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International Atomic Energy Agency

Measurement, Assessment and Improvement of the Management System

Regional Workshop on the development and
implementation of effective IMS based on GSR Part 2

Jakarta, Indonesia
31 July- 04 August 2023

Regulatory Activities Section
Division of Nuclear Installation Safety(NSNI)
International Atomic Energy Agency (IAEA)
Department of Nuclear Safety & Security



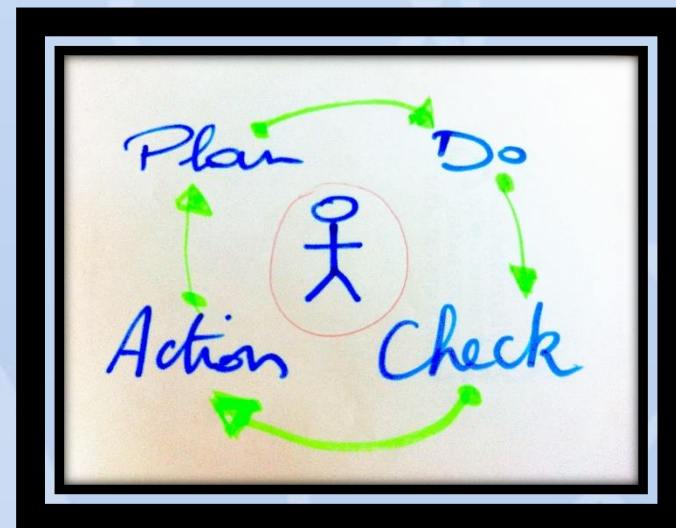
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Learning objectives

Getting acquainted on:

- How to measure, assess and improve the effectiveness of the management system.
- using the measurement and assessment methods

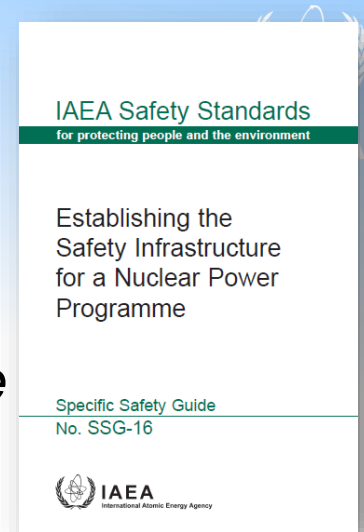


1. IAEA Basis
2. Monitoring and measuring of management system
3. Evaluation of processes
4. Non-conformances and corrective actions
5. Independent assessments and self-assessments
6. Review of the management system
7. Continuous improvement
8. Key messages

IAEA Basis

- **SSG-16 Recommendations**

- **Phase 2, Action 77:** *“The regulatory body and the operating organization should make appropriate arrangements for measurement, assessment (both ‘self-assessment’ and independent assessment) and continuous improvement of their management systems.”*
- **Phase 3, Action 80:** *“The operating organization and the regulatory body should ensure that the effectiveness of their management systems is monitored and measured, and that self-assessments as well as independent assessments are conducted regularly for continuous improvement.”*



IAEA Basis

R1: Achieving the fundamental safety objective

Responsibility for Safety

R2: Demonstration leadership for safety by managers

Leadership for Safety

R3: Responsibility of Senior Management for the Management System

R4: Goals, strategies, plans and objectives

R5: Interaction with interested parties

Management for Safety

R6: Integration of the Management System

R9: Provision of Resources

R7: Application of the Graded Approach

R10: Management of Processes and Activities

IAEA Safety Standards
for protecting people and the environment

Leadership and
Management for Safety

General Safety Requirements
No. GSR Part 2



R8: Documentation of the Management System

R11: Management of the Supply Chain

Culture for Safety

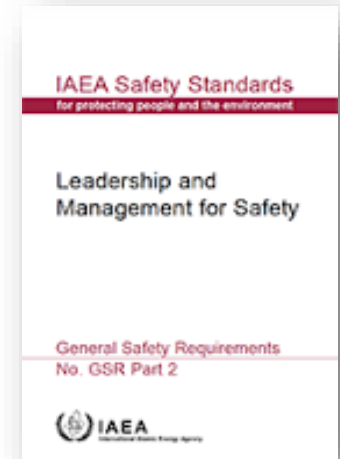
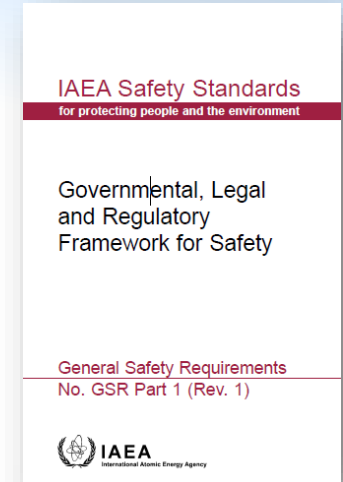
Measurement,
Assessment
and
Improvement

