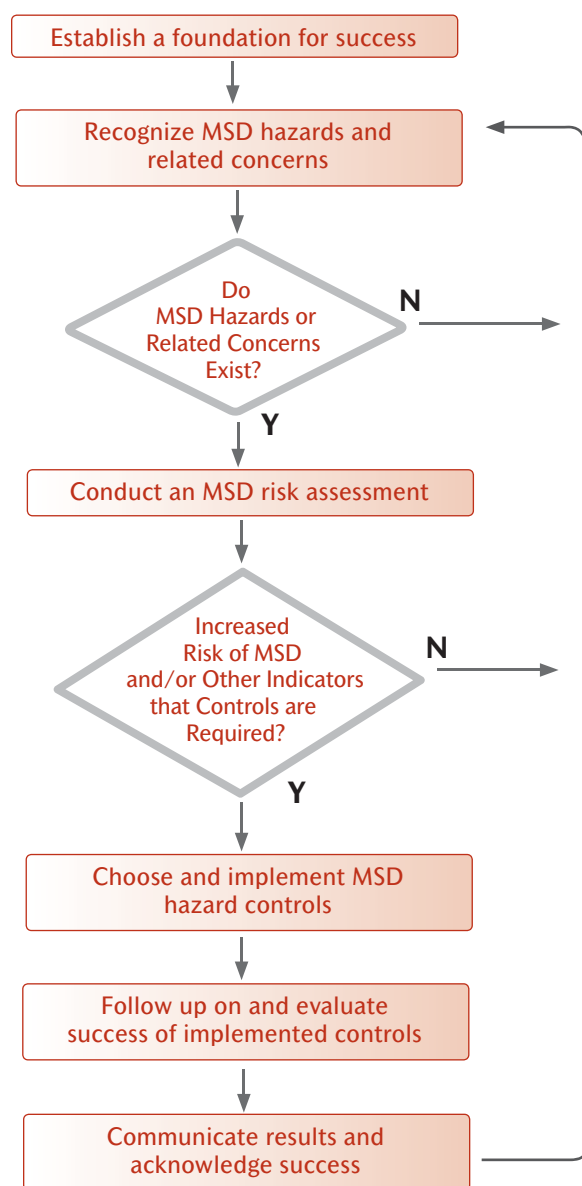


Figure 2.0: Steps in the MSD prevention framework

MSD prevention does not have to be difficult or complex. All you really need is the ability and the will to recognize, assess and control MSD hazards in the same way you would any other hazard in the workplace.

This guideline provides an overview of a recommended MSD prevention framework (see Figure 2.0) that should be familiar to everyone in a workplace such as employers, supervisors, JHSC members, H&S reps and front-line staff. The steps in the framework are the same steps used to deal with any hazard in a workplace. Implementing these steps will help to ensure that MSD hazards are recognized, assessed and, most importantly, controlled, resulting in a reduced risk of MSDs for all workers.

See the **Resource Manual for the MSD Prevention Guideline for Ontario** for more details on how to implement the MSD prevention framework.

POINT TO REMEMBER



If you have an effective health and safety program, you already have a good foundation for preventing MSDs.

Section 3: Establish a Foundation for Success

A number of suggested steps for creating a foundation for a successful MSD prevention program are outlined below. These steps have been shown to be important. However, the elements listed for each step are not all inclusive, and not all elements may be required or applicable in all workplaces. Among the most important steps are management commitment, vision, leadership and worker participation.

See **Section 3 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on how to establish a foundation for success.

Management Commitment to MSD Prevention

Management is encouraged to:

- incorporate MSD prevention activities into their existing health and safety programs
- develop an MSD prevention policy, procedure and/or statement in consultation with the JHSC or H&S rep and communicate it to all workers
- define the roles of employers, managers, supervisors, JHSC or H&S reps, and workers in preventing MSDs
- review reports of MSD hazards and take corrective action
- annually review the MSD prevention aspects of the overall health and safety policy and program in consultation with the JHSC or H&S rep, and
- report on progress of MSD prevention efforts.

POINT TO REMEMBER

Preventing MSDs leads to improved overall business performance. Building a foundation will help to ensure that you get maximum return on your investment.

Establish and Communicate a Process for Identifying and Controlling MSD Hazards

Workplace parties are encouraged to:

- look for MSD hazards during regular workplace inspections
- identify MSD hazards when doing job task analysis
- review reports of MSD concerns and hazards during JHSC meetings
- establish a process for assessing MSD risk
- consider potential MSD hazards when making any change in the workplace
- ensure that all workers are aware of how MSD hazards will be identified and controlled, and
- create an MSD prevention plan that outlines the objectives for, methods to be used in and expectations of any MSD prevention activities implemented in the workplace.

