



Safety management system

SMS

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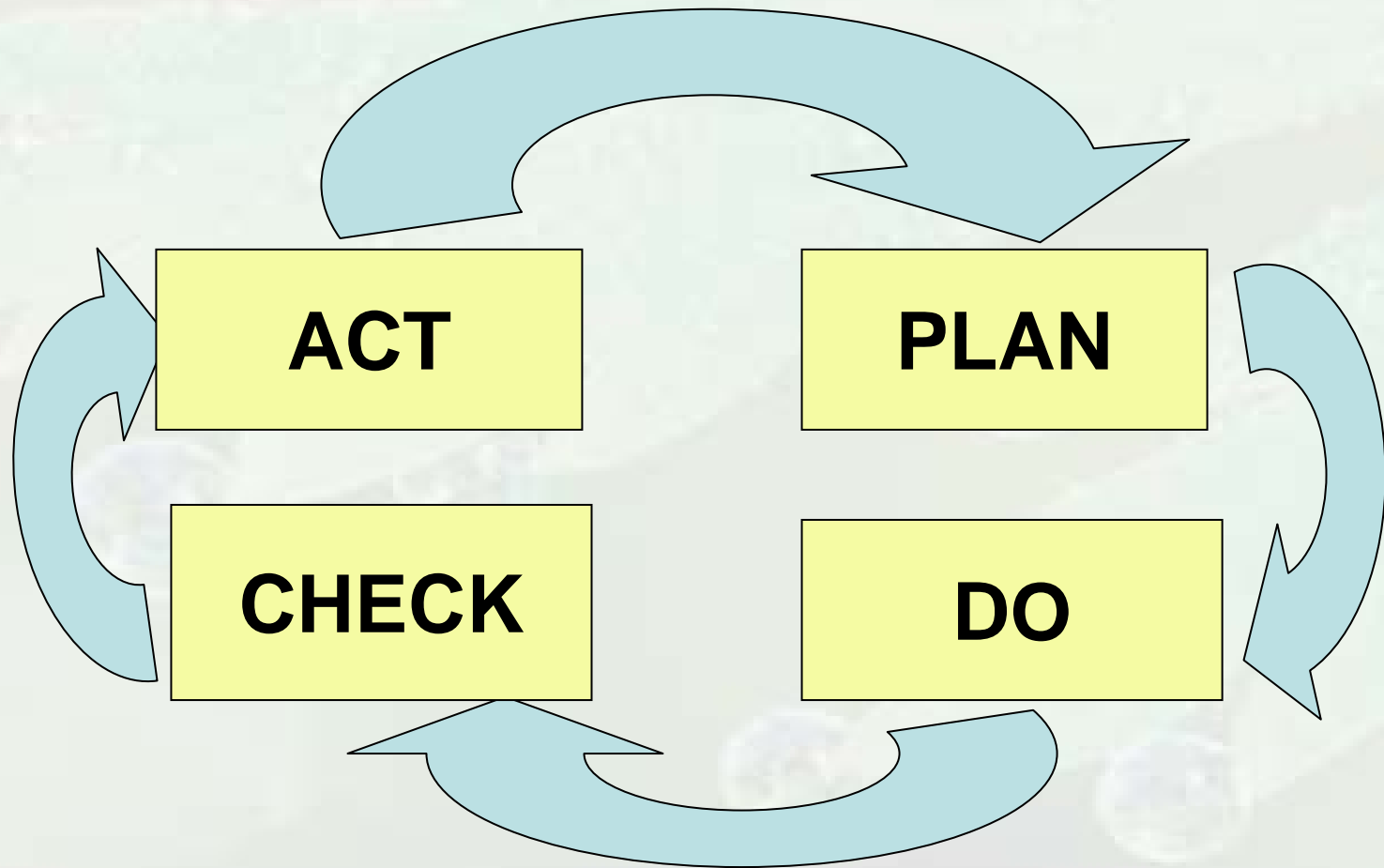


