Why Are the New People Making the Same Mistakes That the Old-Timers Made 25 Years Ago? Managing Organizational Change

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Abstract

History repeats itself. The same process safety incidents occur over and over. The same occupational safety incidents occur repeatedly.

Why? "Organizations have no memory" – Trevor Kletz. As the operating, maintenance, and engineering personnel are promoted, retire, take vacation, are absent, OR job duties are reallocated, critical safety information and expertise is lost. The paper gives examples of memory loss and its consequences.

The right critical knowledge and skills must be available on site, all the time, when they are needed. The paper describes a straight-forward Management System to maintain the needed competency as the organization changes. The system is self-documenting and can easily be kept up-to-date. Examples are given from years of experience.

1 Introduction

Many of us have experienced one or more days when process safety hit home. For this author and his colleagues, one such day occurred when we realized that the same process safety incidents were occurring over and over. We also realized that the same occupational safety incidents were occurring over and over. New people are making the same mistakes that the old-timers made years ago. The problem was that history was repeating itself.

Why did history repeat? Trevor Kletz observed "Organizations have no memory" [1]. We asked ourselves **why** do organizations have no memory? It seems that each person was learning from his/her own mistakes, but had not learned from mistakes made by their predecessors.

We recognized that we needed a system to help people have the necessary information, training, and skills to avoid repeating the incidents of the past.

2   The memory issues

The memory issue occurs because operating and maintenance personnel (and support personnel, as well) are promoted, retire, take vacation, are absent for one reason or another, OR their job duties are reallocated. As these changes occur, without a formal system, it is unlikely that the new person will know and understand the same hazards and safeguards that the outgoing person knows. What the new person knows depends on his/her training, background, and experience. Should sufficiency of the incoming knowledge be left to chance?

In 50 years of process safety experience, the author has observed or experienced a six-month operator training a new operator. The new operator simply followed the six-month person around for two weeks and was considered to be trained.

The author has observed production manager changes where there was no overlap whatsoever. The old manager left and the best overlap was that the new manager sat down in the office swivel chair just as it stopped spinning from the old manager's exit. In other cases, there were gaps of days or weeks between the old and the new manager. Well, managers know how to manage, right? That may be true, but does the new manager understand what the hazards are in his/her unit? Does he or she know what is needed to sign off on bypassing a safeguard safely?

The other problem with memory is that people in the same job can forget what they once knew, especially for tasks that are done infrequently. Consider that modern units may run for 1 to 5 years between startups and shutdowns. Therefore, a system is needed to provide timely refresher training or drills so that people know what they need to know when they do a task.

3.   Example solutions

3.1   New employee

The author observed a unit in which, within the first six months, almost every operator had an occupational injury (US OSHA recordable) or a first-aid injury from exposure to an organic acid. After six months, no experienced operators had the exposures even though they were continuing to do the same tasks. Why did this occur?

Before an exposure, no one understood that exposure to the organic acid was as bad as they had been told – they just didn't believe it. They treated the job task in a cavalier manner. All the training was done on the job. After an exposure – an injury – they understood the severity of the consequences and the reasons underlying the procedures to avoid exposure. Procedures were appropriate, but new folks believed shortcuts were okay.

The facility began a new operator training program using air and water in the pumps and tanks of an out-of-service unit. The trainees made mistakes and took shortcuts, but they were exposed only to water. The trainers explained the severity of a chemical exposure in similar situations.

The result was the number of injuries in the first six months declined.

After a few years, the training unit was repurposed for another product and was no longer available for training. Because of an economic downturn at the time, the hands-on water and air training was discontinued. Anecdotally, the author understands that the injury rate went up.

