



Workplace Health and Safety Performance Improvement Guide

A Best Practices Guideline

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WORKPLACE HEALTH AND SAFETY PERFORMANCE IMPROVEMENT GUIDELINE

**A Best Practice of the
Construction Owners Association of Alberta**

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1. OVERVIEW

The heavy industrial construction industry has typically measured H&S performance using “lagging Indicators”. It has been recognized by COAA members that additional focus is needed on introducing “leading indicators” to attain the next level of H&S performance excellence.

“Lagging indicators” are post-incident metrics, which sometimes do not point to the underlying causes of the incident. By definition, follow up actions are reactive. In contrast, “leading indicators” are proactive and directly tied to preventive actions. For instance: lagging “number of face/eye injuries” vs. leading “percentage of workbenches with readily accessible face shields”.

The purposes of this best practice guideline are to:

- provide an industry best practice regarding the tracking, trending and reporting on Health and Safety (H&S) Performance, using balanced reporting criteria
- encourage the use and adoption of leading indicators to drive H&S continuous improvement

The focus of the COAA Safety Committee is on H&S; some COAA members include environmental key performance indicators (HS&E). The principles outlined herein apply to both.

This guideline provides a framework and guidance for improving the performance of a company, facility or work site. It does not prescribe what constitutes good or bad performance. Each organization referencing this best practice guideline must establish their own starting point and targets for “lagging” or “leading” indicators. Targets will differ between organizations due to their current H&S performance and the maturity of their H&S culture and practices.

2. RESPONSIBILITIES

2.1 Owners

- a) Establish H&S performance targets as part of yearly H&S plans (Plan), communicate and establish initiatives to meet those targets (Do), establish systems and practices to monitor performance (Check) and upon reviewing outcomes, realign activities and establish new targets (Act).
- b) Define the H&S performance improvement expectations and initiatives in contract documents, as well as site-specific minimum requirements (e.g. scope / leading and lagging indicators to be measured / responsibilities / accountabilities / audits to verify compliance, etc.)
- c) Include leading indicator questions in pre-qualification questionnaires in order to establish this mindset.
- d) Discuss performance improvement targets and initiatives in contract kick-off meetings.
- e) Define methods, scope and accountabilities for all stakeholders. Make available spreadsheets, databases or other tools to be used to track metrics.
- f) Define activities expected to drive these outputs (e.g. structured reviews by management teams, follow up by designated line manager / close out by designated line manager with expected dates, tracking in database, etc.).

2.2 Contractors / Employers:

- a) Communicate contract requirements (i.e. scope / expectations) to all contractor and sub-contractor employees.
- b) Set clear expectations and Key Performance Indicators (KPI's)
- c) Put agreed tools in place to track / trend / report, compatible with Owner tools
- d) Put processes in place to manage reporting gaps in a structured, transparent manner with active participation by line managers / supervisors.
- e) Provide "leading and lagging indicator" awareness modules in manager /supervisor training
- f) Provide KPI feedback loops to all stakeholders, particularly workers

2.3 Line Managers / Supervisors

- a) Actively and visibly participate in continuous improvement as defined by the Owners and/or Contractors/Employers.
- b) Provide hands-on leadership for step change, rather than incremental change, in crew behaviour related to best-in-class application of leading indicator activities (e.g. best-in-class training in injury prevention).
- c) Empower direct reports and crews to hold them accountable for consistent leadership (e.g. clear goals, open communication and active engagement in execution of leading indicator activities).

2.4 H&S Professionals

- a) Put in place appropriate tools to track leading and lagging indicators.
- b) Put in place rigorous administration of H&S databases used for tracking / trending / reporting of performance data – statistics must be credible to all stakeholders
- c) Ensure program is visibly and proactively "owned" by line managers / supervisors – must not become "safety's job" as this will defeat the intended benefits.

