

MSI PREVENTION & ERGONOMICS

**MSABC Roadmap for Implementing
an Effective MSI Prevention Program**

Introductions



Will Thomas

Ergonomist,
Specialist Advisor



Education



**BSc. Kinesiology &
Occupational Ergonomics**



**MSc. Ergonomics &
Human Factors**

Experience

EHS Coordinator

Pepsi Beverages Canada (PBC)

Ergonomic Program Manager

PepsiCo EHS Center of Excellence

Lead Ergonomist | CSM

LifeBooster, Inc.

Ergonomist | Specialist Advisor

Manufacturing Safety Alliance of BC

➔ Email @ W.Thomas@safetyalliancebc.ca

Learning Objectives

- ✔ **Learning Objective 1:** Understand the challenges that ergonomic risk factors create and the scale of impact for MSIs
- ✔ **Learning Objective 2:** Learn about the requirements for MSI Prevention programs and keys to success
- ✔ **Learning Objective 3:** Understand how to get started with implementing an effective MSI prevention program
- ✔ **Learning Objective 4:** See a roadmap for how to expand and sustain your MSI Prevention program long-term
- ✔ **Learning Objective 5:** Learn how MSABC can support your MSI Prevention journey!

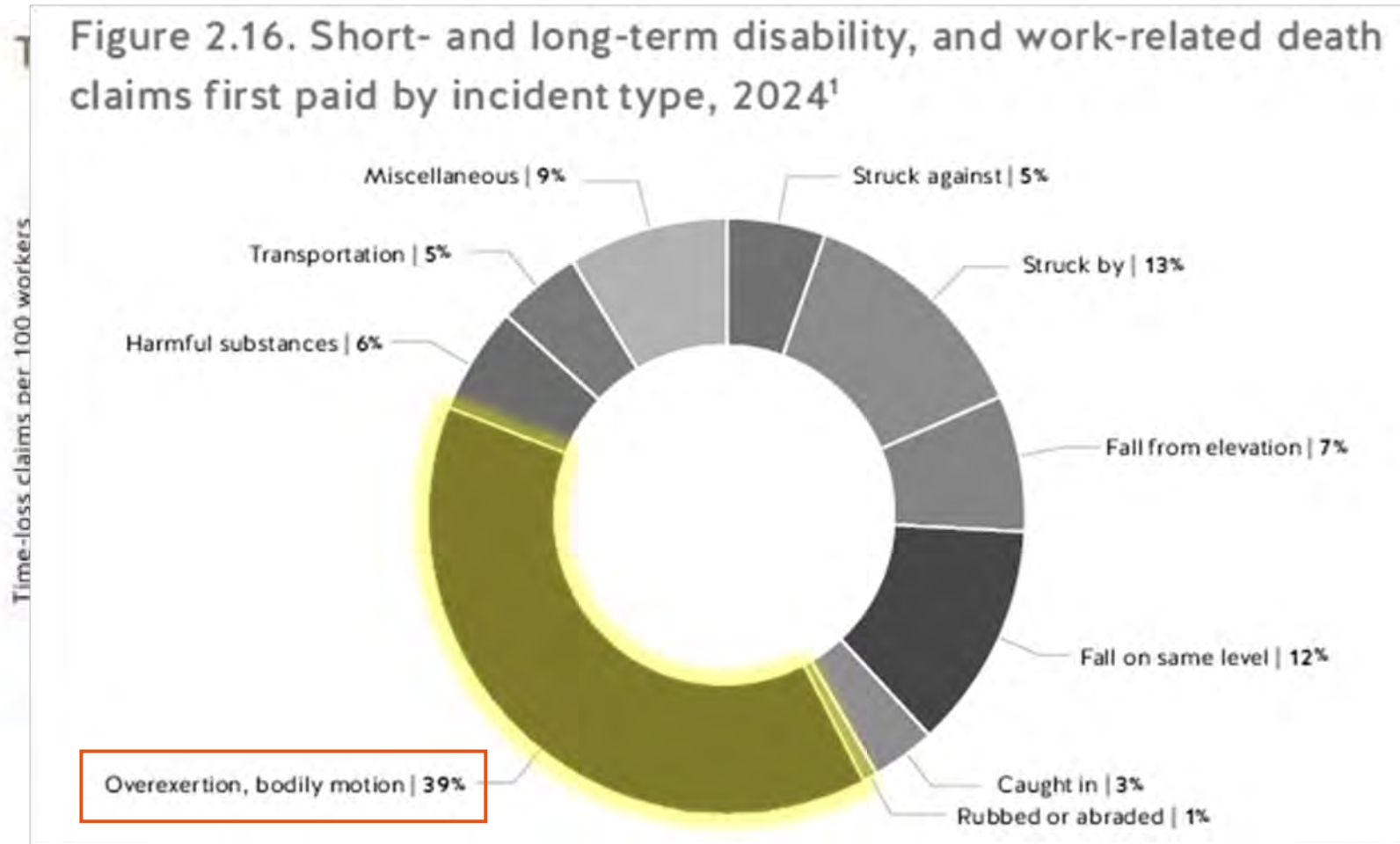
SECTION 1

Why is an MSI Prevention Program important?

- ✓ The prevalence of MSIs in British Columbia
- ✓ How MSIs impact people and organizations
- ✓ What are the current barriers to Ergonomic programs and MSI Prevention success
- ✓ Musculoskeletal Injury (MSI) development in the workplace

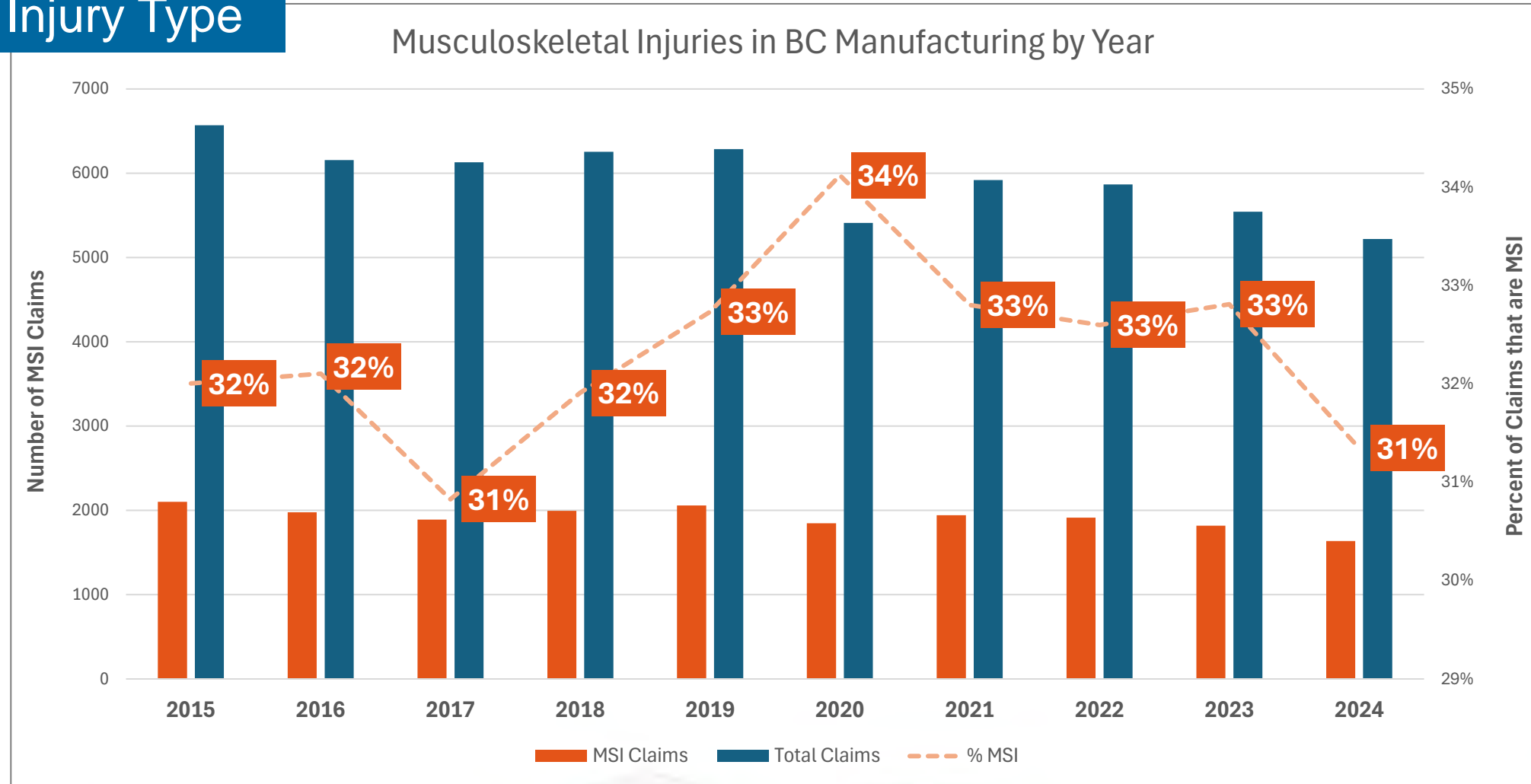
***NEXT UP:** What are the key parts of an effective MSI Prevention program?*

Injuries are Trending down, but MSIs remain a Challenge



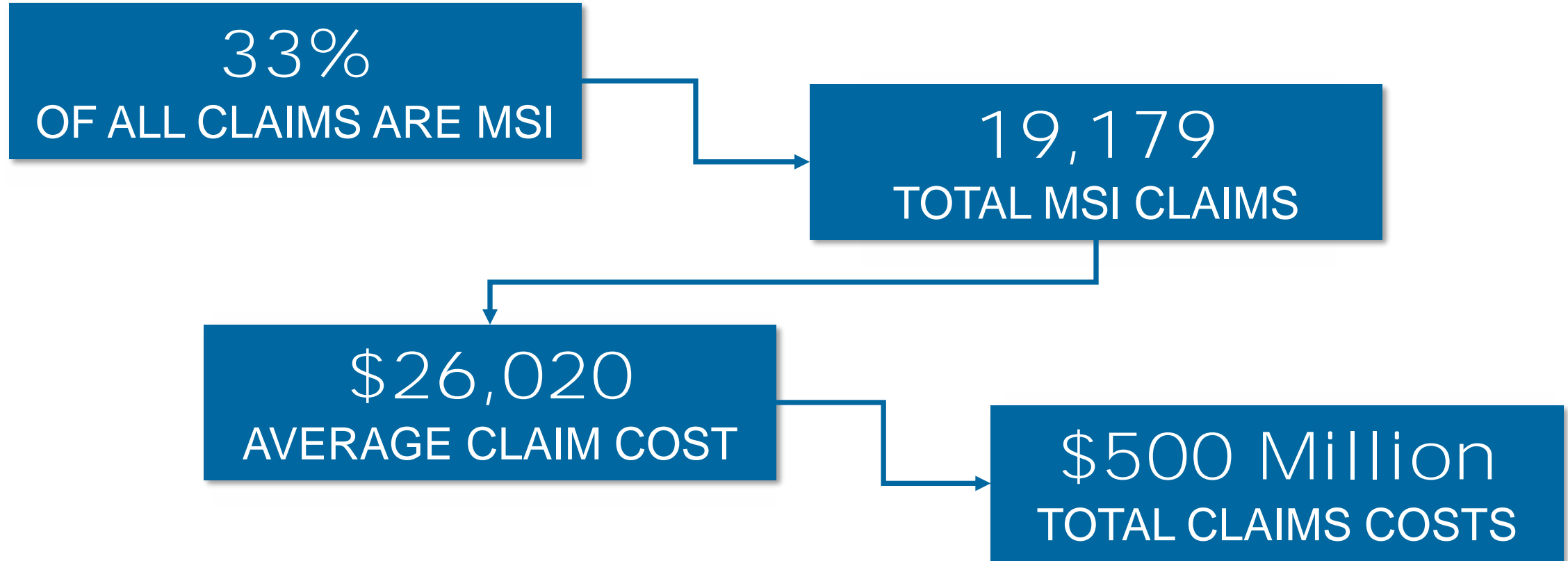
Why is Ergonomics Important in Manufacturing?

#1 Injury Type

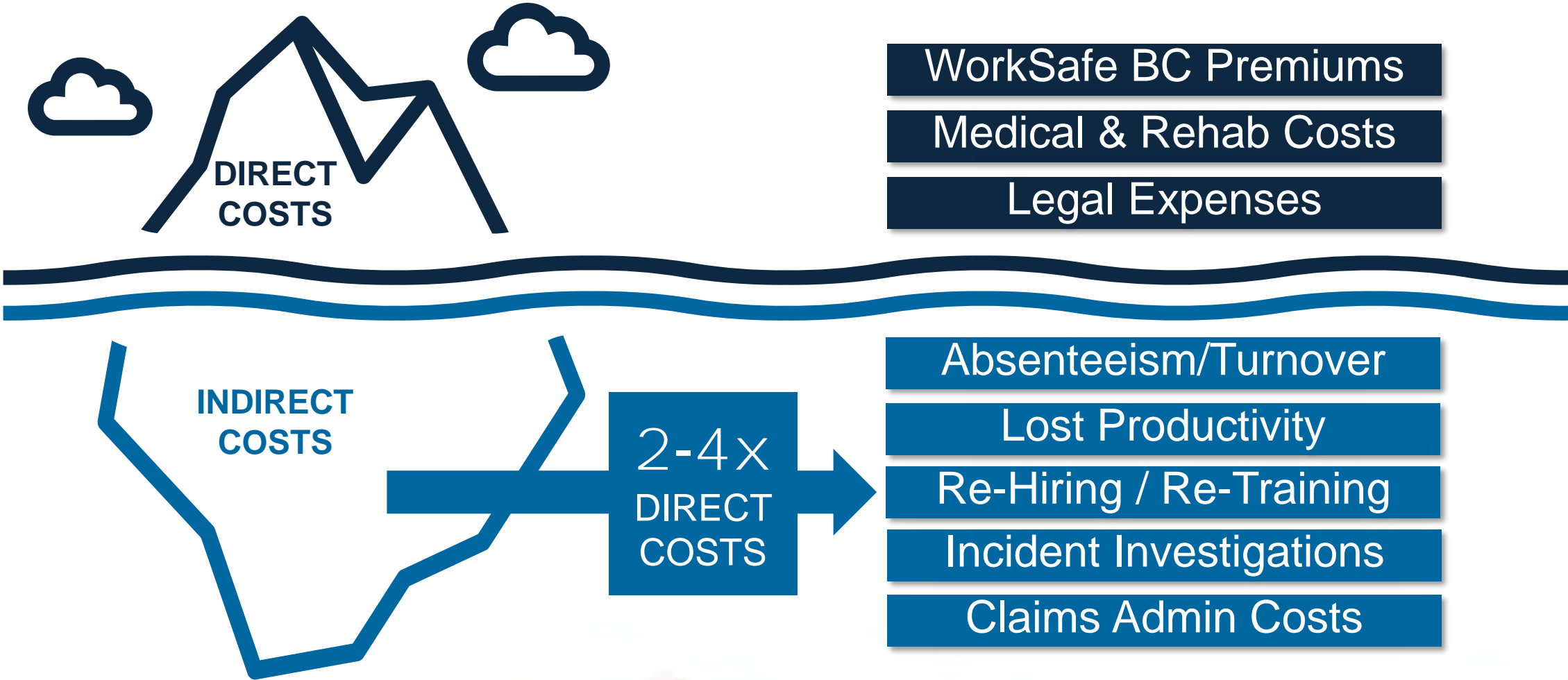


Source: [WorkSafeBC Industry Data: Provincial Overview & Industry Claims Analysis](#)

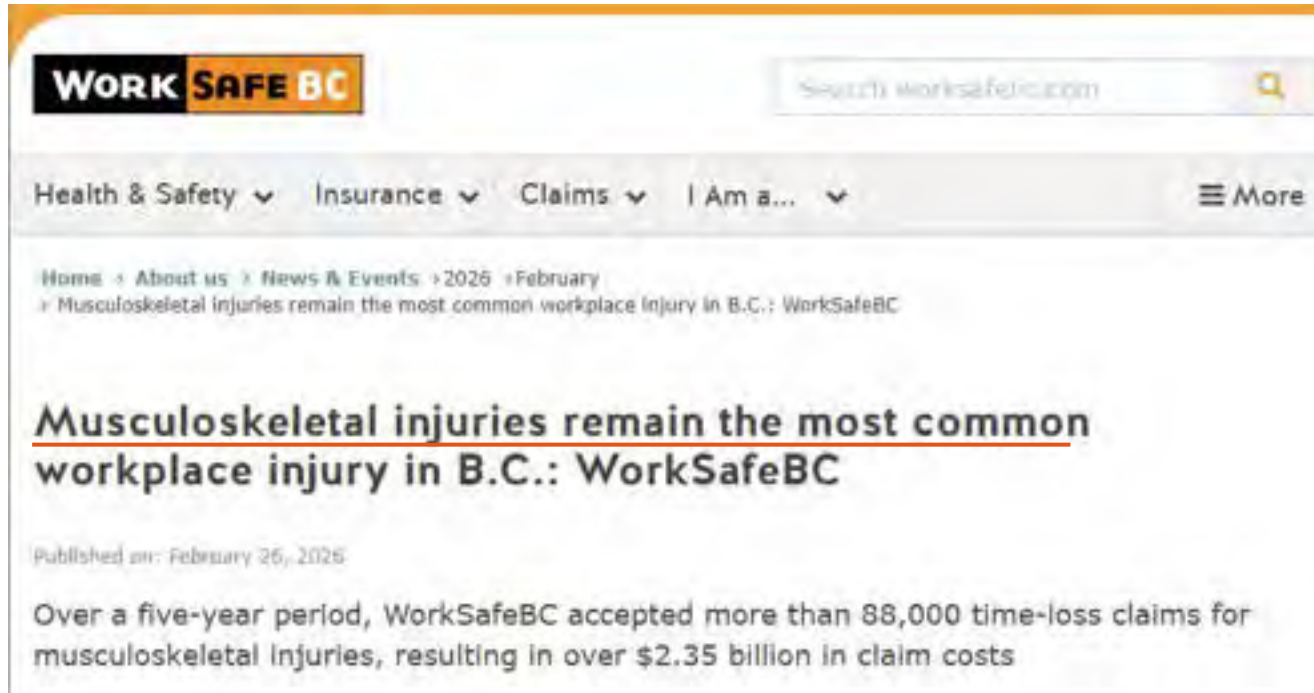
MSIs in BC Manufacturing (10 Year Snapshot)



Direct vs Indirect Costs of MSIs



Are things changing?



