

PROFESSIONAL SAFETY

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CRANE & HOIST SIDE PULLS

Hazards, Risks & Alternative Methods

**Contractor Safety
Prequalification**

**Portable
Ladder Safety**

**Gas Detection in
Confined Spaces**

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CRANE & HOIST SIDE PULLS

Hazards, Risks & Alternative Methods

By Albert Weaver III, Megan Haase, Grace Callahan, Isabella Forst, Ashley Hearn and James McCall

Despite the abundance of regulatory standards prohibiting side pulls, they continue to be a common cause of crane and hoist failure. This article examines these prohibited practices including circumstances under which they are permitted. It also explores alternative materials handling methods such as the use of a portable gantry crane or an engine hoist to avoid the hazards associated with side pulls.

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CONTRACTOR SAFETY PREQUALIFICATION Background, Current Practice & New Paths

By David W. Wilbanks

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SAFETY THROUGH ACCOUNTABILITY & RECOGNITION OHSMS Management Commitment & Worker Participation Explained

By Paul A. Esposito

Management accountability for OSH performance is the foundation for management commitment. This article discusses what occupational health and safety management system (OHSMS) references can be used to design management accountability into OHSMS. Learn about applying a “balanced set of metrics” to strategic OSH objectives, and see examples of maturing worker participation to engagement while enhancing recognition programs.

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COVER

Side pulls continue to be a common cause of crane and hoist failure, accounting for about 175 injuries and 45 fatalities in the U.S. each year. Photo AntonMatveev/iStock/Getty Images Plus



ABOUT PROFESSIONAL SAFETY

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SAFETY THROUGH ACCOUNTABILITY & RECOGNITION

OHSMS Management Commitment & Worker Participation Explained

By Paul A. Esposito

WITH THE 2018 PUBLICATION of the ISO 45001 standard and the 2019 revision of the ANSI/ASSP Z10 standard, a marked increase has taken place in the use and improvement of occupational health and safety management systems (OHSMSs) among organizations throughout the U.S. and worldwide. Management systems are modeled after the Deming cycle of plan, do, check and act (PDCA). First published as a quality management system (ISO 9001:2008 and ISO 9001:2015), the environmental management system (ISO 14001:2004 and ISO 14001:2015) and occupational safety and health assessment series (OHSAS 18001) soon followed. ISO gained traction in 2018 when publishing its OHSMS standard as ISO 45001.

In environmental management systems and OHSMSs, the PDCA cycle is framed within a culture of management (leadership) commitment and worker participation (Figure 1, p. 40). So, why is the cultural component of leadership and worker participation so important? Krause (1996) says, “the effect on management systems of [cultural] assumptions is quite dramat-

ic. Different management systems in turn allow different exposure levels, hence different injury rates” (p. 61).

Petersen (2003) says, “root causes are weaknesses in management systems” and “root causes are operational errors” (p. 28). He also says, “unsafe acts and unsafe conditions are symptoms, symptoms of something wrong with the management system” (p. 29). To look at the underlying factors influencing management systems, Dekker (2016) says, “systems, by themselves, cannot be solely held accountable as the causes of incidents. Individuals or management have a role in the creation and implementation of the systems” (p. 80). Petersen (1996) also says, “culture determines what program elements will work, and what elements will not work” (p. 67). Thus, it is this author’s opinion that the culture of an organization influences the breadth, depth and effectiveness of its management system.

Measuring the right people or parts of the organization on the right things and holding them accountable, especially using positive reinforcement, provides motivation for OSH conformance and continual improvement (Daniels, 2016). This article further explains and expands on how leadership and management accountability can be implemented, consistent with an OHSMS approach, while explaining how recognition best impacts and motivates worker participation. These two elements, when underpinning all of the OHSMS elements and PDCA cycles, provide the foundation on which to build effective OHSMSs and continual improvements.

