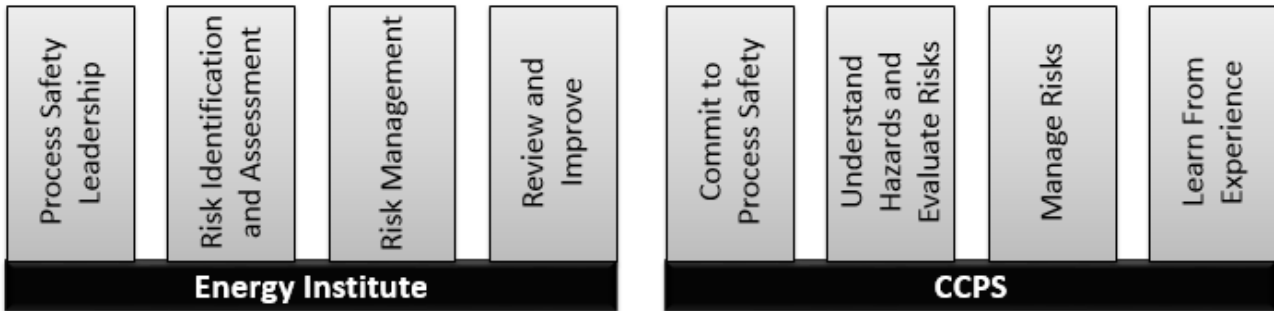## Managing Process Safety – Four Pillars

In recent years we have seen a shift in Process Safety Management within the high hazard sector that provides clear direction on all elements covering Plant, Processes and People.

The Energy Institute and Centre for Chemical Process Safety (CCPS) both identify four accident prevention pillars striving towards the same goal – SAFE PROCESS OPERATIONS.
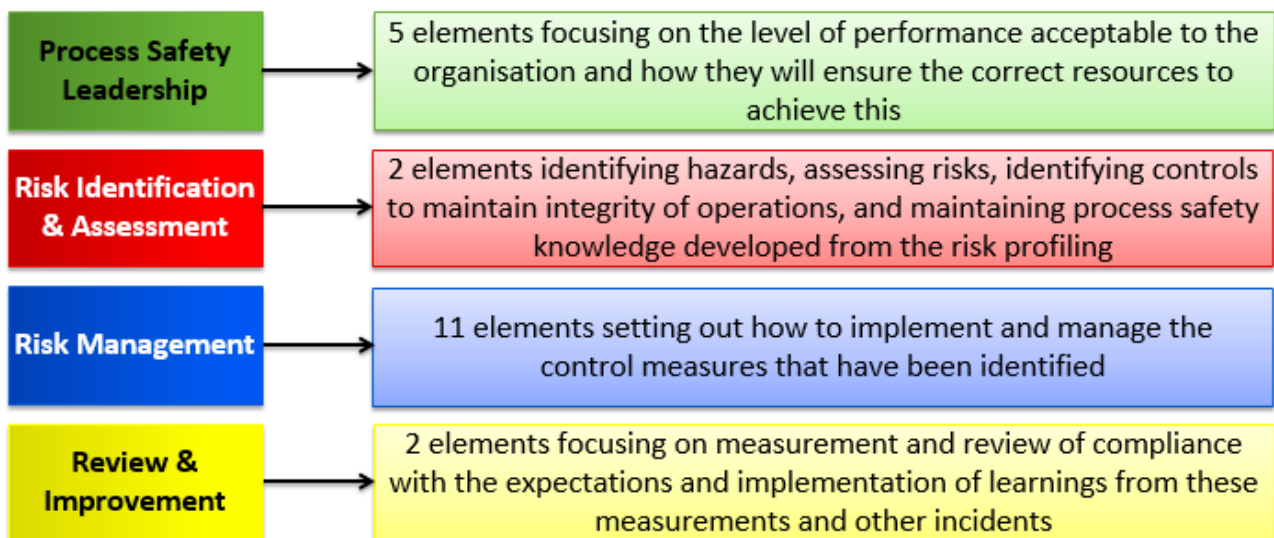

The Occupational Health and Safety Administration (OSHA) also have a 14-point process safety management plan, this is largely applicable to high hazard industries either based in the US, and some UK organisations with boards in the US, are required to commit to these PSM Principles.

