



MANAGEMENT OF CHANGE

*A Practical Guide to
Fixing MOC's*

Most major incidents involve some form of change... yet MOC is often still often treated like paperwork. The recent CSB incident reviews noted MOC as a contributing cause in several incidents and has been a factor in numerous near misses. The AIChE CCPS identifies several systemic vulnerabilities in MOC programs that commonly lead to regulatory non-compliance or safety incidents, including:

- Changes implemented without initiating the MOC process – skipped MOC
- MOC not fully communicated to team members
- Incomplete risk assessments that miss critical hazards
- Action items assigned but never tracked to closure
- SCOPE CREEP -adding in other changes without further review
- Not updating procedures
- Temporary vs permanent status confusions
- Lack of program oversight
- Organizational changes

MOC – Best Practices Guidance

Let's take a deeper look at some incidents involving MOC issues.

1. **Incident from personal knowledge** – In this incident, the lead engineer for the unit and the head operator decided to make changes in the field. They were good friends and discussed the changes during golf. They discussed the hazards with a couple of the operators that were onsite at the time and then proceeded with the change. They opened a MOC, but felt that they had discussed everything thoroughly, so bypassed some of the steps.

One of the board operators was on vacation. When he returned, he went through his email to check for changes, then went to work. During his shift, there was a slight upset. He made changes according to practice. Unbeknownst to him, it caused further issues in a downstream unit.

In the downstream unit, an operator who was on shift turned a corner just as a pump broke out in flames. He was able to put it out immediately and no one was hurt.

In this incident, the main issues were lack of evaluation of the hazards and lack of communication.

2. **SABIC MT. Vernon IN** – In this incident, the main cause was heating the reactor's outlet piping that contained solidified polybutylene terephthalate polymer, butanediol and tetrahydrofuran while a nozzle on an interconnected heat exchanger was open, allowing oxygen to enter the equipment.

A contributing cause was the Management of Change (MOC) review for leak testing did not assess how the leak testing might affect the simultaneous pre-startup tasks- it was incomplete.

3. **PBF Energy Oregon, OH** - in this incident, LPG was released during temporary leak repair, corroded piping broke while sealant being injected into leak repair clamp. An MOC was authorized but failed to consider the actions taken.

Background: Five days before the incident, PBF Energy found a small leak of flammable liquefied petroleum gas ("LPG") on a section of 1.5-inch drain piping ("drain piping"). Unable to isolate the leaking section during operation, PBF Energy authorized a management of change (MOC) and hired a contractor to design and install a leak repair clamp ("clamp") (Figure 2). On November 23, 2021 (the day of the incident), the clamp was leaking, and while workers added sealant, the drain piping catastrophically.

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PBF Energy's investigation found that during the installation of the leak repair clamp, a grinder was used to reduce the size of the clamp's horizontal support to enable the clamp to fit. Because this modification effectively removed the clamp's horizontal support, the contractor informed PBF Energy that they planned to design and install a different type of support later. The investigation also revealed that when the clamp continued to leak, the contractor had likely applied too much sealant pressure within the clamp. PBF Energy's investigation concluded that high sealant pressure during the injection without adequate horizontal clamp support stretched and broke the drain piping.

Why This Matters to Managers

Robust MOC protects your operations and your reputation. It provides:

- Operational continuity
- Leadership credibility

It reduces:

- Regulatory exposure
 - Major accident risk
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Guidance from known Process Safety Organizations

Common PSM & MOC Issues & AIChE Solutions

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1. Poor Tracking of Temporary Changes

- **The Issue:** Temporary MOCs are frequently needed but feared or bypassed, leading to unintended risks (e.g., the infamous Flixborough disaster). Temporary workarounds (such as hoses or scaffolding) are often implemented without proper review for long-term impacts.
- **AIChE Guidance:** Treat temporary changes rigorously. Establish specific time limits, involve competent personnel in reviews, and conduct a structured follow-up before returning to normal operations.

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2. Overlooking Organizational Changes

- **The Issue:** Facilities often focus strictly on physical or equipment changes. Downsizing, shifts in job responsibilities, loss of key personnel, or altered shift hours can severely impact process safety.
- **AICHE Guidance:** The [AIChE Managing Process Safety Risks During Organizational Change](#) webinar details how organizations must apply the same systematic MOC rigour to non-physical changes.

3. Inadequate Hazard Reviews and PSI Updates

- **The Issue:** Failing to update Process Safety Information (PSI)—such as P&IDs and operating procedures—when physical components are replaced. Incorrectly assuming "like-in-kind" replacements also leads to unanalyzed risks.
- **AICHE Guidance:** MOC procedures should mandate that all related documentation is immediately updated. If you are replacing equipment, refer to resources like [MOC 101—Fundamentals for Effective Change Management](#) to verify the technical basis of the replacement and update Process Hazard Analysis (PHA) documents.

