Manual Handling Is a System Failure

The Most Persistent Failure in Modern Safety Systems

There are very few hazards in occupational health and safety that have received as much sustained attention as manual handling and musculoskeletal disorders. For decades, organizations have invested in training programs, ergonomic assessments, lifting guidelines, and awareness campaigns designed to reduce strain and prevent injury. Workers across industries can recite the principles of safe lifting with a level of familiarity that few other safety topics achieve. And yet, despite this depth of awareness, MSDs continue to dominate injury statistics across Canada, consistently representing one of the largest categories of lost-time claims and compensation costs.

This persistence is not the result of neglect. It is the result of a mismatch between how the problem is understood and how it is actually created in the workplace. Most prevention strategies have been built on the assumption that injuries occur because workers perform tasks incorrectly, and that correcting behaviour will reduce risk. While behaviour plays a role, it is rarely the root cause. The more fundamental issue is that the conditions under which work is performed often make safe execution difficult, inconsistent, or impractical.

When a hazard persists despite sustained intervention, it is rarely a training problem. It is a system problem.

Why Behaviour-Based Prevention Reaches a Ceiling

The logic behind behaviour-based prevention is straightforward. If workers are trained to lift properly, avoid awkward postures, and use available aids, then injuries should decrease. This approach is appealing because it is relatively easy to implement, scalable across organizations, and aligns with traditional models of safety training.

However, it relies on a critical assumption—that workers have both the ability and the opportunity to apply what they have been taught consistently.

In practice, this assumption breaks down quickly.

Work is performed under time pressure, often in environments that are not designed for ideal movement. Loads are irregular, space is constrained, and tasks are repetitive. Equipment may exist, but it is not always positioned where it is needed or integrated into workflow. Workers are required to make continuous adjustments to complete tasks efficiently, and those adjustments often involve trade-offs between speed and physical strain.

Under these conditions, behaviour becomes an output of the system, not an independent variable. Workers do not simply choose between safe and unsafe actions. They respond to the constraints and incentives embedded in their environment.

This is why behaviour-based interventions tend to produce initial improvements that plateau over time. They address awareness, but not the structural factors that shape execution.

Understanding MSDs as a Product of Work Design

To move beyond this plateau, it is necessary to reframe how MSDs are understood.

Rather than viewing them as isolated incidents caused by improper technique, they need to be seen as the cumulative outcome of how work is designed and performed over time. Every lift, every reach, every repetition contributes to a pattern of exposure that either remains within sustainable limits or gradually exceeds them.

This perspective shifts attention from individual actions to systemic conditions.

It raises questions about how tasks are structured, how frequently they are performed, and what physical demands they impose. It highlights the importance of factors such as load characteristics, workspace layout, workflow design, and pacing. It also brings into focus the interaction between physical demands and human capacity, particularly over extended periods.

When MSDs are viewed through this lens, prevention becomes less about correcting isolated behaviours and more about shaping the conditions that produce those behaviours.

The Role of Exposure and Accumulation

One of the defining characteristics of musculoskeletal disorders is that they develop through accumulation rather than singular events. Unlike acute injuries, which are often linked to a specific incident, MSDs emerge from repeated exposure to suboptimal conditions. This makes them more difficult to detect, analyze, and prevent using traditional incident-based approaches.

A single lift may not pose significant risk. But when that lift is repeated hundreds or thousands of times, particularly under conditions of fatigue or constraint, the cumulative effect becomes significant. Similarly, a posture that is slightly awkward may be manageable in isolation, but when sustained over long periods, it contributes to strain and injury.

This cumulative nature of MSDs requires a different approach to risk assessment.

Rather than focusing solely on whether a task can be performed safely once, organizations need to consider whether it can be performed safely repeatedly, over the duration of a shift, week, or career. This introduces the concept of sustainable work, where tasks are evaluated not just for immediate safety, but for their long-term impact on worker capacity.

