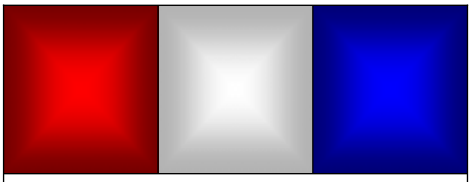


SIGAS&SI

Implementing an Integral Environment, Health and Safety Management System in "the company"

Course for SIGAS&SI Implementation Teams

Table of Contents

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

SIGAS&SI

The following are the objectives of the course:

- To convey the objective and essential concepts of the SIGAS&SI.
- To do some exercises to become familiar with the contents of the sections and the chapters of the Manual of the SIGAS&SI.
- To present and explain in detail the activities to be carried out during the Self-Assessment Process and the development of the Global Improvement Program.
- To explain the forms to be completed and the reports to be generated.
- To perform a simulation of the Self-Assessment exercise using the Manual of the SIGAS&SI

All this with the fundamental objective of preparing you to carry out a complete and reliable implementation.

SIGAS&SI

The course for the personnel and Implementation Teams of the SIGAS&SI in this Implementation Unit will take two days. Following is the work plan:

Day 1	
8:30-9:00	Welcome, Introduction, Objectives, Agenda
9:00-9:20	Message from the President of "the company"
9:20-10:50	Overview of the SIGAS&SI
10:50-11:00	Break
11:00-12:00	Manual of the SIGAS&SI and Toolbox
12:00-13:30	SIGAS&SI Workshops (Elements 1 to 6)
13:30-15:00	Lunch
15:00-16:30	SIGAS&SI Workshops (Elements 7 to 12)
16:30-16:45	Break
16:45-17:30	SIGAS&SI Workshops (Elements 13 to 15)

Day 2	
8:30-9:15	SIGAS&SI Workshops (Elements 16 to 18)
9:15-10:45	Self-Assessment Process
10:45-11:00	Break
11:00-12:00	Development of the Comprehensive Improvement Program
12:00-13:30	Simulation
13:30-15:00	Lunch
15:00-16:45	Simulation
16:45-17:00	Break
17:00-18:00	Summary and Assessment of Course

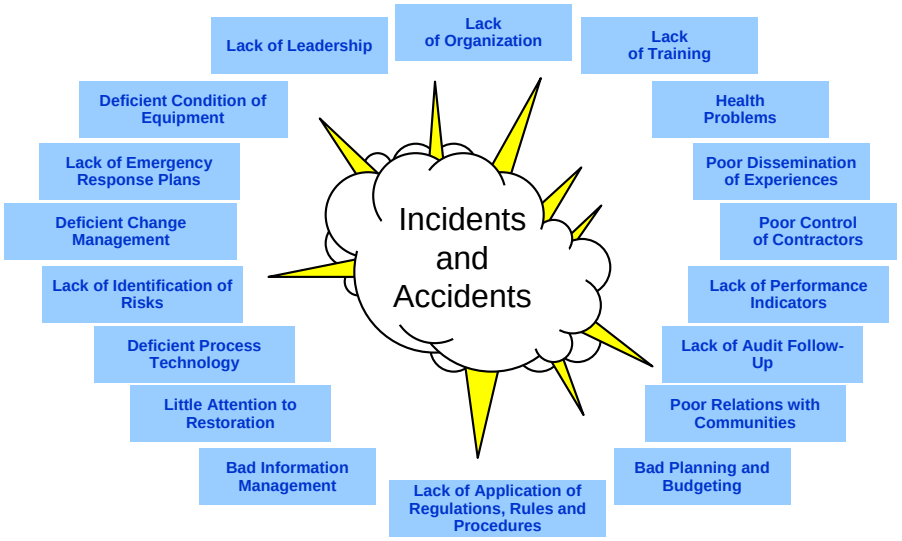
¤ This course and the material covered require the full and continuous attendance of participants.

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

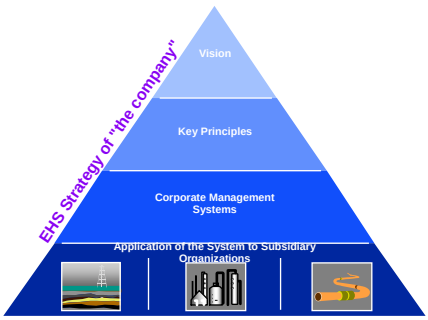
SIGAS&SI

Recent incidents in "the company" show the variety of root causes regarding safety and environmental protection issues.



SIGAS&SI

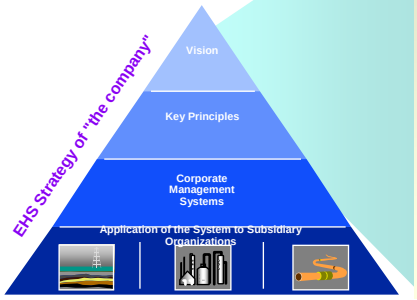
The essential need to attack root causes of these situations made the Institution focus on the creation of Corporate Directors of EHS, and in parallel, on the development of a strategy and a policy on Environment, Health and Safety of "the company" itself.



- **Strategic Short-Term Approach**
  - Basic Compliance Elements
  - Risk Management
  - Internal Development
    - Management System (SIGAS&SI)
    - Integration of Safety and Environmental Protection components into the culture of "the company"
- **Strategic Long-Term Approach**
  - Make Use of Competitive Advantages
  - Sustainability

SIGAS&SI

This Policy contains two parts: a vision and eleven key principles.

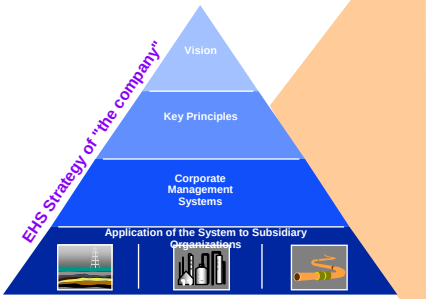


Vision of Environment, Health and Safety of "the company"

- **Good performance of "the company" in Environment, Health and Safety should make its workers and employees feel proud.**
- **Environment, Health and Safety are the responsibility of all workers and employees of "the company".**
- **In the effort to achieve success, Environment, Health and Safety are a fundamental component.**
- **"The company" is to be a national leader in all aspects related to the Environment, Health and Safety.**

SIGAS&SI

The key principles on which the policy is based are the following:



- ***Custodian***
- ***Occupational Health and Safety***
- ***Natural Resource Management***
- ***Resource Allocation***
- ***Risk Management***
- ***Compliance***
- ***Training and Learning***
- ***Integration with "the company's" Culture and Functions***
- ***Interaction with Communities***
- ***Relations with Stakeholders***
- ***Accountability***

To provide support to and ensure compliance with the Policy and its continuity in time, the Corporate Directors of EHS, in coordination with subsidiary organizations, felt it was necessary for "the company" to design an Integral System for Environment, Health and Safety:

SIGAS&SI

Whose Objective is:

To improve performance in Environment, Health and Safety in the short and long term, and integrate their effective management into the culture of "the company", consistently with the institutional policy on Environment, Health and Safety.

The successful implementation of the policy and the SIGAS&SI will bring important benefits for "the company".

- Increase in productivity and use of assets
- Reduction of costs arising from poor safety performance and environmental protection
- Reduction of incidents and accidents (e.g. injuries/diseases, environmental impact).
- Better environmental performance
- Higher motivation of employees
- Better relations with the community and governmental institutions
- Higher value for the company
- Better health levels of workers
- Better image of "the company"

SIGAS&SI

The SIGAS&SI was developed by "the company" and comprises 18 elements related to the human factor, work methods and facilities. The system manages 5 levels of development.

