

Comparative Analysis of Safety Management Systems

Best Practices in Corporate Health and Safety

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Comparative Analysis of Safety Management Systems

- Leadership:** An effective leader must unite followers to a shared vision that offers true value, integrity, and trust to transform and improve an organization and society at large. (source: www.bambooweb.com)
- Management:** Management characterizes the process of leading and directing all or part of an organization, often a business one, through the deployment and manipulation of resources (human, financial, material, intellectual or intangible). One can also think of management functionally: as the action in measuring a quantity on a regular basis and adjusting an initial plan and the actions taken to reach one's intended goal. This applies even in situations where planning does not take place. Situational management may precede and subsume purposive management. (source: www.bambooweb.com)
- Employee Relations:** Employee Relations refers to the characteristics of people understanding their role in the Organization, with two-way open communications and managers ability to effectively relate to inspire, motivate, and leverage the talents of the employees within the organization to achieve organizational goals.
- Measurement:** Measurement is the determination of the size or magnitude of something. Measurement is not limited to physical quantities, but can extend to quantifying almost any imaginable thing such as degree of uncertainty, worker confidence. (source: www.bambooweb.com)
- Safety Culture :** Safety Culture refers to the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine commitment to, and the style and proficiency of, an organization's health and safety management. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety and by the efficacy of preventive measures. (source: The Advisory Committee on the Safety of Nuclear Installations (ACSNI)1993, p23).

Core Element Comparisons

Leadership at the Top	
CEO Leader	Executive Team
Top 12 Managers	Operations Leadership in Transition
VP Responsible	
Management System That Works	
"Trust but Verify"	Best Safety Practices
Bi-Monthly Reporting to Top Management	OHSAS, CHSEA, OSHA Standards & Certifications
Behavioral	
Confidence by all in Company Value	
Operations Accountability	Public Report
Accountability Requirements	Broad Use of Goals
Financial Incentives	High Profile VPP Participation
Rewards/Recognitions	
Performance Monitoring and Feedback	
Internal & External Audits	
Real Time Performance Data	
Focused Staff Follow-up	
Assessment Program	

Source: Driving Toward "0"
 Best Practices in Corporate Health and Safety, R-1334-03-RR,
 The Conference Board. <http://www.conference-board.org>

Keil Centre Ltd. - Safety Culture Maturity® Model

The safety culture maturity model® presented refers to organizational behaviors; NOT safety management systems. A positive safety culture is the product of effective safety management. As part of a project sponsored by the United Kingdom offshore oil industry and the Health and Safety Executive, The Keil Centre developed the Safety Culture Maturity® Model, providing a structured safety culture improvement process. The Safety Culture Maturity® Model assists organizations to identify their current level of safety culture, and develop level-specific improvement actions. The focus of improvement actions differs, depending upon the existing level. The Model is set out in stages. Organizations progress sequentially through the five levels. Growth in Safety Culture Maturity® normally takes one to two years per level, and collectively five to ten years for an organization to achieve peak performance, assuming they start at Level 1 and maintain a sustained and well-resourced effort. Safety Culture Maturity is a Registered Trade Mark of The Keil Centre Ltd. Copyright The Keil Centre, 1999

1	2	3	4	5
Emerging	Managing	Involving	Cooperating	Continually Improving
Develop Management Commitment	Realize the importance of frontline staff and develop personal responsibility	Engage all staff to develop cooperation and commitment to improving safety	Develop consistency and fight complacency	

Safety Culture Maturity® Element	Leadership	Management	Employee Relations	Measurement
Visible Management Commitment	X			
Safety Communication	X	X		
Production versus Safety	X			X
Learning Organization	X		X	X
Health and Safety Resources		X		
Participation in Safety	X		X	
Risk-taking Behavior		X		X
Trust between Management and Frontline Staff	X		X	
Industrial Relations and Job Satisfaction			X	
Competency		X		X

Australian Defense Aviation System

The specific goals of the Defense Aviation Safety Management System (ASMS) to accomplish this purpose are the:

1. Preservation of the human and materiel resources of Defense aviation in order to maintain capability, improve quality and enhance readiness to perform the organization's mission(s)
2. Reduction in the rate of aviation accidents and serious incidents resulting from human, organizational and systemic deficiencies to zero
3. Establishment and maintenance of an effective hazard identification, reporting, investigation and management system, which eliminates, or reduces to an acceptable level, aviation risks within Defense aviation
4. Establishment and maintenance of a generative safety culture