Where Most Systems Lose Visibility

Despite the importance of exposure and accumulation, many organizations have limited visibility into these factors. Hazard assessments may identify manual handling risks, but they often do so at a high level, without capturing the frequency, duration, and variability of tasks. Observations may be conducted, but they are not always structured in a way that reveals patterns over time.

This lack of visibility creates a blind spot.

Organizations know that manual handling occurs, but they do not fully understand how it is performed across different contexts and conditions. They may not recognize which tasks contribute the most to cumulative strain, or how changes in workflow affect exposure.

As a result, interventions may be applied broadly rather than targeted where they will have the greatest impact.

Improving visibility requires more detailed analysis of tasks and more systematic observation of how work is actually performed. It also requires integrating this information into decision-making processes, rather than treating it as a one-time assessment.

Bridging the Gap Between Design and Execution

Even when risks are identified and solutions are proposed, there is often a gap between design and execution. Controls may be implemented, but not consistently used. Equipment may be available, but not integrated into workflow. Procedures may be defined, but not aligned with operational realities.

This gap is where many MSD prevention efforts falter.

Bridging it requires a focus on practicality and integration.

Controls need to be designed in a way that makes them the easiest option for workers to use. Equipment needs to be accessible, intuitive, and aligned with the pace of work. Procedures need to reflect how tasks are actually performed, not how they are ideally performed.

This is not simply a matter of compliance. It is a matter of usability.

When controls are easy to use and aligned with workflow, adoption increases naturally. When they are difficult or disruptive, they are bypassed, regardless of training.

The Critical Role of Supervision and Feedback

Supervisors play a pivotal role in ensuring that MSD prevention strategies translate into practice. They are the link between system design and day-to-day execution, and their

observations provide valuable insight into how work is actually performed.

However, this role is often underdeveloped.

Supervisors may be trained to enforce rules, but not to analyze work processes or identify early indicators of strain. They may focus on compliance with procedures rather than understanding why deviations occur.

Developing this capability requires a shift in expectations.

Supervisors need to be equipped to observe tasks critically, identify patterns of strain, and provide feedback that informs system improvements. They need to understand not just what is happening, but why it is happening.

This creates a feedback loop between execution and design, allowing organizations to continuously refine their approach.

Aligning Accountability Across the Organization

One of the reasons MSDs persist is that responsibility for prevention is often fragmented. Safety teams develop policies and conduct training, but they do not control how work is designed or executed. Operations teams control workflow and productivity, but may not fully account for physical demands. Supervisors operate at the intersection, but may lack the authority or resources to implement changes.

This fragmentation limits effectiveness.

Addressing MSDs requires alignment across these functions.

Safety needs to provide expertise and guidance. Operations needs to integrate ergonomic considerations into planning and decision-making. Supervisors need to implement and reinforce practices in the field.

When these roles are aligned, prevention becomes part of how the organization operates, rather than an overlay.

From Compliance to System Performance

The final shift is moving from a compliance mindset to a performance mindset.

Compliance focuses on meeting requirements—having policies, providing training, documenting actions. Performance focuses on outcomes—how work is actually performed, how risks are managed, and how systems respond under real conditions.

In the context of MSDs, this means evaluating whether the system is producing sustainable work.

Are workers able to perform tasks without excessive strain?
Are controls effective in practice?
Is exposure being reduced over time?

These questions go beyond compliance. They assess the health of the system itself.

Final Thoughts

Musculoskeletal disorders are often treated as a persistent but manageable aspect of work.

In reality, they are a signal.

A signal that the design of work and the capacity of workers are not fully aligned.

Organizations that respond to this signal by reinforcing training will see limited improvement. Those that respond by examining and redesigning their systems will begin to see meaningful change.

Because the goal of modern OHS is not simply to prevent individual injuries.

It is to build systems where safe, sustainable work is the natural outcome.

And that is where MSD prevention ultimately belongs—not at the level of instruction, but at the level of design.