Components of the SIGAS&SI

Human Factor	Methods	Facilities
1. Policy, leadership and commitment	8. Planning and budget	16. Emergency response plans
2. Organization	9. Rules and Regulations	17. Mechanic integrity
3. Training	10. Information management	18. Control and restoration
4. Occupational health	11. Process technology	
5. Analysis and dissemination of incidents and good practices	12. Risk analysis	
6. Control of contractors	13. Change management	
7. Public relations and relations with communities	14. Performance indicators	
	15. Audits	

Levels of the SIGAS&SI

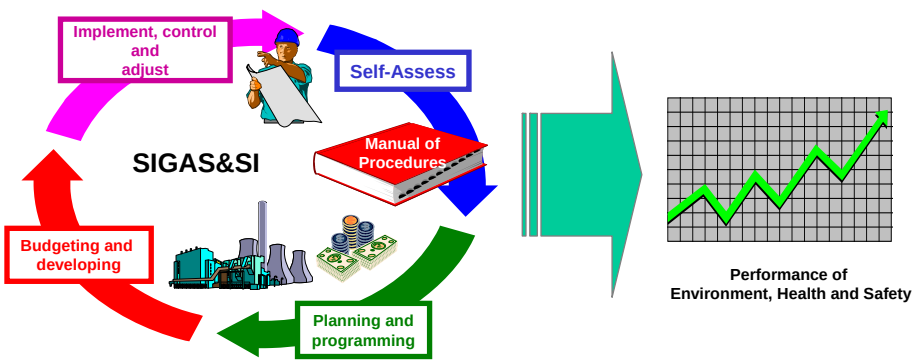
1	2	3	4	5
AWARENESS	DESIGN AND DEVELOPMENT	UNDER IMPLEMENTATION	IMPLEMENTED SYSTEM	IN SEARCH FOR EXCELLENCE

SIGAS&SI

What is a Management System?

Management System

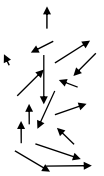
The necessary combination of policy, resources, personnel and procedures, whose components interact in an organized manner to ensure performance of a specific task or to achieve or maintain a specific result.

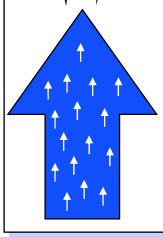


SIGAS&SI

In the SYSTEM concept, all components interact in an organized manner and are focused on a single effort to achieve or maintain a specific result.

Non-Systematized Components	*Systematized Components*
Diffuse and unclear objectives	**Clear and precise objectives**
Disorganized and unfocused efforts	**The efforts are organized and focused on achieving the objectives set**





SIGAS&SI

Internationally renowned companies have management systems similar to the SIGAS&SI.

PETROLEOS MEXICANOS — SIGASSI — INTEGRAL ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT SYSTEM

1. POLICY, LEADERSHIP AND COMMITMENT
2. ORGANIZATION
3. TRAINING
4. OCCUPATIONAL HEALTH
5. ANALYSIS AND DISSEMINATION OF INCIDENTS AND GOOD PRACTICES
6. CONTROL OF CONTRACTORS
7. PUBLIC RELATIONS AND RELATIONS WITH COMMUNITIES
8. PLANNING AND BUDGET
9. RULES AND REGULATIONS
10. INFORMATION MANAGEMENT
11. PROCESS TECHNOLOGY
12. RISK ANALYSIS
13. CHANGE MANAGEMENT
14. PERFORMANCE INDICATORS
15. AUDITING
16. EMERGENCY RESPONSE PLANS
17. MECHANIC INTEGRITY
18. CONTROL AND RESTORATION

SHELL — *SEMP* — SAFETY AND ENVIRONMENTAL MANAGEMENT PROGRAM

1. OVERVIEW
10. ENVIRONMENTAL AND SAFETY INFORMATION
12. RISK ANALYSIS
13. CHANGE MANAGEMENT
9. OPERATIONAL PROCEDURES
17. SAFE LABOR PRACTICES
3. TRAINING
17. GUARANTY OF QUALITY AND MECHANICAL INTEGRITY
9. 17. PRE-STARTUP EXAM
16. CONTROL AND RESPONSE TO EMERGENCIES
5. INCIDENT INVESTIGATION
15. AUDIT AND REVISION OF SEMP

BRITISH PETROLEUM USA — *OIAS* — OPERATIONAL INTEGRITY ASSURANCE SYSTEM

1. LEADERSHIP, COMMITTMENT AND RESPONSIBILITY
12. 14. RISK VALUATION AND MANAGEMENT
11. 17. DESIGN AND CONSTRUCTION OF FACILITIES
11. 17. OPERATION AND MAINTENANCE
13. CHANGE MANAGEMENT
10. INFORMATION AND DOCUMENTATION
2. 3. PERSONNEL AND TRAINING
6. WORKING WITH CONTRACTORS AND THIRD PARTIES
5. INCIDENT INVESTIGATION AND ANALYSIS
16. 8. COMMUNITY AWARENESS AND EMERGENCY PLANS
17. 14. VALUATION AND IMPROVEMENT OF OPERATIONS INTEGRITY
8. CUSTOMERS AND PRODUCTS

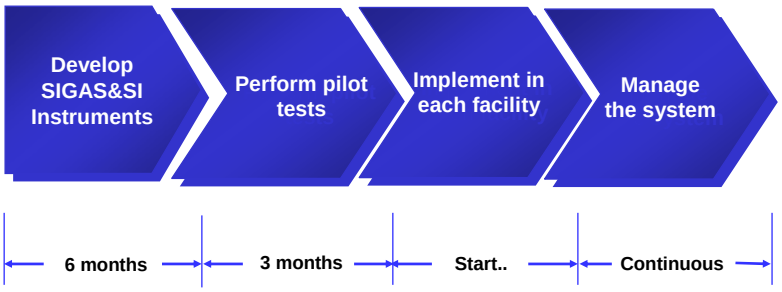
EXXON — *QIMS* — OPERATIONS INTEGRITY MANAGEMENT SYSTEM

1. LEADERSHIP, COMMITMENT AND RESPONSIBILITY
12. 14. RISK VALUATION AND MANAGEMENT RISKS
17. 11. DESIGN AND CONSTRUCTION OF FACILITIES
10. DOCUMENTATION AND INFORMATION
2. 3. PERSONNEL AND TRAINING
17. 11. OPERATION AND MAINTENANCE
13. CHANGE MANAGEMENT
6. THIRD PARTIES' SERVICES
4. ANALYSIS AND INVESTIGATION OF INCIDENTS
16. COMMUNITY AWARENESS AND EMERGENCY PLANS
17. VALUATION AND IMPROVEMENT OF OPERATIONS INTEGRITY

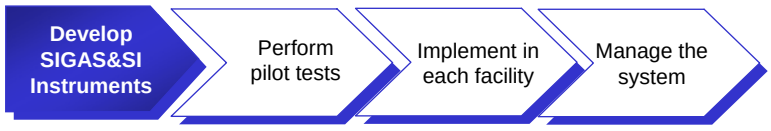
CONOCO — *SHEA* — SAFETY, HEALTH AND ENVIRONMENTAL ADMINISTRATION

1. VISION
1. LEADERSHIP AND COMMITTMENT
1. POLICY
2. OBJECTIVES AND GOALS
8. STRATEGIC PLANNING
2. ORGANIZATION AND PERSONNEL
14. 15. ASSESSMENT EFFECTS / ASPECTS
12. RISK VALUATION AND MANAGEMENT
8. 17. OPERATION PROGRAMS AND PRACTICES
16. EMERGENCY PLANS
3. TRAINING AND COMPETENCE
10. DOCUMENTATION
14. MONITORING
11. AUDITING
14. 15. VALUATION BY DIRECTORS

The program for development and implementation of the SIGAS&SI involves four major blocks of activities with active participation of personnel of "the company" from different areas.



The development of SIGAS&SI instruments included the preparation of a Manual of the SIGAS&SI and a Toolbox



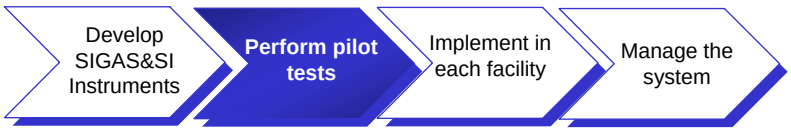
The Support Group comprising personnel of the Corporation and subsidiaries and an external consultant

- A Manual of the SIGAS&SI to be used in the implementation in each facility
- A Toolbox containing supporting documentary information for the Implementation

Multidisciplinary personnel from different divisions of "the company" developed along the past months a Manual of the SIGAS&SI with the purpose of providing a guide for the implementation of the System in the facilities.