R12: Fostering a culture for safety

R13: Measurement, assessment and improvement of the management system

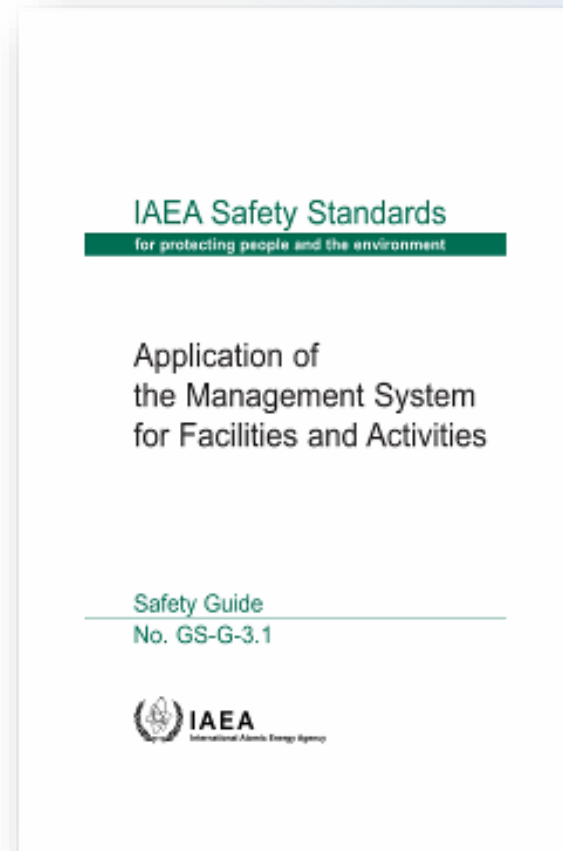
R14: Measurement, assessment and improvement of leadership for safety and of safety culture

- **GSR Part 1 (Rev. 1), Req. 19:** The regulatory body shall establish, implement, and assess and improve a management system that is aligned with its safety goals and contributes to their achievement.
- **GSR Part 2 - Req. 13:** The effectiveness of the management system shall be measured, assessed and improved to enhance safety performance, including minimizing the occurrence of problems relating to safety.



- **GS-G-3.1, 6.1:** Measurement, assessment and improvement should be part of the establishment of a learning culture in the organization. Individuals at all levels should review their work critically on a routine basis to identify areas needing improvement and the means of achieving it.

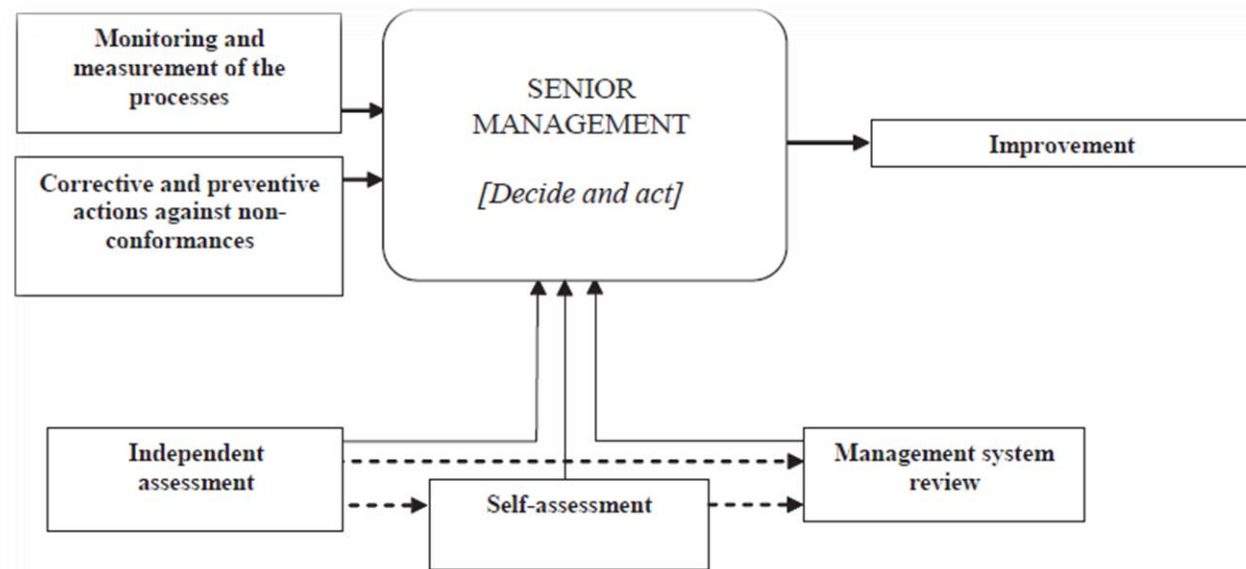
Note: GS-G-3.1 is currently being revised and will be replaced by DS 513