As noted, management commitment is specifically identified in ISO 45001:2018 as an OHSMS success factor. With the ultimate safety performance objectives of OHSMSs being 1. injury and ill health prevention; 2. risk reduction;

KEY TAKEAWAYS

- **Management accountability for OSH performance is the foundation for management commitment. This article discusses what occupational health and safety management system (OHSMS) references can be used to design management accountability into OHSMS.**
- **Measuring the right part of the organization on the right things is essential for a culture of continual improvement. Apply a “balanced set of metrics” to strategic OSH objectives.**
- **Worker recognition is the foundation for worker involvement and participation. See examples of maturing worker participation to engagement, while enhancing recognition programs.**

and 3. OSH element performance improvements, there is a reasonable expectation that achieving these objectives will influence and drive down incident rates (ISO, 2018). ISO 45001:2018 states that:

The success of the OH&S management system depends on leadership, commitment and participation from all levels and functions of the organization. . . . Its effectiveness . . . [is] dependent on . . . top management . . . accountability. (p. vi)

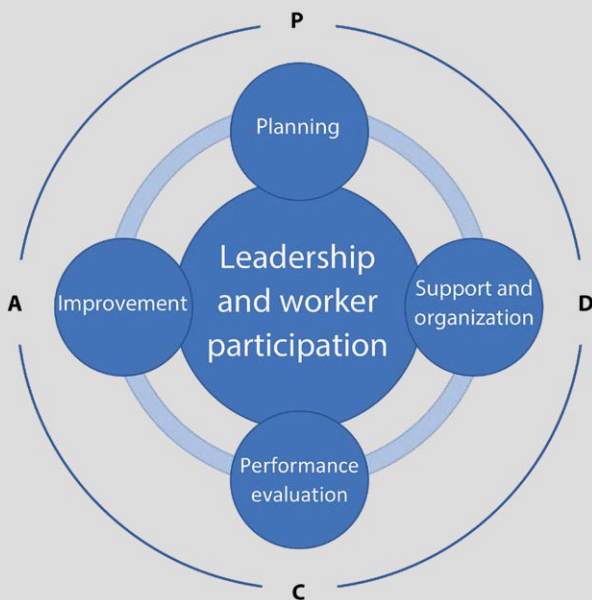
While leadership, commitment and responsibility are described in detail throughout the ISO documents, accountability is only mentioned in ISO 45001:2018 four times, with no apparent explanation or definition. This leaves a rather large void in understanding for OSH professionals when developing implementation strategies for management accountability.

According to OSHA (1989):

Management commitment and employee involvement are complementary. Management commitment provides the motivating force and the resources for organizing and controlling activities within an organization. In an effective program, management regards workers' safety and health as a fundamental value of the organization and applies its commitment to safety and health protection with as much vigor as to other organizational purposes. Employee involvement provides the means through which workers develop and/or express their own commitment to safety and health protection, for themselves and for their fellow workers.

FIGURE 1 PDCA CYCLE IN ENVIRONMENTAL MANAGEMENT SYSTEMS & OHSMS

In environmental management systems and OHSMSs, the PDCA cycle is framed within a culture of management (leadership) commitment and worker participation.



The consultation and participation of workers is another key factor for OHSMS success. Based on the learning from OSHA's Voluntary Protection Programs (VPP), established in 1986, and other OHSMSs mentioned by OSHA (2018), recognition is a motivating factor toward the participation of workers.

References for OSH Accountability

So, why does ISO use the term "accountability" but not define it? Perhaps it is based on the time frame (the 1950s) in which Deming first developed the PDCA cycle. After WWII, during the second coming of the industrial revolution, Deming was invited to Japan to develop his theories. At the time, the Deming cycle was specific to quality and production. He postulated 14 points and developed the PDCA cycle, and the word "responsibility" was widely used to define what people needed to do (Walton, 1986). Some may believe that responsibility in Deming's era implied accountability. Today, accountability is more recognized as a separate element.

The term "accountability" has evolved from how Deming used the term "responsibility" years ago and is now its own term. The responsible, accountable, consulted, informed (RACI) concept was derived from the tool for organizing projects in the goal directed project management (GDPM) methodology, innovated in the early 1970s and published for the first time in 1984 by Andersen, Grude and Haug. RACI is still widely used to identify roles, responsibilities and accountabilities within an organization.

