When the Environment Becomes the Hazard



The Shift Most Safety Systems Weren’t Designed For

For decades, occupational health and safety systems have been built around a stable assumption: hazards originate within the workplace, and with the right combination of engineering controls, procedures, training, and supervision, those hazards can be identified, assessed, and controlled.

That assumption is no longer holding.

Across Canada, a different pattern is emerging—one that is reshaping how risk actually enters the workplace. Heat waves are lasting longer and reaching higher intensities. Wildfire smoke is traveling across provinces, affecting regions far removed from the fire itself. Severe weather events are becoming less predictable, more intense, and more disruptive to operations.

These are not isolated events. They are becoming part of the operating environment.

And that creates a structural problem for many OHS systems. They were designed to manage fixed hazards in relatively stable conditions. They were not designed to manage hazards that change the conditions themselves.

This distinction matters more than it first appears. When the environment becomes the hazard, it does not simply add another risk to the list. It alters how every other hazard behaves.

Why Climate Hazards Are Different from Traditional Risks

Most workplace hazards can be isolated and controlled within defined boundaries. A machine can be guarded. A chemical can be contained. A process can be engineered to reduce exposure. These controls are built around predictability.

Climate-related hazards operate differently.

They are variable, often rapidly changing, and frequently outside the direct control of the employer. More importantly, they interact with existing hazards in ways that amplify risk across the system.

A job that is safe under moderate temperatures may become high-risk during extreme heat, not because the task itself has changed, but because the worker’s capacity to perform it safely has been reduced. A worksite that is well-managed under normal air quality conditions may become hazardous when wildfire smoke reduces visibility and impairs respiratory function. A routine outdoor task may become unstable when severe weather alters ground conditions, equipment performance, and communication.

In each case, the hazard is not just the environment. The hazard is the way the environment changes everything else.

This is where traditional hazard assessment models begin to fall short. They are typically built around identifying discrete hazards and assigning fixed controls. They struggle when the underlying conditions that those controls depend on are no longer stable.

How Canadian Workplaces Are Already Experiencing This Shift

Recent years have provided multiple examples of how climate-related hazards are reshaping workplace risk across Canada.

The 2021 heat dome in British Columbia created conditions where outdoor work became physically dangerous within hours, and indoor environments without adequate cooling became heat traps. Workers in construction, agriculture, utilities, and municipal services were exposed to sustained high temperatures that exceeded the assumptions built into existing safety procedures.

Wildfire seasons have expanded both in duration and geographic reach. Smoke from fires in one region can affect air quality hundreds or even thousands of kilometres away. This has introduced respiratory and visibility risks into industries that historically did not have to manage them, including transportation, logistics, and urban construction.

Severe weather events, including flooding, high winds, and sudden temperature shifts, are increasingly disrupting operations. These events affect footing, equipment stability, emergency response times, and communication systems. They also create pressure to accelerate work before conditions worsen, which can lead to shortcuts and increased risk-taking.

These are not edge cases anymore. They are becoming part of the baseline conditions under which work is performed.

Where Traditional Hazard Assessments Break Down

Most hazard assessments are built around a fixed snapshot of the job. They assume a set of conditions under which the task will be performed and define controls accordingly.

That approach works when conditions are relatively stable.

It becomes fragile when conditions change frequently or unpredictably.

A hazard assessment may correctly identify the risks associated with a task under normal conditions, but fail to account for how those risks escalate under extreme heat, poor air quality, or severe weather. Controls that are sufficient in one set of conditions may be inadequate in another.

This creates a gap between documented safety and actual risk.

The organization believes the hazard has been assessed and controlled. In reality, the conditions have changed in ways that were not fully captured, and the controls have not adapted accordingly.

This is similar to what is seen in broader OHS audit failures, where organizations confirm that systems exist but do not verify whether they are effective under real conditions

In a climate-driven risk environment, that gap becomes more pronounced and more difficult to defend.

The Growing Expectation of Dynamic Risk Management

Regulatory expectations in Canada are evolving alongside these changes.

