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ORGANIZATIONAL CHANGE MANAGEMENT

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Abstract

It has long been acknowledged that when not properly evaluated and controlled, changes to physical equipment in a facility can lead to serious incidents with potentially severe consequences. Management of change (MOC) systems, replete with a variety of electronic systems, flow charts, and checklists, have been developed by a number of reliable organizations throughout the world to manage these physical changes. It is less commonly recognized that other types of changes such as changes in job responsibilities, loss of key personnel, or even changes in shift hours can have an adverse impact on process safety. These and other non-physical changes, collectively referred to as Organizational Changes, can lead to serious incidents with potentially severe consequences. Due to their focus on managing physical changes, most MOC systems have overlooked or only superficially address organizational change management (OCM) and the impact of organizational changes that affect process safety.

Organizational change is an unavoidable aspect of doing business. There is a large variety of changes which fit under this umbrella of organizational change. Any of these types of changes could result in catastrophic consequences if the changes are not successfully administered. Effective OCM procedures must include a system for managing potential modifications to a variety of organizational aspects.

The Center for Chemical Process Safety (CCPS) plans to publish a new guideline book in 2012 covering organizational change management. This presentation will highlight some of the key concerns related to organizational change management which are covered in this new publication and which should be included in a successful OCM program.

1. Introduction

OCM should encompass a variety of types of changes within an organization. Some of the types of changes to consider include the following:

- Modification of Working Conditions
    - Changes to the terms and conditions of employment such as hours, shifts, and allowable overtime (including temporary deviations)
    - Modifying the location, methods of communication, or time allocation for people
    - Staffing during extreme weather events, facility-wide emergencies, or turnarounds
- Personnel Changes
    - Change of plant management (e.g., plant manager, HSE manager)
    - Project changes (e.g. new project manager, replacement of a project engineer)
    - Replacing a subject matter expert (SME)/core competency (e.g., relief sizing, risk assessment, mechanical

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integrity, incident investigation, PHA facilitation, etc.)

- Replacing the incumbent in a position that affects process safety (including corporate staff)
- Strikes, work stoppages, downsizing/layoffs, slowdowns, etc.
- Emergency response team staffing for facility-wide emergencies

- Task Allocation Changes
  - Job competency requirement changes
  - Relinquishing an individual's responsibilities for tasks without those tasks being reallocated
  - Requiring individuals to take on new responsibilities demanding skills and competencies unconnected with those previously required
  - Temporarily not filling a position (e.g., hiring freeze)
  - Temporary backfill for leave of absence, vacation, or temporary assignments

- Organizational Hierarchy Changes
  - Centralization or decentralization of job functions (engineering, maintenance, SHE, etc.)
  - Reorganization and de-layering the hierarchy
  - Changes to span of control
  - Linear vs. matrix organization
  - Acquisitions, mergers, and joint ventures
  - Changing service providers

- Organizational Policy Change
  - New and revised corporate process safety related polices/procedures
  - In-sourcing/out-sourcing of key departmental functions such as engineering design or maintenance
  - Major changes to policy or budgets for maintenance or operations
  - Staffing level policy changes (start-up, shut down, turnaround)
  - Changes to mission or vision statements

2. Organizational Change Management Program

Most companies that handle hazardous materials have a Management of Change (MOC) program that addresses changes to equipment, facilities, and procedures. Some have included organizational changes in their existing MOC procedures or in a separate procedure. However, organizational changes, whether large or small can have less obvious but equally serious impacts on an organization's process safety performance. In many instances, it may take months or even years to realize the impact on process safety resulting from an organizational change. In some cases the impact has only been identified after a serious incident. Therefore it is important that these changes be reviewed to assess their impact on process safety.

Any management system should start with a clear policy from the highest level of the organization. This policy should state the principles, commitment and accountability of the organization and commit to proportionate consideration of all organizational changes, large and small, as even those with no apparent connection to safety need to be given due consideration to confirm whether or not they have impacts on safety.