W. Edwards Deming said the first of the 14 points for good management principles is "Create constancy of purpose for improving products and services" [2]. We have all seen incident-reducing initiatives that seem to be effective, but for, one reason or another, were discontinued, with a subsequent increase in incidents

3.2 Promotion

When one employee is promoted to another position, the replacement employee must eventually be able to do what the incumbent did. Alternately, the duties must be parceled out to other employees. In either case, **ALL** the job duties must be identified. The training required must be made available and taken **before** the change is made or **before** the new person undertakes the new duties.

It doesn't make sense that management would put a new person into a job and not have a list of the job duties. It doesn't make sense to expect a person to do a new task safely before training is given.

While the principles in this section would seem to be common sense, we have heard some surprising stories.

3.2.1   Promotion example

A unit Day Foreman retired. A Shift Foreman was promoted to Day Foreman. An Operator was promoted to Shift Foreman. The previous Shift Foreman had managed the water quality in the cooling tower. The new Shift Foreman had no knowledge of water quality and why it might be important, and did not manage the cooling tower water. Legionella bacteria developed in the cooling tower basin. The result was a major public relations disaster even though no cases of Legionella were identified.

3.3 Reorganization

Reorganization is similar to the promotion example above, except that it is much more extensive. **ALL** the duties of ALL organizations being reorganized must be identified:

- Are there job descriptions for the jobs being eliminated?
- Do they cover all aspects of the jobs?

The new system must cover **ALL** the duties that were being done by the old organization. It is a massive task to identify exhaustively all the tasks that are done by a worker; it is even more daunting to identify those associated with the whole department. Extensive and intensive debriefings must be done. It is not a trivial task.

The more departments that are being reorganized, the more work is being performed. All the tasks for all the positions must be identified. Then the tasks must be sorted into two categories:

- Not done?
  - Can they be safely eliminated? It takes a meeting and analysis with knowledgeable people to know.
- Can they be done by others who already know how to do them?
  - Who and where are the others who already know how to do them? Are they contractors? Or in other departments? How do we know that they know that they now have the tasks?

3.3.1   Reorganization example

An extensive site reorganization was done. After several years, a process safety audit found that several relief valves had not been inspected and tested as required by the company's mechanical integrity program. The auditors found that all the personnel who might have had the responsibility in the past to ensure the inspections and tests were done were sure that they did not have that responsibility in their current jobs. The auditors could not find anyone who believed the inspections and tests were part of their current jobs. The task had been lost in the reorganization.

- Everyone thought that someone else had the task.
- Everyone was sure that he/she did not have the task.
- Reality: **NO ONE** had the task.

3.4   Temporary absence long-term

A long-term absence is when the incumbent is missing for a day to several days to several weeks (e.g., a vacation or an illness).

How will the replacement be done? Will it be from a pool of equally qualified individuals? Will it be temporary help? Will the tasks of the absent person be added to the workload of others?

Are the duties to be performed known by the new people that are intended to be doing them? Is there a job description? Is it correct and up-to-date? Is the updating of job descriptions part of the management of change process?

Management must clearly communicate to all involved what each individual is being asked to do and how frequently. And of course, what is the training for the replacement people?

3.4.1   Long term example absence

A pumper had the task to gauge a 15 million pounds storage tank to do a weekly check on the inventory. (To do this task, the pumper went to the top of the tank and inserted a wooden stick with measurement lines to measure the depth of the material in the tank.) The tank had a single level indicator, but it was known to be wrong frequently. The pumper went on vacation, and nobody was designated to gauge the tank during this time. After a week of production and barge receipts with no inventory confirmation, the tank overflowed, creating a potentially serious exposure hazard, a difficult cleanup, and potentially serious environmental consequences.

3.5   Temporary absence short-term

A short-term absence is for a few hours, such as a meeting away from the unit, a trip into town, a medical appointment, etc. Are there critical tasks being performed during this absence (e.g., startup, shutdown)? Have minimum coverage standards for these tasks been established (e.g., number of people, experience level)? Will these tasks be adversely affected by this absence? Has there been any opportunity to plan for this absence (e.g., calling in a replacement, deferring critical tasks)?

