



Process Safety Critical Equipment

PSCE List

PSCE list requirements

Each facility shall maintain a list of PSCE which shall:

- Be developed according to the requirements of the PSCE procedure
- Reason why each item was identified as PSCE.
- Maintenance strategy for each piece of equipment on the list.
- Be flagged as PSCE on the Maintenance Management System (MMS) to facilitate the generation of reports.
- Reviewed at a minimum of every 3 years or unless earlier review is warranted due to changing circumstance.

PSCE categories

Categories for identified PSCE to compile the PSCE list:

- Instrumentation
- Process containing equipment
- Mitigating equipment

Instrumentation

- Instrumented protective systems or (SIF) that have been SIL rated for safety reasons
- Trips protecting the process against significant safety consequences shall be reviewed.
- Trips deemed critical by the judgement of a management team shall be added to the list of PSCE.

Process containing equipment

Process containing equipment shall be deemed Process Safety Critical when:

- It has the potential to cause a major process safety incident should it fail and release hazardous chemicals.
- There is a known mechanism of failure, such as corrosion or erosion.

Note:

- Portable equipment such as LPG cylinders, oxy-fuel gas sets, sample containers, etc. should be excluded.

Identify process equipment that is PSCE

- Identify the hazardous chemicals present in the process.
- List all the equipment that may contain hazardous chemicals, may be performed by marking up a set of drawings.
- Determine the consequences when a failure of the process containing equipment release hazardous chemicals.
- Consider the potential quantity and rate of release.
- Review the likelihood when a failure is expected and/or has been detected which may cause the equipment to fail.
- Equipment meeting all the above criteria shall be classified as process safety critical equipment.

Mitigating equipment that is PSCE

- Mitigating equipment protecting the PSCE
- All active and passive mitigating systems intended to reduce the consequences of a loss of containment from the PSCE listed shall also be added to the PSCE list.

Other considerations:

- Mitigating systems may be added or removed from the PSCE list through a justification by inputs from a PHA study or similar process.
- Records of the above process shall be kept in order to explain the reasons for future reference.

PSCE schedule adherence

- PSCE Adherence = $\frac{\text{Number inspected and maintained}}{\text{Number planned to be inspected and maintained}} \times 100$
- Measures the number of PSCE tested and inspected according to the maintenance schedule for a reporting period.
- Reported as a percentage
- It must have a maintenance strategy
- The following maintenance is used for the schedule adherence:
 - Preventative maintenance irrespective of condition
 - Predicted maintenance inspect and then repair

PSCE Failure before schedule

Purpose:

- Applies to PSCE that have failed prior to being tested and inspected according to the maintenance schedule.
- Provide a measure of the confirmed weaknesses to PSCE that do not meet their minimum performance requirements.
- An indication of the weaknesses to maintenance strategies developed for specific PSCE resulting in reactive maintenance of PSCE.

Measurement:

- Measure as the number of PSCE that failed before scheduled maintenance.
- Measure number of orders loaded as breakdown orders

Questions