

Key CalARP/ RMP/PSM/SEMS Elements & Program Overlap

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How Did We Get Here?



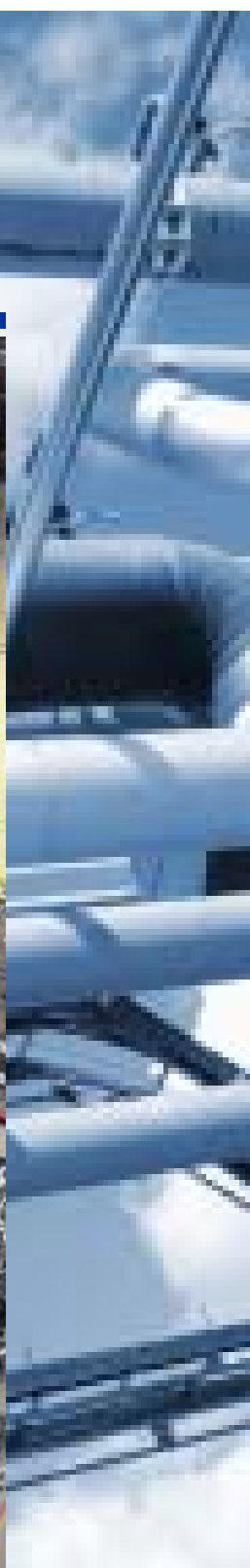
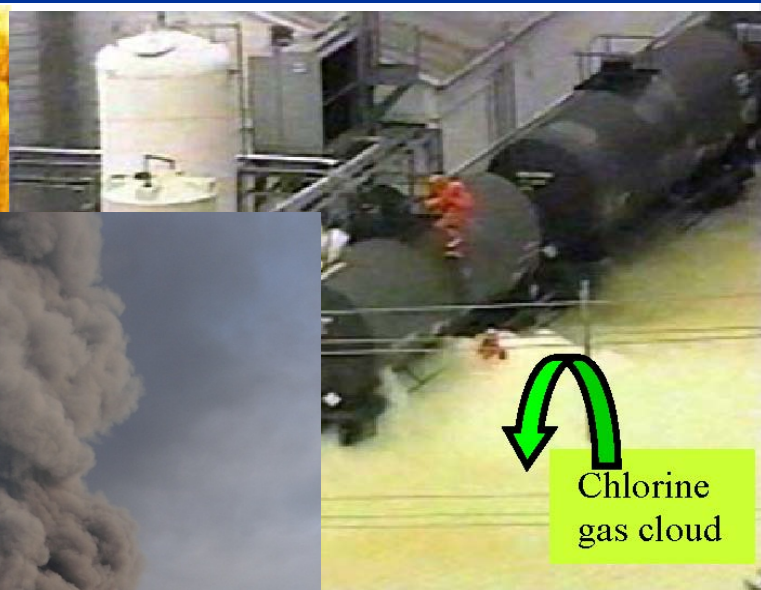
July 2005 – CCPS Process Safety Beacon



August 2004 – CCPS Process Safety Beacon



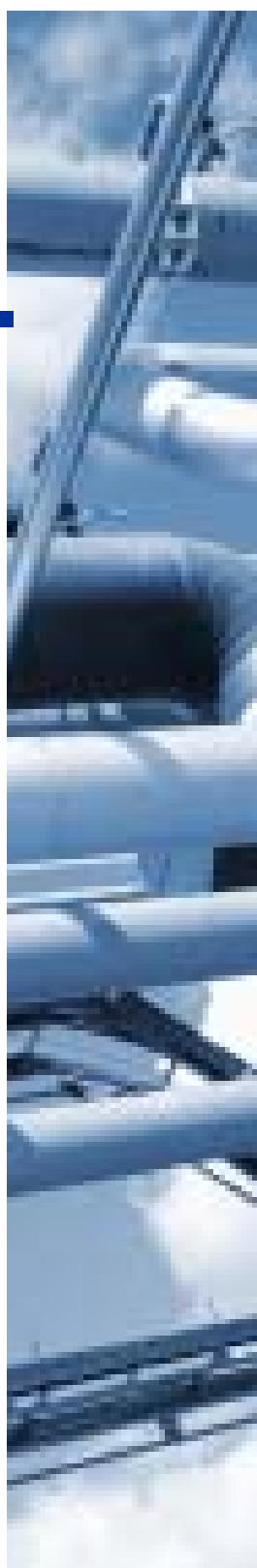
From Houston Chronicle – www.chron.com



Observations from Major Incidents

Safety Management Systems Concepts

- Major Accidents have Caused Significant Loss of Life and Property, as well as Significant Indirect Costs, e.g.:
 - Business Interruption
 - Lost Confidence and Contracts
 - Increased Regulation
- Typical Characteristics of Major Accidents:
 - Relatively-Simple Precursors & Initiating Events
 - Root Causes – Failure to Maintain Design Intent (first line of defense)
- MOST EFFECTIVE MECHANISM FOR IMPROVEMENT – Not by Addressing Specific Actions, but by Effecting Changes in the Way Business is Done (i.e., **SAFETY CULTURE & “MANAGEMENT SYSTEMS”**)