2.5 Industry

- a) Align and agree on the power of actively tracking, trending and reporting key leading indicators – focus on ones that make a difference, identified through shared best practices and shared lessons learned from past incidents.
- b) Avoid focussing on the familiar: lagging indicators are also important but will not require the same effort since they are already well established.
- c) Avoid splitting hairs on recordability issues – agree in principle definitions used by COAA are adequately aligned
- d) All stakeholders are accountable to:
 - o Communicate in site orientations and company orientations the concepts and expectations regarding leading indicators – awareness of what these are and how they benefit workers (e.g. hazard awareness; enhanced communication; interactive, visible management, etc).
 - o Include in Manager / Supervisor training the hard skills and the leadership skills related to leading indicators.
 - o Promote the concept that measurement of leading indicators encourages both workers and managers to “walk the talk” - to hold one another accountable for proactively working safely
 - o Recognize opportunities for H&S improvement from learnings identified in the trending analysis of leading and lagging indicators

The appropriate level of training should be established for various positions (e.g. awareness training, various levels of proficiency training, etc.) and put into context with a training matrix.

3. PERFORMANCE IMPROVEMENT GUIDELINE

3.1 Setting Goals for Improvement

Performance improvement initiatives taken by individual work site will vary according to existing safety performance and maturity levels of the safety culture and processes. A company that is trying to reduce Lost Time Incidents will have a different improvement strategy than one with a best-in-class recordable injury rate. Therefore, this best practice guideline provides a range of improvement initiatives as well as links to a wider variety of reference materials.

As a starting point, any company, facility or work site that wishes to improve safety performance must measure their current (baseline) performance, then set attainable targets for improvement. Goals can be based on incremental improvement of internal (company, facility or work site) performance, or based on reaching external benchmarks of industry performance. “Good” goals are specific (to the company, facility or work site), measurable, value-adding and achievable.

Measurement of baseline performance and setting of goals can progress from lagging to leading indicators:

- a) Injury frequency statistics: numbers of selected serious injuries. (Take care to not set the bar too low, so as to discourage reporting of minor incidents and injuries. For instance, high levels of First Aid reporting accompanied by low levels of Recordable or more serious incidents is good!)
- b) Compliance (or non-compliance) with documented safety program or legislated requirements. Immediate performance improvement initiatives can be linked to education and increased audits to measure compliance.
- c) In more mature companies, implementation (or non-implementation / ineffective implementation) of documented COAA or other best practices. The base line and improvement initiatives would be based on effective implementation that directly impacts the company, facility or work site in a measurable, sustainable way.
- d) In highly mature companies, the improvement initiatives would likely be based on an ambitious, values-based goal such as “Zero Incidents”, and would involve a high degree of commitment from all levels of employees. Note that, to be effective, even ambitious goals must be believed to be achievable.

Goals and monitoring tools should be set in a way which encourage sustained H&S performance improvement – raising the goal once the original target is achieved - thus building a culture of pro-active H&S improvement. Specific suggestions include:

- a) Focus on selection of metrics which are appropriate for the stage of the project cycle (e.g. start by tracking contractor pre-qualification, then contractor mobilization to the field, then key indicators specific to the types of work being performed).
- b) Select Leading Indicators early in the project cycle and establish them as part of the key deliverables for the project. Lagging Indicators are already well established, so do not require the same degree of attention to ensure successful uptake.
- c) Choose a few important metrics, then insist on high quality execution, tracking and reporting processes - the focus should be on quality, not quantity. Emphasize excellent implementation, visible supervisory leadership, and participation by all employees.
- d) Involve all key stakeholders in selecting the leading Indicators, whenever possible. As a minimum, test for understanding and commitment when metrics are pre-selected by owners or managing contractors. Integrate activities whenever possible (e.g. joint management walk-about, joint H&S Committees, etc.).
- e) Be crystal clear about methods for tracking and reporting. Track by project, area, by contractor, etc. in order to ensure clear accountabilities and active participation. (What does not get measured will probably not get done!)

- f) Allocate sufficient people and time to track leading indicators effectively. Focusing time and energy leading indicators will reinforce a culture of proactive measurement and management of H&S Performance.
- g) Use frequency indicators to gauge overall performance re: both leading and lagging indicators.

3.2 Examples of Leading Indicators

Many of the following activities and indicators are aligned with COAA Best Practices.