The OCM procedure should have a clear definition of what constitutes an organizational change. In traditional MOC programs, a simple definition of a change is anything that is not "replacement in kind". For OCM the key issue is whether the change impacts the organization's ability to implement process safety critical tasks or to control process hazards; if not, then from a process safety perspective it is not an organizational change. Organizational Change is

defined as any change in position or responsibility in an organization or any change to an organizational policy or procedure that affects process safety.

In order to effectively manage organizational change, a company needs to start with a procedure. This can either be a standalone procedure or modifications to an existing MOC procedure to incorporate organizational changes. The procedure should identify the types of changes covered by the procedure and should include a thorough risk assessment of the change to ensure that process safety does not suffer due to the change. Various types of organizational change can take place safely as long as they are properly managed.

An important aspect of OCM is communication and participation. The individuals affected by the change should be notified as early as possible in the OCM process to ensure their active participation and understanding of the need for the change. Any organizational change can have a significant impact on an individual's morale and focus. The sooner that affected individuals can provide feedback on the process, the more time management will have to address these concerns before the change is implemented. Downsizing or divestiture is one exception where communication of the change may not occur until after the change has been authorized for implementation. For these types of organizational changes, the communication part of the OCM process becomes even more important in order to ensure an orderly and safe transition.

The main component of an OCM procedure is the risk assessment (RA). The OCM risk assessment needs to identify potential risks resulting from implementation of the change as well as any risks associated with the process of implementing the change. The OCM risk assessment needs to consider the potential process safety impacts under all foreseeable conditions and scenarios, including:

- All activities required to operate and maintain the facility in a safe condition, such as operations, maintenance, and contractor activities
- All activities required for process safety management, such as process hazard analysis, mechanical integrity, incident and near miss investigations, and management of change
- Effective emergency response

As is true for a process hazard analysis (PHA) or hazard identification, the risk assessment is only as good as the team members (i.e. knowledgeable, skilled, and experienced). The risk assessment team should be led by someone trained in the methods and tools that will be used to identify and assess the hazards. At least one team member should be experienced and/or knowledgeable in the main positions or roles being impacted. At least one team member should be knowledgeable in the process safety management systems most impacted by the change(s). Additional knowledge may be required on the OCM RA team.

An important set of baseline tools and information to assess how the change will impact the organization and specific job duties are detailed job descriptions (roles, responsibilities, and expectations (RREs)), and competencies (knowledge and skills). Typical duties/responsibilities for affected positions or individuals, if not formally documented, should be developed. One approach is to maintain a register of individuals and their tasks, roles and responsibilities related to mitigating major hazards, including contractors who may have a role in process safety. This will eliminate or reduce the level of effort to conduct this exercise as part of the OCM implementation process.

Once the risk assessment is completed, the findings should be summarized and an action plan developed. This action plan to address risk assessment findings should be part of an overall implementation plan developed for the change. The action plan should clearly identify the critical path for action items including which action items need to be completed before implementation of the change and which can be addressed after the change is implemented. Confirmation that these pre-implementation action items have been addressed should be part of the process to authorize implementation of the change. The implementation or transition plan should detail how the change from the old to the new organization will occur.

It is important to continue to monitor the impact of the change on the organization after the change is implemented. This can be accomplished by monitoring various safety and health indicators that are specific to the change and the potential risks that have been identified. Benchmarking these indicators should occur prior to implementation of the change in order to obtain a relevant comparison before and after the change.

3. Modification of Working Conditions

This category of changes includes planned actions such as modifications to working hours and shift schedules, the opportunity or requirement to work overtime, and relocation of personnel. It also includes changes to staffing arrangements in relation to start-ups, shutdowns, turnarounds, upsets, emergency conditions, and severe weather events, during which inadequate manpower can have devastating consequences.