- The Manual of the SIGAS&SI is one of the basic instruments to perform the Self-Assessment and Implementation of the system.
- This will be the document to be used by each self-assessor as a guide for performing the Self-Assessment process required by the SIGAS&SI and structuring an Improvement Action Program.
- The objective of the Manual is to guide the process of determining at which level of the SIGAS&SI is the facility, and then facilitate the development of the Global Improvement Program required to reach the following levels.

Pilot tests of the Self-Assessment process have been carried out in selected Implementation Units of "the company".



- Several refineries
- Several E&P centers

Refining

E&P

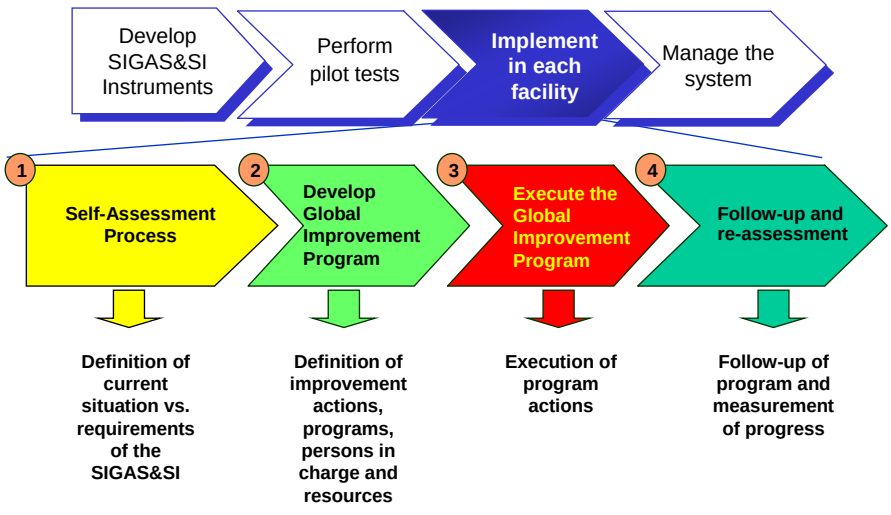
SIGAS&SI

The main objectives of the pilot tests were the following:

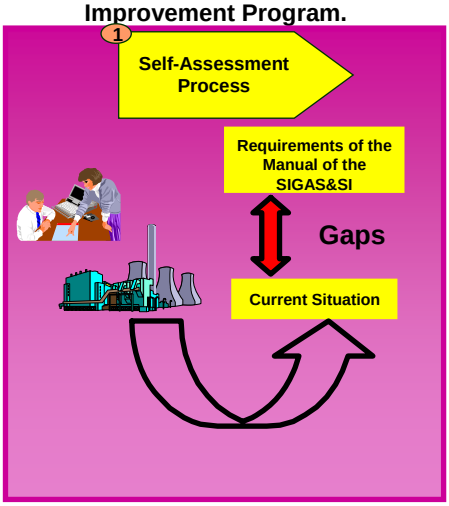
- Disseminate the concepts and objectives of the SIGAS&SI among the personnel of the facilities.
- Create a shared vision about the value of the SIGAS&SI
- Begin the formal implementation of the SIGAS&SI in the facility
- Test and improve the instruments and processes developed
  - Manual of the SIGAS&SI
  - Self-Assessment and Implementation Guidelines
  - Set up Implementation Teams
  - Self-Assessment Logistics
  - Definition of Improvement Action Programs
- Development of information for the General Implementation Program of each subsidiary.

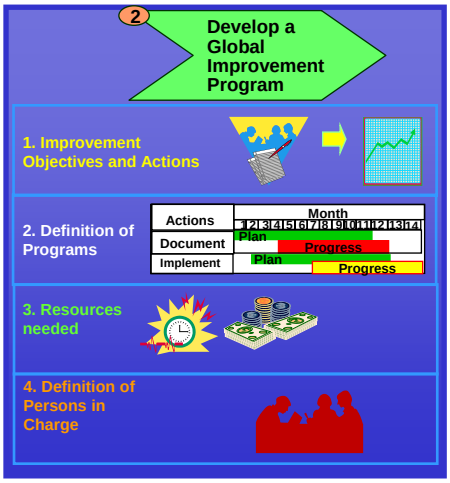
SIGAS&SI

The implementation of the SIGAS&SI in each facility of "the company" will have the following stages:

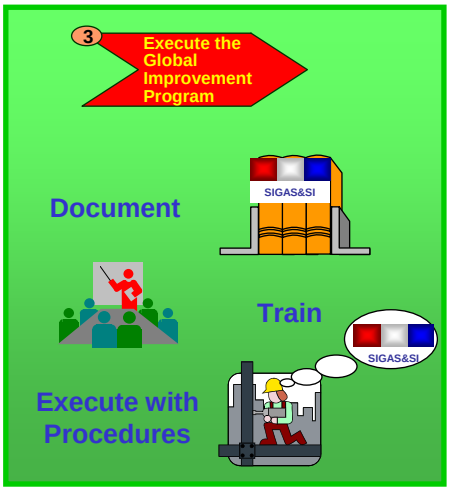


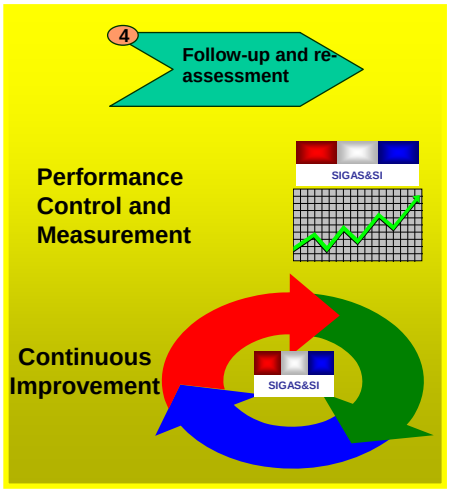
The process requires performance of a Self-Assessment to determine the current situation of the Implementation Unit with respect to the requirements of the System, and then development of a Global Improvement Program.





Once the Global Improvement Program is defined, it is executed and the development of the SIGAS&SI is followed up

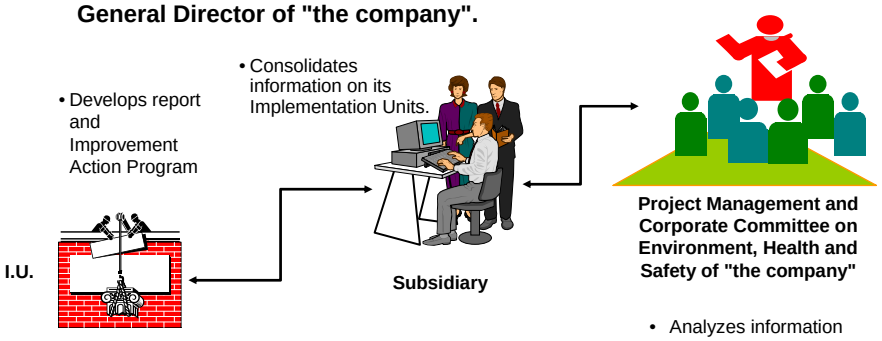




Overview of the SIGAS&SI - Consolidation of Information

SIGAS&SI

The progress is checked by the Environment, Health and Safety Committee of each Unit and a report on it is submitted to the Subsidiary Organization to be presented to the Corporate Committee on Environment, Health and Safety headed by the General Director of "the company".