The screenshot shows the WorkSafeBC website with a news release titled "Musculoskeletal injuries remain the most common workplace injury in B.C.: WorkSafeBC". The page includes a search bar, navigation menu, and breadcrumb trail. The main text states that over a five-year period, WorkSafeBC accepted more than 88,000 time-loss claims for musculoskeletal injuries, resulting in over \$2.35 billion in claim costs.

Source: [WorkSafeBC News Release](#)
Published on: February 26, 2026

Musculoskeletal injuries (MSIs) in B.C. workplaces

~88K time-loss claims
2020-2024



30% of all WorkSafeBC time-loss claims are related to MSIs

MSI Prevention - Inspectional Focus for WSBC

WorkSafeBC's inspectional focus

WorkSafeBC's planned inspectional initiatives identify industries and employers with a high risk of serious workplace injuries and a significant contribution to the serious injury rate and the time-loss claims rate. MSI prevention will be an inspectional focus for WorkSafeBC in 2026, particularly in sectors where data indicates elevated risk, including health care, construction, retail, and transportation.

Several of WorkSafeBC's planned inspectional initiatives emphasize MSI prevention across various sectors. WorkSafeBC also provides resources and tools to help workers and employers identify, assess, and control the risk factors for MSIs.

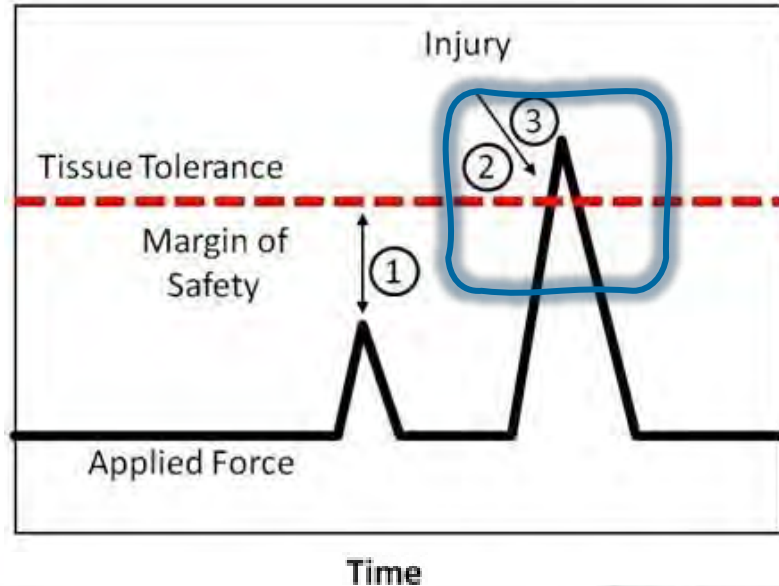
Source: [WorkSafeBC News Release](#)

Published on: February 26, 2026

Understanding Musculoskeletal Injuries

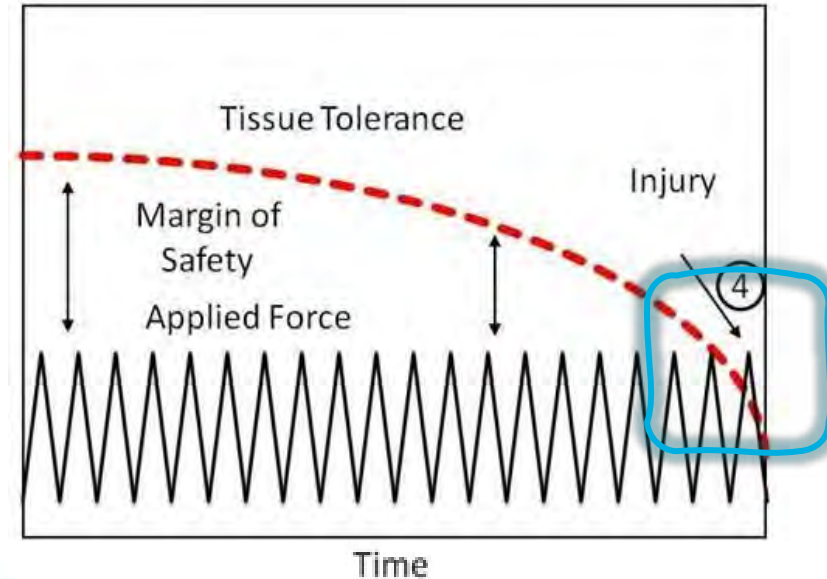
ACUTE INJURIES

- Accident, immediate event/ trauma
- Single over-exertion

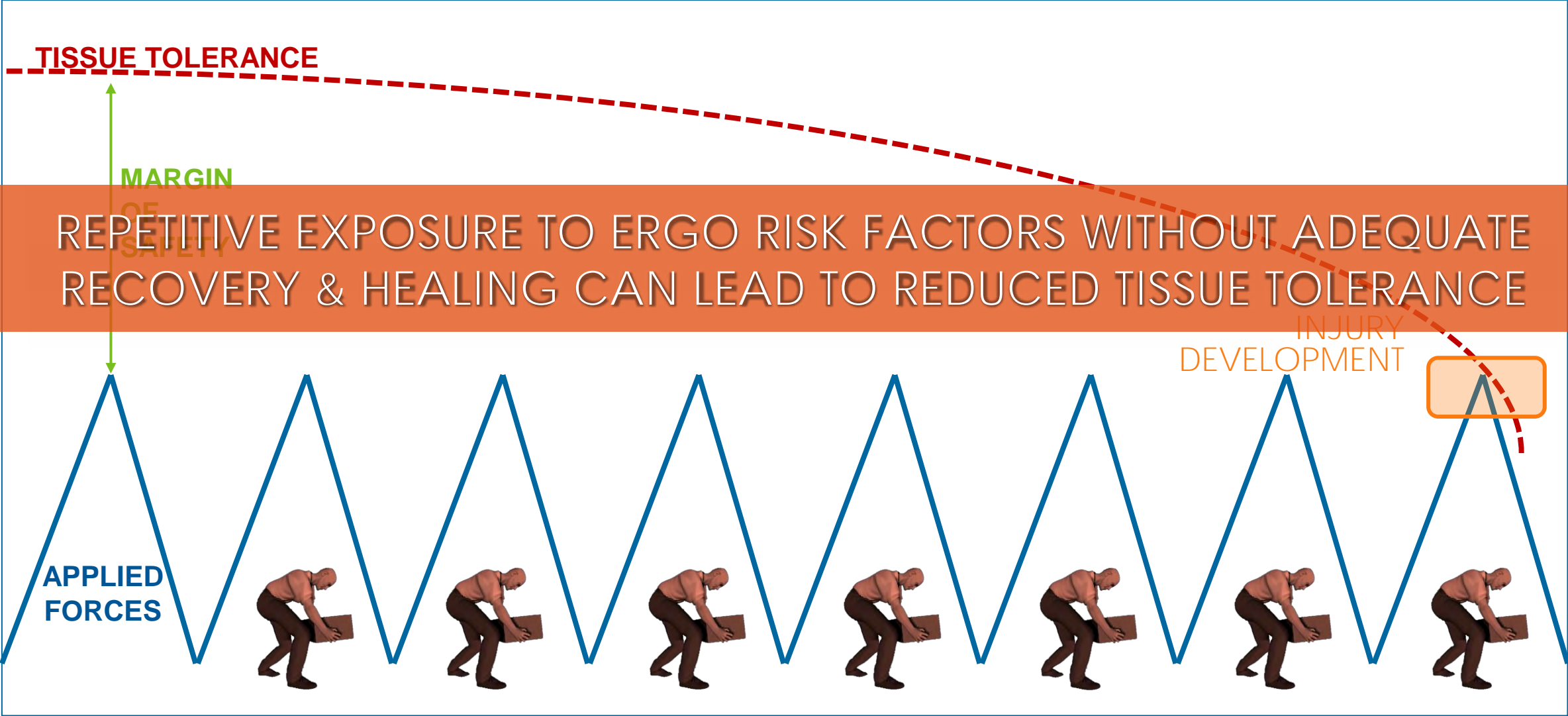


CUMULATIVE INJURIES

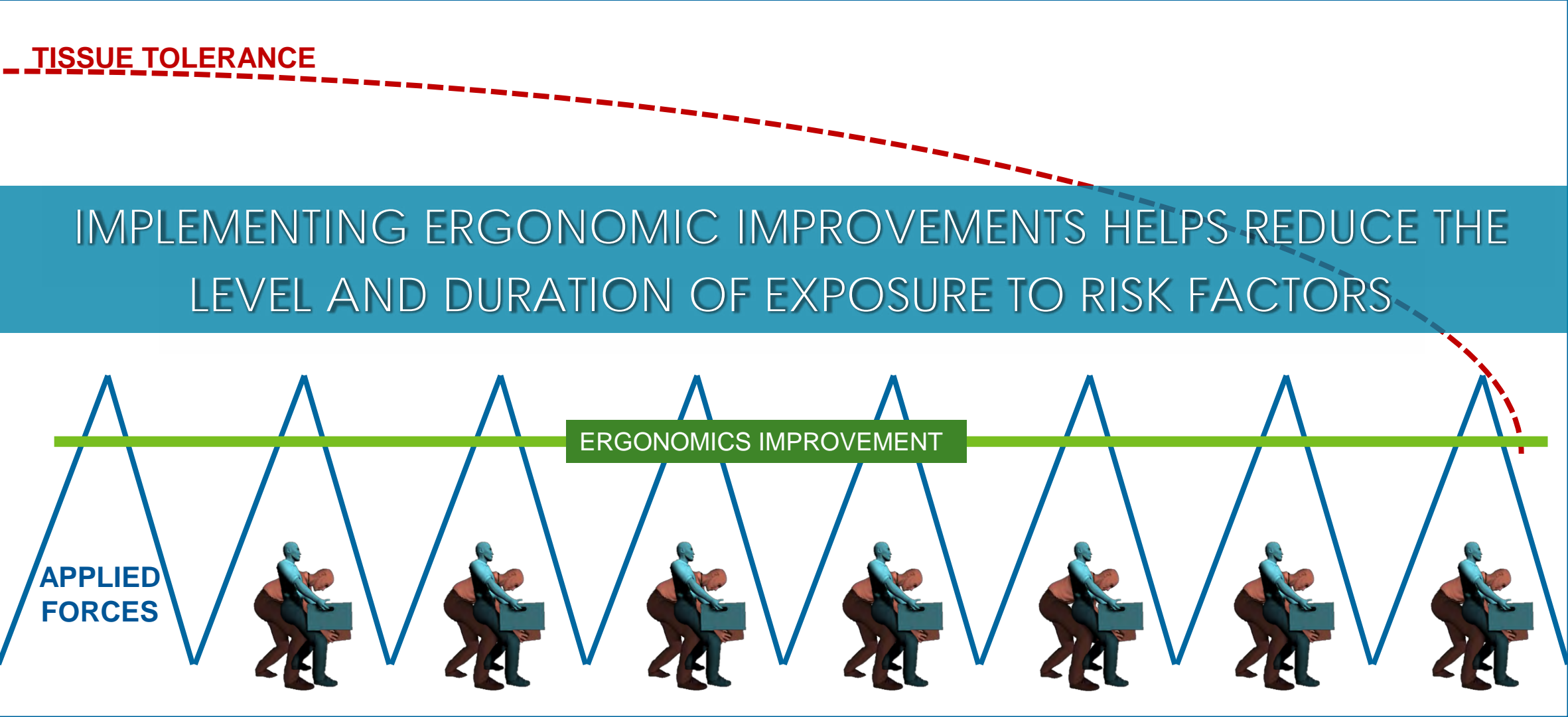
- Repetitive loading
- Lower forces
- Develop over time