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Deming's principles



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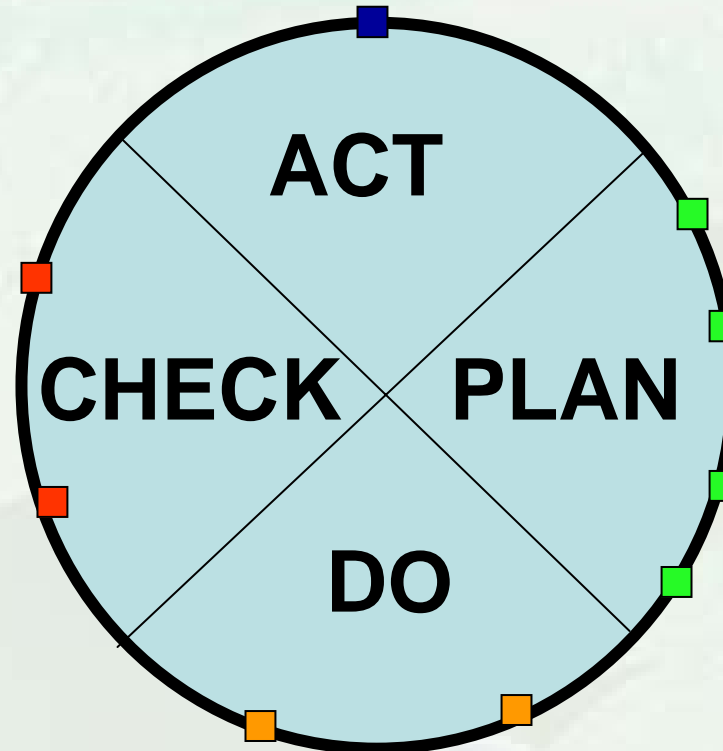
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Safety management system

Continual Improvement

**Management
Review**

**Checking
and
Evaluation**



**Identification of
Requirements**

Safety Policy

Initial Review

Planning

**Implementation and
Operation**



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Safety policy ⁽¹⁾

Top management should establish and maintain the policy that is applicable to the organization, which includes a commitment to objectives and improvement of performances, and has the following profile:

a) is appropriate to the purpose of the organization,



Safety policy ⁽²⁾

- b) is appropriate to the hazards of major accidents,**
- c) includes a commitment to continual improvement**
- d) includes a commitment to comply with relevant legislation and regulations and with other requirements to which the organization subscribes**

Safety policy ⁽³⁾

- e) is documented, implemented and maintained and communicated and understood within the organization,**
- f) is accessible to the relevant interested parties,**
- g) provides the framework for setting and reviewing safety objectives and targets,**
- h) is reviewed for continuing suitability,**
- i) ensures the availability of resources,**



Responsibility and authority ⁽¹⁾

- **Responsibilities and authorities should be defined, documented and communicated in order to facilitate effective safety management.**
- **Top management has the final responsibility and has to provide the essential resources to implement, manage and improve the management system.**

Responsibility and authority ⁽²⁾

Top management should have responsibilities and authorities including the followings:

- a) Ensuring that OSH management system requirements are established, implemented and maintained in accordance with this guideline**
- b) Reporting to top management on the performance of OSH management system**



Responsibility and authority

- c) Ensuring the promotion of awareness of legal requirements throughout the organization**
- d) Providing liaison with external parties on matters relating to safety management system.**

Initial review⁽¹⁾

The organization should

- **establish and maintain procedure(s) to:**
 - **identify installations and processes, that can cause major hazards**
 - **evaluate and assess risks of major accidents**
- **establish and maintain procedure(s) to identify and obtain the legal and other requirements**



Initial review ⁽²⁾

The organization should

- ensure that the results and impacts related to this evaluation are considered in setting its safety objectives,**
- establish and maintain the monitoring procedures that ensure the effectiveness and conformity,**
- keep this information up-to-date.**

Objectives and targets⁽¹⁾

- **The company should establish and maintain documented safety objectives and targets, at each relevant function and level within the company organization.**



Objectives and targets⁽²⁾

- **When establishing and reviewing its objectives, a company should consider the legal and other requirements, its significant safety aspects, its technological options and its financial, operational and business requirements, and the views of interested parties.**

Objectives and targets⁽³⁾

The objectives should be measurable and consistent with the safety policy that includes commitment for continual improvement.



Organization ⁽¹⁾

The top management should establish and maintain a program (organization) for achieving its objectives and targets including

- a) resources by which targets are to be achieved,**
- b) designation of responsibility and authorities for achieving objectives and targets at each relevant function and level of the company,**



Organization ⁽²⁾

- c) the means and timeframe by which they are to be achieved,**
- d) the plan related to the safety activities,**
- e) the control plan for performance measurement.**

If the company's management condition, activities, products and services are changed, program(s) should be amended appropriately.