Evolution of SMS Guidelines & Regulations to Performance (Goal) – Based Standards

1987 – CCPS
1990 – API RP 750
1992 – PSM

1996 – RMP



Onshore Process Safety (USA)

2013 – CSB Interim Rpt.
2013 – E.O. 13650
2013 – OSHA PSM RFI
2014 – CSB Reg. Rpt.

1989 – PSSDS
1991 – SEMP Concept
1993 – API RP 75



Offshore Safety Management Systems (USA)

2004 – API RP 75

2006 – SEMS Concept

2009 – SEMS Prop. Rule

2010 – SEMS Final Rule

2013 – SEMS II

1992 – UK Safety Case



Offshore Safety Management Systems (UK)

2005 – UK SC Update

2009 – MODU HSE Case

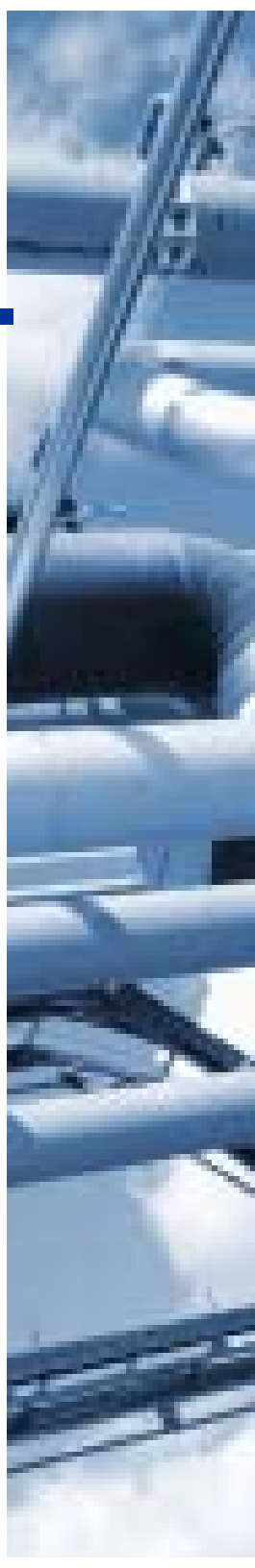
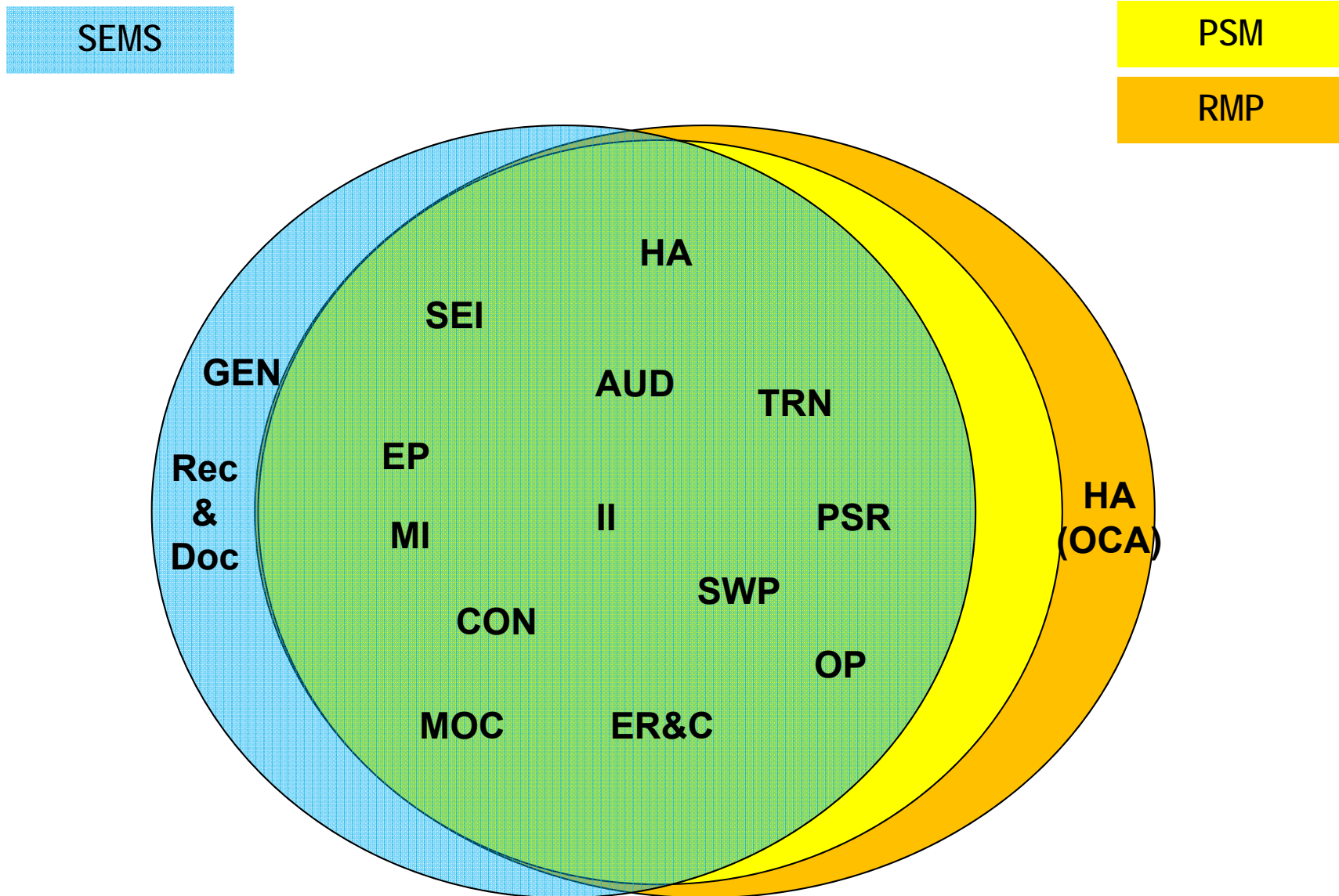
2013 – Safety Directive