In its "Recommended Practices for Safety and Health Programs: Voluntary Standards Crosswalk" document, OSHA (2018) compares the topical content of seven OHSMS publications:

1. OSHA recommended practices, 2016,
2. OSHA Safety and Health Program Management Guidelines, 1989,
3. OSHA VPP Star criteria, 2008,
4. International Labor Organization (ILO) Guidelines on OSH Management Systems, 2001,
5. ANSI/AIHA/ASSP Z10 occupational health and safety management systems, 2012,
6. National Safety Council Journey to Safety Excellence, 2013, and
7. ISO 45001, 2018.

To further explore how to define OSH accountability, various OHSMS publications explain what is meant by OSH accountability. Of the seven references in OSHA's (2018) crosswalk document, OSHA and ILO define and explain OSH accountability. Table 1 compares OSHA's 1989 program management guidelines, OSHA's VPP Star criteria from 2008 and 2020, and ILO-OSH 2001 with regard to accountability. Although the 2020 version of OSHA's VPP Star criteria updated the 2008 version, the 2020 version did not include the evaluation format found in 2008.

Accountability & Recognition Using a Balanced Set of Metrics

There is a saying that "what gets measured gets done." By itself, measurement is not the same as motivation (Daniels, 2016). If it was, stepping on a scale periodically would keep us at our optimum weight. However, if an initial measurement is further complemented by "what gets celebrated gets done well," accountability and recognition metrics provide enhanced feedback that the right actions get the right results. Deming, in particular, suggests we measure the inputs

TABLE 1
REFERENCE FOR OSH ACCOUNTABILITY

Reference	Applicable content
OSHA program management guidelines, 1989	<ul style="list-style-type: none"> •(vii): "Hold managers, supervisors and employees accountable for meeting their responsibilities, so that essential tasks will be performed." •(c)(1)(vii) Comment: "Stating expectations of managers, supervisors and other employees means little if management is not serious enough to track performance, to reward it when it is competent and to correct it when it is not. Holding everyone accountable for meeting their responsibilities is at the heart of effective workers safety and health protection. If management states high expectations for such protection but pays greater attention to productivity or other values, safety and health protection will be neglected."
OSHA VPP Star criteria (CSP 03-01-005), 2000	<ul style="list-style-type: none"> •Chapter 4, II. A. 11: "Holding managers, supervisors and nonsupervisory employees accountable for meeting their safety and health responsibilities." •12: "Evaluating managers' and supervisors' safety and health performance at least annually by operating a documented performance standards and appraisal system that addresses correcting deficient safety and health performance."
OSHA VPP Star criteria (CSP 03-01-003), 2008, Appendix D: Onsite evaluation report format	<ul style="list-style-type: none"> •D1: "Does top management accept ultimate responsibility for safety and health in the organization? (Top management acknowledges ultimate responsibility even if some safety and health functions are delegated to others.) If not, please explain." •D2: "How is the assignment of authority and responsibility documented and communicated (for example, organization charts, job descriptions)?" •D3: "Do the individuals assigned responsibility for safety and health have the authority to ensure that hazards are corrected or necessary changes to the safety and health management system are made? If not, please explain." •D4: "How are managers, supervisors and employees held accountable for meeting their responsibilities for workplace safety and health? (Annual performance evaluations for managers and supervisors are required.)" •D5: "Are adequate resources (equipment, budget or experts) dedicated to ensuring workplace safety and health? Provide examples." •D6: "Is access to experts (for example, certified industrial hygienists, certified safety professionals, occupational nurses or engineers), reasonably available to the site, based upon the nature, conditions, complexity and hazards of the site? If so, under what arrangements and how often are they used?"
ILO-OSH 2001	<ul style="list-style-type: none"> •3.3.2.: "The employer and senior management should allocate responsibility, accountability and authority for the development, implementation and performance of the OSH management system and the achievement of the relevant OSH objectives." •(b): "Define and communicate to the members of the organization the responsibility, accountability and authority of persons who identify, evaluate or control OSH hazards and risks."

and the process itself to predict or influence the outputs and outcomes (Walton, 1986). If the inputs and the processes are measured and continually improved, then the outputs and outcomes are more likely to yield desired results. So, what does this mean? Do not just measure results. Measure a set of interrelated leading metrics, which would include actions, activity, progress and results (i.e., input, process and output). Compare this set of leading metrics to a lagging metric (outcome or result) to generate a balanced set of metrics (AIHA, 2020; Esposito, 2018).