When employees from a variety of disciplines work in close proximity, they develop relationships independent of their prescribed job duties. Casual interaction among maintenance staff, engineers, management, and control room employees fosters a sense of camaraderie and a feeling of accountability for each other. With this familiarity comes a more relaxed attitude toward communication. The separation of staff disciplines should only be considered after a thorough analysis of their interactions is performed. OCM procedures should assess potential impacts with regard to the efficiency of each to perform its duties.

It is common for shift employees to develop a cohesive team mentality and approach to their duties. In an efficient unit, the members of a shift operate as one entity, anticipating each other's moves and unconsciously cooperating on tasks. If changes are made to the structure of a shift without a thorough understanding of how that shift operates as a team, this solidarity can be disrupted. Coworkers may no longer have an inherent understanding of their responsibilities within the group as they relate to each other. If modifications are only made to some of the shift employees' schedules, this disturbance can escalate. Overlapping of shifts can mean that, in the event of an emergency, it is unclear which shift or which employees are responsible for certain duties. This can cause delays in response time, duplication of actions, and a general confusion at a time when efforts need to be streamlined. Making any of these types of changes without first having a clear picture of how employees interact with and rely on one another can be detrimental to both efficiency and safety.

Regardless of the location of a facility, there are bound to be occasional weather issues. Blizzards, hurricanes, severe thunderstorms, and tornadoes are some examples of natural phenomena that can have unpredictable impacts on operations. Emergencies within the facility, such as a fire or explosion, can also create extreme confusion and necessitate swift actions to prevent escalation of the emergency. When a unit or an entire facility only maintains the minimum number of employees required to complete job duties at any given time, unexpected upsets, such as erratic weather conditions or plant emergencies, can wreak havoc on a workforce that is already barely adequate. Completing a robust OCM evaluation each time changes are made to personnel numbers is imperative to ensure that the availability of adequate manpower during emergency situations is not neglected.

Changes to working conditions can take a variety of forms. Communication and training are key concerns associated with these types of changes. When teams of people are disrupted by changes to hours or location, communication pathways can change resulting in disruptive consequences. Both formal and informal communication between people must be encouraged and managed during such changes. Training may also need to be reviewed to ensure that these types of changes do not leave someone without adequate understanding and resources in an emergency.

4. Personnel Changes

One of the most common types of personnel change involves downsizing and layoffs. However, there are many other types of changes that should also be considered in this category, including retirements, replacement of key plant personnel such as the plant manager or a subject matter expert (SME), replacement of capital project personnel, and strike coverage.

When an experienced employee leaves the company, it is crucial to understand all of the roles he or she plays and ensure that these are adequately covered by remaining employees or his or her replacement. When considering the roles and responsibilities of an individual, be sure to include any unique skills, knowledge, and relationships he or she may have but which are not explicitly included in the basic job description.

When considering a downsizing, especially as it pertains to the actual operating staff, a comprehensive evaluation should be made to ensure there is no critical reduction in process knowledge or response times during emergency situations. The temptation to simply demand fixed percentage cuts from all departments must be avoided. The modern control room is a complex socio-technical system in which a number of factors influence the effectiveness of the operation, and thereby the safety of the facility. A baseline study should be done as well as a review of the proposed change to ensure that the new organizational structure does not reduce emergency capabilities below tolerable limits or introduce significant new hazards.

When the number of personnel is reduced due to downsizing or inability to fill a position, be on the lookout for issues related to overloading and fatigue. During any organizational change, but especially for downsizing, it is important to not only consider the implications of the revised organization, but to also think about the potential safety impacts during the transition. Whenever possible, phase in the changes to prevent a loss of control through over-complexity and to minimize peaks in workload. In addition to training, it is important to ensure ample support and/or supervision by competent people is available for anyone with new safety-sensitive work. Do not hurry through such a change before all necessary training is complete and any new safety measures are in place and functioning. There should be clear criteria available with regard to competency levels which should be verified before the organizational change takes effect.