Monitoring and measuring of MS

- The effectiveness of the management system shall be monitored and measured and opportunities for improvement of the management system should be identified

Relationship between the activities

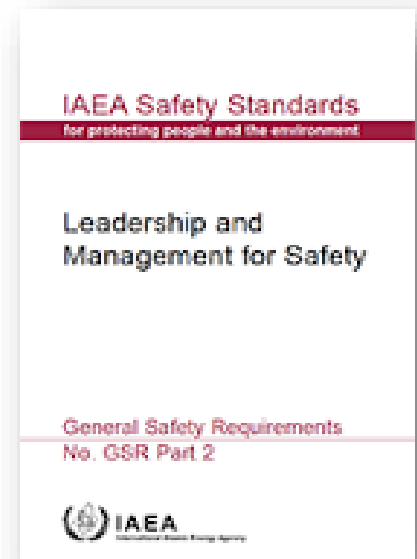


Ref: GS-G 3.1

FIG. 1. Relationships between the activities of measurement, assessment and improvement. The broken lines show where one activity is used as an input to focus the activities of another assessment.

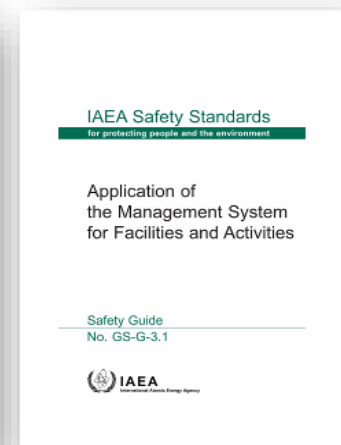
Evaluation of processes

- All processes shall be regularly evaluated for their ability to ensure safety.
- Performance indicators shall be developed in advance and used in order to:
 - Assess the effectiveness of the management system
 - Confirm the suitability of processes or activities for achieving the intended outcomes



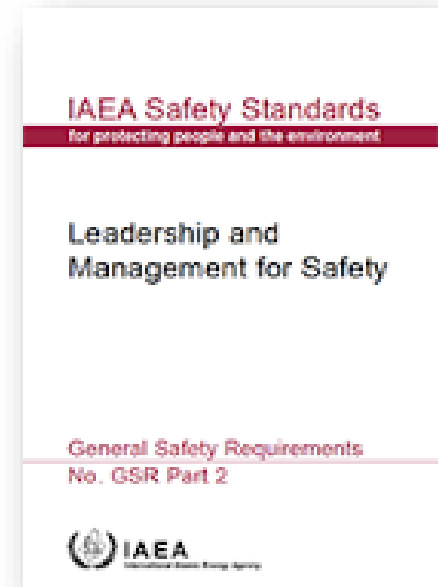
Non-conformances and corrective actions

- The causes of non-conformances of processes and the causes of safety related events that could give rise to radiation risks shall be evaluated and consequences shall be managed and shall be mitigated.
- Non-conformances should be regarded by the organization as opportunities for improvement
- Management should foster a 'no blame' culture to encourage individuals to identify non-conforming products and processes



Non-conformances and corrective actions

- The corrective actions shall be taken in a timely manner.
- The status and effectiveness of all corrective actions and preventive actions taken shall be monitored
- Corrective and preventive actions can be used as a tool for improvements