1	2	3	4
Genuine Command Commitment	Generative Safety Culture	Defined Safety Organization Structure	Communication
<ul style="list-style-type: none"> ◆ Safety recognized as a priority ◆ Command committed to improving ◆ Appropriate allocation of resources ◆ Trained and qualified staff ◆ Personnel aware of: orders, instructions, procedures ◆ High level of awareness ◆ Effective risk management process 	<ul style="list-style-type: none"> ◆ Promote stds of excellence: <ul style="list-style-type: none"> ○ Professionalism, ○ Innovation ○ Loyalty ○ Integrity - adherence to codes. ◆ Commanders should: <ul style="list-style-type: none"> ○ Lead by example ○ Allocate adequate resources ○ Acknowledge concerns & suggestions ○ Give feedback on decisions ◆ Actively measure: <ul style="list-style-type: none"> ○ Safety climate ○ Behaviors ○ SMS ◆ Measure perceptions: <ul style="list-style-type: none"> ○ Integrity ○ Trust ○ Morale ○ Quality ○ Leadership 	<ul style="list-style-type: none"> ◆ Committee purpose: inform commander promote interest ◆ Forum for: viewpoints policy objectives eliminate/mitigate safety hazards 	<ul style="list-style-type: none"> ◆ Policy documentation ◆ Review boards/working groups ◆ Surveys ◆ Audits ◆ Safety stand-downs ◆ Open reporting mechanisms ◆ Confidential reporting ◆ Activity briefings/de-briefings ◆ Face to face discussions ◆ Visits and liaisons ◆ Safety information ◆ Communication strategy

Australian Defense Aviation System (continued)

5	6	7	8
Documented Safety Policy	Training & Education	Risk Management	Hazard Reporting & Tracking
<ul style="list-style-type: none"> ◆ Group policy: a safety <ul style="list-style-type: none"> ○ Mgmt system culture - open reporting hazard ○ Id process risk ○ Management target - zero accidents ◆ Personnel policy: adequate training awareness risk management 	<ul style="list-style-type: none"> ◆ Training: <ul style="list-style-type: none"> ○ Orientation ○ Postgraduate ○ Skill specialization ○ Contractor ○ Safety staff ○ Overseas ○ Domestic ○ Conferences ○ Websites ◆ Recognition program 	<ul style="list-style-type: none"> ◆ Establish the context ◆ Identify risks ◆ Analyze risks ◆ Evaluate risks ◆ Treat risks ◆ Communication & consultation ◆ Monitoring & review ◆ 5-m model for assessment ◆ Hazard identification ◆ Risk control strategies ◆ Risk control tools ◆ Risk decision making 	<ul style="list-style-type: none"> ◆ Hazard reporting ◆ Occurrence reporting: <ul style="list-style-type: none"> ○ Event ○ Incident ○ Accident ○ Serious accident ◆ Hazard review board ◆ Tracking ◆ Reports ◆ Hazard identification ◆ Perception of a hazard
9	10	11	12
Investigation	Emergency Response	Survey & Audit	ASMS Review
<ul style="list-style-type: none"> ◆ Analysis ◆ Findings ◆ Contributing factors ◆ Defenses ◆ Risk management ◆ Actions & recommendations 	<ul style="list-style-type: none"> ◆ Standard plan framework ◆ Standard terminology ◆ Facility names ◆ Promulgate authority ◆ Planning committee ◆ Emergency plan context ◆ Define any problems ◆ Set planning objectives ◆ Design & apply the management structure ◆ Determine roles ◆ Determine responsibilities ◆ Analyze resources ◆ Develop emergency systems ◆ Document response plan ◆ Test the plan ◆ Review the plan 	<ul style="list-style-type: none"> ◆ Safety survey purpose: <ul style="list-style-type: none"> ○ Assess the SMS ○ Recommendations for improvement ○ Measure culture ○ Improve the quality ◆ Quality mgmt. System: <ul style="list-style-type: none"> ○ Identify positive impacts ○ Identify hazards ○ Risk mitigation strategies ○ Facilitate safety education ○ Transfer new information ○ Raise safety awareness ◆ Mgmt. System audits: <ul style="list-style-type: none"> ○ Ensure compliance ○ Check standards & quality of documentation ○ Improve the QMS 	<ul style="list-style-type: none"> ◆ Continuous improvement cycle: <ul style="list-style-type: none"> ○ Safety policy planning ○ Implementation ○ Measure & evaluate ○ Management review