Let's look at these different systems before we explore these and see how our standards meet with these guidelines.

Energy Institute

The four Energy Institute accident prevention pillars provide a well-structured system that provides clear direction on all elements covering Plant, Processes and People All ensuring SAFE PROCESS OPERATIONS.
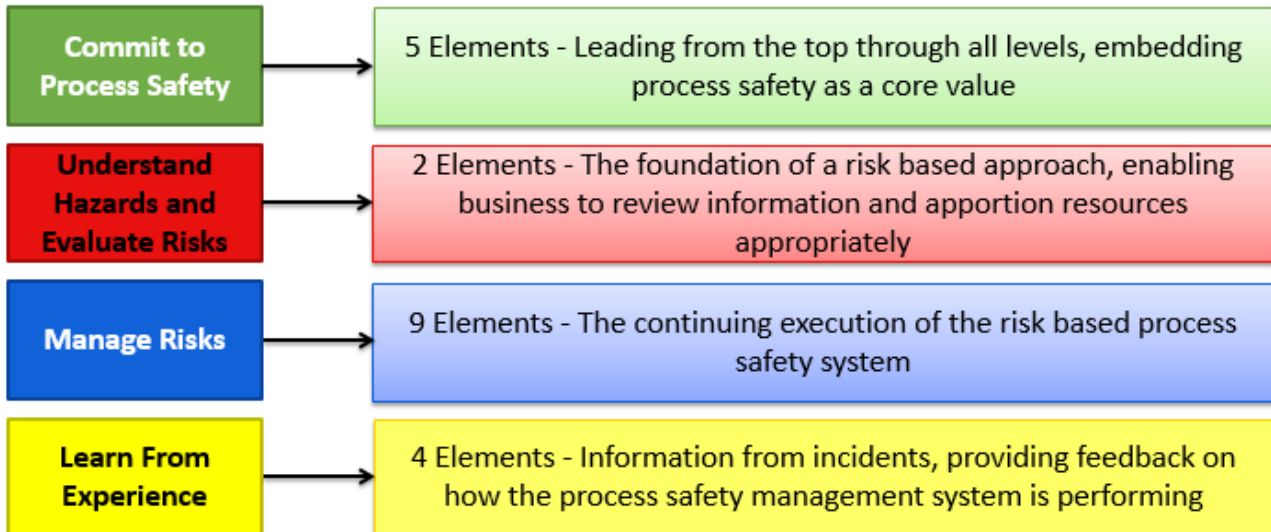

Energy Institute provide twenty elements that expand on the original PSM elements reflecting their comprehensive experience in PSM implementation.

These elements fit within the four pillars and encompass best practice from a large variety of industries / sectors and worldwide regulatory requirements.

1. Leadership, commitment, responsibility	6. Hazard identification & risk assessment	11. Standards & practices	16. Management of safety critical devices
2. Identification & compliance with legislation & industry standards	7. Documentation, records & knowledge management	12. Management of change & project management	17. Work control, permit-to-work & test risk management
3. Employee selection, placement, competency & health assurance	8. Operating manuals & procedures	13. Operational readiness & process start-up	18. Contractor & supplier, selection & management
4. Workforce involvement	9. Process & operational status monitoring & handover	14. Emergency preparedness	19. Incident reporting & investigation
5. Communication with stakeholders	10. Management of operational interfaces	15. Inspection & maintenance	20. Audit, assurance, management review & intervention

CCPS Four Pillars

The four CCPS accident prevention pillars provide a well-structured system that provides clear direction on all elements covering Plant, Processes and People. All ensuring SAFE PROCESS OPERATIONS.

