

PLAN-DO-CHECK-ACT

Integrating Quality Into Safety Management

By Art Williams

Safety professionals often hear the words *usually* or *normally*, but it is most disconcerting to hear these words while investigating workplace injuries. We know that injuries typically happen when circumstances are outside of the normal or the usual.

We also know that humans and machines can fail, so there will always be circumstances that are outside of the normal. In fact, new safety system strategies are based on the idea that failures are failures of the system (ASSP, 2017). Consequently, comprehensive (systemic) approaches are needed to recognize and control failures and make our workplaces fail-safe, that is, when failures occur, harm does not. These approaches must address factors that include mechanical and structural (technological), behavioral, human and work interaction (sociotechnical), cultural (including both organizational and personal), and complex systems (resilience; Pillay, 2015).

As the systems we manage become more complex, the management systems we use to control the safety of the systems are becoming complex as well. Things get away from us and we get (usually unfortunate) surprises. This brings us the challenge of how to systematically manage our safety management system.

A great solution to this challenge comes from the world of quality, particularly from the post-WWII quality pioneers Walter Shewhart and W. Edwards Deming. Shewhart and Deming brought us the plan-do-check-act (PDCA) cycle that is intrinsic to many successful quality programs. PDCA evolved from the scientific methods of Galileo Galilei and Francis Bacon. In the 1930s and 1940s, Shewhart refined the method into three steps: specification, production and inspection. In his work with reconstruction in Japan, Deming further developed Shewhart's ideas, which became the four steps of PDCA (Moen, 2009). PDCA has since developed into the foundation for not only quality, but all types of management systems. ANSI/ASSP Z10, CSA Z1000 and ISO 45001 are all based on PDCA methodology.

It is unfortunate to learn through workplace injuries that people are not doing what we thought they were doing. In this case, the injury itself closes our feedback loop and produces (re)actions that may or may not be properly implemented. Alter-

natively, if PDCA is built into your safety management system, it can be used to close the loop and ensure that people are doing what we expect them to do.

Plan. The plan step of the PDCA cycle involves choosing objectives and developing methods to achieve them. These methods could include workplace inspections, behavioral audits, training, policies and procedures, reward programs and meetings. In this step, we say what we will do.

Do. The do step of the cycle involves implementing the methods that have resulted from our planning. Initially, this may involve some experimentation, but the result is that we do what we said we would do in the planning stage.

Check. Check is a significant step in the process, but is often overlooked. This step confirms that we are doing what we said we would do. Some amount of variance and drift occurs in every process, but without checks in place, the variances and drifting are allowed to grow, thus, increasing the risk of injury. Safety professionals are often surprised to learn during an incident investigation that the procedure being followed was completely different from the one in the manual. We need checks in place to avoid these kinds of surprises.

Act. The act step involves a review process that studies variances from, drifts in, and breaches of the system and provides changes to the plan step. The act step ensures that the safety management system continues to improve. System reviews can be integrated by including these discussions as agenda items in manager and supervisor meetings.

Actually, none of the PDCA steps need involve significant changes to a company's current safety management system. Instead, the steps can often be integrated into existing elements. Formal audits are often used in the check step to ensure that the system is operating as planned. Safety management system standards such as ANSI/ASSP Z10, CSA Z1000 and ISO 45001 require auditing. However, formal audits require their own planning and resources, and must be managed as well. Formal audits, therefore, add to the complexity of the system that they are intended to fortify. The need for formal auditing may be reduced by simply integrating checks into existing elements of the safety management system.

For example, perhaps we want to ensure that each workplace inspection includes performing a risk analysis. We plan, perhaps in a policy, that the inspections will be conducted monthly, we cre-



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ate a procedure, develop the appropriate training, and build an inspection schedule. We then create and implement the procedure. Too often, the systems stop there, with no clear way of knowing that the procedure is being followed or followed as intended; the check step of the system is missing. We could implement a new formal internal audit procedure or we could instead use existing activities to satisfy the auditing component.

Suppose the system also includes monthly safety meetings. We could standardize the agenda of our monthly safety meetings to include a review of risk analysis results from the inspections. The actions, their owners and due dates can be recorded in the meeting minutes. This results in a month-to-month check that the inspections and risk analyses are being performed. And since this check is built into the agenda and recorded in the minutes of the safety meeting, we also have a monthly check that the check itself is being performed (i.e., “checking the checker”).

However, it is not enough to know that the inspections are being done and that

the results are being correctly recorded; we also must observe that the inspections are being performed properly. To solve this, we could add procedural audits to the schedule and, as a result, add complexity to the system. Instead, we could change the existing training schedule to include a requirement for conducting and recording practical observations as part of each retraining event.

During inspection reviews, we may notice an observation that is common to most inspections. Perhaps we notice that guarding is not being secured. As a result of this check, we decide to implement new guarding training; we have acted on the check to improve the system. But remember that if we implement new training, we must also implement a way to check it either by adding it to our safety management system or by integrating it into an existing element.

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Integrating PDCA into our safety management systems will make them both preventive and reactive. This will also free us from hearing the words *usually* or *normally* when investigating a workplace injury; we will already be confident that the incident occurred within the usual or normal. More importantly, there may be no incident to investigate. **PSJ**


References

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