Independent assessments and self-assessments

- Independent assessments and self-assessments of the management system shall be regularly conducted to evaluate its effectiveness and to identify opportunities for its improvement.
(6.4)
- “**Self-assessment**” means to evaluate the effectiveness of performance in all areas of the own activities
- “**Independent assessment**” means assessments involving an independent party from outside of the area of responsibilities such as: internal/ external audits or surveillances
- Appropriate combinations of various types of assessment - provide a balanced evaluation of performance

Independent assessments and self-assessments

- **Self-assessment** of the management system should be performed periodically by managers and by individuals at all levels in the organization to:
 - Identify success, correct weakness for continuous improvement
 - confirm that the management system is delivering to the required standard for safety
 - enhance leadership and safety culture
 - ensure the effectiveness of processes and activities
 - participate in the sharing of experience within the regulatory body and externally
- **Self-assessments** should be initiated in response to situations that indicate a need for a closer review of performance (e.g. adverse trends, indication of inefficiencies, input from external assessment, significant changes)

Independent assessments and self-assessments

- **Independent assessments should be conducted regularly on behalf of senior management to evaluate efficiency and effectiveness of the RB.**
- Independent assessment of the management system may include:
 - Reviewing
 - Checking
 - Internal audits/in-house independent assessment
 - Audits performed by external organizations/external independent assessment

Review of the management system

- Senior management shall conduct a review of the management system at planned intervals to confirm its suitability and effectiveness, and its ability to enable the objectives of the organization to be accomplished, with account taken of new requirements and changes in the organization.
- The review of the management system shall include evaluation and timely use of the following:
 - (a) Lessons from experience gained and from events that have occurred, both within the organization and outside the organization, and lessons from identifying the causes of events
 - (b) Technical advances and results of research and development
 - (c) Lessons from identifying good practices.



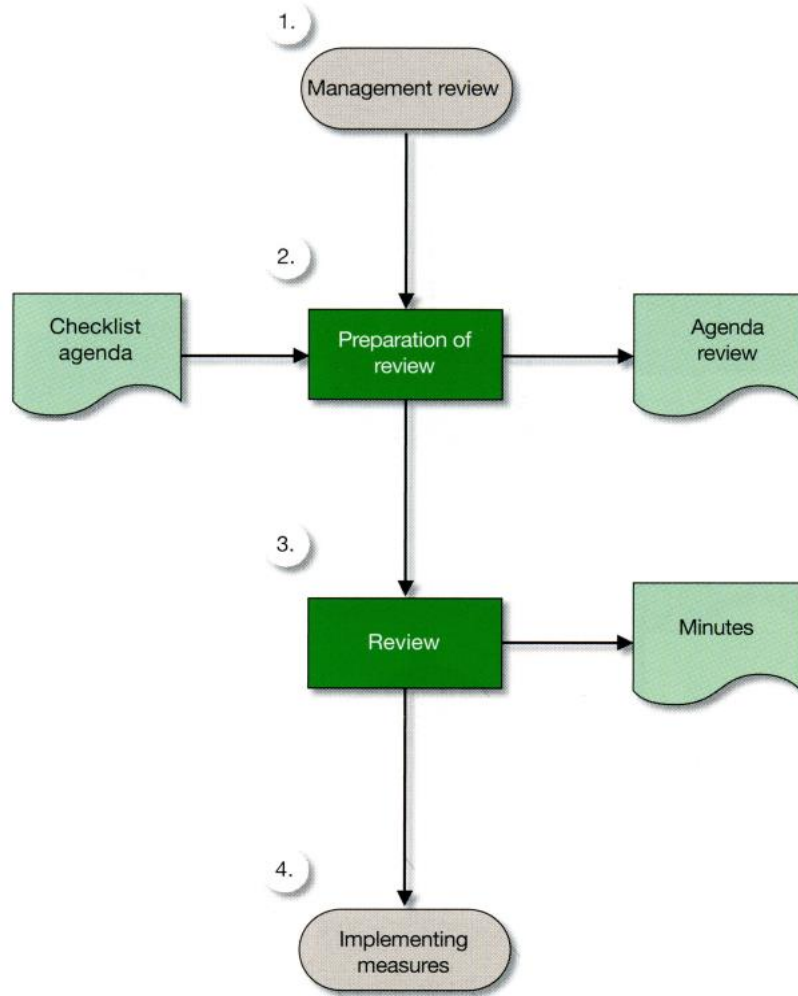
Review of the management system

- Inputs for the management system review include but are not limited to:
 - ✓ Status of actions from past management system reviews
 - ✓ Outputs from different forms of assessment, including self-assessments of senior management itself;
 - ✓ Results delivered and objectives achieved by the regulatory body and its processes and activities;
 - ✓ Non-conformances and the progress and effectiveness of corrective and preventive actions;
 - ✓ Feedback from operating experience, including lessons learned, benchmarking, and good practices from other organizations;
 - ✓ Status of activities in strategic partnerships
 - ✓ Advances in technology, research and development
 - ✓ Relevant statutory and regulatory changes
 - ✓ Other factors - financial, social or environmental conditions
 - ✓ Opportunities for improvement

