SAFETY BULLETIN 30/22

Management of Change – Key element of Risk Management

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PSM Element # 12, Management of Change

What is a change and why does it have to be managed?

Industrial Organizations undergo all sorts of changes every day, but does this mean that there is a need to subject all these changes to the organization's Management of Change process? Hence, before embarking on the topic of Management of Change, it is important to first establish the definition of a change covered under Process Safety Management.

A change can be defined as a modification to an existing item, process, plant, Facility, system, specification, manufacturing recipes or technology, method, parameter or condition outside the specified operating limits, or organizational structure.

More often than not, proposed changes of such nature may bring about unintended safety, health & environmental consequences in the workplace. As such, the Management of Change process (MOC) is necessary to allow the organization to evaluate whether the change can be executed in a safe manner. Based on the past experience it has been observed that globally a significant number of major process safety incidents for Chemical Process Industry happened due to lack of or poor MOC compliance.

Although the MOC process may differ for each organization, the flow and spirit of the MOC process should largely be the same. A key part of the MOC process is the conduct of a risk assessment to identify the potential hazards and risks, and the control measures targeted at reducing the risks associated with the identified hazards. Once the change has been executed after being assessed as safe to do so, training has to be provided for all affected workers who will execute the new process. As changes are rolled out, it is important to continue to monitor and evaluate the worker's exposure to risk, adjusting the process where necessary.

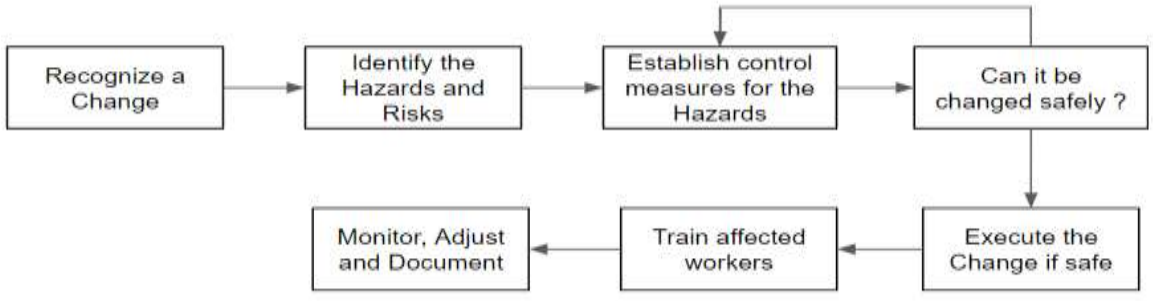


Figure 1. General MOC Flowchart

Who are the key stakeholders involved in the MOC process?

The stakeholders involved in a change may differ depending on the organization's MOC process, but the typical key stakeholders involved in a change are as follows:

Change Initiator:

The Change Initiator is the person who initiates the MOC process, and is responsible for furnishing information relevant to the change, including a short description on the change, the reasons for change and the expected outcomes, etc.

Change Assessor:

The Change Assessor is the person assigned to examine a change request within his/her field of competence and perimeter, to identify and assess the related risks and to propose elimination or reduction measures.

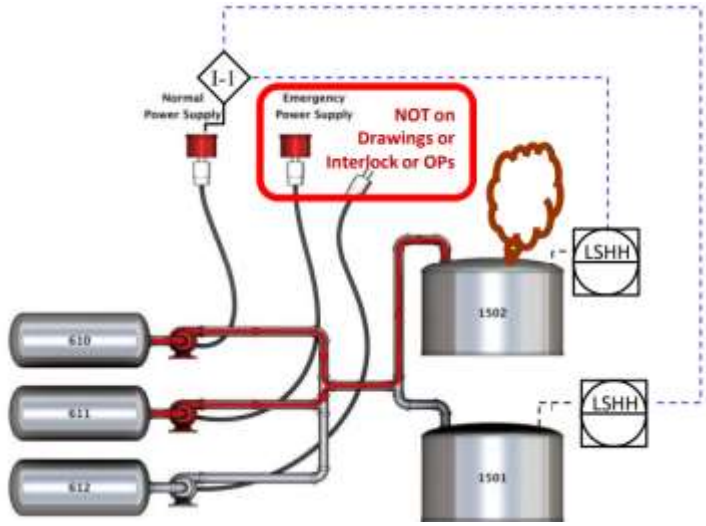
Change Approver:

The Change Approver is the person assigned to authorize or reject the change request, taking the results of the risk assessment conducted by Change Assessors into account when making this decision.

Change Executor:

The Change Executor is the person responsible for executing the change once it has been approved by the Change Approver. Change execution can be largely broken down into two main parts - execution of the physical change on site and updating of related documented information, including training to affected parties, where relevant.

What can go wrong? Examples of incidents in the industry & learning points*



(Information Source: CCPS Process Safety Beacon)*

On October 11, 2008, an overfill of oleum (a solution of sulfur trioxide in sulfuric acid) resulted in a cloud of toxic and corrosive SO3/H2SO4 mist. About 2500 people had to evacuate or shelter-in-place. Fortunately, no serious injuries occurred.

Originally, the facility was built with one power supply and three plug-in pumps. This prevented more than one pump being used at a time. To prevent an overfill, this power supply was interlocked to stop the pump on a High-High (HiHi) level in either tank 1501 or 1502.

However, in the 1980's, a "temporary" emergency power supply was added after several power outages in the main/normal system.

This change did not go through the Management of Change (MOC) procedure.

This emergency system was therefore never added to the Piping and Instrumentation Diagrams (P&IDs), nor to the operating procedures.

Importantly, it was NOT controlled by the HiHi level interlock. On the day of the overflow, an operator was called in and began to pump oleum from Tank 610 to Tank 1502. To save time, he also began a transfer from Tank 611 to Tank 1502 by plugging another pump into the emergency power supply. The HiHi Level switch was unable to stop the transfer from tank 611 and tank 1502 overfilled, releasing oleum.

Conclusion & Take away

When in doubt of whether a proposed change is indeed a change covered under the MOC process, the recommended course of action will be to initiate this as a change - involve the Assessors and Subject Matter Experts with the relevant expertise to gather their assessment on whether this is indeed a change which has to be subjected to this process.

In conclusion, MOC is a detailed process and requires focused effort. Furthermore it is one of the key Process Safety programs which is completely necessary to prevent process safety events and also protect the safety and well-being of the workers who may be exposed to any potential risks brought about by a change. Do not underestimate the risks and hazards that can result from seemingly minor changes - follow the systematic process as detailed in AIGA 010 and 099[1,2] to manage changes so that everyone will be able to work with a peace of mind and go home safely at the end of the day.

References:

1. AIGA 010, *Management of Change, www.asiaiga.org*
2. AIGA 099, *Process Safety Management,* www.asiaiga.org