Taken a step further, process metrics can be explained by a process map (Figure 2, p. 42). Start with a set of lagging metrics (outcome), identify complementary predictive metrics (input, process and output) that help monitor, influence or predict whether a strategic objective (outcome) has a possibility of success (Hessing, n.d.).

For example, if you have a process for performing inspections, a typical process leading metric may be how many

inspections are performed versus scheduled. The problem is that this number or percentage says nothing about the quality of the inspection process or the effectiveness of the inspections, let alone the value of the inspection process. Some think we perform inspections because regulations require it. This is not incorrect, but the number of inspections is not the real goal of inspections. The goal is to confirm whether hazards are being controlled properly. Thus, an example of an inspection process map and metrics can be as presented in Table 2 (p. 43). Note that input, process and output are all leading metrics (six in total) to the two lagging metrics (outcome). A balance is achieved when input metrics are balanced by complementary process and output metrics, describing a more complete picture for why inspections are performed in the first place, namely, influencing the reduction in the number of nonconformances (output). Ultimately, we want to see a reduction in uncontrolled hazards that lead to incidents (outcome).

Individually, however, none of the leading metrics, by themselves, tells a complete story. Even with these six leading metrics, the story may be incomplete. Additional output metrics may need to be considered, such as average time to completion for corrective actions, percentage of on-time action plan completions, and which parts of the organization have the best conformance rate, nonconforming trend reductions and on-time performance.

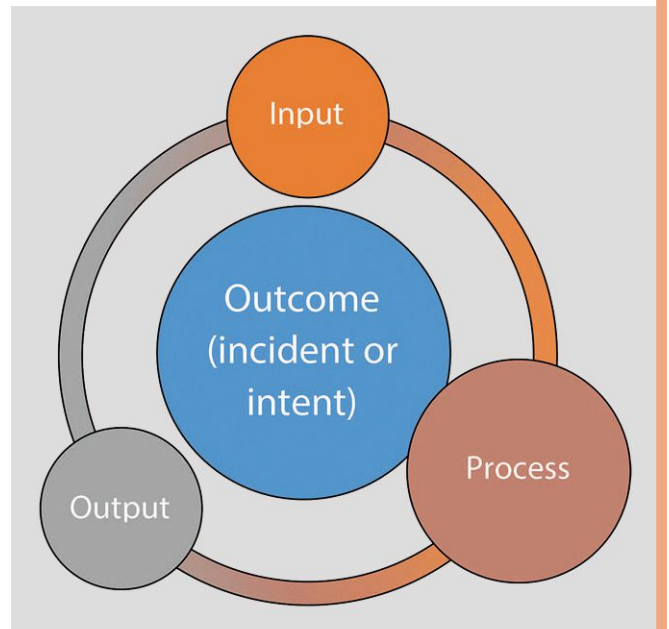
Notice that these accountability examples are expected to be to tasks, responsibilities or actions taken to reduce risk and control hazards, that is, OSH performance objectives (ISO 45001:2018). Stating a responsibility for zero incidents without measuring complementary objectives or action plans to prevent injury and illness is grossly incomplete. The forthcoming ANSI Z16 standard, Safety and Health Metrics and Performance Measures, and AIHA's (2020) leading health metrics guidance both borrow from process metrics and Kaplan and Norton's balanced scorecard (BSI, n.d.) to create a new term: Balanced set of metrics. For years, OSH professionals have recognized that lagging metrics (e.g., incident rates, workers' compensation) are like trying to drive a car by looking in the rearview mirror. While necessary, lagging metrics are not the primary focus to get to a destination or achieve a strategic objective. Kaplan and Norton discussed using a balanced scorecard to achieve strategic objectives. Their concept was that no single number could possibly tell the entire story or predict and influence successful implementation or strategic achievement. Kaplan and Norton proposed using interrelated metrics from four quadrants—financial, process, customers and worker learning—to provide a complementary picture of success being predicted or achieved.