Transport Canada

A safety management system is a businesslike approach to safety. It is a systematic, explicit and comprehensive process for managing safety risks. As with all management systems, a safety management system provides for goal setting, planning, and measuring performance. A safety management system is woven into the fabric of an organization. It becomes part of the culture, the way people do their jobs. The organizational structures and activities that make up a safety management system are found throughout an organization. Every employee contributes to the safety health of the organization. In larger organizations, safety management activity will be more visible in some departments than in others, but the system must be integrated into “the way things are done” throughout the establishment. This will be achieved by the implementation and continuing support of a coherent safety policy which leads to well designed procedures.

1	2	3	4
Senior Management Commitment	Safety Policy	Safety Information	Establishing Safety as a Core Value
<ul style="list-style-type: none"> ◆ Expressed as direction ◆ Allocates responsibilities ◆ Holds people accountable 	<ul style="list-style-type: none"> ◆ Commitment & objectives ◆ Performance goals & review ◆ Clear statements of responsibility ◆ Accountabilities converge at top ◆ Ensure compliance w/ regulations ◆ Adequate knowledge & skills ◆ Compatibility or integration ◆ With other management systems 	<ul style="list-style-type: none"> ◆ Safety goals ◆ Evaluation of progress ◆ Accident/incident records ◆ Investigation findings ◆ Corrective actions ◆ Concerns raised by ◆ Employees/resultant action ◆ Safety review & actions ◆ Records of safety initiatives 	<ul style="list-style-type: none"> ◆ Safety integral to mgmt. Plan ◆ Set safety goals ◆ Hold managers & employees accountable ◆ Achieve goals ◆ Establish deadlines ◆ Part of normal business ◆ Part of normal job ◆ In acquisition process

5	6	7	8
Setting Safety Goals	Hazard Identification & Risk Management	Establishing a Safety Reporting System	Safety Audit & Assessment
<ul style="list-style-type: none"> ◆ Identify & eliminate or control hazards ◆ Risk management ◆ Identify: <ul style="list-style-type: none"> ○ Systemic weaknesses ○ Accident precursors ◆ Eliminate or mitigate them 	<ul style="list-style-type: none"> ◆ During implementation ◆ Regular intervals afterwards ◆ Major operational changes ◆ When changes are planned ◆ If organization is: <ul style="list-style-type: none"> ○ Undergoing rapid change ○ Changing services new ○ Equipment/procedures key ○ Personnel change 	<ul style="list-style-type: none"> ◆ Employees: <ul style="list-style-type: none"> ○ Report hazards ○ Report concerns ○ Trust & use system ◆ Staff know: how to report ◆ Reports are: acknowledged analyzed resolved 	<ul style="list-style-type: none"> ◆ Includes contractor activities ◆ Are staff following procedures? ◆ If not? Why? ◆ Audits & assessments are conducted regularly

Transport Canada (continued)

9	10	11	12
Accident & Incident Reporting & Investigation	Safety Orientation & Recurrent Training	Emergency Response Plan	Documentation
<ul style="list-style-type: none"> ◆ Every accident/incident is: <ul style="list-style-type: none"> ○ Reported ○ Investigated ○ Analyzed ○ What happened ○ Why it happened ○ How it happened ◆ Responsible manager acts on findings 	<ul style="list-style-type: none"> ◆ New employee training: <ul style="list-style-type: none"> ○ How safety is managed ○ Company philosophy ○ Policies ○ Procedures ○ Practices ◆ Employee training: <ul style="list-style-type: none"> ○ Each discipline ○ Refresher/retrainer 	<ul style="list-style-type: none"> ◆ Checklists & contact info ◆ Regularly updated ◆ Exercised to ensure ◆ Adequacy & readiness ◆ After plan is adopted: <ul style="list-style-type: none"> ○ Staff are briefed ○ Staff receive training ○ In procedures ○ Poc has plan on desk 	<ul style="list-style-type: none"> ◆ Policy statement ◆ Reporting chain ◆ Key personnel ◆ Responsibilities ◆ Identifies processes: <ul style="list-style-type: none"> ○ Hazard identification ○ Risk management ○ Safety reporting ○ Audit/review

Nine Elements of a Successful Safety and Health System © 2005 National Safety Council

A safety management system is an organized and structured means of ensuring that an organization (or a defined part of it) is capable of achieving and maintaining high standards of safety performance. A comprehensive safety and health system should be proactive and preventive. It should be an integrated system that involves everyone in the company, starting with a solid commitment from top management. It should include a formal method of measuring and evaluating individual and organizational safety performance with an emphasis on improving safety performance within the system. In creating a safety management system, a company's management system must first clarify and establish its safety and health philosophy, beliefs, and vision or mission. Through these efforts, a culture that promotes safety and health is established. A comprehensive safety management system should give equal consideration to the administrative, operational and technical, and cultural issues of safety and health.