Review of the management system

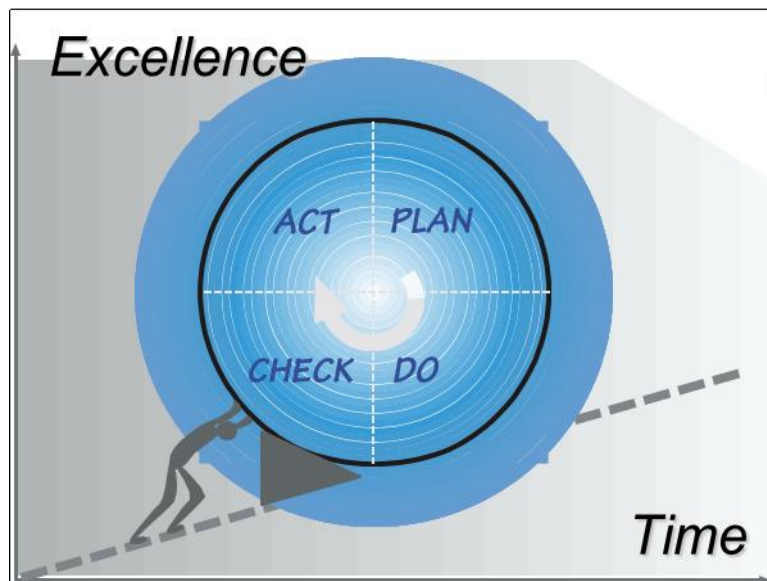
- **Outputs for the review for the management system include but are not limited:**
 - Performance objectives for safety, products and processes
 - Objectives of improvements in performance and safety for the organization
 - Appraisals of the suitability of the organization's structure and resources
 - Strategies and initiatives for satisfying interested parties
 - Loss prevention and mitigation plans for identified risks
 - Information for strategic planning for meeting the future needs of the organization

Review of the management system



- The schedule of reviews facilitate the timely provision of data for strategic planning for the organization
- Outputs used by senior management as inputs to the improvement process
- Selected outputs communicated to the individuals in the organization to demonstrate how the process of management system review conducted by senior management leads to new objectives that will benefit the organization

Continuous improvement



Plan

Establish the objectives and processes necessary to deliver results in accordance with requirements and the organization's policies

Do

Implement the processes

Check

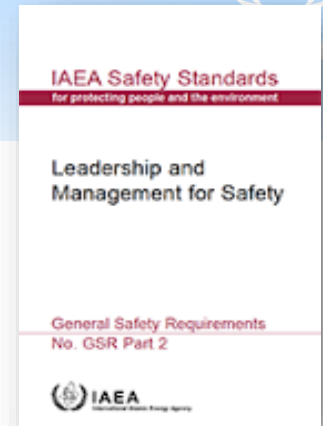
Monitor and measure processes and product against policies, objectives and requirements for the product and report the results

