

Understanding and Preventing Musculoskeletal Injuries (MSIs)

Musculoskeletal injuries (MSIs) are the most common type of injury in manufacturing. This is because manufacturing workers — whether they work in a food-processing plant, a foundry, a warehouse, or some other setting — are often required to perform tasks that involve repetitive motion or forceful exertion. These tasks put workers at risk for MSIs. MSIs that are caused by repetitive motion or forceful exertion account for roughly one-third of all claims accepted from manufacturing workers every year.

MSIs can affect your workplace in many ways. Potential effects on employers include

- Increased costs due to the need to replace and train workers and investigate incidents
- Reduced worker productivity and morale
- Increased insurance rates

Potential effects on workers include

- Needing to take time off work
- Changes in job duties
- Needing to seek medical treatment

How do MSIs happen?

While each job and workplace has its own particular risks, there are some general MSI risk factors that are common in many workplaces. These include

- Lifting or moving loads
- Repeating the same motion for extended periods

How can I reduce MSIs in my workplace?

MSIs can be challenging to prevent because they often occur gradually. A worker may lift boxes every day but not experience any pain until a few months into the job. There are, however, many things you can do to reduce the number of MSIs at your workplace.

The first step is a risk assessment to identify and address the risks in your workplace. You will need to consider the duration and frequency of tasks, the number of workers affected, and the design and arrangement of work areas and equipment. This is where ergonomics comes in.

Ergonomics is about designing and arranging workplaces so that they are efficient and safe for workers. To be effective, an ergonomics program should

An MSI is an injury (including a sprain, strain, or inflammation) or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels, or related soft tissues.

In British Columbia, employers are required to identify, assess, and eliminate or minimize factors in their workplaces that may expose workers to the risk of musculoskeletal injury.

- Performing awkward movements, such as reaching, bending, or twisting
- Being in contact with hard surfaces for extended periods, or with force applied

include workers' input and participation — starting with the risk assessment process and all the way through to developing risk-reduction strategies. In addition to changing the design or arrangement of work areas and equipment, an effective ergonomics program should also consider administrative changes, such as changes to how work is organized.

Education and training are also important components of any prevention strategy. Workers who aren't informed about MSIs may assume that MSI-related pain is an unavoidable part of the job. Workers must be told about the risk factors they are exposed to and the tools and techniques that are available to reduce their risk of injury.

Reducing MSIs: Three Steps to Success

1

Identify tasks that put workers at risk

- Look for tasks that require:
 - Forceful lifting, lowering, carrying, pushing, pulling, or gripping
 - Repetitive motions
 - Awkward postures, such as a bending, twisting, or reaching
- Use the MSI risk-identification worksheet available on WorkSafeBC.com



2

Assess the degree of risk for each task

- Consider the duration and frequency of tasks, the number of workers affected, the design and arrangement of work areas, as well as the type of equipment or machinery used.

Use the MSI risk-assessment worksheet available on WorkSafeBC.com



3

Eliminate or reduce the risks

- Focus on the tasks that have the highest degree of risk
- Choose prevention strategies that allow you to eliminate as many high-risk tasks and processes as possible
- Choose prevention strategies to reduce and minimize as many other risks as possible
- Use the ergonomics and MSI prevention resources available on WorkSafeBC.com

Strategies for Preventing MSIs in the Manufacturing Sector

The most effective prevention strategies are those that address MSI risk factors at a system-level. Usually, employers and managers are the only ones who can implement these strategies. These system-level prevention strategies are at the top of each list in the

table below. While strategies that rely on the behaviour of individual workers will be less effective, they still play an important role in reducing MSIs. These strategies can be found at the bottom of each list.

Some Common Risk Factors

Prevention Strategies

Forceful exertion



- Automate or mechanize lifting
- Limit the amount of weight per lift
- Improve workplace layout to reduce the need for bending, reaching, or twisting while moving objects

- Alternate lifting with other tasks that require less effort
- Ask for help when moving heavy objects

Repetitive motion



- Use machines for repetitive tasks instead of human labour
- Reduce the force required to perform repetitive tasks
- Implement a job rotation schedule

- Allow workers to set the pace of work
- Avoid quotas and piece work
- Take regular, quick pauses (just a few seconds to shake out and stretch) during repetitive activities

Awkward postures



- Rearrange or redesign the workplace to reduce the need for reaching, bending, or twisting
- Store materials between shoulder and knee height

- Use platforms to reduce the need for overhead reaching

Local contact stress



- Replace sharp contact points, such as the edges of equipment, with angled designs or padding
- Train workers to avoid leaning on hard surfaces or sharp edges for extended periods

- Provide workers with appropriate tools for their tasks
- Use knee pads when working on knees

Other Resources

Ergonomics requirements and guidelines

- Sections 4.46–4.53 of the Occupational Health and Safety Regulation
- WorkSafeBC Guidelines G4.46–G4.53

For general ergonomics information, as well as MSI-related toolbox talks, calculators, and videos, visit WorkSafeBC's ergonomics portal:

<http://www2.worksafebc.com/Topics/Ergonomics/Resources-general.asp>