3.5.1   Short-term example – missing knowledge

As a consultant, the author has been to a number of different facilities where we discussed emergency response procedures for certain tanks of hazardous materials. The operations, technical, and safety personnel in the meeting did not know critical details of the emergency response procedure. "Well, John Doe is the expert on that and he is away today, so we can't answer that question." We asked, "Can we see the written procedure?" "Well, ah, we can't find it right now." Someone in the meeting commented, "I guess it is a good thing that we don't have an emergency involving that tank today!"

3.5.2   Short-term example – a good program

One unit, comprised of multiple trains producing a toxic intermediate, established a clear operating policy for start-up of the trains. They always started up a train on the evening shift, because there were fewer people in the plant at that time. They also ensured that the skill level of operations personnel on shift was adequate during the startup.

Another unit normally would hold over a shift, thereby providing double staffing during a startup, for training and quality assurance. All managers were cognizant of the personnel on shift during startup, and provided coverage by foreman as needed.

5   A management system

What is needed to avoid incidents introduced by personnel change?

The right critical **knowledge** and **skills** must be available:

- Where the task is being done,

- When the task is being done,
- To the person doing the task.

A Personnel Management of Change System is needed to accomplish this objective. The Personnel Management of Change System must document the tasks, and document the needed skills and knowledge to accomplish those tasks safely. The Personnel Management of Change System must institute and maintain a formal management of personnel change process. The Personnel Management of Change System must provide assignments to specific individuals to manage the Personnel Management of Change System.

4.1 Document

We can answer the documentation question by asking (and answering) more questions. What knowledge does the technician (operator or mechanic) need to know? What skills does the technician need to do the task safely, reliably, and with good quality? What are **ALL** the tasks that need to be done? What is the best way to do the task? Institute training, observation, and positive reinforcement to ensure that everyone does the tasks in the best way!

4.2 Formal management of personnel change system

The formal management of personnel change system should identify the knowledge, skills, and tasks for each position. The management system develops an action plan to ensure the new person learns the knowledge, demonstrates his/her skills, and understands his/her task and responsibilities. Further, the management system develops a plan to provide the knowledge, skills, and tasks safely while the new person is in training – that is, it develops a transition plan.

The management of change system should provide a system to manage temporary absences. First, the system must recognize when critical knowledge and skills are missing. Second, it should ensure critical operations are not performed when key people are missing. And, third, it should provide alternate resources to ensure safe operations.

4.3 Managing the management of change system

Managing the management system means that there is a plan in place with identified people to take care of the Personnel Management of Change system to ensure that the system is working properly, to ensure that problems are corrected, and to ensure that improvements are implemented. The Personnel Management of Change system should confirm:

- Who is documenting the changes to task, skills, and knowledge?
- Who is responsible for scheduling and conducting the formal management of change processes?
- Who is responsible to ensure that the necessary training is completed on schedule?

- Who audits the Personnel Management of Change system?

4.4 Auditing management of change system

Remember that we must inspect and test the equipment and procedures for independent protection layers that prevent serious consequences in the operating facility. We test relief valves [3]. We test safety instrumented functions [4]. We should inspect dikes. We should drill our operators on response to alarms. If we find deficiencies, we should correct them (e.g., repair/replace, train, etc.).

Likewise, it is critical to "inspect and test" the management system for organizational change to ensure that it is providing personnel with the right skills and knowledge to do the right tasks.

5 Conclusion

This paper merely skims the surface in examples of process safety incidents that have occurred because of personnel change that was not well managed. A common element of these types of incidents is that people did not have the knowledge and skills to do their job. People did not know certain duties were part of their new job.

This paper gives several examples for improved management of personnel change systems and provides a number of questions to ask. If the questions can be answered, then a strong management of change system can be developed. Building a management of personnel change system will make major strides in providing company memory.

CCPS has a guideline book that can be helpful in developing a management system for personnel change [5].

6 Acknowledgment

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