Underplayed in ISO 45001:2018 and ANSI/ASSP Z10-2019 is the role that accountability and recognition play in motivating management and workers, respectively, to continually improve OSH strategic objectives. Daniels (2016) says, "people do what they do because of what happens to them when they do it." Therefore, positive reinforcement and recognition are motivating forces for behavior and more impactful than negative consequences. Accountability metrics, therefore, provide the basis for both recognizing and measuring positive performance. To that end, it could be argued that accountability and recognition are reinforced as the foundational elements to achieve effective management commitment and worker participation.

Measuring the Right Part of the Organization on the Right Things

Ultimate accountability, if implemented correctly, ensures that the process is in place (including inputs and outputs), resourced and achieving the right objectives (outcomes). If any of those leading metrics are trending in the wrong direction and some part of the organization is held accountable, there is a better chance of correcting problems before they result in incidents or undesired events. If these leading metrics are going in the wrong direction, however, the right part of the organization needs to take action. Holding safety responsible for fixing safety-related maintenance issues on time is a responsibility without authority and just poor management. Another accountability concept is that only one person or part of the organization must be accountable to the outcome: The right one (Wikipedia, 2021).

FIGURE 2
PROCESS MAPPING



However, different parts of the organization may be responsible and accountable for many of the leading metrics. For a supervisor or manager, the outcome metrics become a part of the OSH accountability process and performance appraisal (Esposito, 2018; OSHA, 1989). Ultimately enough leading metrics should be available to predict or influence the lagging metrics before negative events are realized. With many responsible parties all working toward the same objective or outcome, via multiple leading metrics, a greater likelihood exists that the outcome or lagging metric can be achieved.

Worker Participation Through Recognition

So, the aforementioned leading and lagging metrics are used to motivate supervisor and manager OSH performance. Can the same metrics be used to motivate worker participation? Looking at process metrics, inputs and outputs, workers can only act on the leading metrics. If the outcome is greater worker participation, supervisors and managers either provide resources and authority to make this happen, or not. In addition, management accountability must precede worker participation. For example, if workers are encouraged to submit suggestions or solutions for improvement, but management is not measured on the closure of these suggestions, how long will workers continue trying without success? Soon, meaningful worker participation will cease.

What leading metrics, inputs and outputs, would best influence a successful outcome? Look at the lagging metric or outcome desired. One measure of worker participation is the number of safety committee meetings or attendance. Better outcome metrics might be 1. total percentage of employees involved; or 2. total number of action plans generated by their involvement efforts (e.g., what committees are expected to accomplish). An input metric might be whether the right things are on the agenda, or whether all of the last month's action plans got closed. Likewise, if a committee meeting does

not result in any action items, then is it really a committee or just a meeting of people? Are all members participating in closing action items, or are all of the action items for safety and maintenance? Are all members taking home action items with some frequency? Does reporting take place during the next meeting as to what was accomplished? Action items are for both the hourly and salaried members of the committee. Are there pockets of people who do not show up to meetings or who are not permitted to show up? Whose attendance is measured? Is an attendance requirement in place, for example, to attend at least 75% of meetings? Oregon and Washington require that general industry and construction employers have safety committees and safety meetings. One expectation identified by Oregon OSHA (n.d.) is “a written policy that describes specific methods for identifying and correcting safety and health hazards at each location” as part of safety committees. A safety committee can collect another interesting metric: 90 days after an incident investigation’s corrective action is completed, test whether it stayed completed. How often does an incident corrective action indicate that workers will be retrained, only to have three new workers there the following month who have not received the training or information? That level of accountability, where workers measure management, may empower workers to more and better participation.