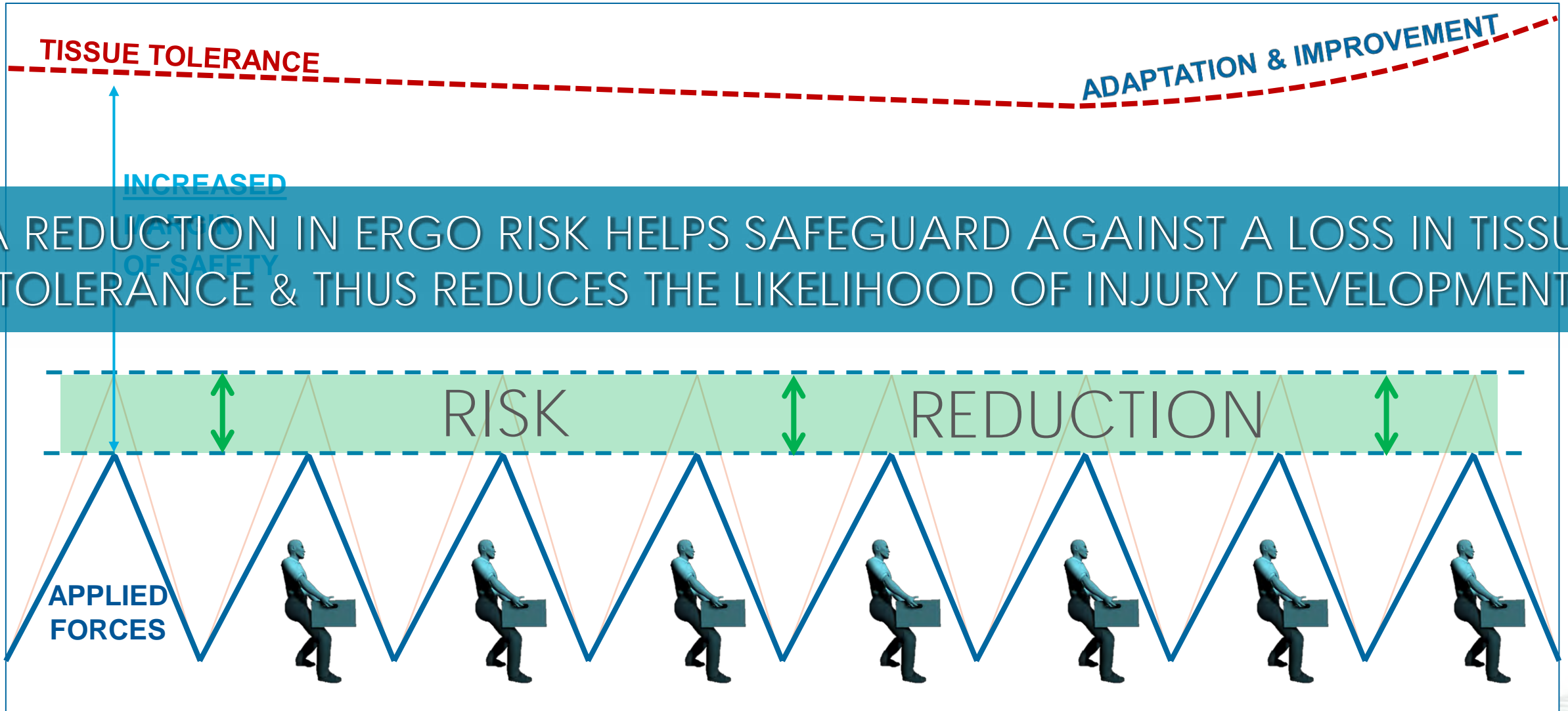
How Cumulative Injuries Develop



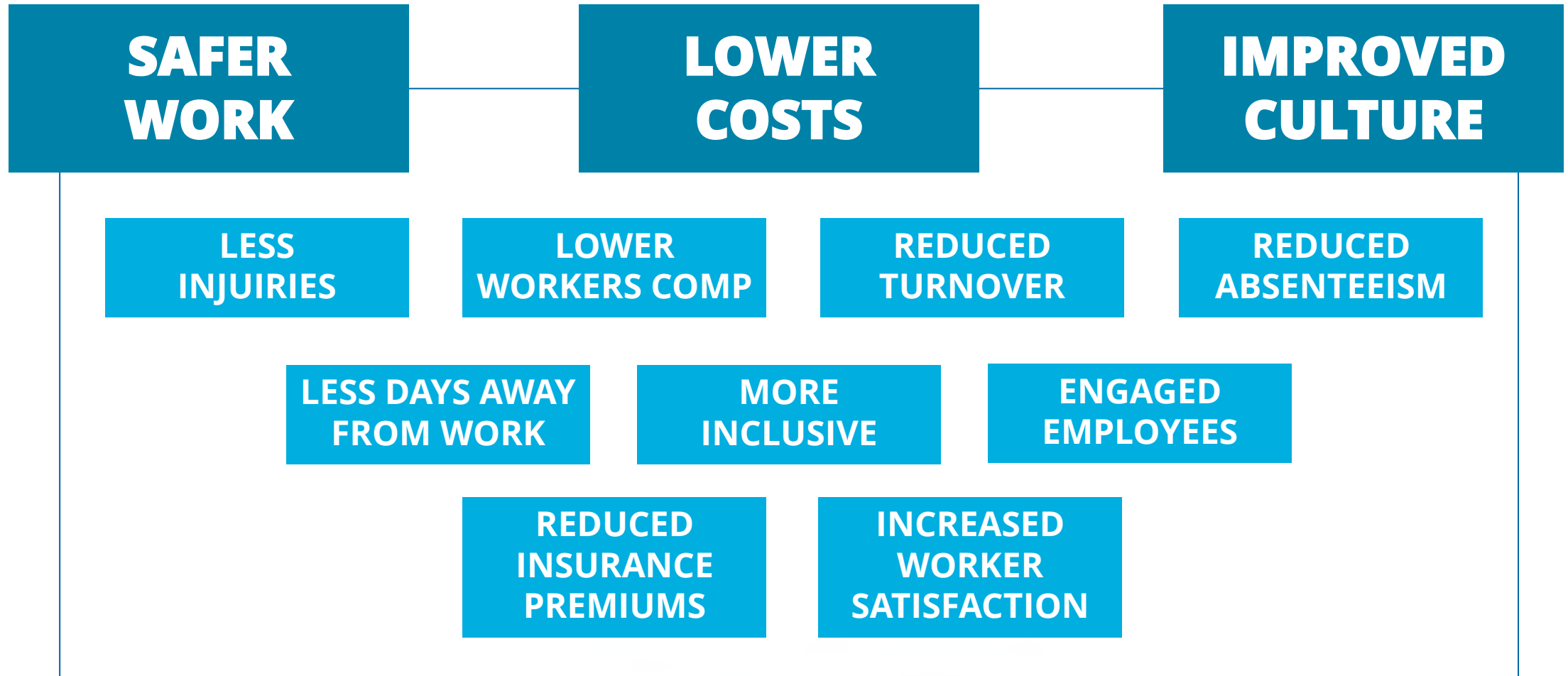
How Cumulative Injuries Develop



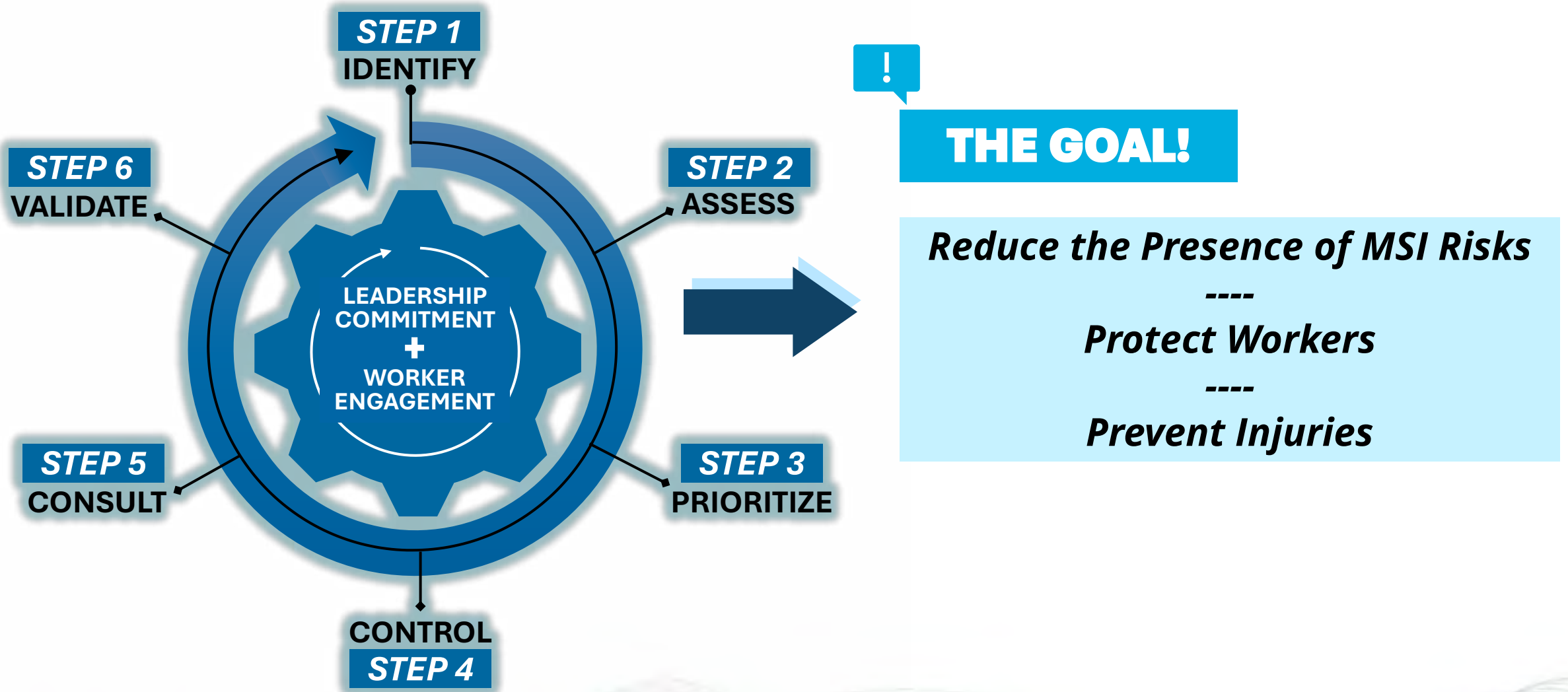
How We Combat Cumulative Injuries Development



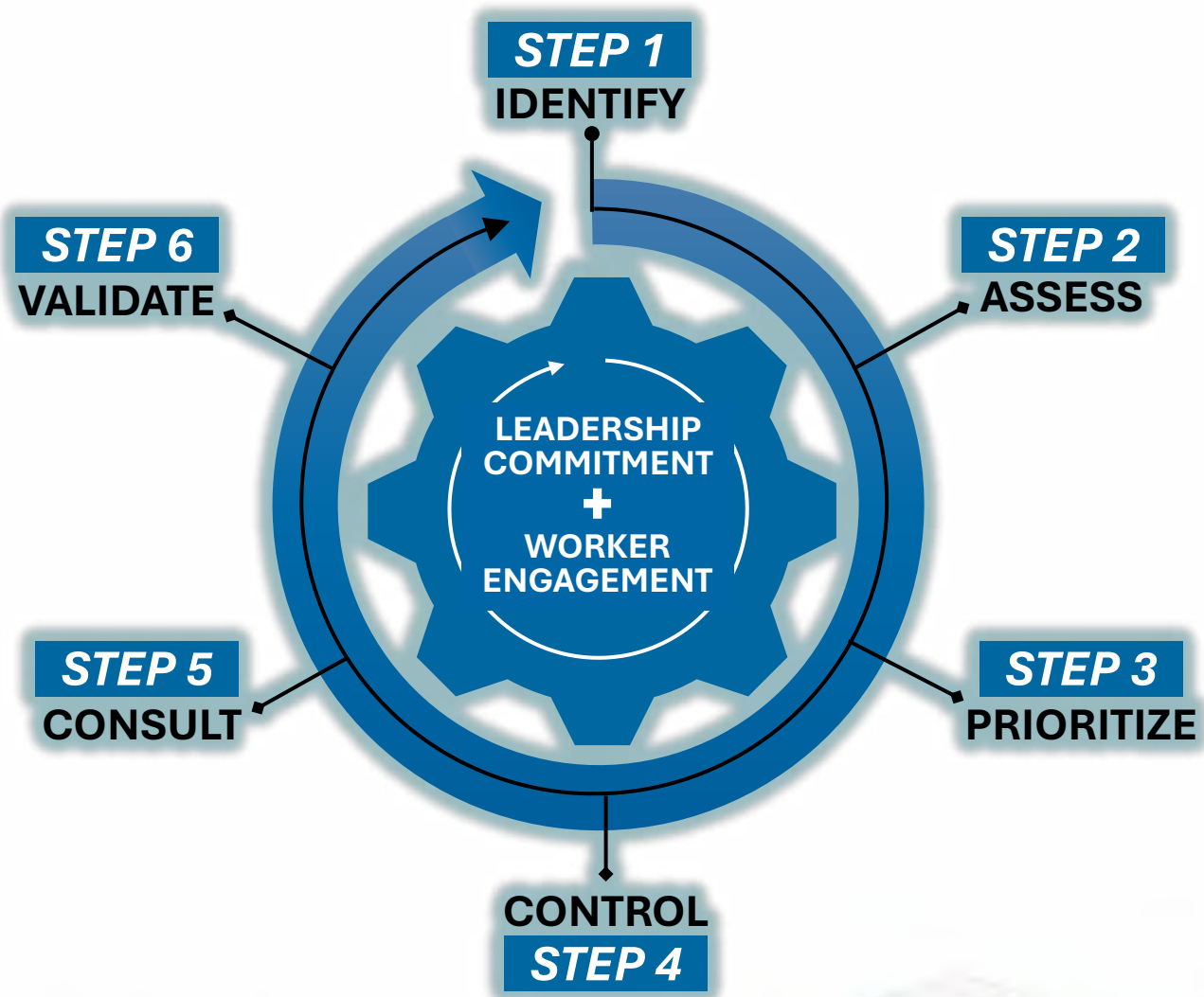
The Goals of an Effective Ergonomics Program



Why is Risk Management so Important to our Goals?



The Challenges of Achieving our Ergonomic Goals



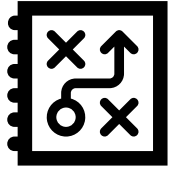
ROADBLOCKS TO SUCCESS

- X Data inaccuracy
 - X Lack of access to workers
 - X Time burden to collect data
 - X Difficulty collecting data across
 - X Poor depth & breadth of analysis
 - X Non-representative data sets
 - X Variability in analysis tools used, not standardized
 - X Inability to aggregate data
 - X Inability to prioritize risk & opportunities
 - X Looking at risk through limited lens
 - X Difficulty making decisions and acting on risk data
 - X Lack of risk holder ownership/accountability
 - X Difficulty validating risk reduction
 - X Difficulty building a business case
 - X Limited communication of results to key stakeholders
- We face many challenges that impact our ability to achieve MSI risk reduction**

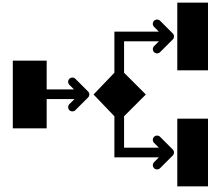
Current Challenges

Complexity	<ul style="list-style-type: none">→ Unrealistic about what can be implemented effectively in set timelines→ Lack of Audience Tailoring, not practical tools/resources for audience
Limited Resources	<ul style="list-style-type: none">→ Divided responsibilities, limited time, focus on higher 'severity' vs frequency→ Lack of cross-functional support, engagement, or execution
Limited Expertise	<ul style="list-style-type: none">→ EHS Generalists, de-prioritizing the SMA you have the least experience with→ Lack of knowledge, training, confidence
Misconceptions	<ul style="list-style-type: none">→ Risk management for MSIs vs for other H&S programs→ Risk vs Consequence (The role of Luck)
Lack of Action	<ul style="list-style-type: none">→ Training & Risk Assessment, but no controls→ Lack of engagement in process, lack of consistent execution
Stakeholders	<ul style="list-style-type: none">→ Wrong stakeholder engaged at wrong points→ Lack of audience tailoring→ Siloed operating groups

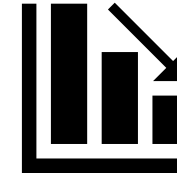
How can MSABC Help?



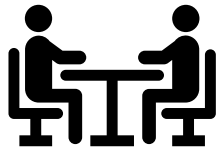
**Clear Roadmap
for Success**



**Simple, Step-
Wise Process**



**Focus on Long-
Term Impacts**



**Collaborative
Partnership**



**Drive through to
Risk Control**



**A Practical
Systems Approach**

+ Templated Resources to get you started!

SECTION 2

What are the key parts of an effective MSI Prevention Program?

- ✓ Quick review of MSI Prevention Regulatory Requirements
- ✓ Intro to the Ergonomics Risk Management Process
- ✓ Driving through from Risk ID and Assessment to Risk Control
- ✓ How MSABC can help

***NEXT UP:** How do I get started tackling this challenge?*

Regulatory Requirements



OHS Regulation Part 4: General Conditions
[Ergonomics \(MSI\) Requirements Section 4.46 - 4.53](#)

Ergonomics (MSI) Requirements

The purpose of sections 4.46 to 4.53 is to eliminate or, if that is not practicable, minimize the risk of musculoskeletal injury to workers.

Note: WorkSafeBC provides publications to assist with implementing the Ergonomics (MSI) Requirements. *Preventing Musculoskeletal Injury (MSI): A Guide for Employers and Joint Committees* provides a MSI prevention process to assist with the application of the ergonomics requirements along with procedures to investigate incidents of MSI and a table of common control measures. *Understanding the Risks of Musculoskeletal Injury (MSI)* is intended to help employers with the requirements of section 4.51(1) to educate workers in risk identification, signs and symptoms of MSI, and their potential health effects.

4.46 Definition [Copy section link](#)

In sections 4.47 to 4.53 (the Ergonomics (MSI) Requirements)

"musculoskeletal injury" or "MSI" means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work.

4.47 Risk identification [Copy section link](#)

The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

4.48 Risk assessment [Copy section link](#)

When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.

Requirements & Guidelines

Requirements **4.46 - 4.53**

Ergonomics (MSI) Requirements My Handbook (0)

4.46 Definition [Copy section link](#)

In sections 4.47 to 4.53 (the Ergonomics (MSI) Requirements)

"musculoskeletal injury" or "MSI" means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work.

4.47 Risk identification [Copy section link](#)

The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

4.48 Risk assessment [Copy section link](#)

When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is reduced.

4.49 Risk factors [Copy section link](#)

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,

Guidelines **G4.46 - G4.53**

Guidelines - Part 4 - Ergonomics (MSI) Requirements Related Regulations | Add to My Handbook

G4.46 Definition of musculoskeletal injury (MSI) [Copy section link](#)

Issued August 3, 2006; Editorial Revision March 11, 2021; Revised December 12, 2023; Editorial Revision June 28, 2024

Regulatory excerpt

Section 4.46 of the OHS Regulation ("Regulation") states:

"musculoskeletal injury" or "MSI" means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work.

Purpose of guideline

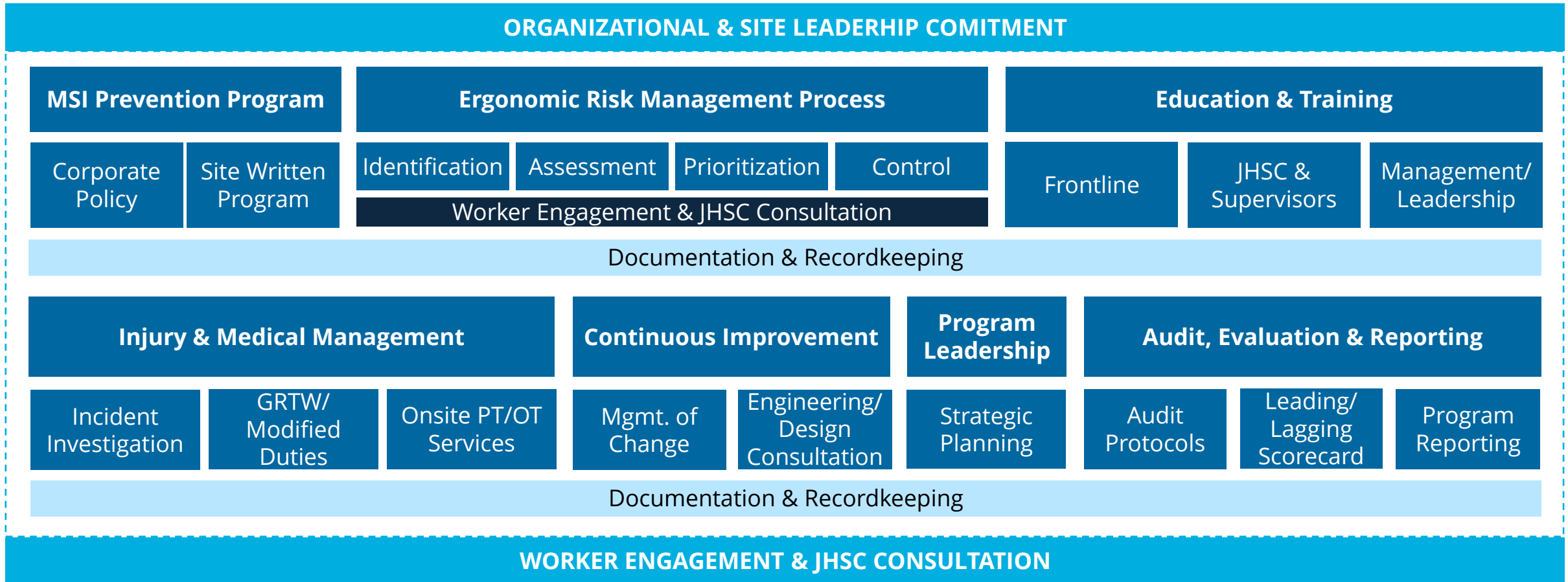
This guideline provides further information on the definition of an MSI as it applied to sections 4.47 to 4.53 of the Regulation.