Administrative - Management

1	2	3
Management Leadership & Commitment	Organization Communications & System Documentation	Assessments, Audits & Continuous Improvement
<ul style="list-style-type: none"> ◆ Clear policy ◆ Goals & objectives ◆ Performance measures ◆ Resources ◆ Accountability ◆ Integrated 	<ul style="list-style-type: none"> ◆ Two-way communication ◆ Record keeping ◆ Documentation 	<ul style="list-style-type: none"> ◆ Compliance to policy & procedure ◆ Audits ◆ Assessments at all levels ◆ Action plans

Technical - Operational

4	5	6
Hazard Recognition, Evaluation & Control	Workplace Design & Engineering	Workplace Design & Engineering
<ul style="list-style-type: none"> ◆ Ergonomic design ◆ Regulations & standards ◆ Design ◆ Policies 	<ul style="list-style-type: none"> ◆ Ergonomic design ◆ Regulations & standards ◆ Design ◆ Policies 	<ul style="list-style-type: none"> ◆ Training ◆ Communications ◆ Behavior auditing ◆ Recognition & reward ◆ Observations

Cultural - Behavioral

7	8	9
Employee Involvement	Motivation, Behavior & Attitudes	Training & Orientation
<ul style="list-style-type: none"> ◆ Training ◆ Communications ◆ Behavior auditing ◆ Recognition & reward ◆ Observations 	<ul style="list-style-type: none"> ◆ Organization Behavior Management (OBM) ◆ Reinforcement & feedback ◆ Total Quality Management (TQM) ◆ Attitude adjustment methods 	<ul style="list-style-type: none"> ◆ Systematic ◆ Training plan ◆ Management training ◆ Orientation program

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Peak safety performance is the result of multiple strategies designed and applied across a broad spectrum of issues and risk factors within an organization. Safety excellence is the outcome of a strategy continuum – one that addresses a company’s regulatory, technical, engineering, organizational, behavioral, managerial and cultural loss sources. Safety excellence is a function of individual and organizational behavior, both of which are a function of organizational culture – that force which determines what everyone does to drive safety through the process. For the past 70 years, American business has focused almost exclusively on the “E” in this equation – engineering, education and enforcement. In large part, safety professionals have mastered these areas. Now it is time to work on the building blocks of culture, organizational strategy, performance leadership and organizational behavior – the true accident sources.

Operational Strategies of a Safety Program

1	2	3
Education “Awareness”	Enforcement “Improving”	Engineering “Engineering”
<ul style="list-style-type: none"> ◆ Policies ◆ Procedures ◆ Meetings ◆ Training ◆ Disciplinary policies 	<ul style="list-style-type: none"> ◆ Facility inspections ◆ Compliance audits ◆ Walkthroughs ◆ Program minimum ◆ Requirements ◆ Citations, fines, penalties 	<ul style="list-style-type: none"> ◆ Automation ◆ Ergonomics ◆ Work methods ◆ Safeguarding ◆ Process design

Safety success = CEOu, where C = culture; E = elements of safety; O = organization and u = you

4	5	6	7
Behavioral Strategy “Actions of All”	Organization “Structure”	Leadership “Managing People”	Cultural Strategy “Culture”
<ul style="list-style-type: none"> ◆ Human resources ◆ Engineers ◆ Operations ◆ Legal ◆ Risk management ◆ Behave safely 	<ul style="list-style-type: none"> ◆ Organizational design ◆ Job descriptions ◆ Responsibilities ◆ Communications ◆ Performance measurement ◆ Rewards systems 	<ul style="list-style-type: none"> ◆ Encourage ◆ Reward ◆ Participative ◆ Teaming ◆ Reinforcing 	<ul style="list-style-type: none"> ◆ Vision & mission building ◆ Values clarification ◆ High-visibility executive ◆ Involvement

Note: The 'Operational Strategies' of Education, Enforcement and Engineering...working left to right and the 'Organizational Strategies' of Culture, Leadership, and Organization, working right to left - in concert, influence 'Behavior'...the ultimate event(s) prior to incident...and potential injury.