Some general best practices for worker participation and recognition include both team and individual recognition, such as:

1. Team-based awards. Use inspection conformance rate (percent of safe conditions or behavior over the total number of conditions or behaviors observed) as a motivator for both supervisor and the team of workers. Team-based recognitions can be a good motivator as workers become the ambassadors and advocates for motivating fellow workers, without calling out or naming nonperformers.

2. When deciding on the award, it is okay for management to have a budget, but let the workers sometimes decide what the actual award will be within that budget.

3. One company had a progressive award system for suggestions. If someone submitted five suggestions in a month, the award was doubled. When the organization was audited, some workers turned out to be brokers. The brokers would collect five suggestions from five fellow workers and submit them. The broker would take a cut of the award, but each person who contributed a suggestion still received their full

award. At first, management was upset. However, the more it was considered, an appreciation developed for a network of advocates (the brokers) who were making the program more effective. Eliminating the broker concept may not be in the best interest of suggestion volume. However, the broker concept also limits recognizing the right people for the right thing. Ultimately, it is better to know how many people are participating.

4. Another organization had a suggestion program, but the workers laughed every time someone received an award. All of the names went into a hat, and one name was selected to get an award. It seemed that the suggestion was never corrected anyway, and some suggestions were actually quite destructive. And with the award being drawn from a hat, the quality and viability of the suggestion had nothing to do with the award. The award process was then revised. Any suggestion received a token for a bottle of water in the cafeteria, but the big monthly award was based on the solution, for example, if the solution was an engineering control versus an administrative control or PPE. The controls were voted on by the safety committee, and more than one winner could be nominated.

5. Awards. Not all awards have to be monetary. They can be days off, special parking spaces or attendance off site to a 1-day training session. There are many options.

6. Another common mistake is who gives the award. Often, the safety manager or committee person is asked to give the award, which breeds disrespect. Workers feel that line management (direct supervisor or manager) considers it unimportant if management does not take time out of their day to have face time with the workers. Awards should be special and always follow the chain of command. Some public relations or advertising can go a long way as well. Remember the objective: suggestions to better control or eliminate hazards in the workplace, by volume of suggestions as well as volume of people participating. Keep metrics and awards specific to achieving that objective.

Note: None of these examples recognize incident rates, which, if a recognition metric, may discourage reporting of incidents. Incident rate recognition is discouraged.

Many people have been given the responsibility to make things happen but have not been given the authority to assign, resource or delegate (i.e., make it happen). Thus, the assignment of responsibility does not always mean one can be

TABLE 2
INSPECTION PROCESS MAP EXAMPLE BALANCED SET OF METRICS

Leading metrics			Lagging metrics
Input	Process	Output	Outcome
1. Are new hazards and controls updated on the inspection form regularly? 2. Are the inspectors competent to look for hazards and controls?	3. Performing inspections to a schedule	4. Find the same uncontrolled hazards repeatedly (trend analysis)? Are the trends improving? 5. Is the conformance rate for using controls at a high level? 6. How many uncontrolled hazards still exist in the workplace?	Fewer uncontrolled hazards (nonconformances) leading to events, incidents and accidents.

Remember the objective: suggestions to better control or eliminate hazards in the workplace, by volume of suggestions as well as volume of people participating. Keep metrics and awards specific to achieving that objective.



held accountable for the end result. To that end, measuring the right part of the organization on the right things is the strategy for success. The higher up in the organization you are, the more you are accountable to the outcomes. The reason is that the part of the organization responsible for providing direction, resources and designing programs is the accountable party. The actions or responsibilities are then delegated to responsible parties. Responsible parties can then be held accountable to the actions or leading metrics. However, the part of the organization that is accountable—the one that determined the actions responsible people would take—is ultimately accountable for the outcome. If these actions were right or wrong, time will tell whether the output was realized, that is, if these inputs or actions were best able to direct or influence the outcomes.

The cultural components of management commitment and worker participation are the drivers of effective OHSMS (Krause, 1996). And Petersen (2001) says, “Involvement will only happen in the right environment (culture)” (p. 128).