Ensure Worker Participation in the MSD Prevention Process

Workers can play an active role in the MSD prevention process by:

- using their experience and knowledge to recognize and assess MSD hazards and to suggest effective solutions to manage and control them
- participating in training to recognize the symptoms of MSDs and the work-related hazards that might contribute to their development
- participating in training on how to use controls that have been implemented to reduce MSD risk and regularly using these controls (e.g., new equipment, work methods, tools)
- being involved in planning and implementing changes to work tasks or jobs, and
- reporting MSD hazards, pain or discomfort, etc., to management.

Encourage Early Reporting and Bringing Solution Ideas Forward

Managers and supervisors should:

- encourage workers to report signs or symptoms of MSDs as soon as possible
- receive these reports positively and take action to ensure that the workers' pain or discomfort does not get worse, and
- encourage workers to look for ways to reduce MSD hazards, and for better and more productive ways to do the job.

Develop a Culture of Open Communication and Report on MSD Prevention Efforts

Your MSD prevention program will be more likely to succeed if your workplace culture supports:

- open discussion about the hazards, and
- frequent communication with all workers and the JHSC or H&S rep about MSD prevention efforts.

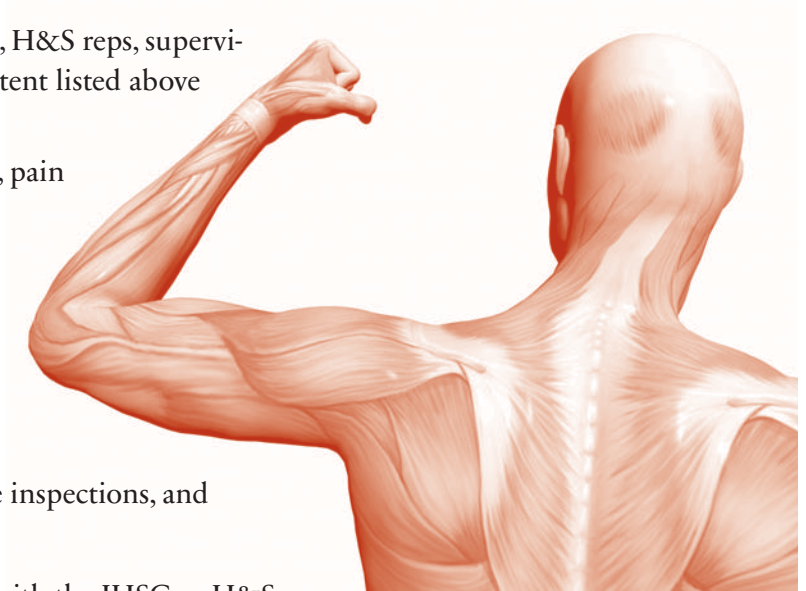
Provide MSD Prevention Training for All Workers

MSD prevention training for all workers should include:

- the signs and symptoms of MSDs
- how to recognize MSD hazards
- workplace policies and procedures for dealing with concerns related to MSDs, and
- information on the equipment, adjustments and procedures workers need to use or follow to reduce or eliminate their exposure to MSD hazards.

MSD prevention training for JHSC members, H&S reps, supervisors and managers should include all of the content listed above for workers, as well as how to:

- respond when workers report a concern, pain or discomfort
- recognize MSD hazards and use MSD hazard identification tools
- recognize indicators for MSD hazards
- analyze injury and incident reports for MSD trends and issues
- look for MSD hazards during workplace inspections, and
- control MSD hazards in the workplace.



Management is encouraged, in consultation with the JHSC or H&S rep, to identify the best way to provide MSD prevention training for workers, determine the appropriate content for this training and establish a method to evaluate the success of the training.

Planning to Prevent MSDs

The process for choosing and implementing controls for MSD hazards presented above is designed to control hazards that are already present in the workplace, at a job or at a workstation.

The preferred and less expensive option is to prevent MSD hazards in the first place. Efforts should be made to prevent these hazards before introducing a new work process, workstation, tool or piece of equipment into the workplace.

See **Section 3 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on how to plan to prevent MSDs.

Section 4: Understanding MSD Hazards

While not strictly part of the MSD prevention framework, it is important to understand what MSD hazards are before trying to recognize them in the workplace.

Many jobs have MSD hazards – things about the job or the way the job is done that increase the risk of a worker developing an MSD. While a number of things can increase MSD risk, the primary MSD hazards are force, fixed or awkward postures, and repetitions.

Force

Force refers to the amount of effort made by the muscles, and the amount of pressure on body parts as a result of different job demands. All work tasks require workers to use their muscles to exert some level of force. However, when a task requires them to exert a level of force that is too high for any particular muscle, it can damage the muscle or the related tendons, joints and other soft tissue.