Resource management

The company should establish and maintain the procedure to define the competence in order to implement and maintain the safety management system, continually improve its effectiveness and enhance and maintain the relationship with interested parties.



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Human resources ⁽¹⁾

The personnel, who are performing work affecting the safety management system, should be competent (appropriate education, training, skills and experience).

The organization should determine and provide the resources needed for the relevant function and level of employee in order to do the followings:

Human resources (2)

- a) Determine the necessary competence for personnel performing work affecting safety policy, procedures and tasks that can impact on safety**
- b) Provide training or take other actions to satisfy these needs**
- c) Assign the responsibilities needed to operate safety management system, including the emergency preparedness and response, and evaluate the effectiveness**



Human resources ⁽³⁾

- d) Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of safety objectives**
- e) Maintain appropriate records of education, training, skills and experience**

Internal communication

Top management should ensure that appropriate communication processes are established within the organization and that communication takes place regarding the effectiveness of safety management system.

The employees should be involved in the development and review of safety management system process and give their opinion regarding the change and other problems.



External communication

The company should determine and implement effective arrangements for communicating with relevant interested parties in relation to the followings:

- a) Product information**
- b) Contracts or order handling**
- c) Receiving, documenting and responding to relevant communication from customers and external interested parties**



Management system documentation

(1)

The company should establish and maintain information, in a suitable medium such as paper or electronic form, considering the following

- a) Describe the core elements of safety management system and their interaction**
- b) Provide direction to related documentation**



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Management system documentation

(2)

The safety management system documentation should include the followings:

- a) Documented statements of a safety policy and objectives**
- b) Documented procedures (this means how the documentation is established, documented, implemented and maintained)**
- c) Documents needed by the company to ensure the effective planning, operation and control of its processes**



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Management system documentation

(3)

The extent of safety management system documentation can differ from one company to another due to

- **size of the company,**
- **type of activities,**
- **the complexity of processes and their interactions**
- **the competence of personnel.**



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Documents control ⁽¹⁾

The organization should establish and maintain procedures for controlling all documents of safety management system to ensure that

- a) they should be periodically reviewed, revised as necessary and approved for adequacy by authorized personnel,**
- b) the current versions of relevant documents and resources are available at all locations where operations essential to the effective functioning of safety management system are performed,**



Documents control (2)

- c) obsolete documents are promptly removed from all points of issue and points of use, or otherwise assured against intended use.**
- d) any documents retained for legal and/or knowledge preservation purposes are suitably identified.**

The documents can be available

Operational control ⁽¹⁾

The company should identify those operations, activities and processes that are associated with the identified significant aspects related to safety in line with its policy, objective and targets.

The company should plan these activities in order to ensure that they are carried out under specified conditions by

Operational control ⁽²⁾

- a) Establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the safety policy, objectives, targets and requirements**
- b) Establishing and maintaining procedures for the design, process, facilities, machinery, operating procedures and work organization in order to inherently eliminate or reduce the safety and health risks, environmental hazards and non-conformities**



Operational control ⁽³⁾

- c) Providing verification, validation, monitoring, inspection and test activities, criteria for operational and control acceptance and the required resources**
- d) Records needed to provide evidence that the results of process meet requirements**
- e) Establishing and maintaining procedures related to the identifiable safety risks of goods, equipment and services purchased and/or used by the company and communicating relevant procedures and requirements to interested parties**



Operational control ⁽⁴⁾

Where the company's operations, activities and processes are changed, there is a need to ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements.



Contracting

The company should review prior to acceptance of contracts or orders, including changes to contracts or orders, that the subcontractor has the ability to meet the requirements specified by the interested parties related to the product and service, including legal requirements, and maintain the records of the results.



Management of change ⁽¹⁾

In the case of changes, the company should ensure that relevant safety documents are amended and that relevant personnel are made aware of the changed requirements.