Act

Take actions to continually improve the processes and the effectiveness of MS

Continuous improvement

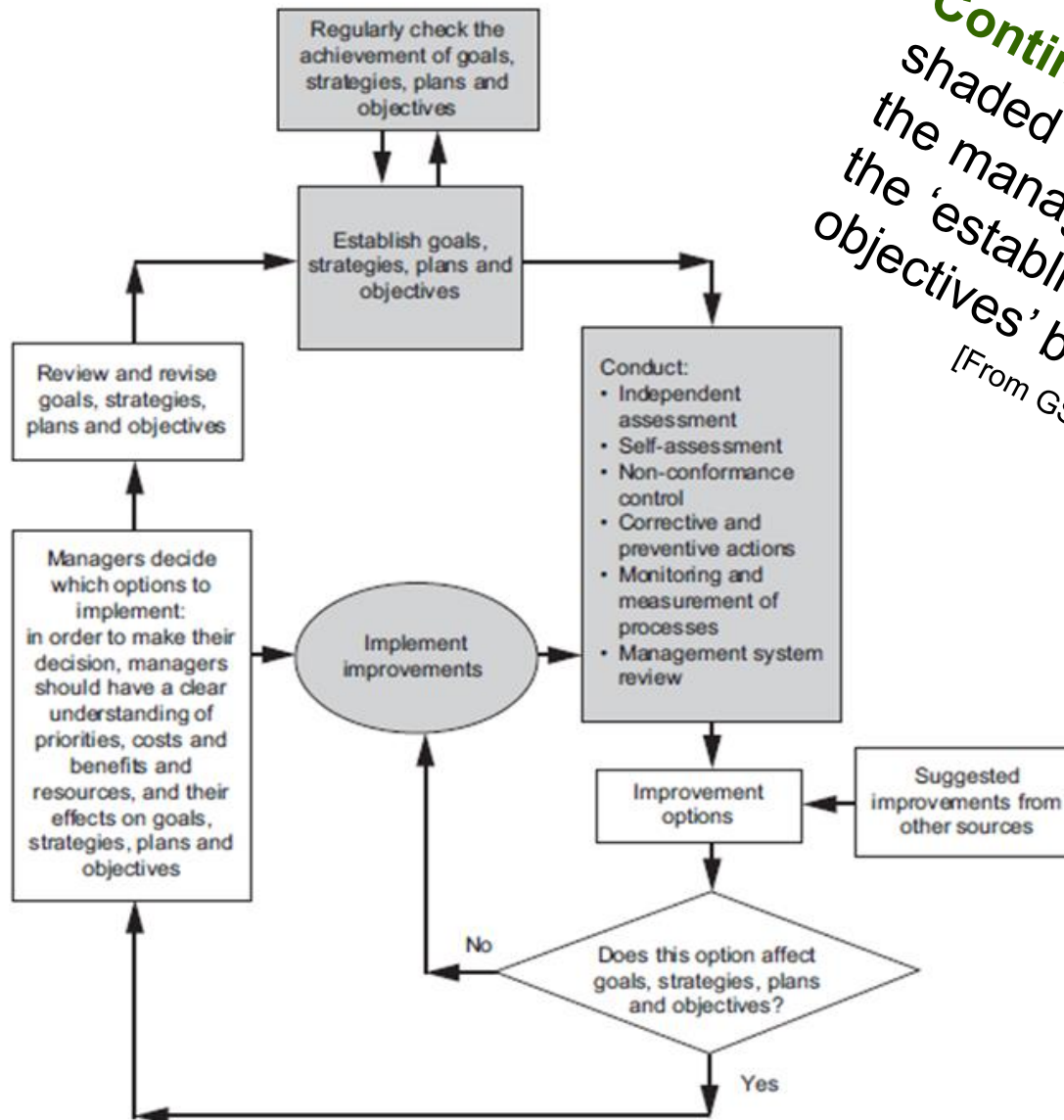
- Organization shall make arrangements to learn from success and from strength of their organizational development and continuous improvement.
- Continual improvement of processes should be a strategic objective of an organization in order to enhance the organization's performance
- Opportunities for the improvement of the management system need to be identified and actions to improve the processes shall be selected, planned and recorded
- Improvement plans shall include plans for the provision of adequate resources, using project management methods
- Actions for improvement shall be monitored through to their completion and the effectiveness of the improvement shall be checked
- Individuals in the organization should be considered the best source of ideas for improvements. Even small improvements should be controlled in order to understand their cumulative effects.



Continuous improvement

- Opportunities for improvement should be identified from the following:
 - ✓ The performance of the management system in meeting goals and plans
 - ✓ Feedback from use
 - ✓ Experience from outside organizations
 - ✓ Technological developments in the field
 - ✓ Improvements identified by individuals
 - ✓ Improvements identified from reviews of the characteristics of products and processes, such as their reliability
 - ✓ The results of assessments, corrective and preventive actions, and management system reviews

Continuous improvement



Continual improvement cycle: the shaded boxes denote requirements for the management system. The start box is the 'establish goals, strategies, plans and objectives' box.

[From GS-G 3.5/6.69]

Key messages

- **The effectiveness of the management system shall be measured, assessed and improved as to enhance safety performance, including minimizing the occurrence of problems relating to safety**
- **Management system can be measured and assessed through different methods namely:**
 - Everyday work
 - Self assessment
 - Independent assessment
 - Review of the management system



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Thank you!