People Based Safety - E. Scott Geller, Safety Performance Solutions - Alumni Distinguished Professor, Virginia Tech

“People-Based Safety” (PBS) strategically integrates the best of behavior-based and person-based safety in order to enrich the culture in which people work — improving job satisfaction, work quality and production, interpersonal relationships, and occupational safety and health.

1	2	3	4
Observable Behavior	External/Internal Factors	Activators & Motivate	Focus on Positive Consequences
<p>“Think To Act Differently”</p> <ul style="list-style-type: none"> ◆ What people do ◆ Analyzes why ◆ Intervention strategy 	<p>“Improve Behavior”</p> <ul style="list-style-type: none"> ◆ Improve job satisfaction ◆ Work quality & production ◆ Interpersonal relationship ◆ Occupation Safety & Health 	<p>“ABC’s”</p> <ul style="list-style-type: none"> ◆ Activator, behavior, & consequence ◆ Design interventions for ◆ Improving behavior at ◆ Individual, group, & ◆ Organizational levels 	<p>“Motivate Behavior”</p> <ul style="list-style-type: none"> ◆ Working to achieve success ◆ Avoid reactive behavior ◆ Using total recordable ◆ Injury rates

5	6	7
Scientific Method Improve Intervention	Theory to Integrate Information	Consider Internal Feeling & Attitudes of Others
<p>“DO IT”</p> <p>D = define target action & increase or decrease O = observe, set goals I = intervene T = test impact, record</p>	<ul style="list-style-type: none"> ◆ Intervention techniques ◆ Situation ◆ Individual ◆ Work practice 	<p>Leadership empathy & sensitivity to message delivered</p>

Occupational Safety & Health Administration (OSHA) Challenge (VPP Model) - OSHA Draft revised 4/4/2007 - Occupational Safety & Health Administration, U.S. Department of Labor

The OSHA Challenge Pilot uses the Voluntary Protection Programs (VPP) model of safety and health program management to guide employers in the development and improvement of workplace safety and health management systems (SHMS), with the goal of improving performance and ultimately qualifying for VPP recognition and participation. Challenge participants follow a 3-stage roadmap of progressively more comprehensive actions, documentation, and results. At each stage, they address the four major elements of the VPP model:

1. Management leadership and employee involvement. Management accepts responsibility for, and commits to implement and operate (including allocation of necessary resources), an effective occupational safety and health program that protects all employees and contractors working at the site. Employees agree to participate in the program and work with management to ensure a safe and healthful workplace. Annual SHMS self-evaluations are performed, actions items identified and SHMS adjustments made to foster continual improvement.
2. Worksite Analysis. Management of workplace safety and health must begin with a thorough understanding of all hazardous situations to which employees may be exposed, plus the ability to recognize hazards as they arise;
3. Hazard Prevention and Control. Hazards identified during the hazard analysis process must be eliminated or controlled by developing and implementing appropriate systems; and
4. Safety and Health Training. All employees must understand the hazards to which they may be exposed and how to prevent harm to themselves and others. Effective training ensures safety and health personnel, managers, and employees acquire knowledge and skills they need to perform their work free of harm.

1a

1b

1c

Management Leadership & Employee Involvement		
management commitment	employee involvement	contractor employee coverage
<ul style="list-style-type: none"> ◆ Mission & policy statements ◆ Goals & objectives ◆ Leadership by example ◆ Open communications ◆ Between managers & employees ◆ Adequate resources ◆ Responsibility, authority & accountability ◆ Employees notified of results of complaints, ◆ Investigations, etc. ◆ Annual self-evaluation ◆ Continual improvement 	<ul style="list-style-type: none"> ◆ Employee safety & health perception survey ◆ Meaningful employee ◆ Involvement in the SHMS, such as: <ul style="list-style-type: none"> ○ Investigations ○ Hazard analysis ○ Planning ◆ Employee rights intact ◆ “Ownership” of SHMS 	<ul style="list-style-type: none"> ◆ Documented oversight & management system ◆ Adherence to rules ◆ Same level of protection as regular employees ◆ Contractor selection process ◆ Encourage contractors to develop & operate effective SHMS ◆ Track correction of hazards ◆ Stop work policy