Issues and disorders addressed by the definition

The definition of an MSI includes reference to an injury and disorder that may be caused or aggravated by exposure to MSI risk factors at work, such as force and work posture, as outlined in section 4.49 of the Regulation.

Workers exposed to these MSI risk factors may develop MSIs (e.g., sprains, strains, and inflammation) or disorders such as tendonitis, bursitis, and carpal tunnel syndrome.

Components of an MSI Prevention Program



Components of an MSI Prevention Program



What do I need to do?



OHS Regulation Part 4: General Conditions
[Ergonomics \(MSI\) Requirements Section 4.51](#)

Ergonomics (MSI) Requirements

4.51 Education and training

- (1) The employer must ensure that a worker who may be exposed to a risk of MSI is educated in risk identification related to the work, including the recognition of early signs and symptoms of MSIs and their potential health effects.
- (2) The employer must ensure that a worker to be assigned to work which requires specific measures to control the risk of MSI is trained in the use of those measures, including, where applicable, work procedures, mechanical aids and personal protective equipment.

What do I need to do?



OHS Regulation Part 4: General Conditions
[Ergonomics \(MSI\) Requirements Section](#)

Details of Regulations Cited

Regulation cited	Regulation text	# Regulation cited	# Locations	# Employers
OHS4.51(1)	The employer must ensure that a worker who may be exposed to a risk of MSI is educated in risk identification related to the work, including the recognition of early signs and symptoms of MSIs and their potential health effects.	247	244	240
OHS4.48	When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.	183	178	174
OHS4.47	The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).	117	116	116

Source: [WorkSafeBC Industry Risks: Prevention Data](#)

MSABC can help with that!

FRONTLINE TRAINING

MSI PREVENTION & ERGONOMICS

General Awareness Training
for Frontline Workers



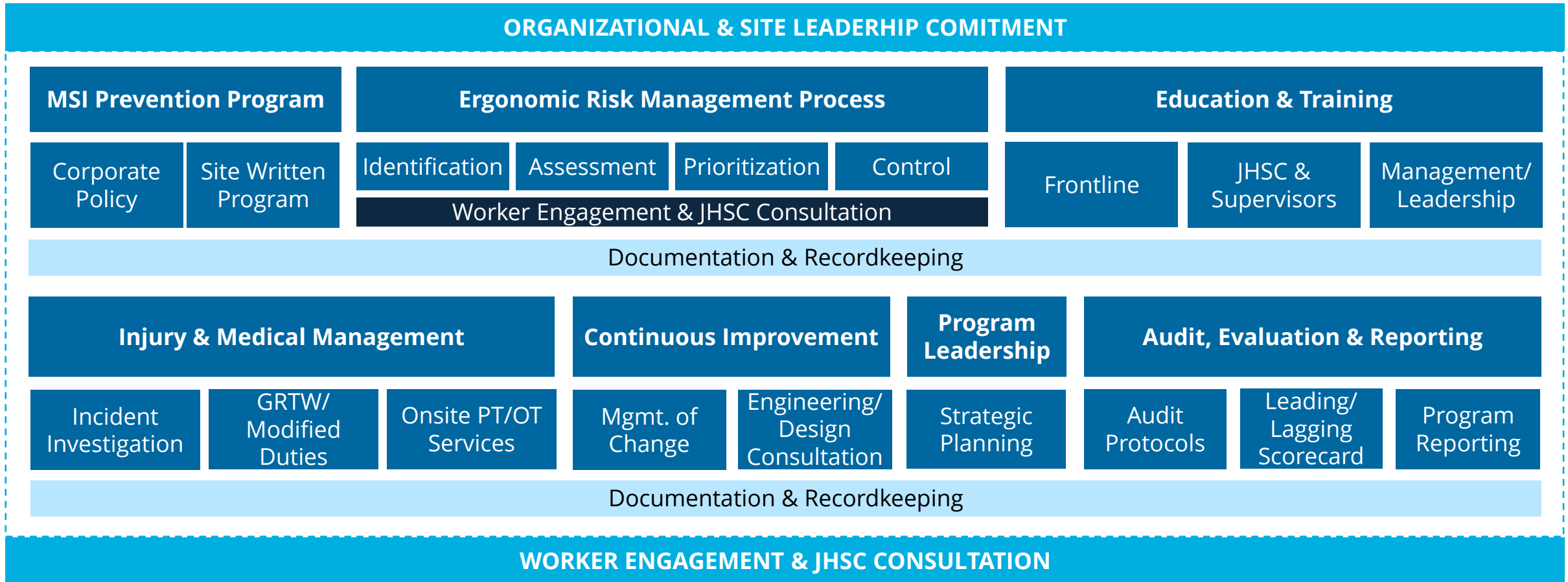
JHSC TRAINING

MSI PREVENTION & ERGONOMICS

Risk Management Training
for JHSC, Supervisors, & EHS



Components of an MSI Prevention Program

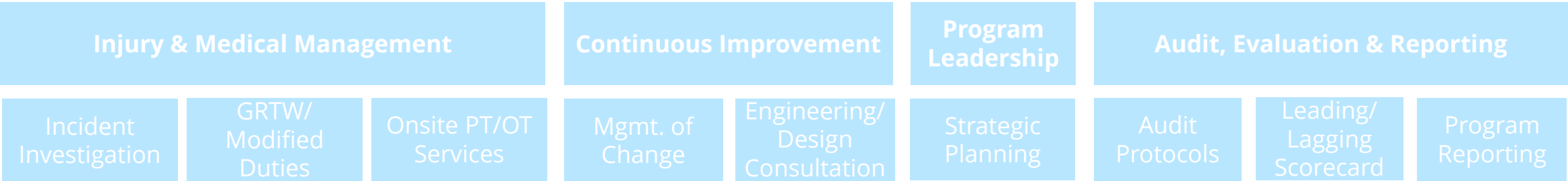


Risk Management Process for MSI Prevention

ORGANIZATIONAL & SITE LEADERHIP COMITMENT



Documentation & Recordkeeping



Documentation & Recordkeeping

WORKER ENGAGEMENT & JHSC CONSULTATION

What do I need to do?

WORK SAFE BC

**Guidelines - Part 4 - Ergonomics (MSI)
Requirements**

[Risk Factors G4.47 - 4.49](#)

4.47 Risk identification

The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

4.48 Risk assessment

When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.

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) containers, 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;

What do I need to do?



OHS Regulation Part 4: General Conditions
[Ergonomics \(MSI\) Requirements Section](#)

Details of Regulations Cited

Regulation cited	Regulation text	# Regulation cited	# Locations	# Employers
OHS4.51(1)	The employer must ensure that a worker who may be exposed to a risk of MSI is educated in risk identification related to the work, including the recognition of early signs and symptoms of MSIs and their potential health effects.	247	244	240
OHS4.48	When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.	183	178	174
OHS4.47	The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).	117	116	116

Source: [WorkSafeBC Industry Risks: Prevention Data](#)

What do I need to do?

WORK SAFE BC

Guidelines - Part 4 - Ergonomics (MSI) Requirements

[Risk Factors 4.50 – 4.53](#)

4.50 Risk control

- (1) The employer must eliminate or, if that is not practicable, minimize the risk of MSI to workers.
- (2) Personal protective equipment may only be used as a substitute for engineering or administrative controls if it is used in circumstances in which those controls are not practicable.
- (3) The employer must, without delay, implement interim control measures when the introduction of permanent control measures will be delayed.

4.52 Evaluation

- (1) The employer must monitor the effectiveness of the measures taken to comply with the Ergonomics (MSI) Requirements and ensure they are reviewed at least annually.
- (2) When the monitoring required by subsection (1) identifies deficiencies, they must be corrected without undue delay.

4.53 Consultation

- (1) The employer must consult with the joint committee or the worker health and safety representative, as applicable, with respect to the following when they are required by the Ergonomics (MSI) Requirements:
 - (a) risk identification, assessment and control;
 - (b) the content and provision of worker education and training;
 - (c) the evaluation of the compliance measures taken.
- (2) The employer must, when performing a risk assessment, consult with
 - (a) workers with signs or symptoms of MSI, and
 - (b) a representative sample of the workers who are required to carry out the work being assessed.

RISK MANAGEMENT FOR ERGONOMICS

CONSULTATION IS CRITICAL TO PROGRAM
SUCCESS

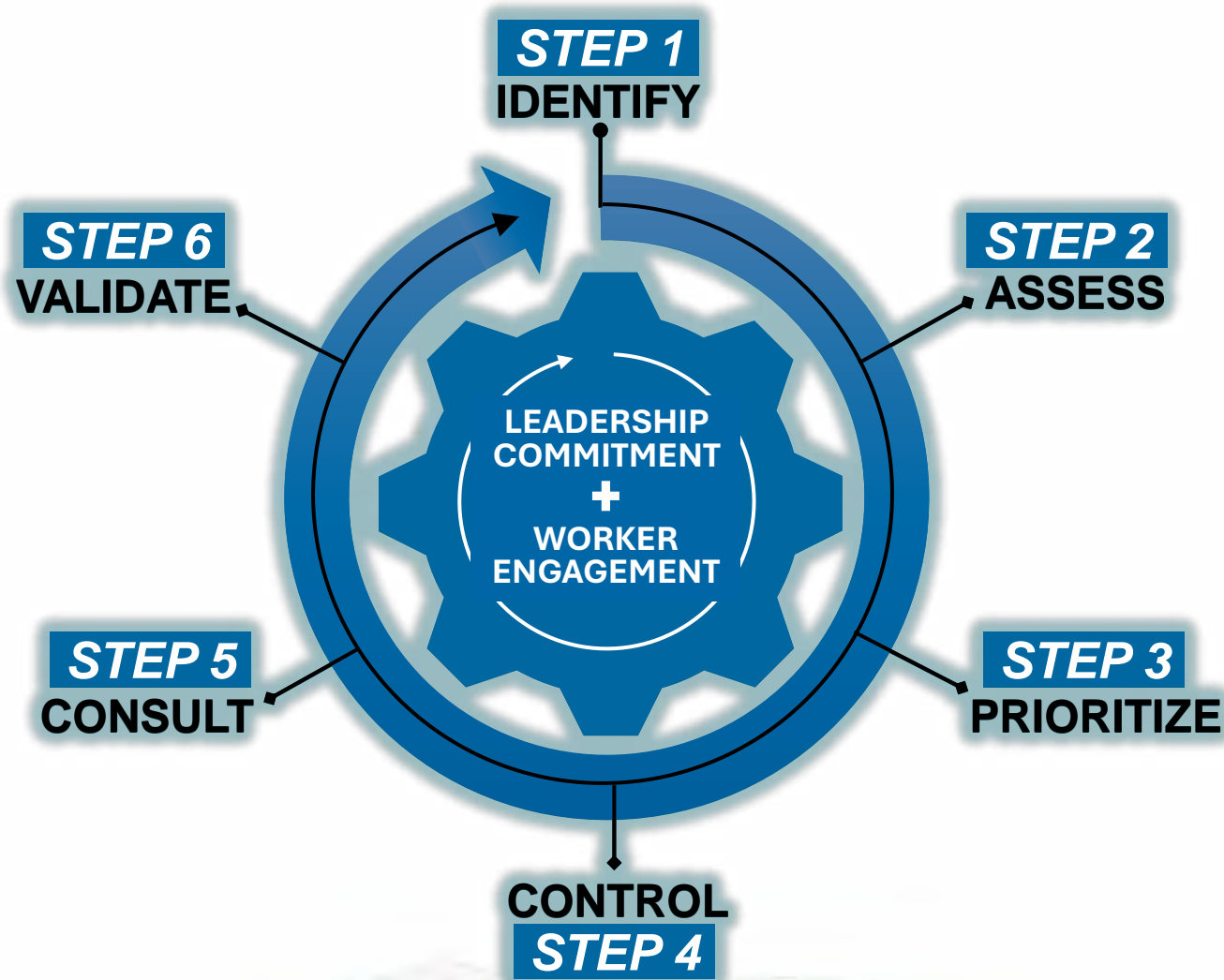


RISK MANAGEMENT FOR ERGONOMICS

MSI RISK MANAGEMENT IS A
CONTINUOUS IMPROVEMENT PROCESS



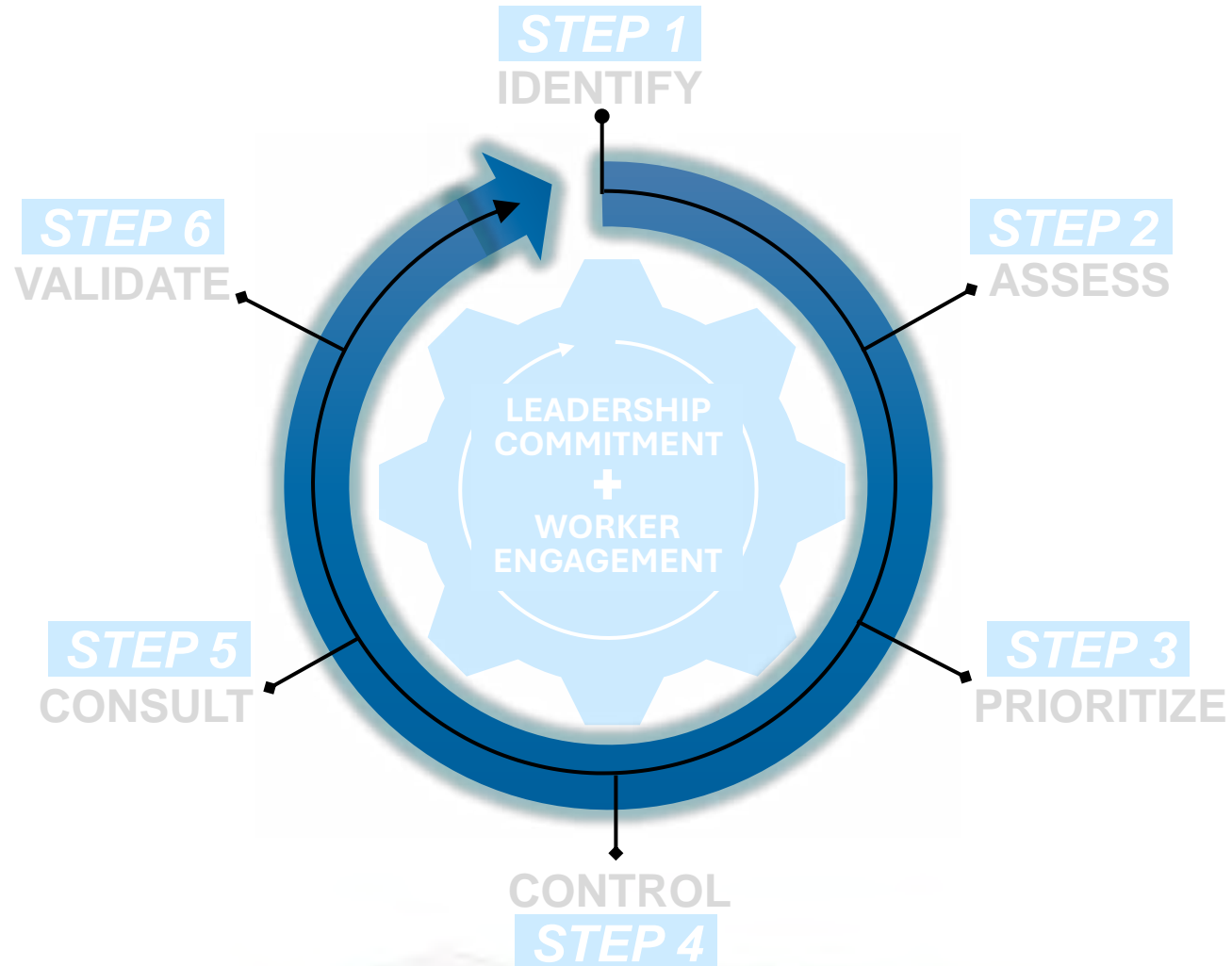
A Systematic, Step-by-Step Process



Continuous Improvement Cycle

CONTINUOUS IMPROVEMENT

The process is not linear!
Continually monitor and mitigate risks as they emerge via the same process.