Management of change ⁽²⁾

The organization should establish and maintain the procedure to control the followings:

- a) Evaluate the impacts on safety, health, environment and quality where the internal and/or external changes including temporary changes are carried out on safety management system**
- b) Determine whether the revision of safety management system is necessary or not**



Management of change ⁽³⁾

- c) Ensure that all affected members of the organization are informed and trained about the implementation of a “decision to change”.**

The changes of most concern are those that affect the agreed operating limits (ie. major investment in new plant new or amended process or product, procedures; new raw materials or changes in specification or source; new, temporary or modified equipment or software; changes of personnel or organizational structure).



Emergency preparedness and response

(1)

The company should establish and maintain procedures to identify potential for and respond to accidents, incidents and emergency situations related to safety, and for preventing and mitigating the injuries, diseases, environmental pollution and products loss that may be associated with them.



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Emergency preparedness and response

(2)

The company should review and revise where necessary, its emergency preparedness and response procedures, in particular, after the occurrence of accidents, incidents or emergency situations related to safety.

The company should also periodically test such procedures where practicable.



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Checking and Evaluation ⁽¹⁾

Performance monitoring and measurement

The company should establish and maintain documented procedures to monitor and measure on a regular basis safety performance and the key characteristics of its operations and activities that can have a significant impact on the safety.

Checking and Evaluation ⁽²⁾

These procedures should provide the followings:

- a) Measurement of safety performance indicators**
- b) Monitoring of compliance with safety policy and achievement of established objectives and targets**

Checking and Evaluation ⁽³⁾

- c) Recording of data and results of monitoring and measurement should be sufficient to facilitate subsequent corrective and preventative action analysis**
- d) Records of monitoring and measurement results including the process should be recorded and retained**
- e) Records of this process and monitoring results should be retained**



Internal/External audit ⁽¹⁾

The company should establish and maintain an audit program and procedures for periodic safety management system audits to be carried out, in order to determine whether or not the SMS conforms to the followings:

- a) The legal requirements**
- b) The requirements of management system**
- c) The adequacy of implementing and maintaining**
- d) The compliance with established plan, the safety policy and objectives**



Internal/External audit ⁽²⁾

The audit program should be based on

- a) The results of previous audits**
- b) The status and importance of the processes and areas to be audited**
- c) Assurance of the objectivity and impartiality of audit process**

Internal/External audit ⁽³⁾

These procedures should include:

- The responsibilities and requirements for conducting audits and reporting results**
- The audit scope, criteria, frequency and methodologies**
- The audits planning, execution and assurance of independence of audits**
- The responsibilities and requirements for recording and maintaining**
- The follow-up activities that should include the verification of the action taken and the reporting of verification results**



Records ⁽¹⁾

The company should establish and maintain procedures for the identification, maintenance, retrieving, retention times and disposition of safety management records, as well as the results of internal audits and reviews.



Records ⁽²⁾

Records should be established and maintained, as appropriate to the system and to the organization, to provide evidence of the effective operation of safety management.

Records should be legible, readily retrievable and protected against damage, deterioration or loss.



Improvement

The organization should establish and maintain procedures for defining responsibility and authority for:

- a) The investigation of accidents, incidents, non-conformances and the case that planned results are not achieved**
- b) Taking action to mitigate any consequences arising from accidents, incidents, non-conformances or the case that planned results are not achieved**



Improvement ⁽²⁾

c) The initiation and completion of corrective and preventive actions

d) Confirmation and re-verification of the effectiveness of corrective and preventive actions taken.

The company should identify all of the predictable accidents, incidents and non-conformances through risk assessment process prior to implementation and establishing the appropriate preventive action in the planning.



Improvement ⁽³⁾

For these preliminary assessments, the company should establish the procedures for monitoring and measuring the characteristics of process and products.

The company should implement and record any changes in the documented procedures resulting from the control of accidents, incidents and non-conformances.



Management review ⁽¹⁾

The top management should review safety management system, to ensure its continuing suitability, adequacy and effectiveness.

The management review process should ensure that necessary information is collected to allow management to carry out this evaluation. This review should be documented.