Occupational Safety & Health Administration (OSHA) Challenge (VPP Model) - OSHA Draft revised 4/4/2007 - Occupational Safety & Health Administration, U.S. Department of Labor (continued)

2

3

4

Worksite Analysis	Hazard Prevention & Control	Safety & Health Training
<ul style="list-style-type: none"> ◆ Baseline safety & industrial hygiene (IH) analysis ◆ Data trend analysis ◆ Hazard analysis of routine jobs, tasks, and processes ◆ Hazard analysis of significant changes ◆ Pre-use analysis ◆ Change analysis 	<ul style="list-style-type: none"> ◆ Access to certified professional resources ◆ Hazard elimination & control methods ◆ Hierarchy of controls: engineering, administrative, work practice, personal protective equipment (PPE) ◆ Documented system for hazard correction & tracking ◆ Emergency preparedness & response ◆ IH program ◆ Routine self-inspections ◆ Employee hazard reporting system ◆ Investigation of hazards & near misses ◆ Equitable & clearly communicated ◆ Disciplinary system 	<ul style="list-style-type: none"> ◆ Orientation for all employees, including contractors ◆ Training for all workers appropriate to level of responsibility and exposure to hazards ◆ Training for specific groups of workers ◆ Training for non-routine tasks ◆ Change of job training

ANSI/AIHA Z10-2005: The American National Standard for Occupational Health and Safety Management Systems

The American National Standard for Occupational Health and Safety Management Systems (ANSI/AIHA Z10-2005) is a voluntary consensus standard on occupational health and safety management systems. It uses recognized management system principles in order to be compatible with quality and environmental management standards such as the ISO 9000 and ISO 14000 series. The standard draws from approaches used by the International Labor Organization's (ILO) guidelines on Occupational Health and Safety Management Systems and from systems in use in organizations in the United States. This compatibility encourages integration of the standard's requirements into other business management systems in order to enhance overall organizational performance (AIHA, 2005).

The purpose of the standard is to provide organizations an effective tool for continual improvement of their occupational health and safety performance. The ANSI/AIHA Z10-2005 standard is a set of interrelated elements that establish or support health and safety policy and objectives, and mechanisms to achieve those objectives in order to continually improve occupational safety and health (AIHA, 2005).

3.0 Policy	4.0 Planning	5.0 Implementation & Operation	6.0 Evaluation & Corrective Action	7.0 Management Review
PLAN		DO	CHECK	ACT
3.1 Management Leadership 3.1.1 Occupational Health and Safety Management System 3.1.2 OHS Policy 3.1.3 Responsibility and Authority 3.2 Employee Participation	4.1 Initial and Ongoing Reviews 4.1.1 Initial Reviews 4.1.2 Ongoing Reviews 4.2 Assessment and Prioritization 4.3 Objectives 4.4 Implementation Plans and Allocation of Resources	5.1 OHSMS Operational Elements 5.1.1 Hierarchy of Controls 5.1.2 Design Review and Management of Change 5.1.3 Procurement 5.1.4 Contractors 5.1.5 Emergency Preparedness 5.2 Education, Training, Awareness, and Competence 5.3 Communications 5.4 Document and Record Process	6.1 Monitoring, Measurement, and Assessments 6.2 Incident Investigation 6.3 Audits 6.4 Corrective and Preventive Actions 6.5 Feedback to the Planning Process	7.1 Management Review Process 7.2 Management Review Outcomes and Follow-up

Health & Safety Management System OHSAS 18001

OHSAS 18001 is an internationally accepted specification that defines the requirements for establishing, implementing and operating an OHSMS. The specification was developed with the assistance of a number of international standards and certification bodies. OHSAS 18001 fills a void, in that there is currently no international ISO standard suitable for independent third-party certification. OHSAS 18001 was designed to be compatible with ISO 9001 and ISO 14001. This will be helpful if you want to design, implement and operate an integrated quality, environmental and occupational health and safety management system. The benefits of an OHSMS include:

- ◆ Reductions in staff absence
- ◆ Reductions in claims against the organization
- ◆ Reductions in adverse publicity
- ◆ Improved insurance liability rating may equal lower insurance premiums
- ◆ Improved productivity
- ◆ A positive response from customers who want to deal with an organization with a proven health and safety track record.