Elements of API RP 750 – Management of Process Hazards

- Process Safety Information
- Process Hazards Analysis
- Management of Change
- Operating Procedures
- Safe Work Practices
- Training
- Assuring the Quality and Mechanical Integrity of Critical Equipment
- Pre-Start-up Safety Review
- Emergency Response and Control
- Investigation of Process-Related Incidents
- Audit of Process Hazards Management Systems

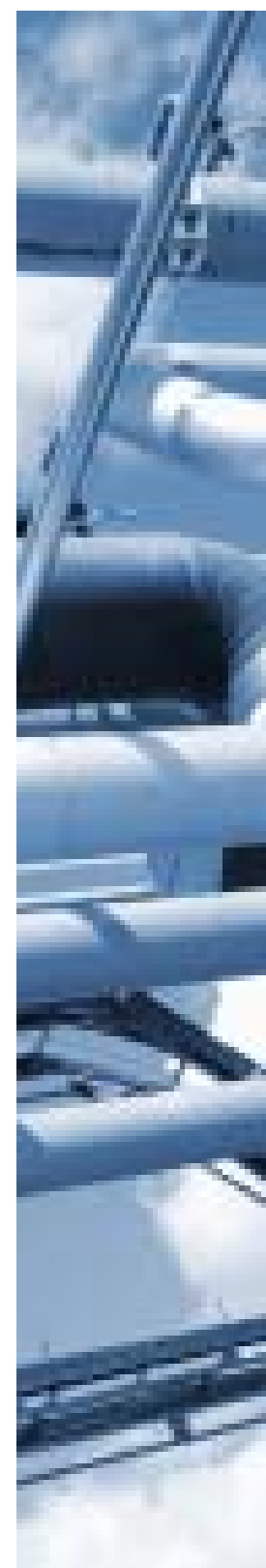


Overlap Between Key Programs



SMS Program Overlap Compliance Matrix

Section	API RP 75 / 30 CFR	OSHA (29 CFR)	EPA (40 CFR)
Safety & Environmental Information	2 / 250.1910	1910.119 (d)	68.65
Hazards Analysis	3 / 250.1911	1910.119 (e)	68.67
Management of Change	4 / 250.1912	1910.119 (l)	68.75
Operating Procedures	5 / 250.1913	1910.119 (f)	68.69
Safe Work Practices	6 / 250.1914	1910.119 (h,k)	68.85/87
Training	7 / 250.1915	1910.119 (g)	68.71
Assurance of Quality & Mechanical Integrity of Critical Equipment	8 / 250.1916	1910.119 (j)	68.73
Pre-Startup Review	9 / 250.1917	1910.119 (i)	68.77
Emergency Response & Control	10 / 250.1918	1910.119 (n)	68.95
Investigation of Incidents	11 / 250.1919	1910.119 (m)	68.81
Audit of SEMS Elements	12 / 250.1920/4/5	1910.119 (o)	68.79
Records & Documentation	13 / 250.1928	---	---
Employee Participation	--- / 250.1932	1910.119 (c)	---
Contractor Safety	Various	1910.119 (h)	68.87



Questions?

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