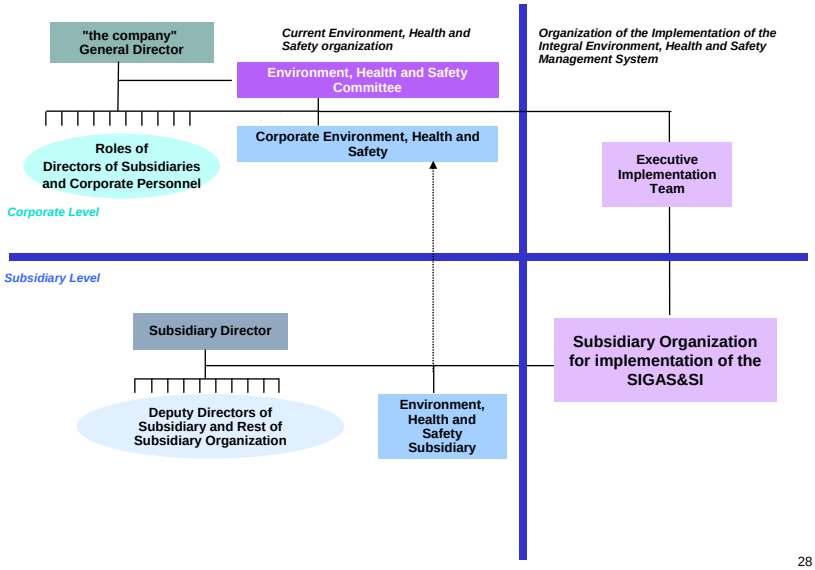


Thus, the committments established in each Implementation Unit will reach the highest level of "the company" on a monthly basis.

Overview of the SIGAS&SI - Organization

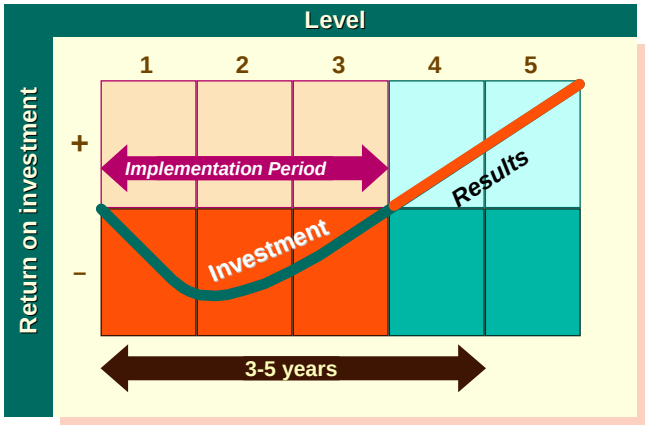
SIGAS&SI

Organization involved in the Implementation of the SIGAS&SI



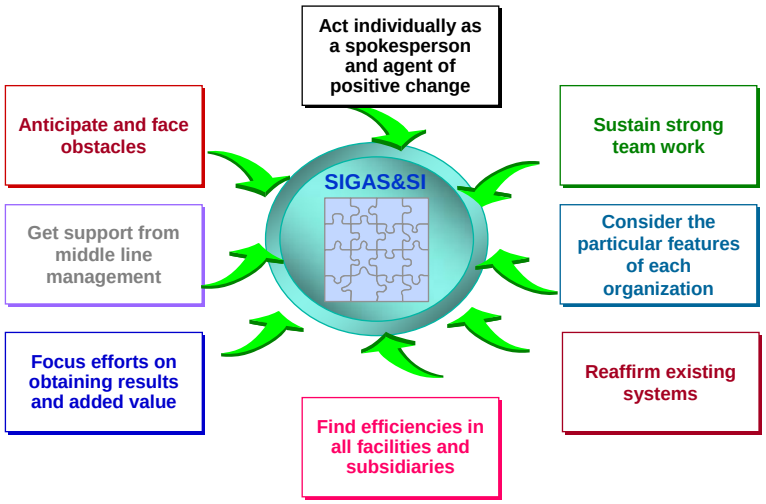
SIGAS&SI

The implementation of the SIGAS&SI requires an investment period and effort before beginning to generate improvements in Environment, Health and Safety performance.



SIGAS&SI

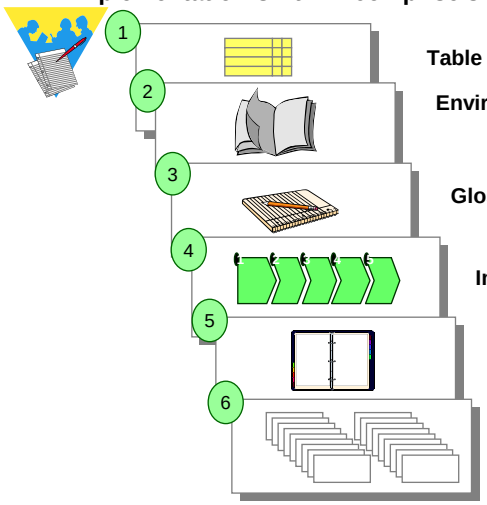
Several factors play an important role in the successful implementation of the SIGAS&SI in "the company" and its integration into the management system of the facilities.



SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

The Manual of the SIGAS&SI to be used in the implementation and development of a Global Improvement Program of each Implementation Unit will comprise six major sections:

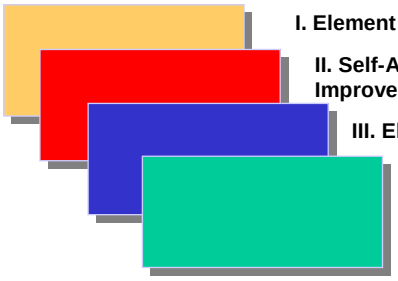


1. **Table of Contents**
2. **Environmental, Health and Safety Policy**
3. **Glossary**
4. **Introduction**
5. **Implementation Guideline**
6. **Chapters of the SIGAS&SI Elements**

The first five sections of the Manual of the SIGAS&SI contain basic information for the implementation of the System:

Section	Table of Contents
Table of Contents	States the Manual contents and the revision date
Recommended Environmental, Health and Safety policy of "the company"	Vision and principles of the Environmental, Health and Safety Policy issued by the Directors of "the company"
Glossary	Definition of terms commonly used in the Manual
Introduction	Overview of the SIGAS&SI, its features and structure, the rationale of the SIGAS&SI elements and their interrelations.
Implementation Guideline	Guideline for implementation of the SIGAS&SI in the facilities.

Section 6 of the Manual of the SIGAS&SI covers the 18 elements of the SIGAS&SI and is organized in individual chapters by element. Each chapter contains the following parts:



I. Element Description

II. Self-Assessment Guidelines / Improvement Action Guideline

III. Element Guidelines

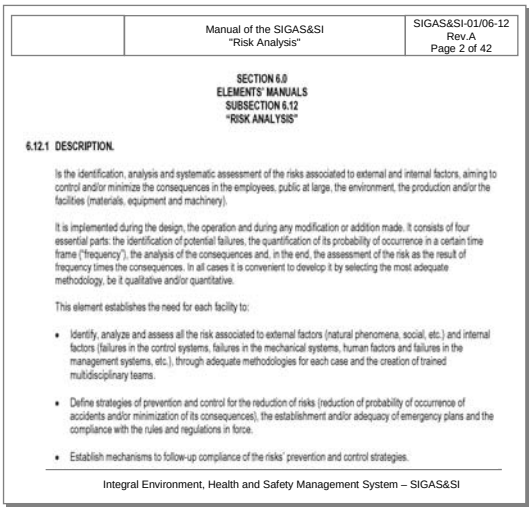
IV. Toolbox

Following is a description of the parts of each chapter, so please have your Manual of the SIGAS&SI handy in order to understand its structure.

The first part shows the Element Description.

Element Description

- The element description explains the components considered in this element, as well as their scope.
- The need for each facility to perform certain processes is also established here.



	Manual of the SIGAS&SI "Risk Analysis"	SIGAS&SI-01/06-12 Rev.A Page 2 of 42

SECTION 6.0
ELEMENTS' MANUALS
SUBSECTION 6.12
"RISK ANALYSIS"

6.12.1 DESCRIPTION.

Is the identification, analysis and systematic assessment of the risks associated to external and internal factors, aiming to control and/or minimize the consequences in the employees, public at large, the environment, the production and/or the facilities (materials, equipment and machinery).

