

Questions received during the live webinar session held on 07th October 2020

1. Which kinds of experience should I have to have to conduct the HAZOP and PHA?

In a sequence of priority (in my view):

- a. Operational experience of working in manufacturing plant as operations support or as process development support involved.
 - b. Being part of HAZOP team.
 - c. Understanding and formal learning of PHA tools.
 - d. Practice as a trainee under guidance from a mentor for minimum of 6 months before being an independent practitioner.
2. We do temporary MOCs in running plant to reduce the financial losses. Can you explain the process and the time frame for which we can run on temporary MOC?

A temporary Management of Change time frame duration differs in each organization. Some organizations have a time frame of 6 months to 2 years but it requires high level of surveillance. Need to have a red marked PID to show the live design and should be available on shopfloor until the permanent changes are implemented.

3. What is msgl?

Mild Steel Glass Lined (msgl) Vessel

4. What should be the scrubbing liquid for trimethyl amine vapors from the vents?

Trimethyl amine is soluble in water, use of dilute HCL is advisable for better scrubbing.

5. Why not atmospheric tank equalizes with tanker itself. So, there will not be overflow chances & close system?

That's right, Tanker and storage tank should be equalized always as tanker should not be vented in open though in this case that wouldn't of overpressurisation of storage tank the failure is due to common vent between day tank and storage tank and the message is to design independent vents for equipment. Also imagine, in this case, if the storage tank and tanker had to be equalized (with the case of no venting provision to the storage tank), during tanker vent disconnection, lot of vapors could have got vented into air.

6. In the third case why the answer was not administrative control?? Any kind of the maintenance during their transferring the material is the communication gape or the work permit system gap this is called administrative control?

That's exactly the point. Because the vents are not designed independently, which is actually the minimum requirement, we have to depend on systems such as Permit to Work as administrative control. Best practice is to ensure venting is independent. In this case the tanker unloading and isolation of tank for repairs are carried out by two different parties to avoid miscommunication between them its required that the vents should be independent even if equalized otherwise.

7. In case 4, do you reckon Steam distillation could be a possible alternative?

The concern in this case is about thermal stability of distillation feed due to iron contamination. In this case, onset of decomposition could reduce substantially, so onset could be much lower than the temperature at which distillation is carried out. So the message is known the contaminants which can reduce thermal stability of intermediates, products and waste too!

8. How tanker during transportation to be grounded. i.e long distance travel?

Static buildup of charges occurs during transportation. It is necessary to remove the buildup of charges by grounding before unloading.

9. Can you suggest some software solutions to maintain live PHA?

Commercially available PHA software are available to maintain a digital repository of your worksheet and other associated information. PHA Leader, PHA Pro, Open PHA, PHA Works to name a few

10. What is SRV?

Safety Relief Valve

11. How SIS is reviewed in HAZOP?

A safety integrated system is qualitatively reviewed in HAZOP. If a SIS is available and if the efficacy of the SIS needs to be evaluated, then a Layer of Protection Analysis is recommended.

12. In 3rd case study Whether PSSR is more important than Management Of Change?

As this was a replacement in kind and therefore the user could assume that it does not require a Management of Change. So, as MoC is missed, PSSR also could miss. PSSR cannot be in isolation without MoC.

13. Is it advisable in HAZOP only focus on critical nodes where process safety risk is involved? Remaining node will be skipped.

A HAZOP is an acronym for HAZards and OPerability study. A qualitative review of all nodes must be performed. This screening techniques helps you identify a critical safeguard in the process. It is therefore important to perform

HAZOP for all nodes and then have additional discussion and deliberation for critical nodes.

14. As a risk engineer or third-party auditor, how to check all mentioned points are in line or are there any deviations from same?

Simple answer to this is check for evidence. Eg: for an action point of SRV installation – instead of closing the point as SRV installed, check if relief calculations have been carried out OR closing a point of SIL being configured, check if SRS checklist was filled in and all details are adequate – that's the additional value addition that the risk engineer or 3rd party auditor could do. The risk assessed by the team more is often not reproducible by another team as the assumptions, experience, skill set, and risk perception may be different. As a third-party auditor it is important to check if the process has been followed and check if action items and recommendations are implemented in a timely manner.

15. I need to bypass a process interlock to ensure production then how it can be done?

There needs to be a procedure where such deviations have to be approved by higher authorities in the plant operations and such deviations should be time bound and risk assessed before considering. Such systems are followed in industry and are required eg: during maintenance of equipment. A proper management review along with a management system needs to be developed for your facility for such operations.

16. Should we consider alarms as a Safety Layer / a safe guard?

If alarms are clear to the operator and if he/she is going to take corrective action, then can be considered as a safeguard after careful review in a qualitative analysis. A more rigorous criteria for safeguard should be needed for advanced PHA techniques like LOPA or CPQRA

17. Pre-Start up Safety Review VS Mechanical completion what is first?

PSSR is filled in during authorization of MoC. Few actions are to be completed before the mechanical completion and few are to be completed post. So if your question is when to first review the checklist, it is before mechanical completion.

18. If there is a design change after the HAZOP is performed, do that system needs to be re-HAZOP ed?

Yes, HAZOP has to be reassessed to find out if there are any other scenarios leading to hazards or if a new hazard is introduced due to system re-design.

19. For Tri Methyl Amine I thing dilute HCl scrubber will be more effective for scrubbing?

That is right.

20. What is the PHA for Noise & Vibration in Pump or rotary machines in hazardous zones?
Consider reviewing API 580 and API 581 for performing a Risk Based Inspection
21. Why molten Sulphur huge storage tank have only atmospheric vent valve?
The choice of using an atmospheric vent valve for a properly degassed molten sulfur to be vetted by a technical expert and is beyond the scope of the presentation
22. What is stability of Sodium Hypochloride solution used in scrubber?
Interaction of sodium hypochlorite with other vapors/gases in scrubber needs to be studied case based and thus to be vetted by a technical expert and is beyond the scope of the presentation