- a) **Manager Active Participation** - senior management introductions to orientation sessions; participation in walkabouts, work area inspections and audits; attendance at FLHAs, weekly H&S or Toolbox Meetings, scheduled work area inspections; etc. Measure attendance in matrix format, by individual senior manager.
- b) **Supervisor Active Participation** – line manager / supervisor safety activities clearly defined and evaluated at regular intervals. Measure participation in defined activities, e.g. focus audits; measure complete vs. outstanding action items by individual supervisor. Screen supervisors to identify gaps. Provide soft skill training similar to “HSE Leadership Training” provided by oil sands operators. Measure type of training and number of supervisors trained vs. number outstanding.
- c) **Worker Active Participation** - Behaviour Based Safety Initiatives, e.g. Behaviour Based Observations: “BBO”/“BBS”/“BEST”/“PBS”/etc. Measure number of programs in place and degree of effectiveness (program well established, management support in place, training in place, “owned” by workers, etc.) Measure general implementation at first, then more specifics, e.g. number of participants, number of participants trained (workers & managers), allocated time for workers, manager participation in joint meetings, etc.)
- d) **Contractor Management** - pre-qualification and selection process mandatory and documented. Measure prequalification percentage complete, broken down by compliance to minimum standards (red / yellow / green); number of H&S kick-off meetings; number of COAA or other Best Practices to be implemented; number of mobilization audits complete. Include contractors when defining the leading indicators plus training processes.
- e) **Communication Forums** - regularity of weekly H&S (“Toolbox”) Meetings –formal, consistent message, set day and time across project, worker attendance sign-in. Measure attendance sign-in divided by actual project manpower.
- f) **Compliance** – conformity to baseline legislation and/or standard practices, e.g. Construction Absolutes / Life Saving Rules. Establish procedures for auditing, committee membership, etc. Measure number of closed out and outstanding action items by supervisor, number of supervisors who understand baseline and are committed to comply.
- g) **Hazard Identification Processes** - e.g. path of construction hazard analysis, overall project hazard identification, Hazard Registers, etc. Measure processes in place prior to start of project. Measure number of closed out and outstanding action items.
- h) **Field Level Hazard Assessments** - FLHAs in place prior to start of work and/or prior to restart after conditions change. Mandatory and rigorously tracked for attendance, by line managers / supervisors and H&S professionals. Measure processes to train and to obtain feedback for continuous improvement. FLHA’s should also be reviewed as a whole at regular intervals, to identify trends.
- i) **Focus Audits and / or Inspections Conducted** - scheduled inspections or focus audits based on project experience – e.g. higher risk activities such as cranes, excavations, work permits, etc. Measure inspections carried out per week by supervisor name in matrix format.
- j) **Track Outstanding Action Items** - number of investigations/inspections/audits by supervisor name, measure closed out vs.outstanding action items. Report weekly and/or monthly.

- k) **Training Conducted** - frequency of H&S orientations, number of critical activity training (e.g. Fall Protection, Work Permits, Excavation, Work Face Planning). Measure training conducted per week in matrix format by supervisor, numbers trained relative to total workforce.
- l) **Proactive A&D Testing** - mandatory, rigorously tracked and documented for all types (Pre-access, Post Incident, For Cause). Training of Supervisors tracked. Measure pre-access compliance. Consider implementing the Rapid Site Access Program (RSAP) and measuring compliance.
- m) **Employee Perception Surveys** - scheduled surveys based on project stage. Measure surveys completed, outcomes documented, followup actions closed out vs. outstanding.
- n) **Near Miss Reporting** – measure number investigated, number closed out vs. outstanding. Analyze, identify trends and followup actions. It is critical to focus on evaluating the POTENTIAL of near miss incidents and give more attention to those with higher consequences.
- o) **Trend Identification** – to provide proactive focus on specific themes which are showing potential safety risks, e.g. vehicle or equipment incidents, falling objects, line-of-fire incidents, slips/trips/falls, hand injuries. Focus on identifying specific risk trends related to current path of construction. Measure followup actions which directly address the themes, e.g. specific training, specific behaviour observations.
- p) **Health Programs** - training in workplace ergonomics, stretching exercises, respiratory protection, and (where possible) “on site health clinics” go a long way toward pro-active injury prevention and the overall health of workers. Formally implement health programs such as these; measure uptake by intended worker population.

3.3 Examples of Lagging Indicators

Note: two standard bases have been used in the past: 1,000,000 person-hours and 200,000 person-hours. The latter base (200,000 person-hours is nominally equivalent to 100 person-years) is used widely in industry, for instance the Alberta Construction Safety Association and by government agencies such as Alberta Occupational Health and Safety.