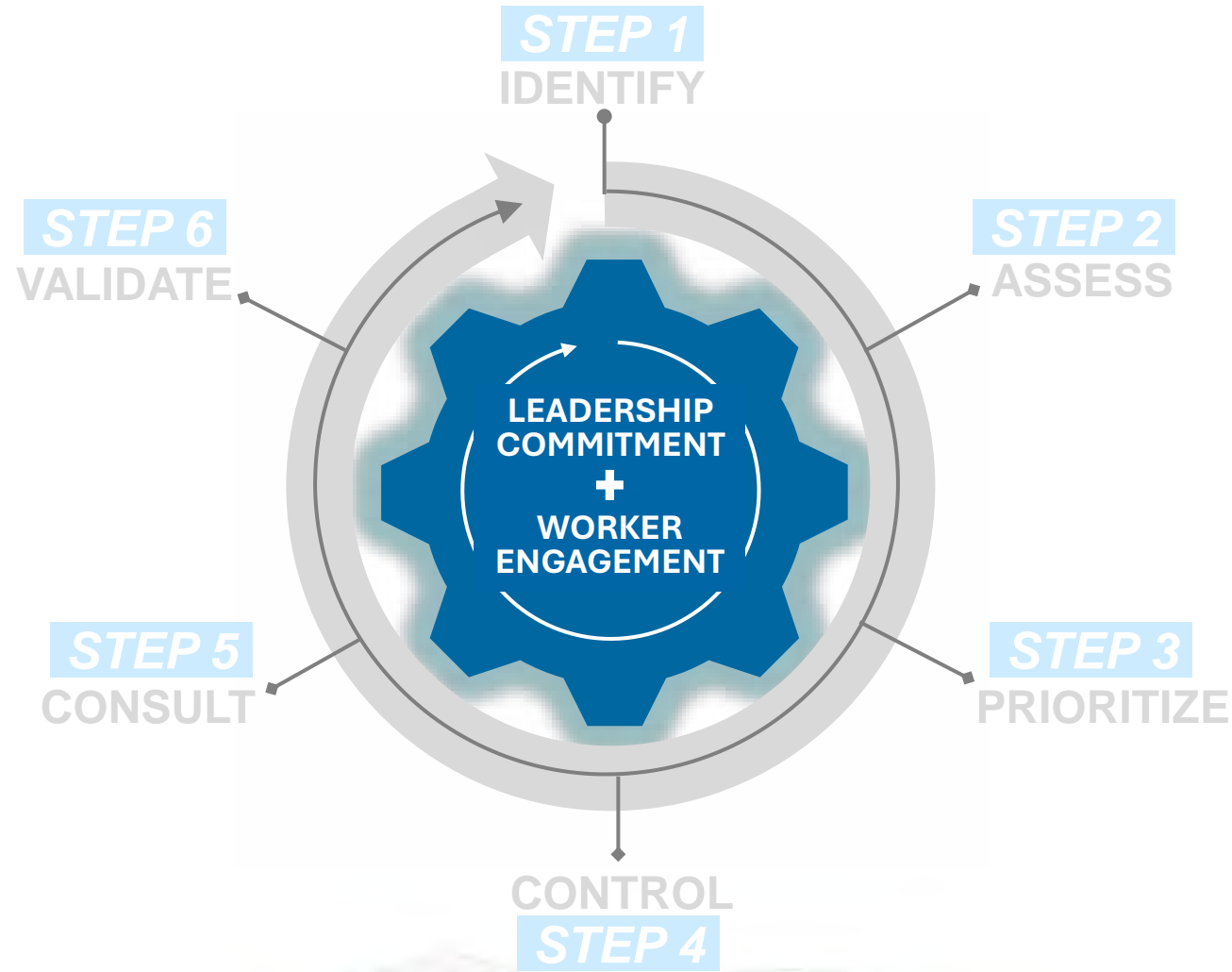
Engage Stakeholders and Gain Buy-in & Commitment

LEADERSHIP COMMITMENT

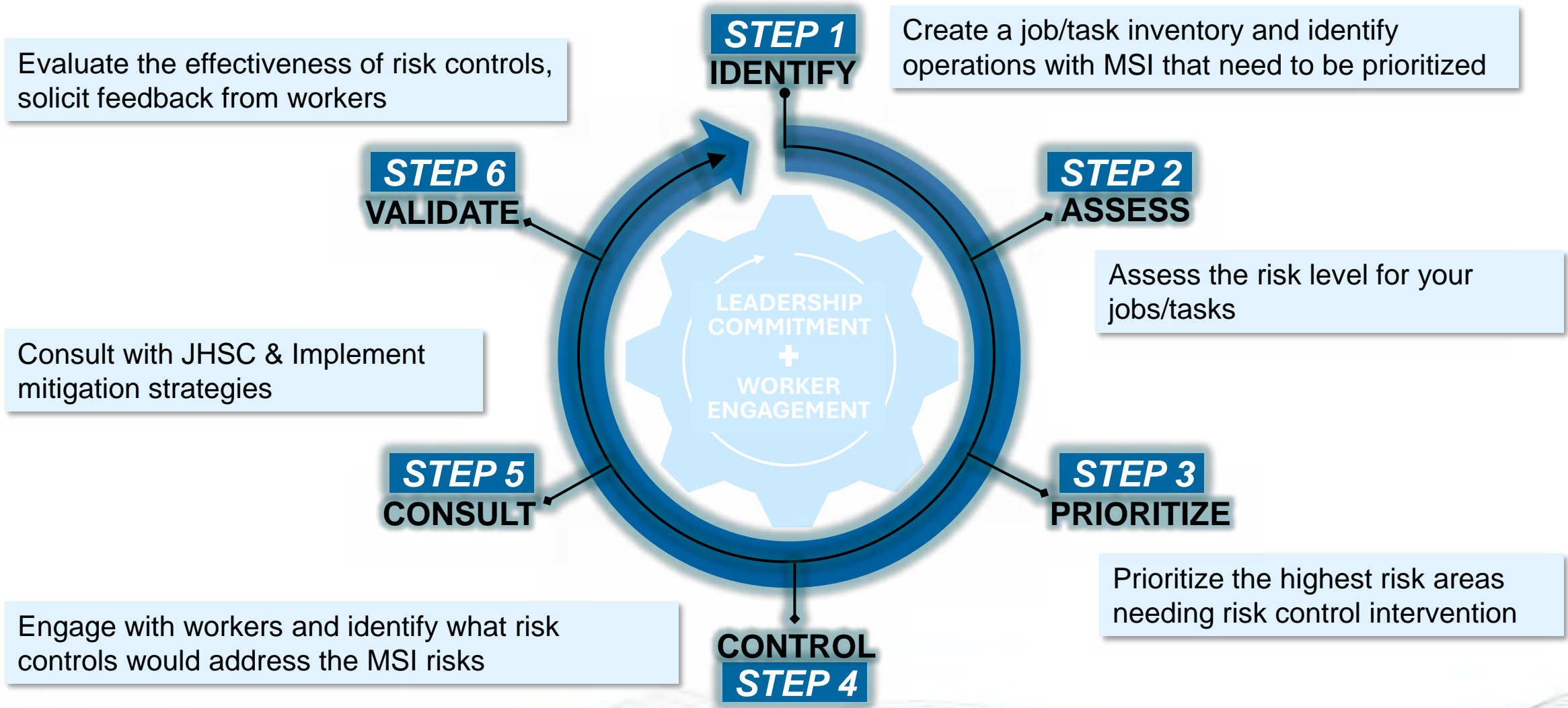
Leadership buy-in and commitment to the process is key to ensure resources and priority are allocated to this process.

WORKER ENGAGEMENT

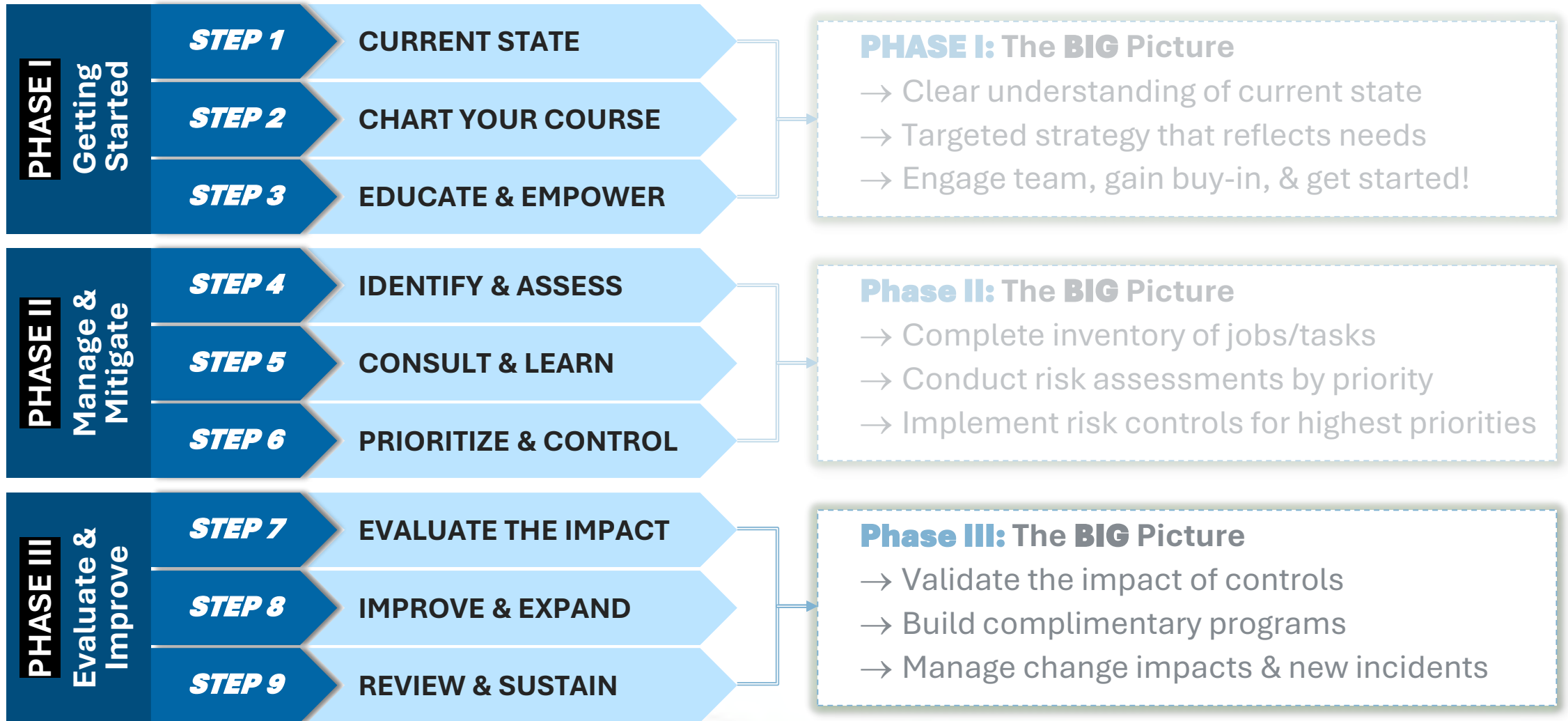
Worker engagement and consultation is vital in identifying risky tasks, verifying risk findings, and realizing effective controls.



Overview of the Steps



Charting your Course



MSABC Can Help!

Build an effective and sustainable MSI Prevention program, with resources to help with each step in the journey!



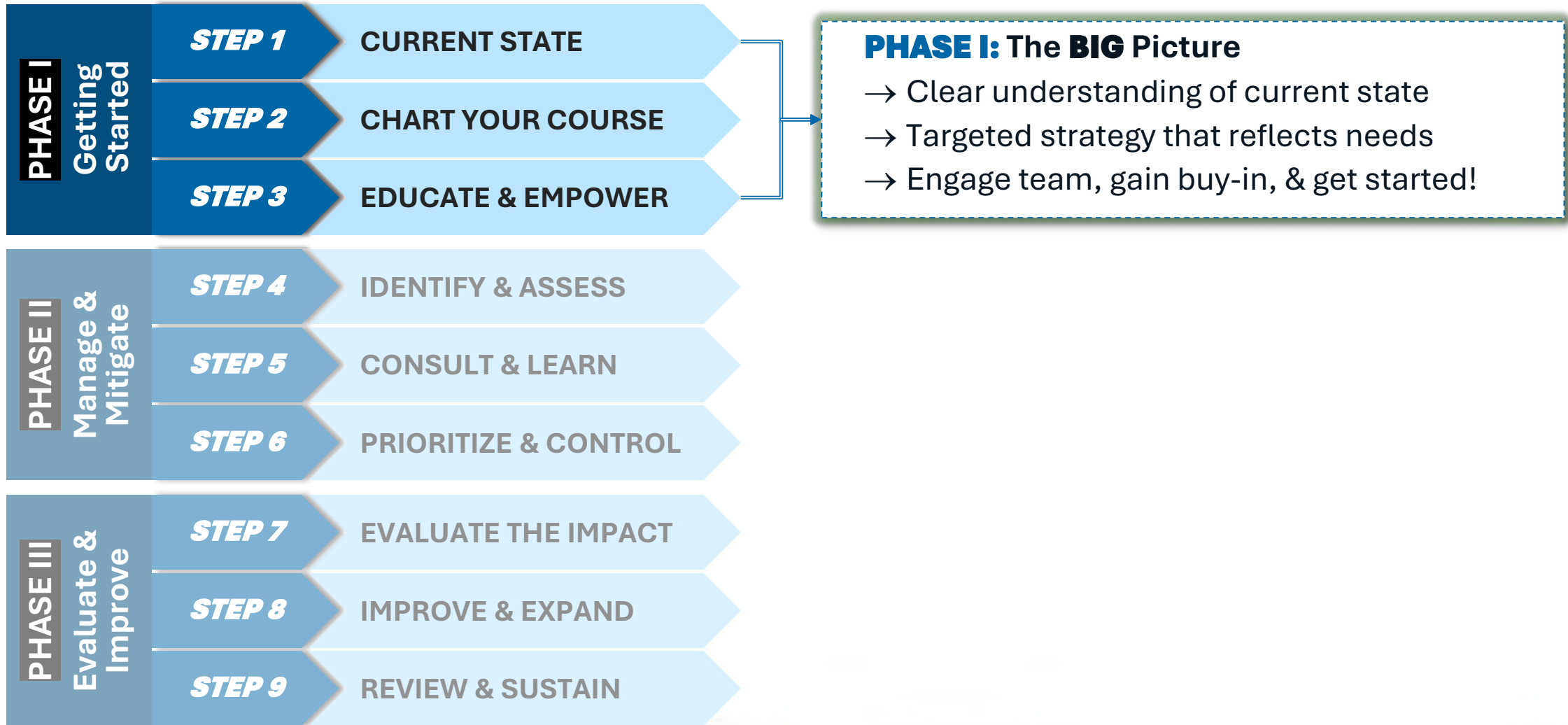
SECTION 3

Where to Start?

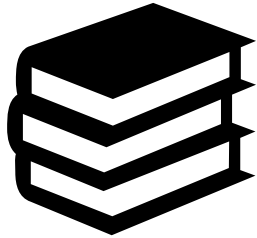
- ✓ Reviewing your WSBC Employer Report – Let your metrics guide you!
- ✓ Get started: Build know-how and capability in your team
- ✓ Get started: Educate frontline teams on Ergo risks and MSI signs & symptoms
- ✓ Get started: Focus on driving through the risk management cycle

NEXT UP: How do I expand and sustain my MSI Prevention program?

What Do I Need in Place



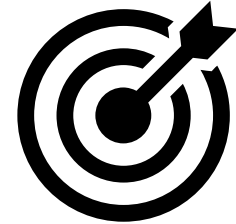
Understanding Current State



**MSI
Prevention
Requirements**



**Organization
Injury (MSI)
Metrics**



**Industry
Risks &
Metrics**

WSBC Health & Safety Planning Tool Kit

How is your organization doing?