Contingency planning for work force actions should carefully consider process safety implications. These types of changes are temporary changes which often do not have specified end dates. When approving a temporary change like this, a reasonable time frame should initially be selected for the change. The situation should be periodically re-evaluated and modifications made as necessary. Depending on the extent and duration of a change like this, it might be necessary to authorize multiple temporary changes until the situation is fully resolved. Do not overlook the fact that an additional organizational management of change may be necessary to return to the normal workforce if they have been off the job for a substantial period of time.

Personnel changes can encompass simple activities such as hiring a new engineer or complex changes such as operating a process plant during a union work stoppage. Each of these types of changes needs to be reviewed for its potential impact on process safety, if any. Simple changes may be handled with a streamlined procedure in which the manager documents the change, updates necessary documents, and ensures that essential training and communication takes place. However, more complex changes should be handled using the OCM procedure, including a risk assessment, to ensure that all necessary actions are taken to prevent process safety problems as a result of the change.

5. Task Allocation Changes

This type of change deals with reallocation of tasks to different individuals or the elimination of tasks that may have an impact on process safety. This can occur for a variety of reasons. The change can result in either underperformance or non performance of a task. The risk of this event obviously depends on the criticality of the task to process safety.

Position advancement occurs at all levels in the organization. Some are a result of attrition (e.g., retirement or departure) and some are by design (fast tracking of managers). The new skill requirements can be both task specific (becoming a maintenance coordinator) or more managerial such as leadership and people skills.

One of the major causes of acquiring more responsibility is the recent trend in industry to shrink the size of organizations to achieve the goal of ‘do more with less’. With fewer people in the organization, key tasks need to be redistributed to those remaining. This situation may result in some individuals getting assignments by default (somebody has to do it), after the logical (based on skills and experience) reassignments have been made. The impact of downsizing is often an increase in workload and/or span of work, or both, for individuals.

When it comes to accidents, organizational factors are conditions rather than causes. In risk assessment terms, they are enabling events. The impact of organizational change is often subtle and not immediately apparent. The effects can be degraded performance following increased workload or span of work. The change may also have disrupted unrecorded or informal activities or communications that contributed to safety. This is more likely when baseline competencies for assigned tasks are not documented.

The key aim of a risk assessment is to ensure that following the change, the organization will have the resources (human, time, information, etc.), competence, and motivation to ensure safety without unrealistic expectations of people. Task mapping can be a very useful tool in these situations.

Task allocation changes can occur as part of a larger organizational change or they can be considered a standalone change. Any time this type of change occurs it is essential to consider what happens to all of the safety-related tasks and who is responsible for each of them after the change. Task mapping is a good way to understand the complete impact of such a change. A risk assessment of the change may identify key actions which should be taken to ensure that all tasks are handled by competent personnel.

6. Organizational Hierarchy Changes

Reorganization or organizational redesign can come from a number of directions but the starting point is nearly always the need or opportunity to improve a company’s financial performance. Indeed the company’s financial survival may depend on how effectively and quickly this change can be executed.

For those primarily concerned with the financial costs and opportunities from the planned change it is good to note the severe financial consequences of process safety incidents, such as the Deepwater Horizon incident. According to a CCPS study, in the US, major industrial accidents cost an average of $80 million each and business interruption costs can amount to four times the cost of the property damage from an incident.

Given these warnings but also recognizing that change must and will occur, an OCM program should be utilized to manage such changes. Because there is generally greater vulnerability during organizational transition, special consideration should be given to process safety during and immediately after the transition occurs. Keep in mind that not only is a business being changed but people’s lives are as well.

When planning a reorganization, a company should ensure that no gaps are left in management and application of process safety elements. There are many elements to a strong process safety management program. They are all necessary and they all need at least one person responsible for ensuring they are being done effectively. These people are often referred to as Subject Matter Experts (SMEs). Each SME should be qualified and clearly charged with the task and responsibility.