4. Bypassing the MOC System

- **The Issue:** Using verbal or emergency MOCs as a shortcut to bypass the "real labor of thinking" or the burden of a thorough review.
 - **AICHE Guidance:** Emergency or verbal MOCs should be used "sparingly". The [Introduction to Management of Change | AIChE](#) emphasizes that all authorized change requests must include necessary risk controls and required follow-up measures.
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Best Practices & Resources from AIChE CCPS

To address these issues comprehensively, the AIChE CCPS provides full-length operational playbooks, including [Guidelines for the Management of Change for Process Safety | AIChE](#) and [Guidelines for Implementing Process Safety Management, 2nd Edition](#) to help organizations introduce and evaluate their current systems. Additional resources include:

- Temporary Management of Change: A Problem or a Necessary Part of Managing Process Safety... - AIChE
Mar 29, 2017 — <https://www.aiche.org/conferences/videos/conference-presentations/temporary-management-change-problem-or-necessary-part-managing-process-safety>
- MOC 101—Fundamentals for effective change management
Jun 20, 2022 - <https://aiche.onlinelibrary.wiley.com/doi/10.1002/prs.12388>

Best Practices & Resources from the CSB:

In a CSB safety bulletin, published in 2001. The CSB examines two fatal 1998 incidents—an oil refinery fire killing six and a chemical plant explosion injuring four—emphasizing that systematic MoC systems must cover operational deviations and abnormal situations, not just physical changes. Both accidents could have been prevented through multidisciplinary hazard analysis and written procedures.

The bulletin also outlines the following best practices for implementing a sound MoC:

- Define safe limits for process conditions, variables and activities, as well as train personnel to recognize significant changes. Combined with knowledge of established operating procedures, this additional training will enable personnel to activate the MoC system when appropriate.
- Apply cross functional approach with the help of people involved in the process when analyzing changes.
- Use appropriate hazard analysis techniques.

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- Change should be authorized at a level that is proportionate to the risk.
- Communication of the essential elements of the change, including new standard operating procedures.
- Identify and share potential hazards and safe operating limits during process changes.

Management of Change: What Actually Separates Good Managers From Great Ones

Every MOC failure we've dug into eventually traces back to the same place: not a missing signature, but a missing conversation. Somewhere along the line, someone decided a change wasn't really a change – and nobody thought to ask why.

That's the part managers control, whether they realize it or not. Most managers aren't reviewing individual MOCs line by line. What they *are* doing, every day, is setting the tone for how the whole system gets used. If approvals crawl, people find ways around them. If flagging "should this be an MOC?" gets treated as a hassle, people stop flagging it. The process only works as well as the culture around it does.

And that's usually where things break down – not in the formal review itself, but well before it. Long before a form gets filled out, someone has already made a judgment call that a change is minor, temporary, or "basically the same thing." That's how temporary fixes quietly become permanent, and how "like-for-like" replacements end up being anything but.

If there's one habit that changes this, it's simple: stay curious. A manager who regularly asks *why* a change happened – not to assign blame, just to understand it – sends a clear signal that shortcuts get noticed. That one behavior tends to do more for MOC discipline than another round of policy updates ever will.

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A few things worth trying over the next 30–60 days:

- Ask for one example of a rejected MOC each month. Rejections are actually a good sign – they mean the system is catching things.
- Sit in on a PHA closeout meeting once a quarter, just to see how findings turn into action.
- Pick one "temporary" change that's been sitting for 90+ days and take a closer look.
- Ask a frontline supervisor what the last change was that they made *without* submitting an MOC – and really listen to the answer.
- Check the MOC backlog for anything stuck in approval. A slow process is an invitation to work around it.

Worth sitting with:

Where in your process safety system are you relying on people to do the right thing, rather than designing it so it's hard to do the wrong one?

A few resources worth your time:

- [**Personnel Change Management: A Vital Component of Process Safety**](#) (Process Safety Progress, 2025) – a practical framework for handling turnover in safety-critical roles without losing institutional knowledge.
- [**Management of Change – Best Practices**](#) (H2Tools) – a clear, no-frills rundown of when a change needs review and how affected employees should be looped in.
- [**Management of Change**](#) (Professional Safety, ASSP) – older, but still holds up on what genuine leadership commitment to MOC looks like day to day.
- [**Safety Change Management + Template**](#) (AlertMedia) – good on cross-functional buy-in and the role of a pre-startup safety review before a change goes live.