Management review ⁽²⁾

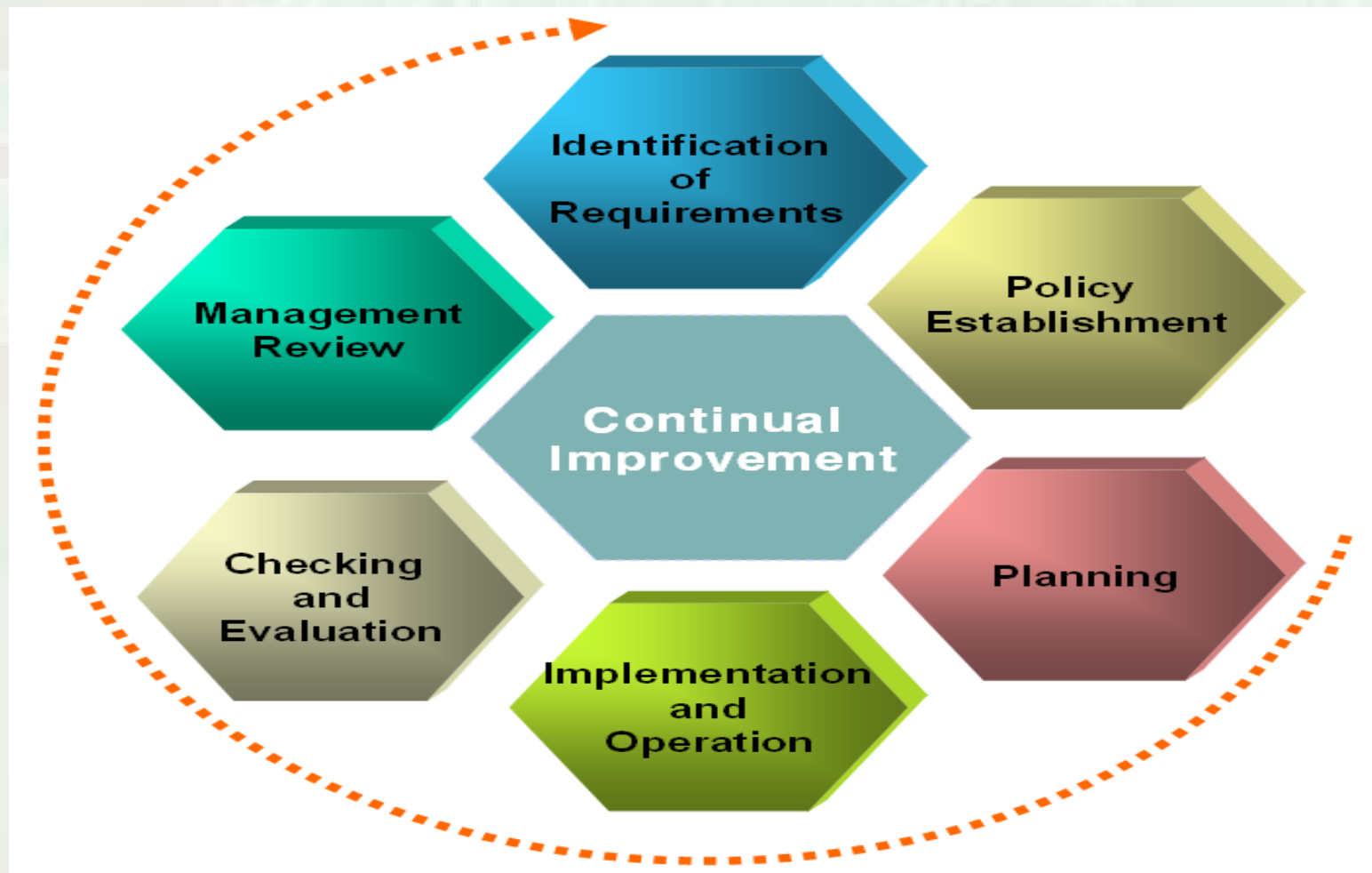
The management review should address the possible need for changes to policy, objectives and other elements of Safety management system, in the light of audit results, customer feedback, corrective and preventive actions, process performance and conformity, changing circumstances and the commitment to continual improvement.

Management review ⁽³⁾

The output from the management review should include any decisions and actions related to improvement of the effectiveness of Safety Management System and its processes, and resource needs in order to achieve those. The result of management review should be recorded and maintained.



Integrated management system HS&EQ



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Useful manuals

- **OECD Guiding Principles** for Chemical Accident Prevention, Preparedness and Response ((OECD,second edition, 2003)
- **GUIDANCE ON DEVELOPING SAFETY PERFORMANCE INDICATORS** related to Chemical Accident Prevention, Preparedness and Response (OECD,second edition, 2008)



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