While OHS legislation does not always explicitly reference climate change, it consistently requires employers to take every reasonable precaution to protect workers and to ensure that hazards are identified, assessed, and controlled under the conditions in which work is performed.

This creates an implicit expectation that employers will account for environmental conditions as part of their risk

management process.

In practical terms, this means that a hazard assessment that does not consider the impact of extreme heat, air quality, or severe weather may be viewed as incomplete. Similarly, controls that are not adjusted when conditions change may be viewed as ineffective.

Inspectors are increasingly focused on how organizations respond to changing conditions. They are not only asking what controls are in place, but how those controls are adapted when the environment shifts.

This places a greater emphasis on dynamic risk management rather than static compliance.

From Fixed Controls to Condition-Based Controls

One of the most important shifts organizations need to make is moving from fixed controls to condition-based controls.

A fixed control assumes that the same measure will be effective regardless of context. A condition-based control recognizes that effectiveness depends on the environment in which the work is performed.

For example, hydration and rest breaks may be sufficient under moderate temperatures but inadequate during extreme heat. Respiratory protection strategies may need to change based on air quality levels. Work scheduling may need to be adjusted in response to weather forecasts. Tasks may need to be delayed, modified, or stopped entirely when conditions exceed safe thresholds.

This requires organizations to define not only what controls are required, but under what conditions those controls must change.

It also requires clear decision-making frameworks so that supervisors and workers understand when and how to adjust those controls in real time.

The Role of Real-Time Environmental Monitoring

As environmental conditions become a more significant driver of risk, real-time information becomes a critical input to safety decision-making.

This includes monitoring:

- Heat index and temperature trends.
- Air quality indices and smoke conditions.
- Weather forecasts and severe weather alerts.

The value of this information is not in simply having it, but in integrating it into operational decisions.

When environmental data is treated as a safety input, it can trigger changes in work practices, scheduling, and control measures. It allows organizations to move from reactive responses to proactive adjustments.

Without this integration, organizations are effectively operating blind to one of the most significant variables affecting worker safety.

Supervisor Decision-Making in a Variable Environment

Supervisors play a central role in translating environmental conditions into operational decisions.

They are the ones who must determine whether work can proceed, whether controls are sufficient, and whether conditions require modification or stoppage.

In a stable environment, these decisions are relatively straightforward. In a variable environment, they become more complex.

Supervisors need clear guidance on how to interpret environmental data, how to assess its impact on specific tasks, and what actions to take when thresholds are exceeded. They also need the authority to make those decisions without undue pressure to maintain productivity at the expense of safety.

Without this clarity and support, decision-making becomes inconsistent, and risk increases.

What Resilient OHS Systems Look Like

Organizations that are adapting effectively to climate-related hazards are not simply adding new procedures. They are redesigning how their systems respond to variability.

These systems share several characteristics.

They treat environmental conditions as a core component of hazard assessment, not an external factor. They incorporate trigger points that require reassessment or modification of work. They use real-time data to inform decisions. They empower supervisors to act on changing conditions. They document how and why decisions were made in response to those conditions.

Most importantly, they recognize that resilience is not about eliminating variability. It is about building systems that can adapt to it.

The Strategic Implication for OHS Leaders

For OHS leaders, this shift represents more than a technical adjustment. It represents a change in how safety is conceptualized.

Safety is no longer just about controlling known hazards within a defined system. It is about managing risk in an environment where the conditions themselves are changing.

This requires a broader perspective, one that integrates environmental awareness, operational flexibility, and continuous validation of controls.

It also requires moving beyond compliance as a baseline and toward resilience as a strategic objective.

Final Thoughts

The environment is no longer a backdrop to work. It is an active participant in how risk is created and managed.

Organizations that continue to rely on static hazard assessments and fixed controls will find it increasingly difficult to keep pace with that reality.

Those that adapt—by building systems that expect change, monitor conditions, and adjust controls accordingly—will not only improve safety outcomes, but strengthen their ability to operate in an increasingly unpredictable world.

Because in the years ahead, the question will not be whether environmental hazards affect your workplace.

It will be how well your system responds when they do.