It is implemented during the design, the operation and during any modification or addition made. It consists of four essential parts: the identification of potential failures, the quantification of its probability of occurrence in a certain time frame ("frequency"), the analysis of the consequences and, in the end, the assessment of the risk as the result of frequency times the consequences. In all cases it is convenient to develop it by selecting the most adequate methodology, be it qualitative and/or quantitative.

This element establishes the need for each facility to:

- Identify, analyze and assess all the risk associated to external factors (natural phenomena, social, etc.) and internal factors (failures in the control systems, failures in the mechanical systems, human factors and failures in the management systems, etc.), through adequate methodologies for each case and the creation of trained multidisciplinary teams.
- Define strategies of prevention and control for the reduction of risks (reduction of probability of occurrence of accidents and/or minimization of its consequences), the establishment and/or adequacy of emergency plans and the compliance with the rules and regulations in force.
- Establish mechanisms to follow-up compliance of the risks' prevention and control strategies.

Integral Environment, Health and Safety Management System – SIGAS&SI

The second part (Self-Assessment Guidelines/Improvement Action Guideline) is organized according to the sub-elements included in the element.

Most of the SIGAS&SI elements have been divided into sub-elements in order to perform a more complete and detailed Self-Assessment of the element.

	Manual of the SIGAS&SI "Risk Analysis"	SIGAS&SI-01/06-12 Rev.A Page 2 of 42

6.12.2 TABLES OF SUB-ELEMENTS, SELF-ASSESSMENT GUIDELINES / IMPROVEMENT ACTIONS GUIDELINES

This element has the following sub-elements.

6.12.2.1 Sub-element "Analysis and Assessment ".

6.12.2.2 Sub-element "Prevention, Control and Follow-up Strategies ".

Integral Environment, Health and Safety Management System – SIGAS&SI

If the element has been divided into sub-elements, a Self-Assessment table, a Self-Assessment Guideline and an Action Improvement Guideline will be available in the chapter for each sub-element defined.

Sub-Element: "Analysis and Assessment"

Self-Assessment Table

HUMAN FACTOR	AWARENESS PHASE	DESIGN AND DEVELOPMENT	UNDER IMPLEMENTATION	IMPLEMENTED SYSTEM	IN SEARCH FOR EXCELLENCE
RISK ANALYSIS	12.1.1.1 Information is missing or incomplete, there are no required criteria for risk analysis and assessment 12.1.1.2 Risk analysis is performed and/or supervised only by safety and environmental protection personnel and/or specialized companies.	12.1.2.1 There is a procedure available for identification, integration and update of information and criteria required for risk analysis. 12.1.2.2 A multidisciplinary team is set up to perform and/or supervise risk analyses; such team is properly trained.	12.1.3.1 The procedure available for identification of required information is carried out, and there are criteria for risk analysis. 12.1.3.2 The multidisciplinary group performs and/or supervises risk analyses according to the documented program and the methodology(ies) for development and update.	12.1.4.1 The multidisciplinary group keeps updated knowledge and techniques for performance and/or supervision of risk analysis. 12.1.4.2 The multidisciplinary group exchanges experiences with professionals in the field (at national level).	12.1.5.1 Advice is given to other facilities regarding risk analysis. 12.1.5.2 Experiences are shared with risk management professionals in international forums.

Self-Assessment Guideline

Suggested Questions	Documentary Evidence	Analysis Guideline	Yes	No	Notes
12.1.3.1 The procedure available for identification and update of required information is carried out, and there are criteria for risk analysis.					
1. Is the required information for performance of risk analysis identified according to the established protocol?	Documentation of the established procedure and work instructions to perform risk analysis.	Verify that there is evidence and that the required information for risk analysis is identified. Check that the contents agree with the established procedure in a clear manner, without any omission or wrong interpretations. See AR.1.01			

Improvement Action Guideline

IMPROVEMENT ACTIONS GUIDELINES.

- Causes must be identified for which the necessary information –to develop the risk analyses and to correct deviations detected- is not available Criteria for the development of those activities must be developed
- If the established criteria were not utilized, in the same way search for the causes of this situation and correct any deviations detected.

Sub-Element Self-Assessment Table

- This table contains the performance requirements for the sub-element in each of the five levels defined within the system.
- The purpose of the scale is to assess at which level of the SIGAS&SI is a specific Implementation Unit and provide the bases for improvement.

6.12.2.1 SUB-ELEMENT "ANALYSIS AND ASSESSMENT".

States the level

States the SIGAS&SI element

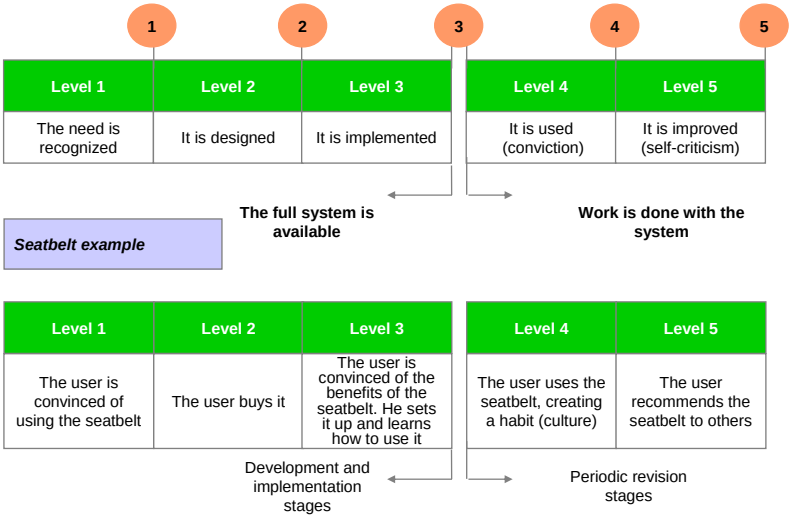
State the requirements for the element at each level

SUB-ELEMENT	1 AWARENESS	2 DESIGN AND DEVELOPMENT	3 UNDER IMPLEMENTATION	4 IMPLEMENTED SYSTEM	5 IN SEARCH FOR EXCELLENCE
ANALYSIS AND ASSESSMENT	12.1.1.1 Lack of or incomplete information and the necessary criteria to analyze and assess risks 12.1.1.2 Risk analyses are developed and/or supervised only by the environmental protection and safety personnel and/or specialized companies. 12.1.1.3 The methodologies utilized for risk analysis and assessment are either not recognized or adequate. 12.1.1.4 Risk analyses and developed to respond to legal and/or insurance requirements and don't have a documented program.	12.1.2.1 There is a procedure in place to identify, integrate and update the required information and criteria to develop the risk analyses. 12.1.2.2 A multidisciplinary team is created to develop and/or supervise the risk analyses. Its training is under development. 12.1.2.3 Methodologie(es) is(are) in place to develop and update the risk analyses. 12.1.2.4 There is a documented program to develop risk analyses.	12.1.3.1 The procedure to identify the required information and criteria to develop risk analyses is utilized. 12.1.3.2 The multidisciplinary team develops and/or supervises the risk analyses according to the established documented program and the methodologie(es) for their development and update. 12.1.3.3 The multidisciplinary team is trained and has received the required training to adequately fulfill its roles.	12.1.4.1 The multidisciplinary team is refreshed in knowledge and techniques to develop and/or supervise the risk analyses. 12.1.4.2 The multidisciplinary team maintains experience exchange with professionals on the subject (at the national level). 12.1.4.3 Cost/benefit analysis is applied to assess the options to manage the identified risks. 12.1.4.4 All decisions derived from risk management are recorded.	12.1.5.1 Other facilities are advised with regards to risk analyses. 12.1.5.2 Experiences are shared with risk management professionals in international forums.

Each level has certain distinctive features.

