

COMMON INSPECTION CRITERIA

Process Hazard Analysis

QUESTIONS FOR SEVESO INSPECTORS

Produced by the Major Accident Hazards Bureau (MAHB) of the European Commission Joint Research Centre (JRC) in collaboration with the EU Technical Working Group on Seveso Inspections

This questionnaire relates to internal audits to check compliance with the SMS, so this means periodic checks whether the procedures of the SMS are being correctly applied. Indentation is used to explore some issues in more detail (if the inspector wishes to do so). Most questions are closed and should be answered positively. Negative answers can only be accepted if a company can demonstrate it has an alternative solution in place or if the question is not relevant or applicable.

PHA Documentation

1. Does the operator dispose of a PHA (one or more controlled documents) describing the risks of major accidents and the measures to prevent major accidents and to mitigate any consequences.
2. Has the PHA been kept up to date and modified in function of modifications of the process installation?
3. Has the PHA been conducted before new installations or modified parts of installations have been taken into service?
4. Had the PHA been reviewed periodically (for existing installations)?
5. Has the PHA identified all equipment with a potential to cause a major hazard (based on nature and quantity of the hazardous substances present)?
6. Has the PHA identified all initial events of loss of containment (LOC) for all equipment with a potential to cause a major accident and specified the measures to prevent the LOC?
7. Select one or a few examples of equipment and LOC-scenarios and follow the PHA up more closely. When and how was the PHA done, which were the results, have the proposed measures been implemented etc. Start with one of the most serious accident scenarios.
8. Has the PHA identified all events following the LOC's with a potential to cause a major accident and specified all necessary measures to mitigate their consequences?
9. Can the operator present the arguments to support his decision to consider the preventive and mitigating measures taken as being 'sufficient'?
10. To which extent have the risks been reduced in the light of the PHA?
11. How many unacceptable risk remained, which have not been adequately addressed?

PHA Procedures

12. Is there a procedure describing the process hazard analysis are done (techniques used, people involved, ...)?

13. Does the analysis method/s chosen for analyzing the process hazards meet the objectives and do they take into account the type and complexity of the process being analyzed?
14. Is the justification for selecting a particular method recorded in the documentation describing the PHA process and its outcome and for which competencies that take part in the PHA work?
15. Is the PHA is based on a systematic approach? The operator should demonstrate that each of the strategies have been considered systematically (as far as these strategies are relevant given the type of hazardous substances present in the installation).
16. Does the operator take into account the available information on best practices when analysing the process hazards?
17. Does the operator take into account the experiences from incidents and lessons-learned when analysing the process hazards?

Control of process upsets

18. Has the operator identified all the possible process upsets leading to a loss of containment in a systematic way?
19. Did the operator evaluate these risks and did he specify measures to reduce the likelihood that these process upsets lead to a loss of containment?

Control of degradation

20. Has the operator identified all specific types of degradation due to the normal or abnormal operational conditions (substances present, concentration, temperatures ...) in a systematic way?
21. For each process equipment containing hazardous substances, are the degradation phenomena identified and documented?
22. Is there an inspection plan for each process equipment (indicating the type of inspections and the intervals)?
23. For each piping system containing hazardous substances, are the degradation phenomena identified and documented?
24. Can the operator demonstrate that each piece of equipment handling hazardous substances is fit for service until the next inspection? Or rather that the process will remain within the safe operation window. This might also need input from the maintenance department.

Limitation of the Size of an Accidental Release

25. Did the operator consider in a systematic way the need for measures to detect accidental releases in an early stage?
26. Did the operator examine in a systematic way the need for measures to limit the size of an accidental release (such as emergency isolation systems, emergency transfer, depressurization,...).

Control of Spreading of Substances Accidentally Released

27. Did the operator examine in a systematic way the need for measures to control the spreading of hazardous liquids in case they are accidentally released (such as containment bunds, draining systems).
28. Did the operator examine in a systematic way the need for measures to control the spreading of toxic or inflammable vapours and gases in case they are accidentally released?
29. Did the operator take the necessary measures to avoid environmental pollution due to firefighting water run off?

Prevention of Ignition of Explosive Atmospheres

30. Did the operator identify zones with an explosive risk during normal operation (according to the European 'Atex' Directive 1999/92/EC on the minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres).
31. Can the operator demonstrate that in the zones classified according to the Atex directive explosion proof equipment is used?
32. Did the operator identify equipment where an internal explosive atmosphere is present or can be present? Did the company define measures to avoid ignition of any explosive atmospheres inside process equipment?
33. Did the operator identify the risks of explosive atmospheres due to the accidental release (in abnormal conditions) of inflammable substances. Did the operator examine the need for avoiding ignition of explosive atmospheres due to such accidental releases?

Mitigating Damage Due to Fire

34. Did the operator evaluate in a systematic way the need for passive and active fire protection to limit damage to the process equipment and process structures in case of a fire?
35. Did the operator evaluate in a systematic way the need for measures to limit the spreading of fire in buildings used for storing hazardous chemical or housing process installations?
36. Did the operator identify the need for fire detection measures?
37. Did the operator identify the need for fire fighting measures?

Mitigating Damage Due to Explosion

38. Did the operator identify in a systematic way the need for measures to protect buildings from damage due to (external) explosions?
39. Did the operator evaluate in a systematic way the need for explosion relief in buildings with a risk of an explosive atmosphere inside?
40. Did the operator identify in a systematic way the need for explosion relief for equipment with a risk of internal explosions?

Mitigating Damage Due to a Toxic Release

41. Did the operator identify the need for protecting people on site in case of a toxic cloud?
42. Did the operator identify the need for protecting operators during manual operations involving toxic substances?
43. Did the operator take measures to prevent people from entering building or room in case a hazardous atmosphere has developed inside (due to a toxic leak).

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