- See how your injury costs impact your insurance rate
- See how you compare to your peers
- View your inspection history

Discover what you can do to improve

- See which injuries are driving your costs
- Learn what regulations and risks are most cited in your industry
- See your return-to-work trends
- Learn about your high duration claims

Learn more

- View your reports
- Calculate the actual cost of incidents in your workplace
- Analyze health and safety data for your industry
- Learn more about creating a healthy and safe workplace

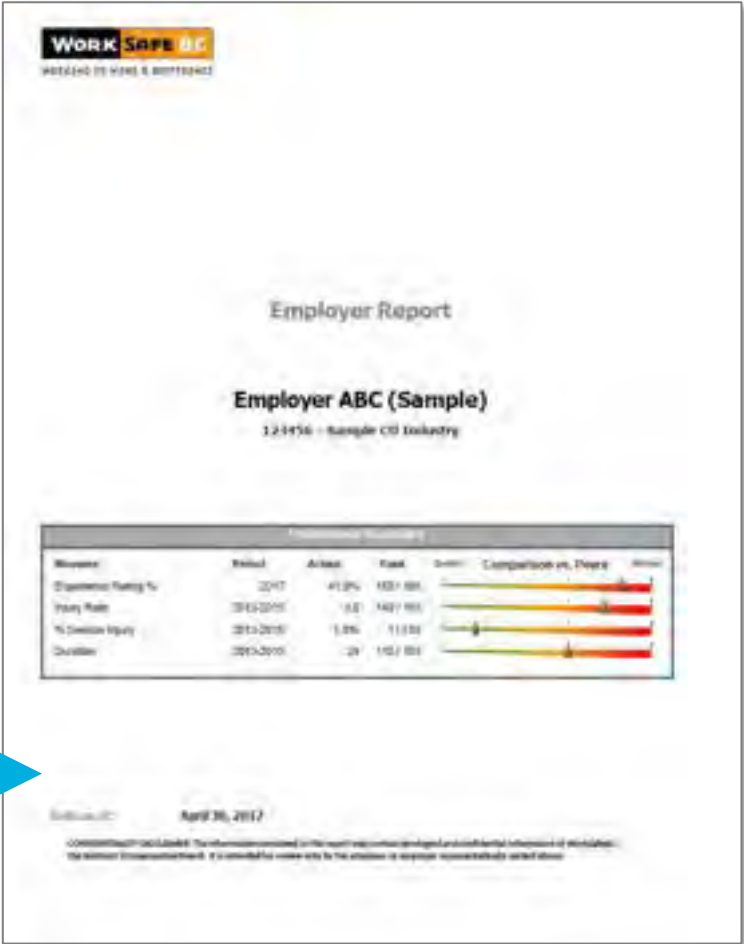
[How to use the tool kit](#) ▶

Source: [WorkSafeBC Employer Health & Safety Planning Tool Kit](#)

Understanding Current State: Employer Report



Source: [WorkSafeBC Online Services](#)



Understanding Current State: Employer Report

Experience Rating & Trends

Injury Rates & Durations

Injury Types & Body Parts

Claim Characteristics

Assessment Rates

RTW & Compliance Activities



Understanding Current State: Employer Report

Trends over Time

Work Groups Impacted

Typical Body Parts

MSI Rates & Counts

Accident Type	STD/LTD/Fatal Claims	% By Volume	Total Cost	% By Total Cost
Exposure to Heat, Cold	73	24%	\$80,777	7%
Fall on Same Level	62	21%	\$230,888	28%
Struck By	43	14%	\$93,442	11%
Overexertion	43	14%	\$181,898	22%
Struck Against	33	11%	\$115,280	14%
Fall from Elevation	15	5%	\$82,852	8%
Involuntary motion	9	3%	\$14,828	2%
Acts of Violence, Force	6	2%	\$11,781	1%
Exposure to Toxic Substances	5	2%	\$2,848	0%
Other Bodily Motion	4	1%	\$5,109	1%
Other Accidents	9	3%	\$47,193	6%
Total	302		\$826,468	

Body Part	STD/LTD/Fatal Claims	% By Volume	Total Cost	% By Total Cost
Wrist, Fingers & Hand	83	27%	\$184,757	22%
Back	43	14%	\$94,577	11%
Other Upper Extremity	37	12%	\$53,895	6%
Other Head	31	10%	\$118,480	14%
Knee	14	5%	\$42,108	5%
Ankle, Toe & Feet	11	4%	\$29,245	4%
Shoulders	8	3%	\$91,524	11%
Eye	6	2%	\$3,709	0%
Face & Ears	6	2%	\$8,101	1%
Other Body Parts	63	21%	\$204,291	25%
Total	302		\$826,468	



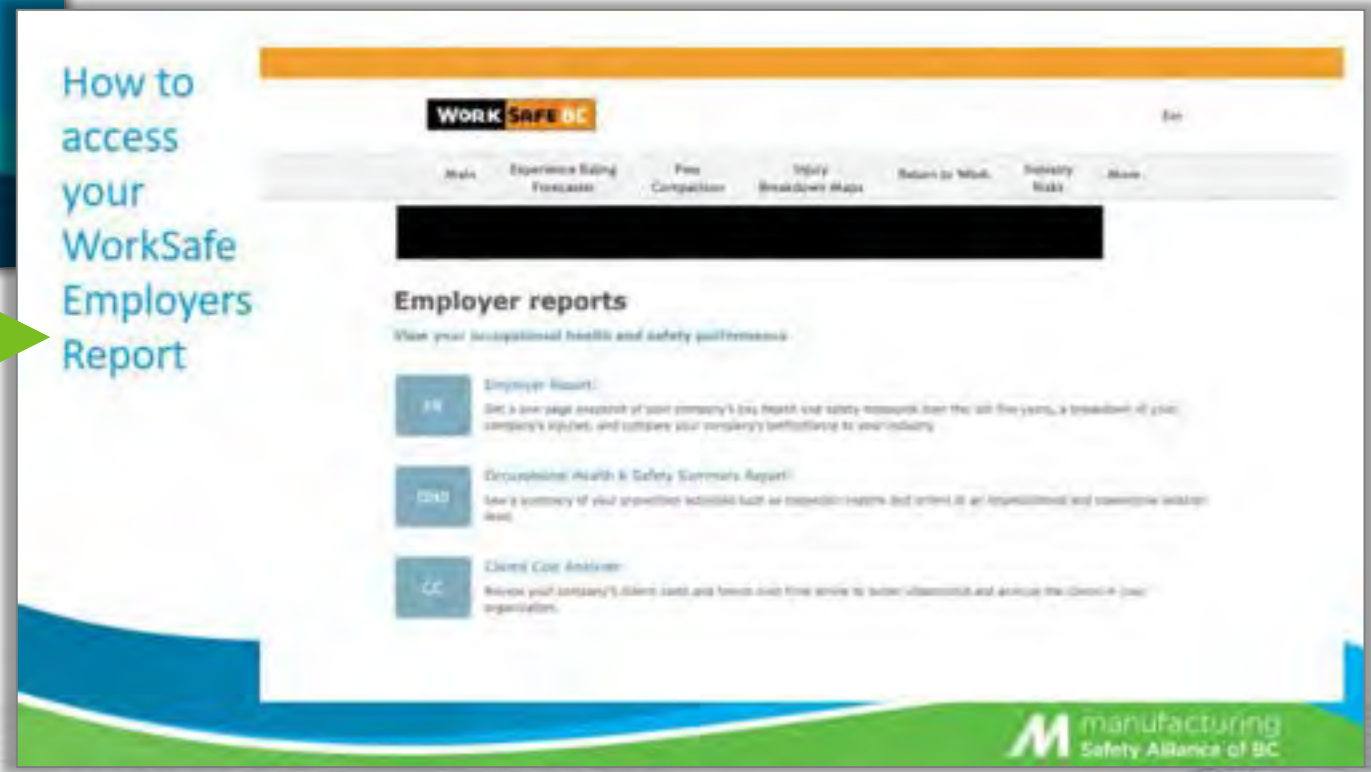
Understand your Industry Risks



Current Claim Rate Comparison			
Rate Type	CU	Subsector	Provincial
LRSS Rate	⊗ 1.15	0.73	0.37
MSI Rate	⊗ 1.85	1.27	0.62
Serious Injury Rate	⊗ 0.65	0.45	0.24
Time-loss Claim Rate	⊗ 5.45	3.67	2.02

Understand Industry Risks and Compare your organization against your CU and Subsector

Learn more about your Employer Report



Learn more about your Employer Report

The screenshot shows the website header with the logo for Manufacturing Safety Alliance of BC. The navigation menu includes: ABOUT, MEMBERSHIP, SERVICES, TRAINING, RESOURCES, COR CERTIFICATION | OSSE, and CONTACT. The RESOURCES menu is expanded, showing two columns: TOPICS and BY TYPE. The TOPICS column lists '12 Months of Safety' and 'All Safety Topics | Resources A to Z'. The BY TYPE column lists: Checklists, Guidebooks, Presentations, Quick Reference Cards, Safety Awareness Posters, Safety Videos, Templates, and Toolbox Talks. The 'Webinars' option is highlighted with a red box, and a red arrow points from the RESOURCES menu to it. Below the menu, the text 'OHS COMPETENCY TOOLS AND FRAMEWORK' is visible. On the left side of the page, there is a banner for 'Self-paced, Classroom, and Conference Training Options' with a 'Save Your Seats' button. On the right side, there is a partial view of a woman's face.

Safety Training | eLearning and Classroom Topics

Health and safety training for your business—explore 60+ topics online. Schedule 8-hour certificate training for new JHSC members. Specialized training for supervisors. Technical safety

Managing Risks starts with Understanding them

FRONTLINE TRAINING

MSI PREVENTION & ERGONOMICS

General Awareness Training
for Frontline Workers



JHSC TRAINING

MSI PREVENTION & ERGONOMICS

Risk Management Training
for JHSC, Supervisors, & EHS



Educate your workers on MSI Signs & Symptoms

SIGNS



Things that you can **SEE**.
(Directly observable)

SWELLING

LOSS OF
STRENGTH

REDNESS

LACK OF MOBILITY

SYMPTOMS



Things that you can **FEEL**.
(But *can't* see directly)



NUMBNESS

DISCOMFORT

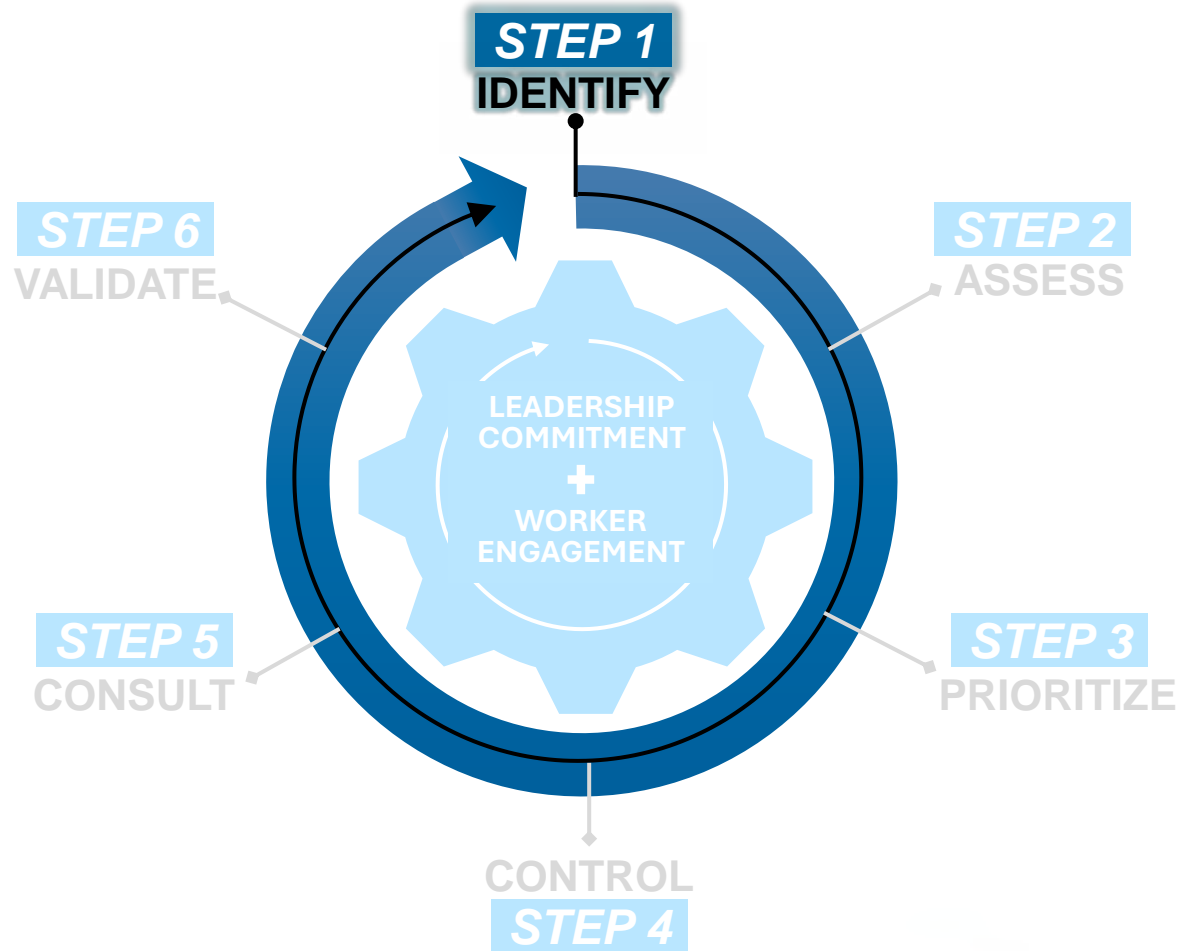
TINGLING

ACHING

BURNING

PAIN

Risk Management For Ergonomics



STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

STEP 6

The
GOAL

Systemically identify and catalog job tasks to be prioritized for Ergonomic Risk Assessment (ERA)

Keys to
SUCCESS

- Engage with team members
- Review records (2-3 Yrs)
- Create a comprehensive list
- Clearly prioritize

What do I need to do?



Guidelines - Part 4 - Ergonomics (MSI) Requirements Risk Factors G4.47 - 4.49

4.47 Risk identification

The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

4.48 Risk assessment

When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.

How are risk factors identified?

In order to identify jobs or work activities with MSI risk factors, the employer should review records, make workplace observations, and speak with workers who perform the job.

To start, the employer should check workplace records for evidence of an MSI, including first aid records, injury claims, and results of incident investigations. In the records review, a sufficient time span should be examined (e.g., 1-3 years) to ensure that any occurrences and patterns are identified. This information will help to determine priority areas for risk factor identification.

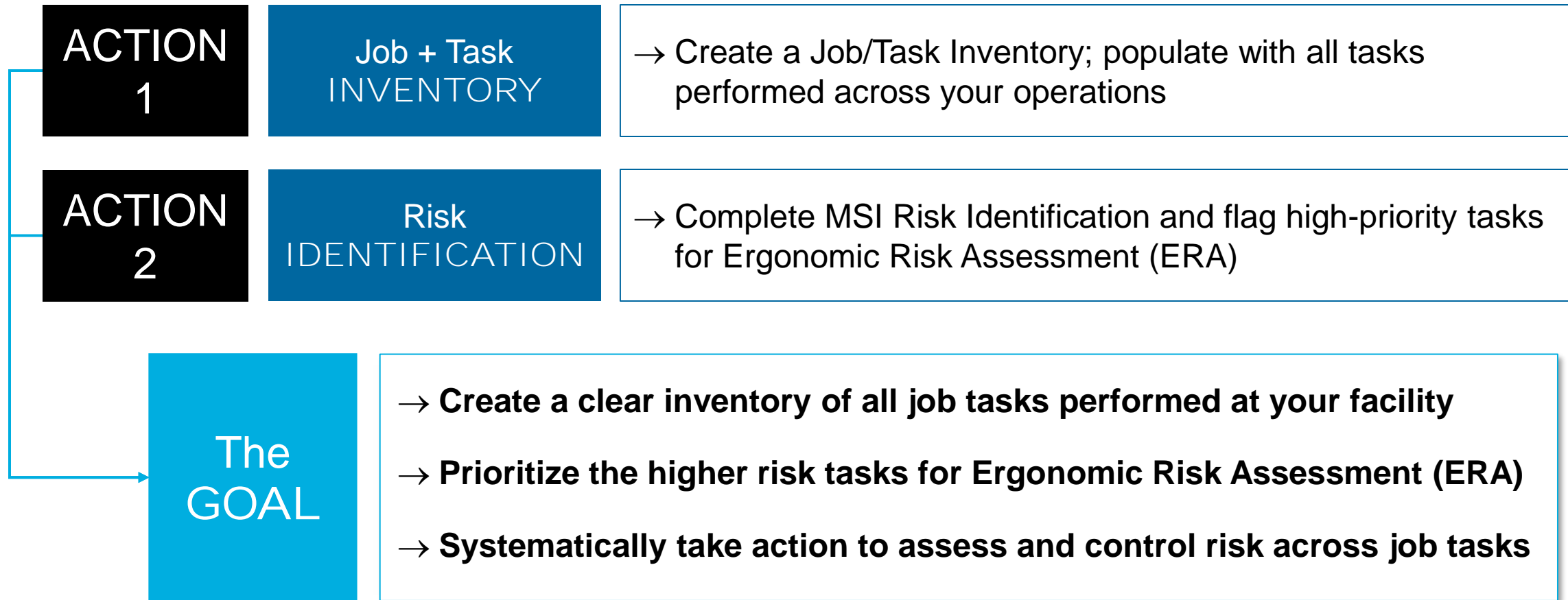
Other sources of information may include the following:

- Reports and surveys from workers and supervisors
- MSI risk factors identified in workplace inspections
- Trends in the employer's industry
- MSI statistics in similar operations where available
- MSI risk factors identified in incident investigations

Risk identification also involves direct observation of the work activities to identify MSI risk factors that may be contributing to injury. Once MSI risk factors have been identified, each risk factor must be assessed to determine the level of risk. Refer to OHS Guideline G4.48 for more information about risk assessment.

To identify MSI risk factors before an injury occurs, risk factors can be included as a part of the regular workplace inspections required under section 3.5 of the *Regulation*. Workers should be encouraged to report MSI risk factors or early signs and symptoms of an MSI to their supervisor. Also, potential MSI risk factors can be identified prior to implementing new work processes or purchasing new equipment to eliminate or minimize the risk of an MSI.