Awareness	Design and Development	Under Implementation	Implemented system	In Search for Excellence
• General knowledge of Safety and Environmental Protection requirements and their administrative process • There is no formal administrative system in this regard • Some safety practices are informal • Some procedures are well documented • The Safety and Environmental Protection management is generally performed by personnel of Safety and Environmental	• Formal documented systems (including policies, procedures, programs and regulations) developed according to specific requirements. • Generally, Safety and Environmental Protection management is entrusted to Safety and Environmental Protection professionals. In line management acknowledges responsibility over this issue, but frequently does not act according to it.	• Formal Safety and Environmental Protection management systems have been disseminated to all personnel involved • All personnel involved are aware of their responsibilities concerning Safety and Environmental Protection. • Generally, the personnel perform their responsibilities concerning Safety and the Environmental Protection according to the documented system; however, the system is not consistent • The personnel perform their job because it is a duty, not because the value of the system is recognized	• Formal Safety and Environmental Protection management systems have been implemented consistently; there are some rare and not important failures. • The systems are self-sustainable and improve continuously • The personnel involved are convinced of the value of the systems; they use them enthusiastically and promote them actively • There are evident improvements in the performance in Safety and Environmental Protection	• The best practices worldwide are identified and incorporated into the existing system • Performance in Safety and Environmental Protection has achieved an exceptional level • No incident has a root cause indicating a weakness in the system

SIGAS&SI Levels- *an example of daily application*



An Implementation Unit is at a certain level until it meets 100% of the requirements established by the SIGAS&SI for the previous levels.

HUMAN FACTOR	AWARENESS PHASE	DESIGN AND DEVELOPMENT	UNDER IMPLEMENTATION	IMPLEMENTED SYSTEM	IN SEARCH FOR EXCELLENCE
RISK ANALYSIS	12.1.1.1 Information is missing or incomplete, there are no required criteria for risk analysis and assessment 12.1.1.2 Risk analysis is performed and/or supervised only by safety and environmental protection personnel and/or specialized companies.	12.1.2.1 There is a procedure available for identification, integration and update of information and criteria required for risk analysis. 12.1.2.2 A multidisciplinary team is set up to perform and/or supervise risk analyses; such team is properly trained.	12.1.3.1 The procedure available for identification of required information is carried out, and there are criteria for risk analysis. 12.1.3.2 The multidisciplinary group performs and/or supervises risk analyses according to the documented program and the methodology(ies) for development and update.	12.1.4.1 The multidisciplinary group keeps updated knowledge and techniques for performance and/or supervision of risk analysis. 12.1.4.2 The multidisciplinary group exchanges experiences with professionals in the field (at national level).	12.1.5.1 Advice is given to other facilities regarding risk analysis. 12.1.5.2 Experiences are shared with risk management professionals in international forums.

When performing the Self-Assessment, it may be determined that the facility meets some requirements of higher levels, but has not met other requirements specified for the previous level.

In order to determine the level of each element, 100% compliance with the SIGAS&SI requirements must be verified.

The Implementation Unit will not move forward to the next level until it meets again all requirements of that level.

Example:

HUMAN FACTOR	AWARENESS PHASE	DESIGN AND DEVELOPMENT	UNDER IMPLEMENTATION	IMPLEMENTED SYSTEM	IN SEARCH FOR EXCELLENCE
RISK ANALYSIS	12.1.1.1 Information is missing or incomplete, there are no required criteria for risk analysis and assessment 12.1.1.2 Risk analysis is performed and/or supervised only by safety and environmental protection personnel and/or specialized companies.	12.1.2.1 There is a procedure available for identification, integration and update of information and criteria required for risk analysis. 12.1.2.2 A multidisciplinary team is set up to perform and/or supervise risk analyses; such team is properly trained.	12.1.3.1 The procedure available for identification of required information is carried out, and there are criteria for risk analysis. 12.1.3.2 The multidisciplinary group performs and/or supervises risk analyses according to the documented program and the methodology(ies) for development and update.	12.1.4.1 The multidisciplinary group keeps updated knowledge and techniques for performance and/or supervision of risk analysis. 12.1.4.2 The multidisciplinary group exchanges experiences with professionals in the field (at national level).	12.1.5.1 Advice is given to other facilities regarding risk analysis. 12.1.5.2 Experiences are shared with risk management professionals in international forums.

Upon completion of the Self-Assessment process, it was concluded that the Implementation Unit of "the company" assessed is at **level 3** as far as *Risk Analysis* is concerned.

This means that all and every requirement of level 2 have been met 100%. It has "graduated" from **level 2** and is now working to cover all requirements of **level 3.**

Although the Implementation Unit has met some requirements of higher levels, its level under SIGAS&SI is **3.**

The Improvement Action Program will focus first on covering the basic requirements of the SIGAS&SI, and then continue with those requirements of a higher level.

The Self-Assessment Guideline is composed of a table containing the questions to be applied, the documentary evidence to be collected and a guideline for its analysis.

Element No. 12: ***Risk Analysis***

Sub-Element: ***"Analysis and Assessment"***

Example:

LEVEL 3 **UNDER IMPLEMENTATION.**

REQUIREMENT					
RECOMMENDED QUESTIONS	EVIDENCE	ANALYSIS GUIDELINE	YES	NO	REMARKS
12.1.3.1 The procedure to identify the required information and criteria to develop risk analyses is utilized.					
1. Is the required information to develop the risk analysis according to the established procedure identified, integrated and updated?	Documentation of the established procedure and the work instructions to develop risk analyses.	Verify the existence of evidence and that the information required for the risk analysis is identified. Check that the content is in agreement with the established procedure in a clear manner with no omissions or misinterpretations. See AR.L.01			
12.1.3.2 The multidisciplinary team develops and/or supervises the risk analyses according to the established documented program and the methodology(ies) for their development and update.					
1. Are the risk analyses developed or supervised by the multidisciplinary team?	Information demonstrating the development of risk analyses and/or supervisors from consulting companies.	Verify that the risk analyses were developed utilizing the adequate methodology(ies) with a technical justification of the implementation of the technology. Also check they were developed and/or supervised by the multidisciplinary team. See AR.L.01			
2. Are the risk analyses developed according to the established methodology(ies)?	Established methodology(ies)	Check that risk analyses are being developed according to the established methodology(ies) and to the needs of the work center, clearly stating the rationale to prioritize the activities. See AR.L.01			
3. Are the risk analyses developed according to the authorized program?	Documented program. Established protocol.	Check that the formal program has the corresponding authorization form and that is being developed according to the stipulations.			

SIGAS&SI

Each section of this Guideline has a specific objective.

The questions will be a guide or reference to perform the Self-Assessment of each requirement of the SIGAS&SI.

The documentary evidence column lists all important documents whose revision is suggested.

REQUIREMENT					
RECOMMENDED QUESTIONS	EVIDENCE	ANALYSIS GUIDELINE	YES	NO	REMARKS
12.1.3.1 The procedure to identify the required information and criteria to develop risk analyses is utilized.					
1 Is the required information to develop the risk analysis according to the established procedure	Documentation of the established procedure and the work instructions	Verify the existence of evidence and that the information required for the risk analysis is identified. Check that the content is in agreement with the established procedure in a clear manner with no omissions or misinterpretations. See AR.L.01			
ding to the established documented program and the methodology(ies) for their development and					
1. Are the risk analyses developed or supervised by the multidisciplinary team?	Information demonstrating the development of risk analyses and/or supervisors from consulting companies.	Verify that the risk analyses were developed utilizing the adequate methodology(ies) with a technical justification of the implementation of the technology. Also check they were developed and/or supervised by the multidisciplinary team. See AR.L.01			
established methodology(ies)?		Check that risk analyses are being developed according to the established me... the needs of th... stating the ratio... activities. See AR.L.01			
3. Are the risk analyses developed according to the authorized program?	Documented program. Established protocol.	Check that the... the correspond... and that is bei... according to the stipulations.			

The analysis guideline indicates the type of elements that the assessor should search in the documents, the persons to contact, etc.

It also contains the guidelines to revise.

The "yes", "no" and "notes" columns are for the assessor to state whether it is in compliance or not, which other evidence is provided and which actions should be taken.

SIGAS&SI

The Improvement Action Guideline is after each Self-Assessment Guideline.