This damage can occur from a single movement or action that requires the muscles to generate a very high level of force. However, more commonly, the damage results when muscles generate moderate to high levels of force repeatedly, for a long duration, and/or while the body is in an awkward posture.

Some job tasks result in high force loads on different parts of the body. For example, lifting a heavy load that is far from the body increases the pressure (compressive force) on the spinal discs and vertebrae in the lower back. This can potentially damage both the discs and the vertebrae.

Another source of force on the body that can potentially cause damage comes from working with hand tools that have hard or sharp edges, resting the forearms on the hard edge of a desk, etc. This force can compress the tendons, muscles, blood vessels and nerves under the skin, which can damage these tissues.

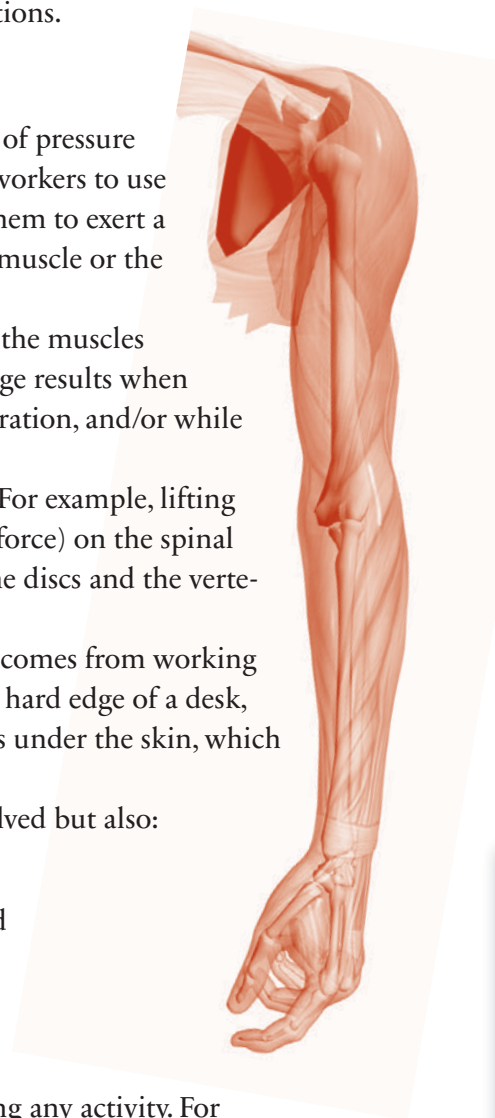
With force, it is important to consider not only how much force is involved but also:

- how long workers need to keep exerting the force
- how many times the force is exerted in a given period of time, and
- the posture used when exerting the force.

Fixed or Awkward Postures

Posture is another name for the position of various parts of the body during any activity. For most joints, a good or “neutral” posture means that the joints are being used near the middle of the full range of motion.

The farther a joint moves towards either end of its range of motion, or the farther away from the neutral posture, the more awkward or poor the posture becomes and the more strain is put on the muscles, tendons and ligaments around the joint. For example, when arms are fully stretched out, the elbow and shoulder joints are at the end of their range of motion. If the worker pulls or lifts



repeatedly in this position, there is a higher risk of injury.

With fixed or awkward postures, it is important to consider:

- how long workers need to hold a specific posture (fixed posture)
- how many times an awkward posture is used in a given period of time, and
- the amount of force being exerted when an awkward posture is used.

Repetition

The risk of developing an MSD increases when the same parts of the body are used repeatedly, with few breaks or chances for rest. Highly repetitive tasks can lead to fatigue, tissue damage, and, eventually, pain and discomfort. This can occur even if the level of force is low and the work postures are not very awkward.

With repetitive tasks, it is not only important to consider how repetitive the task is but also:

- how long workers perform the task
- the posture required, and
- the amount of force being used.

Other MSD Hazards and Workplace Factors

Other MSD hazards and workplace factors that should be considered include:

- contact stress
- local or hand/arm vibration
- whole-body vibration
- cold temperatures
- hot work environments
- work organization, and
- work methods.

See **Section 4 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on understanding MSD hazards.

Section 5: Recognize MSD Hazards and Related Concerns

Workplaces are encouraged to set up a process for recognizing jobs with MSD hazards even if no MSDs, worker concerns, or reports of discomfort have been recorded. While this may seem like a great deal of work, identifying and controlling MSD hazards before workers actually report an MSD, e.g. being proactive, can actually save you money, since you avoid all of the cost associated with an MSD related claim.