1	2	3	4	5
Policy	Planning	Implementation & Operation	Checking & Corrective Action	Management Review
Policy statement supported & authorized by top management	<ul style="list-style-type: none"> ◆ Hazard identification ◆ Risk assessment ◆ Risk control ◆ Objectives to achieve ◆ Policy ◆ Specific and measureable legal & other requirements ◆ Plans that define: <ul style="list-style-type: none"> ○ What will be done ○ Who will do what ○ And by when 	<ul style="list-style-type: none"> ◆ Define roles, responsibilities and authorities of staff ◆ Top mgmt. Representative ◆ Provide appropriate training ◆ Int. & ext. Communication ◆ Develop process & procedures ◆ Control OHSMS documentation ◆ Manage risk control ◆ Record maintenance ◆ Establish, maintain & test a process 	<ul style="list-style-type: none"> ◆ Procedures for handling & investigating accidents, incidents & non-conformities ◆ Eliminate actual or potential cause ◆ Assess system suitability & effectiveness ◆ "Audits" 	<ul style="list-style-type: none"> ◆ Top mgmt. Meet periodically ◆ Facilitate continual improvement ◆ Review policy & performance against objectives ◆ Reviews determine suitability, adequacy, and effectiveness of management system ◆ Reviews focus on improvement & customer satisfaction

ILO-OSH 2001 International Labour Organization's Guidelines on Occupational Health and Safety Management Systems

The International Labour Organization's Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001) was developed according to internationally agreed principles defined by the ILO's tripartite constituents. This tripartite approach provides the strength, flexibility, and appropriate basis for the development of a sustainable safety culture in the *organization*. The ILO has therefore developed voluntary guidelines on OSH management systems which reflect ILO values and instruments relevant to the protection of workers' safety and health (ILO, 2001).

Objects (ILO, 2001)

These guidelines should contribute to the protection of workers from hazards and to the elimination of work-related injuries, ill health, diseases, incidents, and deaths. At national level, the guidelines should:

1. Be used to establish a national framework for OSH management systems, preferably supported by national laws and regulations;
2. Provide guidance for the development of voluntary arrangements to strengthen compliance with regulations and standards leading to continual improvement in OSH performance; and
3. Provide guidance on the development of both national and tailored guidelines on OSH management systems to respond appropriately to the real needs of *organizations*, according to their size and the nature of their activities.

At the level of the *organization*, the guidelines are intended to:

1. Provide guidance regarding the integration of OSH management system elements in the *organization* as a component of policy and management arrangements; and
2. Motivate all members of the *organization*, particularly employers, owners, managerial staff, workers and their representatives, in applying appropriate OSH management principles and methods to continually improve OSH performance.

Policy	Organizing	Planning & Implementation	Evaluation	Action for Improvement
<ul style="list-style-type: none"> ◆ Occupational safety and health policy ◆ Worker participation 	<ul style="list-style-type: none"> ◆ Responsibility and accountability ◆ Competence and training ◆ Occupational safety and health management system documentation ◆ Communication 	<ul style="list-style-type: none"> ◆ Initial review ◆ System planning, development, and implementation ◆ Occupational safety and health objectives ◆ Hazard prevention 	<ul style="list-style-type: none"> ◆ Performance monitoring and measurement ◆ Incident investigation ◆ Audit ◆ Management review 	<ul style="list-style-type: none"> ◆ Preventive and corrective action ◆ Continual improvement

ISO 14000 Environmental Management System (EMS) - American National Standards Institute (ANSI)

The ISO 14000 family is primarily concerned with "environmental management". This means what the organization does to minimize harmful effects on the environment caused by its activities, and to achieve continual improvement of its environmental performance. There are five major elements of the standard; policy, planning, implementation and operation, checking and corrective action, and management review commonly referred to as plan, do, check, act. These elements interact with each other to form the framework of an integrated, systematic approach to environmental management, with the ultimate result being continual improvement of the overall system. Copies of all ISO standards can be purchased from the American National Standards Institute (ANSI), 25 West 43rd St., NY,NY 10036; phone: 212-642-4900 e-mail info@ansi.org <http://www.webstore.ansi.org/ansidocstore/>

1	2	3	4	5
Policy	Planning	Implementation & Operation	Checking & Corrective Action	Management Review
	<ul style="list-style-type: none"> ◆ Pollution prevention ◆ Top management ◆ Commitment continual improvement 	<ul style="list-style-type: none"> ◆ Program achieving objectives ◆ Objectives & targets ◆ Legal & other requirements ◆ Environmental aspects & impacts ◆ Significant aspects 	<ul style="list-style-type: none"> ◆ Emergency preparedness & response ◆ Operational control ◆ Document control ◆ Ems documentation ◆ Communication ◆ Training, awareness, competence ◆ Structure & responsibility 	<ul style="list-style-type: none"> ◆ Ems audit ◆ Records ◆ Nonconformance, corrective & preventative action ◆ Monitoring & measurement

Values-Driven Safety (Safety is a Social or Cultural Issue) - Copyright 1996, Don Eckenfelder, Profit Protection Consultants, Inc.