LEVEL 3 UNDER IMPLEMENTATION.

REQUIREMENT					
RECOMMENDED QUESTIONS	EVIDENCE	ANALYSIS GUIDELINE	YES	NO	REMARKS
12.1.3.1 The procedure to identify the required information and criteria to develop risk analyses is utilized.					
1 Is the required information to develop the risk analysis according to the established procedure identified, integrated and updated?	Documentation of the established procedure and the work instructions to develop risk analyses.	Verify the existence of evidence and that the information required for the risk analysis is identified. Check that the content is in agreement with the established procedure in a clear manner with no omissions or misinterpretations. See AR.L.01			

IMPROVEMENT ACTION GUIDELINES.

12.1.3.1	• Identify the reason why it is not available the required information to develop the risk analyses and correct deviations detected. Establish criteria for the development of said activities. • If the established criteria were not utilized, in the same way search for the reasons of this situation and correct deviations detected.

- This section has been structured to provide information about improvement actions that should be scheduled for the Implementation Unit to reach the following performance level of the SIGAS&SI.
- This information will be useful for the creation of an Improvement Action Program for the Element, once the Self-Assessment is completed.
- Reference is made to the guidelines for each element and the annexes or supporting documents in the Toolbox.

The third part of the chapter contains the Guidelines.

The guidelines contain information about the aspects to be considered by the Implementation Unit for the development of the procedures required for each element.

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6.12.3 GUIDELINES.

6.12.3.1 Guideline AR.L.01 "Guidelines to develop Risk Analyses at "the company's" Work Centers".

AR.L.01
"GUIDELINES TO DEVELOP RISK ANALYSES AT "THE COMPANY" FACILITIES.

1. PURPOSE.

To establish general guidelines to use in the development of risk analyses of "the company" facilities, which may be at the different stages such as design, construction, operation, modification and decommissioning.

2. SCOPE.

The criteria, dispositions and other methodological instruments herein included, because of their general nature, do not substitute or revoke totally or partially the specific rules and regulations of the subsidiaries, affiliate companies and the corporation to develop the risk analyses of their activities, plants or facilities at which dangerous substances are handled .

These guidelines are applicable to facilities or work centers of the different subsidiaries, affiliate companies and the corporation that make up "the company".

Developing a risk analysis can help persons in charge of the facilities to identify the risks associated to them and with it to design and implement the required actions that allow for the prevention and control of the consequences that an undesired event might have.

3. UPDATE.

Suggestions and/or comments to this procedure should be sent to the Corporate Directorate of Environment, health and Safety Systems, which will update it accordingly and in line with the established procedures.

4. DEFINITIONS.

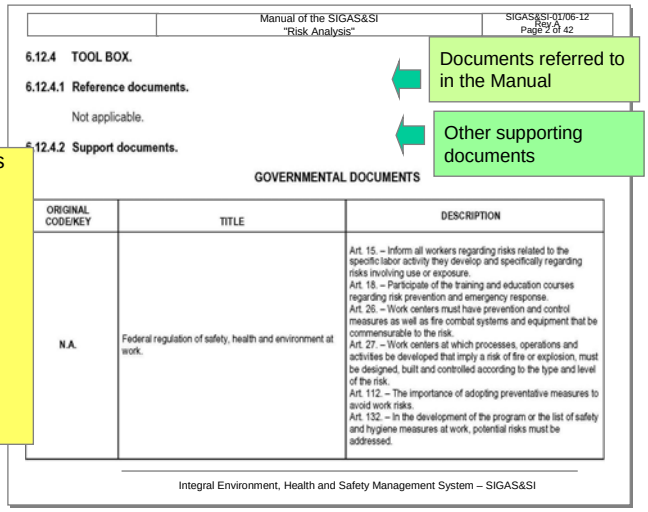
Accident	Undesirable, unexpected and instantaneous event or combination of events with consequences such as injuries to personnel, damage to third parties or third parties' property, damage to the environment, damage to facilities or disruption of normal process activity.

Integral Environment, Health and Safety Management System – SIGAS&SI

The fourth and last part of each chapter contains a list with references to important documents for the elements that may be consulted in the Toolbox.

Toolbox

- It includes rules, regulations and general procedures, training manuals and other useful materials
- It is organized according to the 18 elements of the SIGAS&SI
- The documents included were provided by the Corporation and by Subsidiary Organizations



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6.12.4 TOOL BOX.

6.12.4.1 Reference documents.

Not applicable.

6.12.4.2 Support documents.

Documents referred to in the Manual

Other supporting documents

GOVERNMENTAL DOCUMENTS

ORIGINAL CODE/KEY	TITLE	DESCRIPTION
N.A.	Federal regulation of safety, health and environment at work.	Art. 15. – Inform all workers regarding risks related to the specific labor activity they develop and specifically regarding risks involving use or exposure. Art. 18. – Participate of the training and education courses regarding risk prevention and emergency response. Art. 26. – Work centers must have prevention and control measures as well as fire combat systems and equipment that be commensurable to the risk. Art. 27. – Work centers at which processes, operations and activities be developed that imply a risk of fire or explosion, must be designed, built and controlled according to the type and level of the risk. Art. 112. – The importance of adopting preventative measures to avoid work risks. Art. 132. – In the development of the program or the list of safety and hygiene measures at work, potential risks must be addressed.

Integral Environment, Health and Safety Management System – SIGAS&SI

SIGAS&SI

The documents contained in the Toolbox have been digitalized in a compact disk

The compact disk will be distributed to each Subsidiary so that it provides a copy to each Implementation Unit.

Simple and fast consultation and printing of documents are enabled from this compact disk.

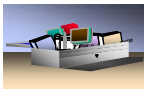
The database will be updated continuously throughout the SIGAS&SI implementation process.

There will be a person in charge of the Toolbox in the Corporation and in each Subsidiary, who will be responsible for managing and updating the Toolbox.

SIGAS&SI

The basic purpose of the documents contained in the Toolbox is to act as a guide and/or support for Implementation Units in the development of the procedures required by the SIGAS&SI.

- When consulting the documents contained in this Toolbox, it will be possible to identify if the procedures that need to be developed have already been developed by someone inside or outside "the company."
- All documents that are useful to this purpose will be included in the Toolbox by contacting the person of charge of it.
- Documents contained in the Toolbox may not be exact for all guidelines of the Manual of the SIGAS&SI. However, they will be a good starting point for the development of specific procedures complying with such guidelines.



SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

Objective

- Get familiarized with the SIGAS&SI elements.
- Produce a list of ideas and information that may help the Element Coordinator to develop the Self-Assessment

Approach

1. The essence, subelements and key requirements are read.

2. Questions of the following slide are answered.

Questions

Questions to be answered during this presentation are the following:

- What are the strengths of this element in this operational unit?
- What areas constitute an opportunity for improvement?
- What persons should participate in the Self-Assessment process to provide the necessary information?
- What information is deemed relevant to be reviewed during the Self-Assessment?

SIGAS&SI

Element 1 : Policy, Leadership and Commitment

Essence

To implement and disseminate the Environment, Health and Safety Policy of "the company"

To make visible the leadership and commitment of all workers towards environment, health and safety.

Subelements

- Policy
- Leadership and Commitment

Key Requirements

- To know and comply with the Environment, Health and Safety Policy.
- To establish a commitment by the Maximum Authority in the implementation of the SIGAS&SI and its dissemination among workers.
- To develop an Overall Improvement Program under SIGAS&SI, to assign responsibilities to the personnel and to systematically comply with it.
- To assign –in all the processes- the highest priority of Environment, Health and Safety aspects.
- To create a Local Committee of Environment, Health and Safety.

SIGAS&SI

Element 2: Organization

Essence

That the Work Center count with an adequate structure to achieve its objectives.

To establish that –in that structure- a regulatory and auditing entity of the Environment, Health and Safety function exists.