Workplaces are also encouraged to take advantage of information that they may already collect and review to help recognize jobs with existing MSDs and related concerns (i.e. accident/injury statistics, discomfort surveys, etc). Although this is a more reactive approach, for workplaces just starting, identifying problem jobs or tasks through MSD injuries and concerns may be an excellent starting point. Once MSD injuries and concerns are identified such workplaces may then wish to look at the proactive approaches to help identify the types of MSD hazards present.

Activities that can be used to recognize jobs with MSD Hazards and jobs with MSDs or related concerns are briefly described below.

See **Section 5 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on recognizing MSD hazards and related concerns.

Recognize Jobs with MSD Hazards

Everyone in the workplace should be trained on how to recognize MSD hazards. This will allow everyone to look for better ways to do their job or identify changes to reduce the risk of MSDs. Possible ways to identify jobs with MSD hazards include:

- using MSD hazard identification tool(s) to document whether MSD hazards are present in each job in the workplace
- encouraging workers to report MSD concerns, signs and symptoms
- asking workers to identify tasks with possible MSD hazards, and
- looking for MSD hazards during workplace inspections.

See the **MSD Prevention Toolbox** for examples of various tools that can be used to help recognize where MSD hazards exist.

Recognize Jobs with Known MSDs and Related Concerns

Recognizing jobs with known MSDs and related concerns is a more reactive step involving a review of existing data sources to help identify jobs, tasks and workstations that have a history of MSDs and/or other related concerns (e.g., discomfort, absenteeism)

POINT TO REMEMBER

If you already have a process for improving production, quality and/or service levels (e.g., Lean, 5S or Kaizen), make sure that you consider MSD hazards when you look for opportunities to improve and make any changes to any job or workstation.

POINT TO REMEMBER

Don't wait for reports of MSDs before starting to identify and control MSD hazards.

Possible actions to identify such jobs include:

- reviewing property damage, injury, incident and first aid records to identify departments, work areas, jobs and tasks where workers are reporting MSD-related pain and discomfort
- reviewing accident and incident investigation reports for information that could indicate the presence of MSD hazards
- gathering information and feedback from workers to help identify jobs with high levels of pain, discomfort and or physical demands
- reviewing human resources-related data (e.g., absenteeism, overtime, worker satisfaction) since this data could indicate the presence of MSD hazards, and
- considering production and service-related data because MSD hazards may contribute to sub-standard levels of quality, efficiency, service delivery and production.

See the **MSD Prevention Toolbox** for examples of tools that may help you to collect information and feedback from workers.

Checking whether MSD Hazards Have Been Recognized

Workplace parties should ask:

- do any jobs or tasks have existing MSDs or other related issues?
- have MSD hazards been recognized for any job or task?

If the answer to either or both of these questions is yes, take action to assess the MSD risk for the workers performing these jobs or tasks. If there is an increased risk of developing an MSD, take steps to implement MSD hazard controls.

Section 6: Conduct an MSD Risk Assessment

This section outlines a 2-step risk assessment process:

- a simple assessment used when the root causes of the MSD hazard appear to be obvious, and
- a more in-depth assessment for more complex MSD hazards and issues.

See **Section 6 of the MSD Resource Manual for the MSD Prevention Guideline for Ontario** for more information on conducting an MSD risk assessment.

A Simple MSD Risk Assessment

A simple risk assessment relies on the opinions and experiences of workers, supervisors, maintenance personnel, etc., to assess the risk related to the MSD hazards of a job, task, workstation, etc. However, using some type of MSD hazard identification tool can help to ensure that less obvious MSD hazards are identified.

Use an MSD Hazard Identification Tool (HIT)

As even the most experienced workers can fail to recognize some important MSD hazards, workplaces are encouraged to use some type of MSD HIT to make sure that all MSD hazards are identified and not just those that are the most obvious. This step is recommended if an MSD HIT was not used in the MSD hazard recognition step.

See the **MSD Prevention Toolbox** for an example of a HIT.

Review Hazards with Appropriate Workers

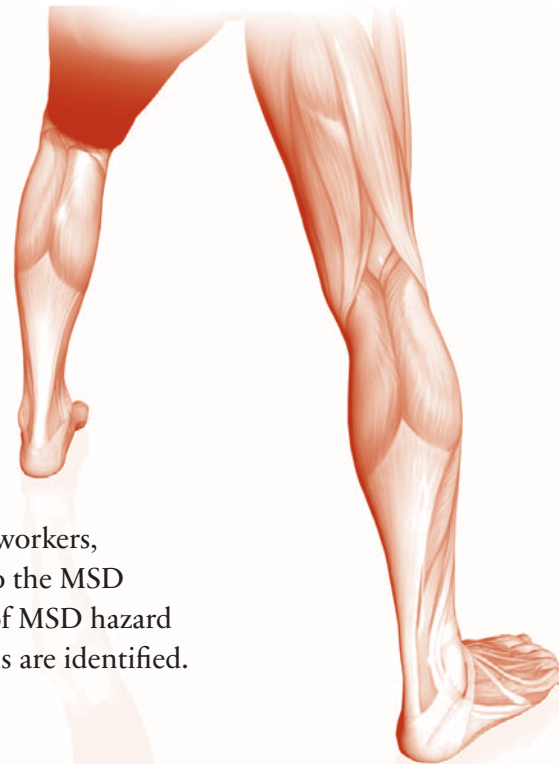
Meet with appropriate workers, including a JHSC member or H&S rep, to review:

- summarized data relating to reports of pain and discomfort
- worker concerns
- type and number of MSD reports of the job or task
- concerns related to absenteeism and/or production levels, and
- the findings from the MSD hazard identification tool(s).

Discuss Job Demands with Appropriate Workers

Have the workers discuss their job tasks and demands. Where possible, it may help to use:

- a written job procedure as a guide or a description of the physical demands of the job, and
- photographs and video recordings of the workstation, job tasks, etc.



Encourage the workers to focus on the parts of the job that they consider difficult or demanding. If workers are expressing concerns about pain and discomfort related to the job, ask them which actions or activities they believe are contributing to their pain and discomfort. Share the results of these discussions with the JHSC or H&S rep.

Is Further Action Required?

This is a decision point. Before moving on, a decision should be made about whether further action is required. No further action may be required when this job or task has identified MSD hazards but:

- there is no history of workers reporting MSDs or expressing concerns about pain and discomfort, and
- workers and the JHSC or H&S rep don't feel that the current job demands are a concern.

However, the workplace should continue to monitor such a job or task. A more in-depth risk assessment may be called for if workers begin to express concerns about job demands, report pain or discomfort, and/or report MSDs.

Reach Agreement on MSD Hazards

This is a decision point. Is there agreement on what MSD hazards are present on the job or task? If yes, move on to identifying root causes of the MSD hazards. If not, a more in-depth risk assessment will probably be required.

Identify the Root Causes of the MSD Hazards

For each of the agreed-upon MSD hazards, have the workers brainstorm or discuss the root causes of the hazard. Look at all of the factors that could cause the hazard. These factors are process, equipment, materials, environment and human (PEMEH).

See the **MSD Prevention Toolbox** for a brainstorming tool that can be used to help identify root causes of MSD hazards.

Reach Agreement on the Root Causes of the MSD Hazards

This is another decision point. If there is agreement about the root causes, it may not be necessary to do a more in-depth risk assessment. With no agreement, an in-depth assessment to identify the root causes will likely be required.

An In-depth MSD Risk Assessment

You should move on to a more in-depth risk assessment if:

- the MSD hazards are not clearly understood, or
- there is no agreement on the root cause(s) of these hazards.

This level of MSD risk assessment requires more experience, training and knowledge to

complete. If a workplace does not have anyone with this knowledge and experience, it may be necessary to bring in a qualified individual.

See the **Resource Manual for the MSD Prevention Guideline for Ontario** for more information and guidance on in-depth MSD risk assessments.

Is the Risk of MSD Increased?

If an in-depth risk assessment indicates that the MSD risk for workers is increased, take steps to select and implement controls for MSD hazards.

If there is no indication that the job or task has an increased risk of MSD, and there is no history of MSDs or reports of pain or discomfort for the job or task, no further action may be required. However, the workplace should continue to monitor the job or task.

If the in-depth risk assessment indicates that the risk of MSD for a job is acceptable but the job or task has a history of MSDs and/or reports of pain or discomfort, the workplace should consider:

- whether the risk assessment methods used were appropriate, considering the MSD hazards identified and/or MSDs reported
- whether accommodations to address individual needs are necessary or possible, and
- whether other factors that were not addressed during the risk assessment may be contributing to the development of MSDs.

Section 7: Choose and Implement MSD Hazard Controls

The process for choosing and implementing controls for MSD hazards is described below. See **Section 7 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on choosing and implementing MSD hazard controls.

POINT TO REMEMBER



Identifying the root cause(s) of an MSD hazard is key to finding effective controls.

Understand Control Approaches for MSD Hazards

Controls should be designed to eliminate a worker's exposure to the identified MSD hazards where possible. Where this is not possible, exposures to MSD hazards should be minimized to acceptable levels or to the greatest extent possible. For example:

- engineering controls reduce or eliminate the worker's exposure to MSD hazards by modifying the work or workplace
- administrative controls reduce a worker's exposure to MSD hazards by developing specific policies and procedures; they may also include:
 - efforts to develop and train workers to use work methods that reduce the risk of MSDs, and
 - changes to how the work is organized, etc.
- personal protective equipment (PPE) cannot effectively control most MSD hazards; some exceptions include:
 - well-designed "anti-vibration" gloves
 - kneepads for kneeling work, and
 - shock-absorbing insoles.