Conclusion

Management commitment and worker participation are key OHSMS factors, foundations on which to build effective OHSMS. Achieve safety (OHSMS) improvements through accountability and recognition. Use a balanced and related set of various leading metrics tied to a lagging metric to achieve strategic initiatives. Use leading metrics to predict or at least alert the organization if the lagging metric (strategic objective) will not be achieved so that timely corrections can be implemented. Use metrics to tell the whole story. Start measuring management accountability first, then worker participation. What gets measured gets done; what gets celebrated gets done well. And measure the right part of the organization on the right things. **PSJ**

References

- American Industrial Hygiene Association (AIHA). (2020, Sept. 9). Best practice guide for leading health metrics in occupational health and safety programs: Guidance document. <https://aiha-assets.sfo2.digitaloceanspaces.com/AIHA/resources/Guidance-Documents/Best-Practice-Guide-for-Leading-Health-Metrics-in-Occupational-Health-and-Safety-Programs-Guidance-Document.pdf>
- Andersen, E.S., Grude, K.V. & Haug, T. (1984). *Goal directed project management*. Kogan Page.
- ANSI/AIHA/ASSP. (2012). Occupational health and safety management systems (ANSI/AIHA/ASSP Z10-2012).
- ANSI/ASSP. (2019). Occupational health and safety management systems (ANSI/ASSP Z10-2019).
- Balanced Scorecard Institute (BSI). (n.d.). Balanced scorecard basics. <https://balancedscorecard.org/bsc-basics-overview>
- Daniels, A. (2016). *Bringing out the best in people: How to apply the astonishing power of positive reinforcement* (3rd ed.). McGraw-Hill Education.
- Dekker, S. (2016). *Just culture: Balancing safety and accountability* (2nd ed.). CRC Press.
- Esposito, P. (2018, June). Safety metrics: Corporate and site level scorecards. *Professional Safety*, 63(6), 30-33.
- Hessing, T. (n.d.). Process mapping. Six Sigma Study Guide. <https://sixsigmastudyguide.com/process-mapping>
- International Labor Organization (ILO). (2001). Guidelines on occupational safety and health management systems (ILO-OSH 2001). www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/normativeinstrument/wcms_107727.pdf
- International Organization for Standardization (ISO). (2018). Occupational health and safety management systems (ISO 45001:2018).
- Krause, T.R. (1996). *The behavior-based safety process: Managing involvement for an injury-free culture* (2nd ed.). Wiley.
- OSHA. (1989). Safety and health program management guidelines: Issuance of voluntary guidelines. www.osha.gov/laws-regs/federalregister/1989-01-26
- OSHA. (2008, Apr. 18). Voluntary Protection Programs (VPP): Policies and procedures manual (Directive No. CSP 03-01-003). www.osha.gov/OshDoc/Directive_pdf/CSP_03-01-003.pdf
- OSHA. (2016). Recommended practices for safety and health programs. www.osha.gov/shpguidelines
- OSHA. (2018). Recommended practices for safety and health programs: Voluntary standards crosswalk. www.osha.gov/shpguidelines/docs/Crosswalk_to_Voluntary_OSHA_Standards_7-3-18.pdf
- OSHA. (2020, Jan. 30). Voluntary Protection Programs policies and procedures manual (Directive No. CSP 03-01-005). www.osha.gov/sites/default/files/enforcement/directives/CSP_03-01-005.pdf
- Oregon OSHA. (n.d.). Safety committees and safety meetings for general industry and construction employers [440-0989 (2/18/COM)]. <https://osha.oregon.gov/OSHApubs/0989.pdf>
- Petersen, D. (1996). *Human error reduction and safety management* (3rd ed.). Wiley.
- Petersen, D. (2001). *Authentic involvement*. National Safety Council.
- Petersen, D. (2003). *Techniques of safety management: A systems approach* (4th ed.). ASSP.
- Walton, M. (1986). *The Deming management method*. Perigee Books.
- Wikipedia. (2021, Jan. 9). Responsibility assignment matrix. https://en.wikipedia.org/w/index.php?title=Responsibility_assignment_matrix&oldid=999349204

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