Commit to Process Safety	5 Elements - Leading from the top through all levels, embedding process safety as a core value
Understand Hazards and Evaluate Risks	2 Elements - The foundation of a risk based approach, enabling business to review information and apportion resources appropriately
Manage Risks	9 Elements - The continuing execution of the risk based process safety system
Learn From Experience	4 Elements - Information from incidents, providing feedback on how the process safety management system is performing

CCPS provide twenty elements that expand on the original PSM elements reflecting their comprehensive experience in PSM implementation.

These elements fit within the four pillars and encompass best practice from a large variety of industries / sectors and world-wide regulatory requirements.
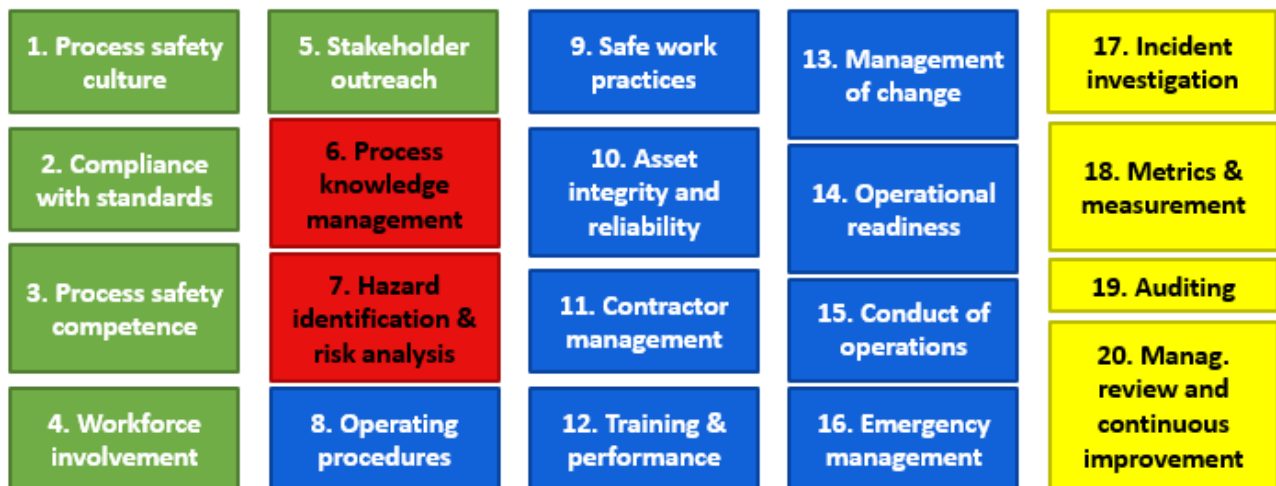
1. Process safety culture	5. Stakeholder outreach	9. Safe work practices	13. Management of change	17. Incident investigation
2. Compliance with standards	6. Process knowledge management	10. Asset integrity and reliability	14. Operational readiness	18. Metrics & measurement
3. Process safety competence	7. Hazard identification & risk analysis	11. Contractor management	15. Conduct of operations	19. Auditing
4. Workforce involvement	8. Operating procedures	12. Training & performance	16. Emergency management	20. Manag. review and continuous improvement

Occupational Safety & Health Administration PSM Guidelines

The OSHA recommendations serve as a non-mandatory guideline to assist employers and employees in complying with the requirements of this section, as well as provides other helpful recommendations and information.

The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose employees and others to serious hazards.

1. Employee Participation	2. Process Safety Information (PSI)	3. Process Hazard Analysis (PHA)	4. Operating Procedures	5. Training
6. Contractor Safety	7. Pre-Startup Safety Review (PSSR)	8. Mechanical Integrity	9. Hot Work Program	10. Management of Change (MOC)
11. Incident Investigation	12. Emergency Planning and Response	13. Compliance Audits	14. Trade Secrets	