In general, engineering controls are better than administrative controls because:

- when they are implemented correctly, they address the MSD hazards at their source
- they rely less on workers to follow safe work practices and not to make errors, and
- they are often the most cost-effective solutions in the long term because they tend to fix the problems completely and do not require ongoing administrative efforts and costs.

See the **MSD Prevention Toolbox** for some practical examples of the different types of MSD hazard controls.

Involve Appropriate Workers

Make sure that workers who do the job or task are part of the control selection team. Others who should be involved include appropriate JHSC members, maintenance, supervisory and engineering staff.

Review Identified Hazards and Discuss Priority Issues

Review the identified MSD hazards and risk assessment results. Discuss the situation with the workers to determine the hazards that are the highest priority for control. In many cases, the hazards with the greatest risk will be the highest priority. However, the workers' experience and knowledge of the job may suggest that a hazard with less risk is a higher priority. This can happen when the hazard leads to increased frustration, work having to be re-done, jam-ups, etc.

Brainstorm Control Options and Ideas

Generate options and ideas to control exposure to the prioritized MSD hazards. A variety of techniques can be used to come up with a list of potential controls. Begin by brainstorming as many control options and ideas as the team can think of.

See the **MSD Prevention Toolbox** for a brainstorming tool that may help identify options and ideas for MSD hazard controls.

Review and Investigate Control Options and Ideas

After listing MSD hazard control options and ideas, take the time to review and investigate them. One option may stand out to everyone involved as the best. If this occurs and everyone agrees, further review may not be needed. However, a thorough review may help to avoid missing a better but less obvious solution.

Choose Your Preferred Control Option(s)



POINT TO REMEMBER

Simple, low-cost changes (e.g., changes in working height) can make a big difference. In addition, they are usually practical and easy to implement.

Compile all of the information collected in a format that allows the team members to easily compare the pros and cons of the various options. One option may stand out as the best (i.e., it is low-cost, easy to implement and eliminates the MSD hazard).

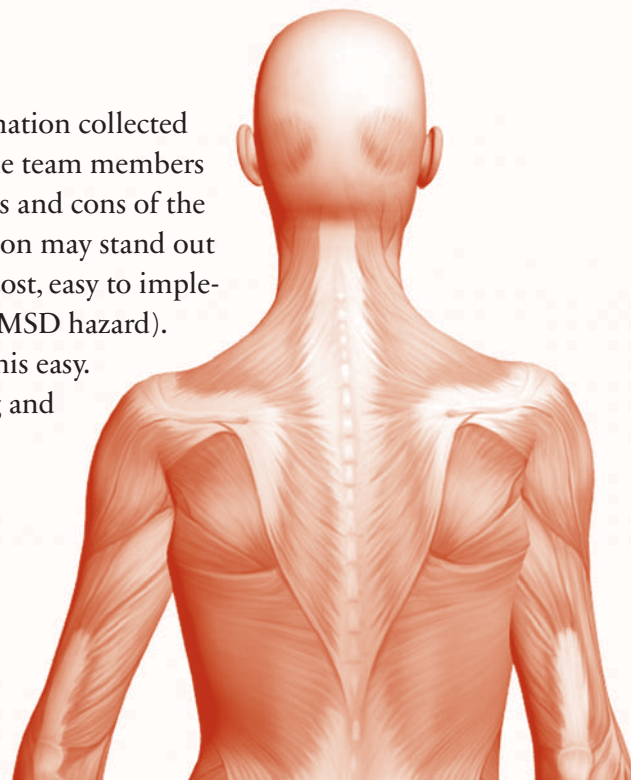
However, it is often not this easy.

If no one control stands out, use a process for ranking and weighting the various review factors.

Implement Your Preferred Control Option(s)

How you implement your preferred control is very important. Ensure that all of the workers who will be affected by the control know about the proposed change. These workers also need to be trained to use the control effectively and efficiently.

Immediately after a control is implemented,



check to make sure that it is working as expected and there are no surprises. Check that:

- the expectations of the workers involved in the project have been met
- the correct solution was installed and it was installed correctly
- all appropriate workers have been trained on how to use the control
- all workers can demonstrate how and when to use the control
- the concerns of maintenance personnel are addressed
- up- and downstream processes have been reviewed to ensure that no new hazards have been introduced, and
- initial feedback of workers is documented.

Section 8: Follow up on and Evaluate the Success of Implemented Controls

The recommended steps for evaluating all MSD prevention projects are described below. See **Section 8 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on following up on and evaluating success of implemented controls.

Evaluate the Process

As soon as possible after implementing a control, ask those who worked on the solution(s) to provide:

- feedback on how well the process worked, and
- suggestions on how to improve the process.