Organizational attitude will determine whether safety initiatives will be successful. The attitude flows directly from the culture and:

1. Culture predicts performance.
2. Culture can be measured and managed.
3. Nothing is more important than getting the culture right.

This knowledge – together with the “tools” to act on it and the resolve to get on with it – can serve as a catalyst for every existing safety effort. It will overcome the deficiencies in behavior-based safety (BBS) and magnify its benefits.

1	2	3	4
Performance Map	Bridge Metaphor	Safety Culture Barometer	Exercises for Improvement
"Causation Diagram" <ul style="list-style-type: none"> ◆ Create loss resistance ◆ Facilitate loss prevention ◆ Work on beliefs and values ◆ Creating organizational culture 	"Strong Bridge" <ul style="list-style-type: none"> ◆ Deal with culture directly ◆ Change it consciously ◆ Change it strategically 	"Maturity Grid" <ul style="list-style-type: none"> ◆ "Measurement tool" ◆ Organization customized ◆ Measurement device 	Do It For The Right Reason Routine exercises

14 attributes that are invariably resident in organizations that are loss resistant:

1. Each employee takes responsibility for safety.
2. Safety is integrated into the management process.
3. The presence of the full-time safety professional is limited.
4. There is an off-the-job safety effort.
5. Safety and other training are seamlessly integrated.
6. Compliance comes naturally.
7. Programs and technical processes have history and occur naturally
8. There is a bias against gimmicks.
9. Leadership always sets the example; safety is never taken lightly.
10. There is a recognizable safety culture.
11. The focus is more on process than statistics.
12. Negative findings are treated expeditiously.
13. The few safety professionals have stature.
14. Safety is seen as a competitive edge...not overhead.

The beliefs and values, worded as imperatives that will lead to the acquisition of the 14 attributes, are:

1. Do it for the right reasons.
2. See it as part of the whole.
3. Recognize there is no end.
4. First, it is a people business; things are a distant second.
5. Put the right person in charge.
6. Use a yardstick everyone can read.
7. Sell benefits...and they are many.
8. Never settle for second best.
9. Be guided by logic, not emotion.
10. Empower others rather than seeking after support.

Statistical Process Control - Motorola Inc.

The goal or purpose of Six Sigma is to reduce variation and eliminate defects so that virtually all products or services meet or exceed customer expectations. Six Sigma is described both as a capability and as a methodology. As a capability, Six Sigma is defined as 3.4 defects per million opportunities in a process. As a methodology, Six Sigma provides the guidelines and tools to significantly and permanently improve processes and products. There are three basic elements to the Six Sigma methodology: process improvement, process design/re-design, and product design/re-design. Six Sigma was developed by Motorola in the 1980s but has its roots in Statistical Process Control (SPC), which first appeared in the 1920s.

1	2	3
Process Improvement	Process Design/Re-design	Process Design/Re-design
<p>DEFINE process identify goals for process consider customer requirements</p> <p>MEASURE process categorize key characteristics verify measurement systems collect data</p> <p>ANALYZE data translate data into information identify causes of defects & problems</p> <p>IMPROVE process develop solutions analyze results of changes determine if changes are beneficial</p> <p>CONTROL monitor process to assure no unexpected changes occur</p>	<p>DEFINE process identify goals for process consider customer requirements develop performance requirements that MATCH goals</p> <p>ANALYZE performance requirements develop outline design for new process detailed DESIGN for new process & IMPLEMENT</p> <p>VERIFY new process performs as required introduce controls to ensure continued performance</p>	<p>DEFINE processes key customer requirements key performance indicators</p> <p>MEASURE performance against requirements and key performance indicators</p> <p>ANALYZE data to enhance measures refine process management mechanisms</p> <p>CONTROL monitor process inputs process operation process outputs</p>