Prioritize Your Inventory



Prioritize Your Inventory

**TAKE
ACTION!**

**Prioritize
Your
Job/Task
Inventory**

1

Previous incidence of work-related MSI claims

2

First Aid records of MSI & MSI Incident Investigations

3

Worker reports of symptoms

4

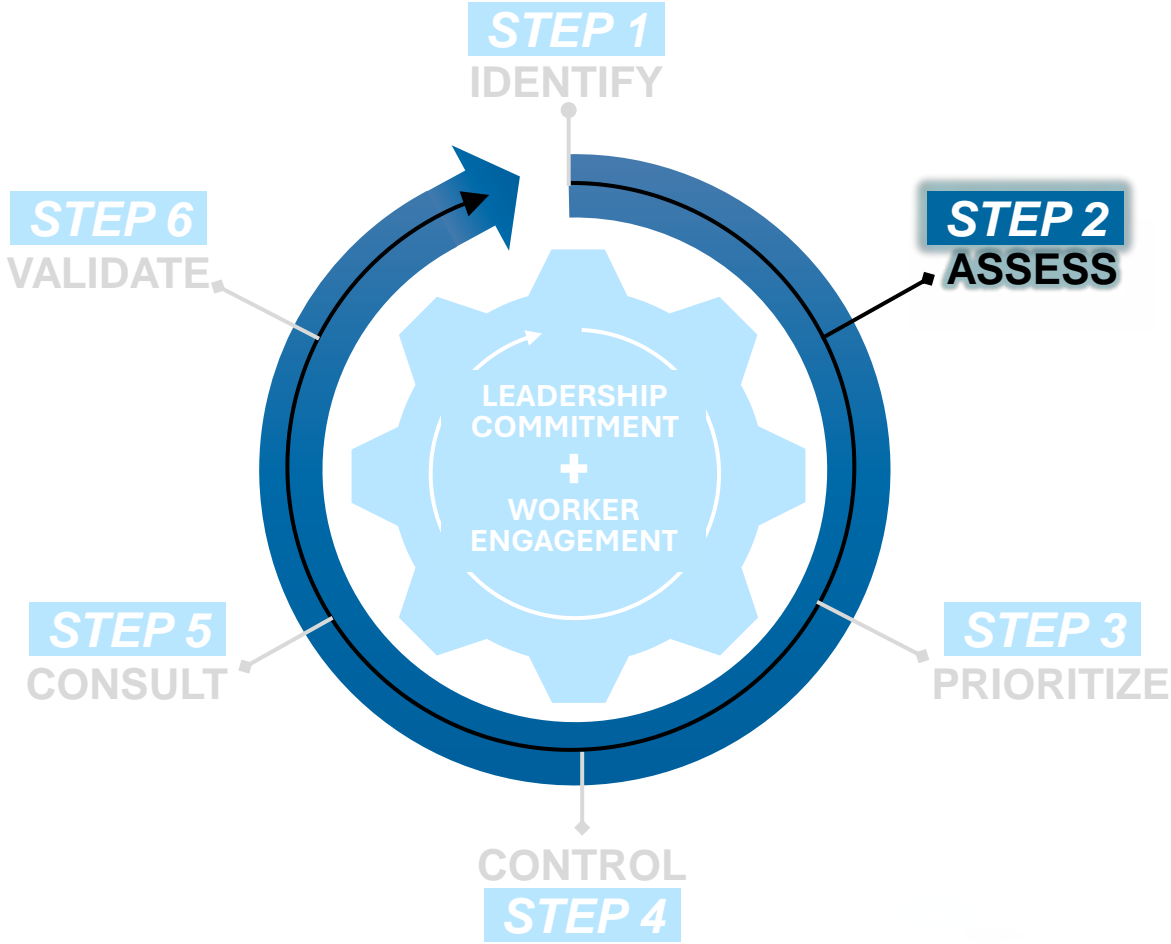
Supervisor/Worker reporting of MSI Risk Factors

5

Worker Surveys, Interviews, or Observations

REVIEW FOR MIN. 2 YEAR TIME WINDOW

Risk Management For Ergonomics



STEP 1 / **STEP 2** / STEP 3 / STEP 4 / STEP 5 / STEP 6

The GOAL

Utilize an objective Ergonomic Risk Assessment tool to assess the level of risk for job tasks

Keys to SUCCESS

- Trained, qualified assessors
- Consult & engage workers
- Capture different worker demographics
- Review with JHSC

What do I need to do?



Guidelines - Part 4 - Ergonomics (MSI) Requirements
Risk Factors 4.47 - 4.49

4.47 Risk identification

The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

4.48 Risk assessment

When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.

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) total 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:

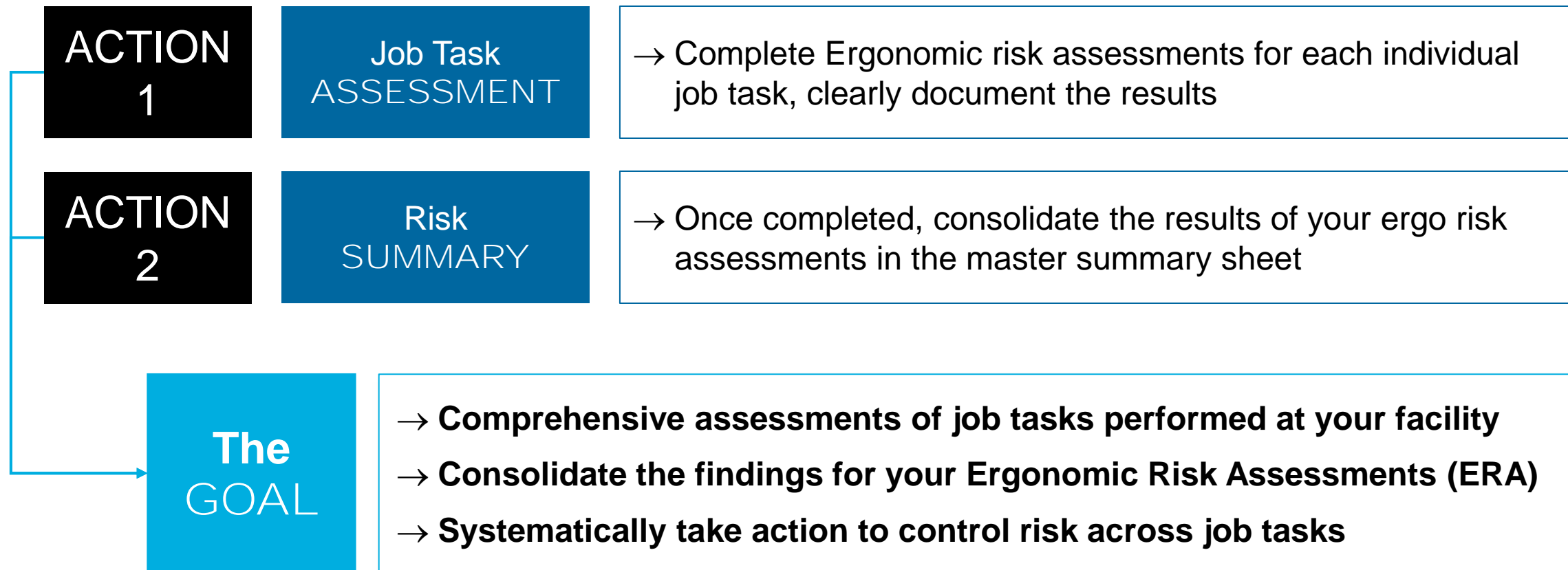
- (i) size and shape;
- (ii) load condition and weight distribution; and
- (iii) container, tool and equipment handles;

(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;

Risk Assessment Process



Risk Assessment Tools

Musculoskeletal Injury (MSI) Risk Assessment Worksheet

Instructions

- Review the Guide to Musculoskeletal Injury (MSI) Risk Assessment for information on how to conduct an MSI risk assessment. The guide also describes the physical demands risk factors and contributing risk factors that you need to consider as part of a risk assessment.
- In the "Description" section of this worksheet:
 - Note the date of the assessment and who is conducting the assessment.
 - Name and describe the job or task being assessed.
 - Note which worker representatives are participating.
- This worksheet has five sections that address different risk factors. The first part of each section covers physical demands risk factors. The second part of each section covers contributing risk factors.
- For the physical demands risk factors component of each section, consider the low, moderate, and high risk criteria for each risk factor. Check the boxes for the highest level of risk that is present.
- For low contributing risk factors component of each section, determine if any contributing risk factors are present. The presence of one or more contributing risk factors may increase the overall risk of injury.
- For each of the five sections, write notes to describe any specific observations you may have.
- On the last page, record the results on the "Summary of risk" table. The results will help you decide which risk factors pose a greater risk to workers so you can focus on controlling these risk factors first.

Description

Date: _____ Completed by: _____

Job or task being assessed:

Representative sample of workers, including workers with MSI signs and symptoms:

Joint health and safety committee (or worker health and safety representatives) reviewed?

Yes No

Page 1 of 17 | Musculoskeletal Injury (MSI) Risk Assessment Worksheet | WORK SAFE BC

MSABC Ergo Risk Summary Template

Table 1. MSI Worksheet Summary Table (ERA 1, 1 JOB | TASK)

ID#:	Completed by:			MATHS & MFL		DTR/DOUG/MP/DC	
TASK:							
DATE:							
MSI Risk Factors	n/a	LOW	MED	HIGH	Contributing Factors	Risk Controls	
FORCE							
Push/Pull							
Twist/Torque							
Lift/Carry							
Reach							
Control							
Vibration							
REPETITION							
Edged							
Wrist							
Hand							
Elbow							
Shoulder							
POSTURE							
Neck							
Back							
CONTACT STRESS							
Hands							
Knees							
Local Pressure							
HAND-ARM VIBRATION							
Right Hand							
Left Hand							

Contributing Risk Factors

Aspects of the Work:

- Working in Working
- Working in Working
- Working in Working
- Working in Working

Control Measures:

- 1. Job & Task
- 2. Work Cycle
- 3. Work Cycle
- 4. Work Cycle

Organizational Issues:

- A. Work Recovery Cycle
- B. Task Variety
- C. Work Pace

NOTES:

- Enter notes here
- Enter notes here
- Enter notes here

Reviewed by: Yes No Date Reviewed: 1/20/2022

Getting Support




manufacturing
Safety Alliance of BC

**Interested in getting more hands-on
training on using the MSI worksheet**

New MSABC Training is now Available!


manufacturing
Safety Alliance of BC

➔ Email @ W.Thomas@safetyalliancebc.ca

SECTION 4

Where do I go?

- ✓ Engage with your teams and implement a formal JHSC consultation process
- ✓ Once we understand the level of risk, we can then prioritize intervention
- ✓ Focus on risk control and mitigation!
- ✓ Engage with your teams and validate outcomes
- ✓ Ask for help!

What do I need to do?

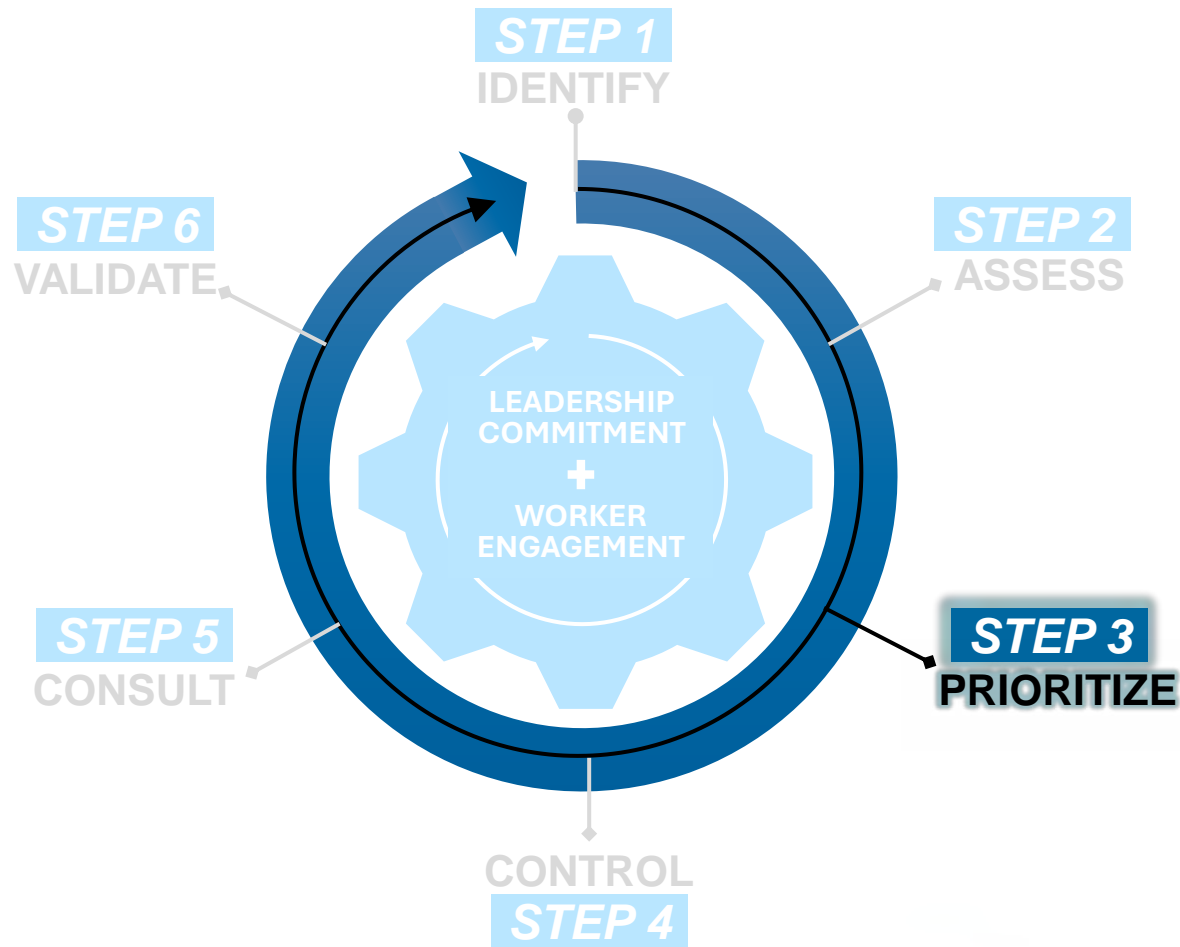


Guidelines - Part 4 - Ergonomics (MSI) Requirements
[Risk Control 4.50](#)

4.50 Risk control

- (1) The employer must eliminate or, if that is not practicable, minimize the risk of MSI to workers.
- (2) Personal protective equipment may only be used as a substitute for engineering or administrative controls if it is used in circumstances in which those controls are not practicable.
- (3) The employer must, without delay, implement interim control measures when the introduction of permanent control measures will be delayed.

Risk Management For Ergonomics



STEP 1 STEP 2 **STEP 3** STEP 4 STEP 5 STEP 6

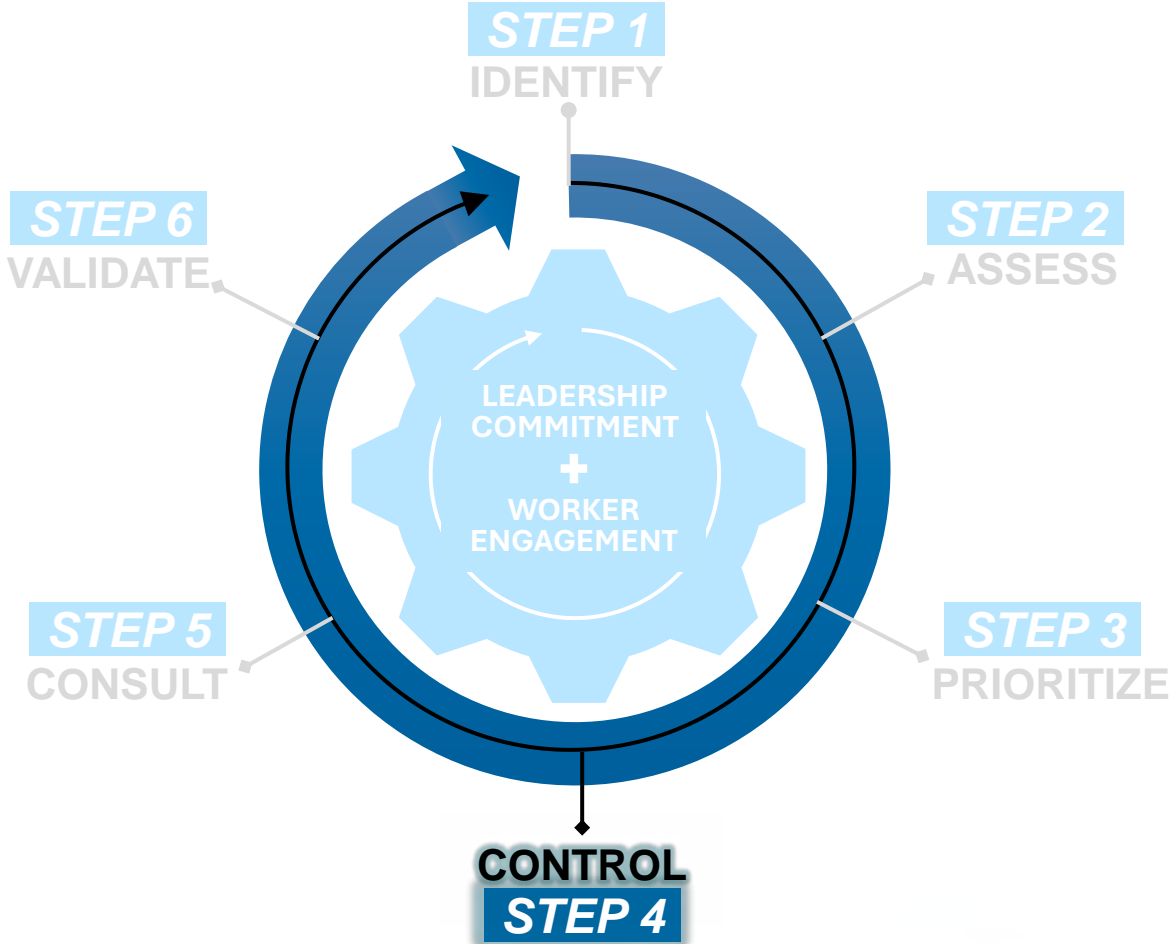
The
GOAL

Clearly document and prioritize the completed risk assessments to target action to highest risks

Keys to
SUCCESS

- Consolidate risk assessments results
- Prioritize by risk level
- Act on highest risks first!