The term, "Corporate memory loss," refers to the loss of knowledge during reorganization. Often downsizing is done using attractive retirement packages, thereby resulting in a disproportionate loss of experienced personnel. Such persons may include among others, shift supervisors, subject matter experts, process engineers, design engineers, and maintenance personnel. What these people know should be passed on before they leave. Nowhere is this more important than process safety. Ideally this is an on-going process since often a person's interest in passing along this knowledge diminishes quickly once they decide to leave or they are informed that they are leaving.

Task mapping is a good tool for ensuring that the new organization will have "all the bases covered". Checklists can also be helpful.

A topic closely related to hierarchy change is a change to the span of control. Sometimes this change occurs as a result of a significant reorganization, but it can also happen with simpler organizational changes. In this type of change, the scope of someone's job responsibilities is changed. If the span of control is increased the types of responsibilities are the same, but the person may be expected to provide oversight, guidance, and expertise to more people or departments within the organization. If not handled correctly, this type of change can result in someone being "spread too thin". It is important to understand the demands of a job on a person's time before increasing the span of control. If the change to the scope of a job means that the person will be less available to the people who rely on them, then it may encourage people to find alternative options, some of which may not provide the same level of safety.

During a change in ownership, companies need to ensure that all aspects of process safety are functional and that everyone understands their roles, responsibilities, and resources available to get their jobs done completely and correctly. If there are gaps in systems due to the change in ownership, these need to be identified and adequate temporary systems put in place until the organizational change is complete.

Sometimes companies need to outsource various aspects of process safety management, such as maintenance. The initial decision to contract out such activities as well as the choice to change service providers should be considered an organizational change. Contracting out a process safety function can introduce many complications in terms of reporting structure, authorizations, and responsibilities. Even if you have these issues ironed out with one contractor, when you change service providers the same issues should be revisited with the new contactor.

7. Organizational Policy Changes

Although these changes may not be associated with immediate organizational changes, they can serve as enabling events which could adversely impact process safety within the organization. Because these types of changes do not involve actual changes to the people or tasks within the organization, they can easily be overlooked by an OCM procedure, but they should be included within the scope of an OCM process.

Many companies have high level policies and procedures which describe how they will address the many facets of process safety management. These are typically driven from a centralized corporate function and are applicable to all operating facilities within the company. On the surface it may seem like these are just typical policy changes which do not require an OCM. However, the specifics of the policy directives that are being made should be reviewed for potential impacts on the downstream organization. In some cases these policy changes could end up requiring changes to someone's span of control or adding additional tasks to their job function which they are not currently equipped to handle. If these new or revised policies require additional activities or documentation beyond what is currently expected, there may be significant resource burdens imposed on plant sites to comply with the new policy.

The risks associated with changes to policies or blanket changes to budgets is that the changes eliminate too many resources (people and/or money) resulting in an inability to properly carry out the necessary functions of a good process safety program. Although managers like to convey the message that everyone will just have to "do more with less" or "work smarter, not harder", there is a minimum resource level below which a facility cannot safely operate. Unless a company has a clear understanding of what this minimum resource level is, they will not be able to adequately argue against budget cuts that go too deep.

The associated activities of shutdowns, turnarounds, and startups present special challenges for process safety. Companies typically have special provisions or policies for additional staffing for these critical time periods. Changes to these special staffing policies should be considered as an OCM activity.

In many cases these types of policy changes are done by people situated very high in the organization who typically have many objectives to consider. In some cases these decision makers may not be familiar with process safety and its implications for the business. In this case, it may be necessary to educate these high level executives on what process safety is and how it may affect the business metrics that they may be more familiar with such as profitability and corporate image.

Policy changes should be carried out with process safety implications clearly understood. Once understood, those making the change may need to adjust the policy so that instead of being a detriment to process safety it is a benefit.

8. Acknowledgements

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