- a) **Fatalities** - measure number
- b) **Lost Time Injury Frequency (LTIF)** - measure number of LTIs, divide by total on-site hours, then convert to standardized frequency based on 200,000 person hours. A lower frequency represents better performance, with zero being ideal.
- c) **Total Recordable Injuries Frequency (TRIF)** - includes Medical Treatment Cases (MTCs); Restricted Workday Cases (RWCs) and Lost Time Injury Incidents (LTIs). Measure number of MTCs, RWCs and LTIs, divide by total on-site hours, convert to standardized frequency based on 200,000 person-hours. A lower frequency represent better performance, with zero being ideal.
- d) **Total Injury Frequency (TIF)** - includes First Aids, MTCs, RWCs and LTIs. Measure the total number of injuries divide by total on-site hours, convert to standardized frequency based on 200,000 person-hours. A lower frequency represent better performance, with zero being ideal.
- e) **Total Recordable Occupational Illnesses Frequency (TROIF)** – this is a health-based metric rather than an injury-based metric. Measure the number of Occupational Illnesses (as defined in by the U.S. Occupational Safety and Health Administration and the Bureau of Labour Statistics), divide by total on-site hours worked, convert to standardized frequency based on 200,000 person-hours. (Caution: not all U.S. safety statistics are based on the 200,000 person-hour standard – be sure to understand the basis for comparative statistics.) A lower frequency represent better performance, with zero being ideal.
- f) **Severity Rate (SR)** - measure the number of full or partial days lost due to an occupational injuries or illnesses, divide by total on-site hours, convert to standardized frequency based on 200,000 person-hours. This represents the severity of injuries or illnesses, an additional

dimension to the frequencies noted above. A lower rate represents better performance, with zero being ideal. A company or work site with a low TRIF may have a high SR, indicating a need for heightened attention to prevent incidents with higher severity.

3.4 Additional Resources

The most readily available, proven-in-practice place for work site to start their safety performance improvement journey is by appropriately implementing the Best Practices listed on the COAA web site (www.coaa.ab.ca). The investment of time and resources must be factored into the improvement journey in order to ensure this is not just “another new idea” that withers from inadequate follow through. The COAA Best Practices have a proven return on investment, as demonstrated by the dramatically improved safety record of the Alberta heavy industrial construction industry over the past decade. Once the Best Practices have been implemented, then a site can review additional ideas such as those listed below and apply the techniques and programs which best fit their organization, facilities or work site.

- a) Reports prepared by the U.S. Construction Industry Institute. For instance, the top five high impact activities have been identified in CII Report CS32-1 “Zero Injury Techniques” as:
 - o Pre-Project/Pre-Task Planning for Safety
 - o Safety Orientation and Training
 - o Written Safety Incentive Program
 - o Alcohol and Substance Abuse Program
 - o Alcohol/Incident Investigations
- b) Improvement opportunities based on local industry experience:
 - o Fitness To Work Evaluation (i.e. multi-factor assessments, beyond D&A)
 - o Work week hours compatible with sustained worker performance at high efficiency levels.
 - o Rigorous root cause investigation processes
 - o Use of Near Miss investigations, H&S survey results, Focus Audits, etc. to prompt proactive
 - o action on potential safety issues.
- c) Tools & Supporting Materials
 - o Leading Indicators Summary Sheet
 - o Behaviour Based Safety
 - o Workers at Risk – Mentoring
 - o Proactive Indicator Tracking Tool
 - o Company-specific case studies

3.5 Auditing and Ongoing Program Review

- a) “Test for Understanding” in the field via questioning individual workers, observing behaviours and quarterly perception surveys
- b) Include Leading Indicator activities in behavioral observations, formal and informal worksite inspections and Internal audits
- c) As part of the weekly project progress meetings, emphasize Leading Indicator updates – stress equal importance to traditional Lagging Indicators.
- d) As part of Contractor close out meetings, ensure the Leading Indicator program is specifically scored and outcomes entered into pre-qualification databases.

The company or organization safety performance should be measured at least quarterly and progress towards improvement goals communicated throughout the organization, facilities or work sites using communications methods.