Risk Management For Ergonomics



STEP 1 STEP 2 STEP 3 **STEP 4** STEP 5 STEP 6

The GOAL

Engage stakeholders and implement controls for the highest risk tasks to mitigate exposures

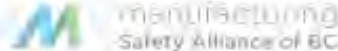
Keys to SUCCESS

- Engage a cross functional team
- Brainstorm and gain as many perspectives as possible
- Consult before acting!

Risk Control Brainstorming Process



Risk Control Brainstorming



 manufacturing
 Safety Alliance of BC

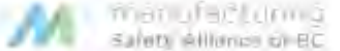
ERGONOMIC LEARNING TEAM

Risk Controls Brainstorming Sheet

STEP 1 REVIEW RISK FINDINGS	Review the assessment findings and write out the key risks that should be prioritized	
STEP 3 ENGAGE THE RIGHT PEOPLE	Write out a list of who should be engaged in the process and why	

PROBLEM	statement(s)	

MSABC Ergo Risk Control Brainstorming Template

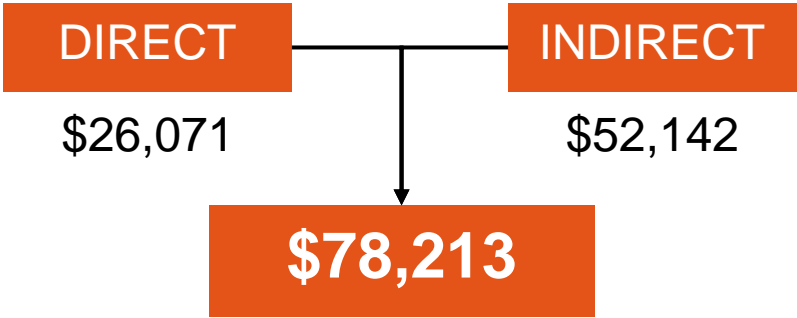


 manufacturing
 Safety Alliance of BC

STEP 4 INDIVIDUAL BRAINSTORM	Brainstorm independently and write out a list of as many proposed controls as you can think of													
STEP 5 GROUP BRAINSTORM	Share your risk control ideas with the group – write out a 'prioritized' list of the most effective options	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;">Elimination</td> <td style="width: 40%;"></td> <td style="width: 45%;"></td> </tr> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;">Substitution</td> <td style="width: 40%;"></td> <td style="width: 45%;"></td> </tr> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;">Engineering</td> <td style="width: 40%;"></td> <td style="width: 45%;"></td> </tr> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;">Admin.</td> <td style="width: 40%;"></td> <td style="width: 45%;"></td> </tr> </table>	Elimination			Substitution			Engineering			Admin.		
Elimination														
Substitution														
Engineering														
Admin.														

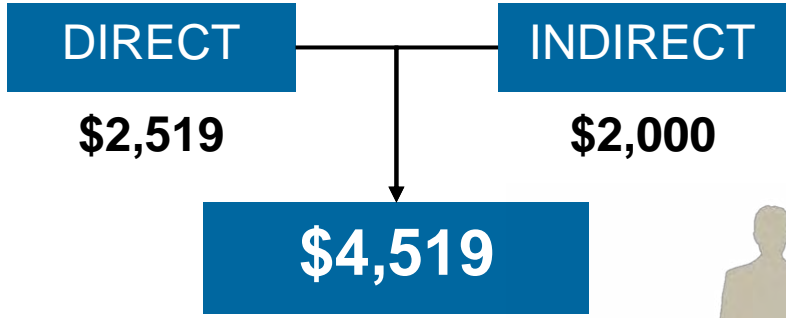
It's not about adding costs, it's about offsetting them.

MSI COSTS



VS

CONTROL COSTS

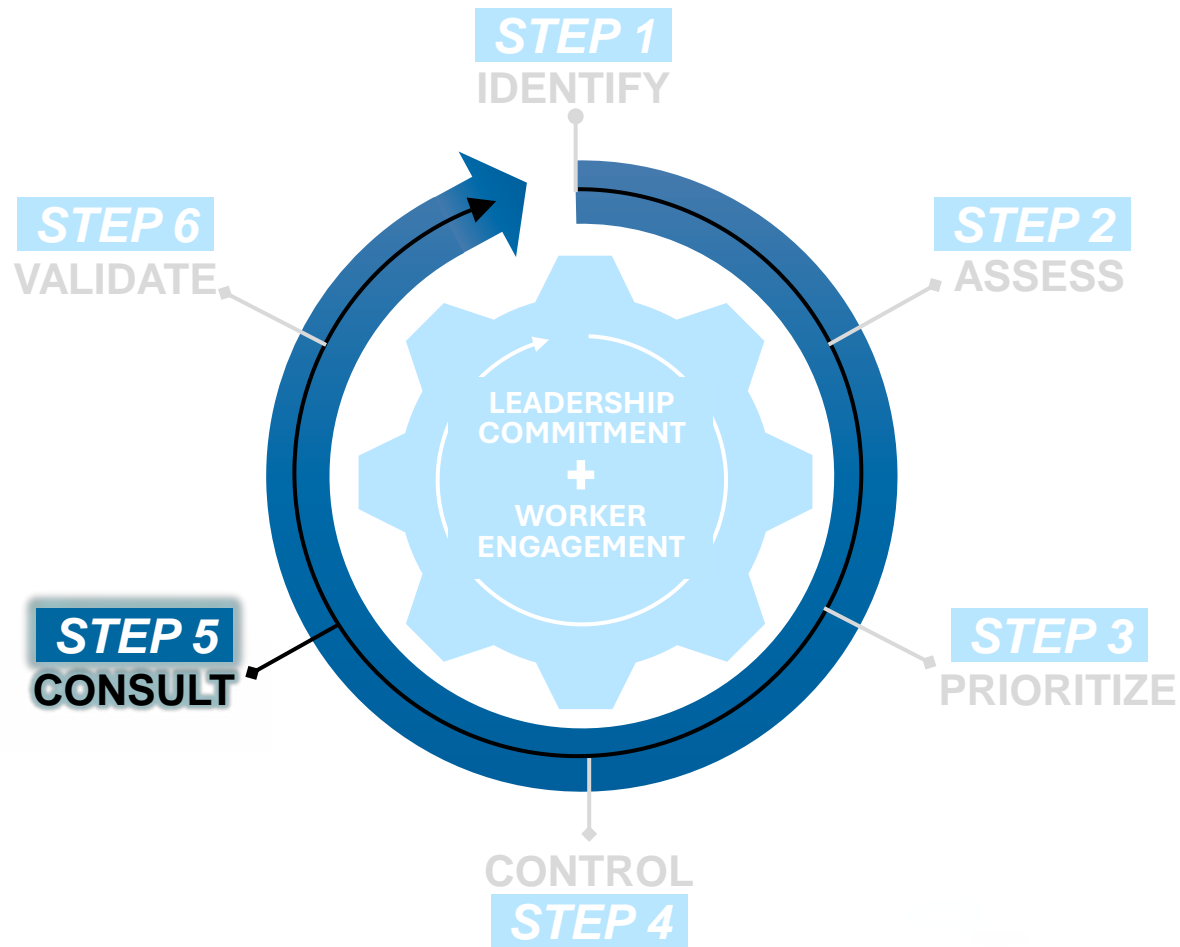


If the equipment offsets ONE (1) MSI

3.75X on Direct Costs

15X on Total Costs

Risk Management For Ergonomics



STEP 1 STEP 2 STEP 3 STEP 4 **STEP 5** STEP 6

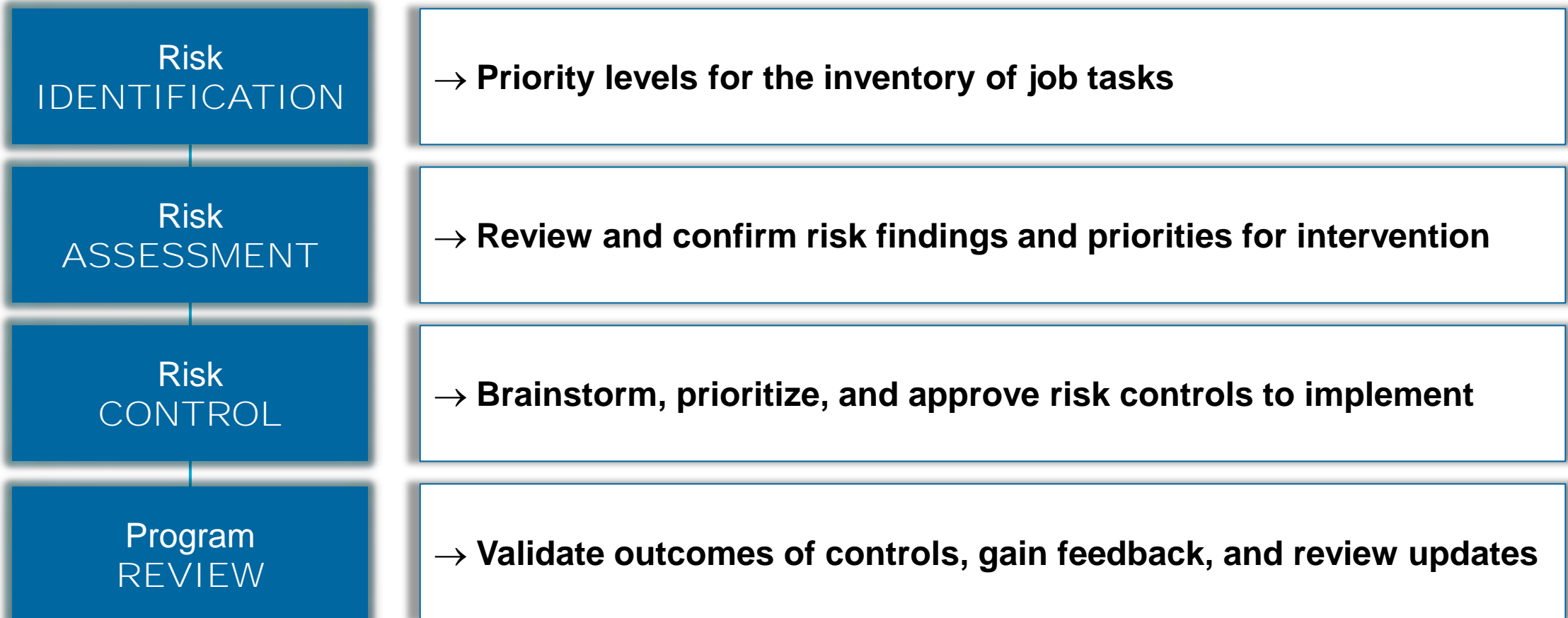
The
GOAL

Consult with your JHSC and Leadership team to align & prioritize effective risk controls

Keys to
SUCCESS

- **Overtly review & discuss with JHSC & Site Leads**
- **Review proposed controls**
- **Align on responsibilities, timeline & next steps, then implement controls!**

When to Consult?



Consultation is an **ongoing, cyclical process** and is a key factor in long-term continuous improvement and proactive risk management

Putting Ideas into Practice: Consultation



REVIEW RISK ASSESSMENT FINDINGS & INSIGHTS



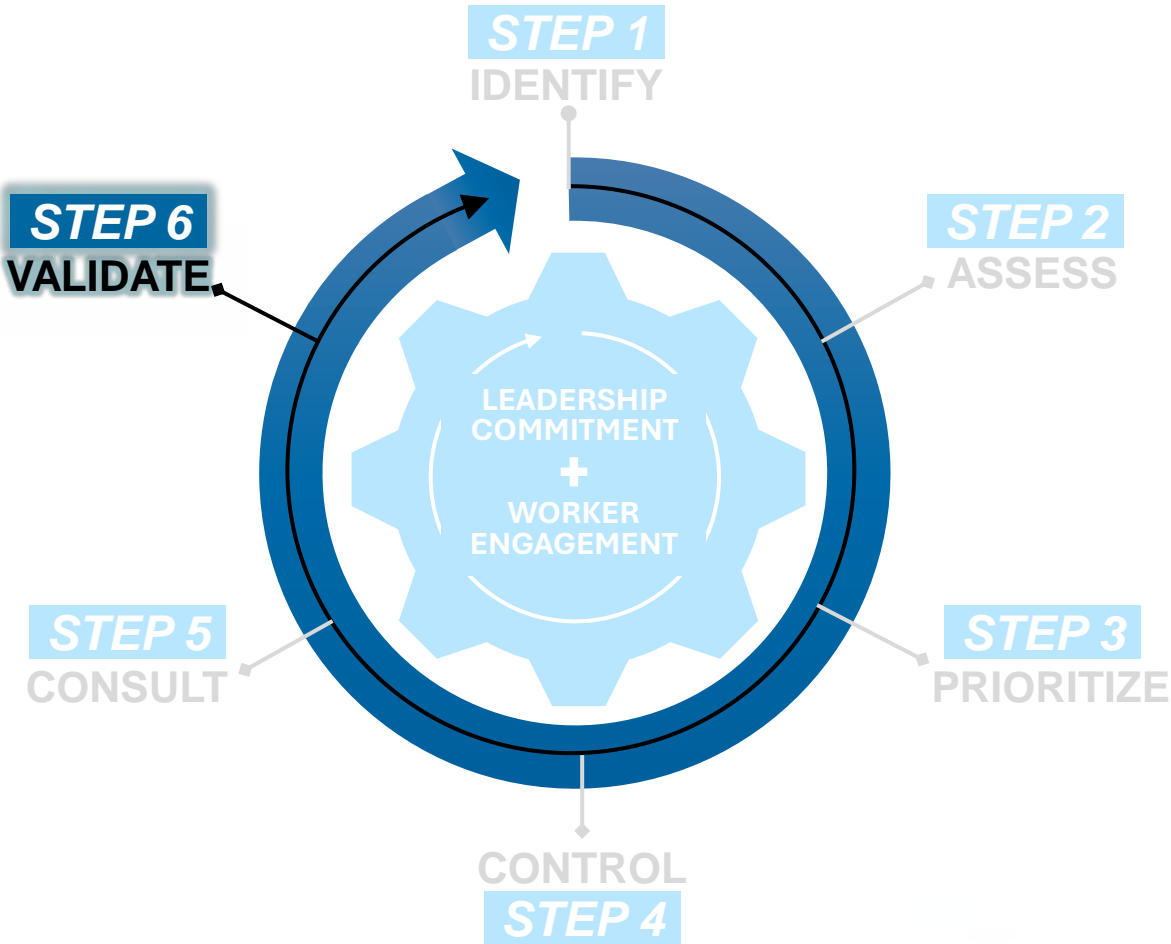
DISCUSS EXPERIENCES OF FRONTLINE WORKERS



HANDS-ON REVIEW OF WORK AREA & OPERATION

AS A TEAM DEFINE WHAT RISK CONTROLS WOULD WORK BEST TO ADDRESS THE RISK & CONCERNS OF WORKERS

Risk Management For Ergonomics



STEP 1 STEP 2 STEP 3 STEP 4 STEP 5 **STEP 6**

The GOAL

Re-asses the risk level and solicit feedback from workers to validate risk reduction

- Keys to SUCCESS**
- **Ensure team members are trained on new controls**
 - **Re-assess risk levels**
 - **Solicit feedback from workers on their experiences**

Getting Support: MSI Risk Controls



→ Email @ W.Thomas@safetyalliancebc.ca

SUMMARY

- ✔ MSIs continue to be the most prevalent injury type – contributing to significant organizational costs and impacts to frontline workers
- ✔ Ergonomics and MSI Prevention are Critical to your organization's future success and profitability
- ✔ Understanding where you are at now is a critical first step to charting your path forward
- ✔ Focus on high-loss areas and drive through the full risk management process to mitigate risks!
- ✔ MSABC can help!
 - Reach out for support with training or building an Action Plan