Evaluate the Control

To evaluate the success of MSD hazard controls more formally, allow some time to pass. This will ensure that:

- any initial “bugs” with the control are corrected
- workers and supervisors have been trained on how to use the control, and
- all workers have had a chance to use and get used to the control.

Shortly after implementing the control, you should:

- observe workers to see whether they are using the controls and using them correctly
- use the MSD hazard identification tool(s) to verify that the hazards continue to be controlled and that no new hazards have been introduced, and
- ask all appropriate workers for their feedback on the control.

Document the information collected during this evaluation and report back to all appropriate workers and the JHSC or H&S rep. If concerns are noted, ask the project team to discuss them and suggest ways to alleviate them.

A more formal and in-depth evaluation should be done once the finalized control has been in use for a period of time (e.g., 3–6 months). By this time, the workers should have a very good idea of how the control works and the positives or negatives associated with its use.

POINT TO REMEMBER



Sometimes an evaluation suggests that the MSD hazard control is not fully successful. If this is the case, you may not have properly identified all of the MSD hazards. Return to Section 5 (Recognize MSD hazards and related concerns).

During this evaluation, consider:

- using a formal survey to gather workers' opinions on the control
- asking workers for suggestions to improve the control
- surveying other appropriate workers about the control (e.g., these would include maintenance, production, engineering, quality, supervisors), and
- collecting production and quality data.

If concerns are identified, bring the project team together to discuss and suggest new ways to correct the identified issues.

See **MSD Prevention Toolbox** for an example of a survey that can be used to collect workers' opinions of the controls.

Do an Ongoing Review and Evaluation

Continue to review all the usual reports to look for problems or improvements on the job or in the work area where the control was implemented. Remember that MSDs may continue to be reported even after a control has been successfully implemented because new cases can result from exposures to hazards before the control was installed.

Section 9: Communicate Results and Acknowledge Success

Good communication is important in preventing MSDs. Even well designed and implemented controls can be less successful than they should be if the communication is poor. The important communication steps to consider for all MSD prevention projects are outlined below.

- keep all staff up to date on progress
- acknowledge all workers involved in the process
- communicate the results of the evaluation, and
- celebrate successes

See **Section 9 of the Resource Manual for the MSD Prevention Guideline for Ontario** for more information on communicating results and acknowledging success.



Resources

Ontario Health and Safety Associations (<http://www.preventiondynamics.com>)

Construction Safety Association of Ontario

Phone: (416) 674-2726
1-800-781-2726
<http://www.csao.org>

Education Safety Association of Ontario

Phone: (416) 250-8005
1-877-732-3726
<http://www.esao.on.ca>

Electrical & Utilities Safety Association

Phone: (905) 625-0100
1-800-263-5024
<http://www.eusa.on.ca>

Farm Safety Association

Phone: (519) 823-5600
1-800-361-8855
<http://www.farmsafety.ca>

Industrial Accident Prevention Association

Phone: (905) 614-4272
1-800-406-4272
<http://www.iapa.ca>

Mines and Aggregates Safety and Health Association

Phone: (705) 474-7233
<http://www.masha.on.ca>

Municipal Health and Safety Association

Phone: (905) 890-2040
1-866-275-0045
<http://www.mhsao.com>

Occupational Health Clinics for Ontario Workers Toronto Clinic

Phone: (416) 510-8713
1-888-596-3800
<http://www.ohcow.on.ca>

Ontario Forestry Safe Workplace Association

Phone: (705) 474-7233
<http://www.ofswa.on.ca>

Ontario Safety Association for Community and Healthcare

Phone: (416) 250-7444
1-877-250-7444
<http://www.osach.ca>

Ontario Service Safety Alliance

Phone: (905) 602-0674
1-800-525-2468
<http://www.ossa.com>

Pulp & Paper Health and Safety Association

Phone: (705) 474-7233
<http://www.pphsa.on.ca>

Transportation Health and Safety Association of Ontario

Phone: (416) 242-4771
1-800-263-5016
<http://www.thsao.on.ca>

Workers Health and Safety Centre (WHSC)

Phone: (416) 441-1939
1-888-869-7950
<http://www.whsc.on.ca>

Ontario Resources

Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD)

<http://www.cre-msd.uwaterloo.ca/>

Institute for Work and Health

<http://www.iwh.on.ca>

Ministry of Labour

<http://www.labour.gov.on.ca/>

Prevention Practices Database

<http://www.preventionpractices.com>

Workplace Safety and Insurance Board

<http://www.wsib.on.ca>

Canada Resources

Canadian Centre for Occupational Health and Safety

<http://www.ccohs.ca/oshanswers>

WorkSafe BC

<http://www.worksafebc.com>

International Resources

European Agency for Safety and Health

<http://europe.osha.eu.int>

Health and Safety Executive (HSE)

<http://www.hse.gov.uk>

National Institute for Occupational Safety and Health

<http://www.cdc.gov/niosh/>

US Department of Labor, Occupational Safety and Health Administration (OSHA)

<http://www.osha.gov>

Professional Ergonomics Associations

Association of Canadian Ergonomists

<http://www.ace-ergocanada.ca>

Ergonomics Society

<http://www.ergonomics.org.uk>

Human Factors and Ergonomics Society

<http://www.hfes.org>

International Ergonomics Association (IEA)

<http://www.iea.cc>

Other Professional Associations

Canadian Association of Occupational Therapists

<http://www.caot.ca>

Canadian Chiropractic Association

<http://www.ccachiro.org>

Canadian Kinesiology Alliance

<http://www.cka.ca/>

Canadian Occupational Health Nurses Association

<http://www.cohna-aciist.ca>

Canadian Physiotherapy Association

<http://www.physiotherapy.ca>

College of Chiropractors of Ontario

<http://www.cco.on.ca>

Occupational Hygiene Association of Ontario

<http://www.ohao.org>

Ontario Kinesiology Association

<http://www.oka.on.ca/>

Ontario Occupational Health Nurses Association

<http://www.oohna.on.ca>

Ontario Physiotherapy Association

<http://www.opa.on.ca>

Ontario Society for Occupational Therapists

<http://www.osot.on.ca>

Selected Bibliography

- Canadian Standards Association. 2000. Z412-00 Guideline on Office Ergonomics. Toronto: CSA
- Cole D, Rivilis I, Van Eerd D, Cullen K, Irvin E, Kramer D. 2005. Effectiveness of Participatory Ergonomic Interventions: A Systematic Review. Toronto: Institute for Work and Health (www.iwh.on.ca)
- Hagbert M, Silverstein, B., Wells R, et al. 1995. Work Related Musculoskeletal Disorders (WMSDs): A Reference Book for Prevention. Bristol PA: Taylor & Francis
- Health and Safety Executive. 2002. Upper Limb Disorders in the Workplace. United Kingdom (www.hsebooks.com)
- National Research Council, 1999. Work-related Musculoskeletal Disorders. National Academy of Sciences. Washington, DC: National Academy Press
- NIOSH. 1997. A Critical Review of Epidemiologic Evidence for Work-related Musculoskeletal Disorders of the Neck, Upper Extremity and Low Back (<http://www.cdc.gov/niosh/docs/97-141/>)
- NIOSH. 1997. Elements of an Ergonomics Program (www.cdc.gov)
- Occupational Health and Safety Council of Ontario, 2007. Occupational Health and Safety Council of Ontario's MSD Prevention Series. Part 2: Resource Manual for the MSD Prevention Guideline for Ontario. (WSIB Form Number: 5158A).
- Occupational Health and Safety Council of Ontario, 2007. Occupational Health and Safety Council of Ontario's MSD Prevention Series. Part 3: MSD Prevention Toolbox. (WSIB Form Number: 5159A).

Review Process

The MSD Prevention Guideline for Ontario (the Guideline) will be regularly reviewed and modified in order to provide Ontario workplaces with information on new research findings, assessment methods, control approaches, etc. The review process is described below:

- 1) The Guideline will be formally reviewed by a technical committee appointed by OHSCO every five (5) years from the date of publication. The committee will consider all received requests for modifications and the current state of research related to MSD prevention. The technical committee will make a recommendation to OHSCO to re-affirm or update the Guideline.
- 2) If the recommendation is to update the Guideline, the technical committee will meet to consider the specific changes to be made.
- 3) The recommended changes will be presented to OSHCO for approval. Once approved by OHSCO the recommended changes will be distributed to external stakeholders for comment.
- 4) After the comment period, the technical committee will meet to review all comments received and submit a final version of the updated Guideline to OSHCO.
- 5) An early review of the Guideline may be considered if information regarding new and well-supported research findings is received, and if the new research findings suggest that information in the Guideline is not providing Ontario workplaces with a reasonable approach to MSD prevention.
- 6) The Chair of OHSCO will ensure that all comments or requests for modifications are reviewed on an annual basis.
- 7) All requests for changes or modifications to the Guideline should be sent to:

By Canada Post: Chair of OHSCO
c/o Branch Secretary
Best Practices Branch
Prevention Division
11th Floor, WSIB
200 Front Street W.
Toronto, ON, M5V 3J1

By Email: prevention@wsib.on.ca

Please put “MSD Prevention Guideline c/o Best Practices Branch” in the e-mail’s subject field.

PREVENTION GUIDELINE