To define that the Environment, Health and Safety responsibility relies on all workers regardless their position or level

Subelements

- Structure
- Functions, Responsibilities and Authority
- Performance

Key Requirements

- To define functions and responsibilities integrating Environment, Health and Safety aspects to operational and support activities.
- To define requirements of the positions and people's profiles for those positions, as well as career plans for the professional staff.
- To establish objectives and goals of individual performance, as well as the corresponding assessment, reward and sanction mechanisms.

SIGAS&SI

Element 3: Training

Essence

That workers receive the necessary training to adequately perform the functions and responsibilities of their position in an efficient and safe manner while protecting the environment.

Subelements

- Planning and Delivery of Training
- Control and Evaluation of Training

Key Requirements

- To develop a general training program including Environment, Health and Safety aspects in an INTEGRATED manner and not in separated chapters.
- The program must take into account updated policies of environment, health and safety, needs' diagnosis, positions' profiles, performance evaluation, as well as reports of significant operative experience.
- To utilize management indicators, records and documentation in said planning.
- To develop induction manuals for: contractors, suppliers and visitors, as well as one for new and recently transferred workers, including Environment, Health and Safety aspects.
- To develop a process for the training of internal trainers.

SIGAS&SI

Element 4: Occupational Health

Essence

To identify, evaluate and control risks or conditions potentially harmful to workers' health, to survey and to foster their health and the compatibility of their profile with the requirements of the position.

Subelements

- Industrial Hygiene
- Determination and Follow-up of Fitness for Work
- Workers Health Surveillance
- Managing Workers Illnesses and Injuries

Key Requirements

- To identify, evaluate and control the agents of work exposure of workers at the Work Center, as well as the health risk factors derived from life style.
- To have an Occupational Health program that addresses the following procedures:
  - Industrial Hygiene
  - Fitness for Work (requirements of positions and workers profile)
  - Workers health surveillance and management of illnesses and injuries
- To disseminate Occupational Health aspects among workers
- To use Occupational Health information in the design, selection and/or improvement of technologies, facilities, equipment, tools and work practices.

SIGAS&SI

Element 5: Analysis and Dissemination of Incidents and Good Practices

Essence

To develop procedures for incidents' investigation and their dissemination, emphasizing root cause analysis, lessons learned and the processes to disseminate these results

To identify, select and disseminate good practices of "the company" and other companies.

Subelements

- Incidents' Investigation and Reporting
- Selection and Dissemination of Good Practices

Key Requirements

- To develop a procedure for incidents' investigation and reporting
- To develop a program to address recommendations derived from the incidents.
- To design and develop a training program on incidents' investigation
- To identify root causes in incidents' investigation.
- To establish mechanisms to learn from the experiences and lessons obtained from the incidents
- To identify, record and disseminate good practices and lessons learned from the incidents
- To implement –in the Work Center- the lessons learned from the dissemination of incidents

SIGAS&SI

Element 6: Control of Contractors

Essence

To establish environment, health and safety standards and procedures for the performance of contractors and suppliers –within the facilities- to be in agreement with that established in the Work Center

To select and verify suppliers and contractors of "the company" for them to comply with the technical requirements to accomplish safe and reliable processes.

Subelements

- Selection and Contract of Contractors
- Internal Contractors' Management in the Facility
- Product or Service Control

Key Requirements

- To establish environment, health and safety performance expectations of suppliers or contractors.
- To incorporate suppliers and contractors with technical profiles in their specialty fit to the needs of "the company" including Environment, Health and Safety aspects.
- To develop an orientation program for contractors on Environment, Health and Safety.
- To establish Environment, Health and Safety performance expectations of suppliers and contractors.
- To systematically supervise that suppliers and contractors comply with contractual requirements.
- Effective control of products and services supplied to avoid passive risks.

SIGAS&SI

Element 7: Public Relations and Relations with Communities

Essence

To establish management practices and procedures to actively communicate with personnel, visitors, authorities and communities, as well as to duly address external claims.

Subelements

- Management Infrastructure
- Internal Communication
- External Communication
- Addressing Claims, Complaints and Accusations

Key Requirements

- To create the function of Public Relations and with the Communities
- To compile and collate information on Environment, Health and Safety (preventative measures, performance, goals and results of the Work Center)
- To develop mechanisms to:
  - Provide internal and external information on prevention, control and good Environment, Health and Safety practices
  - To systematically address claims, complaints and accusations
- To include the communities in the Environment, Health and Safety prevention and control activities.

SIGAS&SI

Element 8: Planning and Budget

Essence

To accomplish the business objectives through the development of defined plans and programs and allocation of required resources.

Subelements

- Planning
- Budget

Key Requirements

- To develop a mechanism of formal planning where objectives are set based on short-, medium- and long-term plans and programs, aligned with the Environment, Health and Safety Policy
- To adapt the budget with the criteria of efficiency, effectiveness and addressing environment, health and safety to be reassigned to all the areas of the Work Center.
- To develop procedures to record and address deviations from programs and objectives.
- To develop guidelines to communicate objectives and goals of the work programs to the workers.

Element 9: Rules and Regulations

Essence

To satisfy the needs on rules and regulations of the Work Centers of "the company", by managing documentation on rules and regulations generated by the Work Center and/or an external entity.

Subelements

- This Element has not been divided in Subelements

Key Requirements

- To have a framework of rules and regulations applicable to the activities of the Work Center.
- To create a multidisciplinary team to coordinate works regarding rules and regulations in the Work Center.
- To develop a document for the elaboration of procedures.
- To elaborate procedures to develop the activities in the Work Center, including Environment, Health and Safety aspects and compliance with the Regulatory Framework.
- To develop a management system of the regulatory framework
- To train personnel in the use of work procedures.

Element 10: Information Management

Essence

To count with reliable, sufficient and timely information for all the activities of operation, maintenance and management of the facilities for the benefit of the environment, health and safety.

Subelements

- This Element has not been divided in Subelements

Key Requirements

- To define and integrate the required information to ensure an adequate performance of the facility or Work Center.
- To define and develop responsibilities and to train personnel to manage information.
- To establish procedures to control documents and handle records.
- To establish a program to integrate, organize and consolidate information, as well as one to distribute it.
- To count with an informatics' system to process and control information.
- To use controlled documents and verified records.

Element 11: Process technology

Essence

To ensure facilities are designed with a level of risk that is controlled, acceptable and environmentally sound.

Subelements

- Documentation
- New Projects

Key Requirements

- To count with updated technical information on materials, processes, equipment and facilities.
- To train personnel in the use of this information.
- To revise the development of new projects from their conceptualization in the aspects of Environment, Health and Safety
- To analyze the use of technologies at worldwide level for its application to materials, processes, equipment and facilities regarding Environment, Health and Safety.

Element 12: Risk Analysis

Essence

To identify, analyze and evaluate the risks associated to external and internal factors, failures in control systems, failures in mechanical systems, human factors and failures in management practices, aiming at controlling and/or minimizing the consequences on personnel, the public, environment, production and/or facilities.

Subelements

- Analysis and Assessment
- Prevention, Control and Follow-up Strategies

Key Requirements

- To systematically identify the required information and criteria to develop a risk assessment.
- To integrate a multidisciplinary group that develops and/or supervises the development of risk analyses.
- To develop or supervise the risk analyses according to the development and update procedure.
- To undertake a formal program of risk analysis.
- To count with a process to document and disseminate the activities of risks' prevention and control.
- To count with the safety measures to reduce and abate risks.
- To identify existing options to manage the risks identified and to record decisions derived from the analysis.

SIGAS&SI

Element 13: Change Management

Essence

To ensure an adequate analysis, planning, execution, control, record and dissemination of the modifications of materials, processes, equipment and facilities.

Subelements

- This Element has not been divided in Subelements

Key Requirements

- To develop procedures to analyze, assess, authorize, record, disseminate and follow-up changes.
- To train personnel involved in Change Management.
- To train operational personnel that might be affected by the changes.

SIGAS&SI

Element 14: Performance Indicators

Essence

To use indices and standards that allow to measure the results of the management of the facility regarding issues related to management, operations and Environment, Health and Safety.

Subelements

- Management Indicators
- Environment, Health and Safety Indicators

Key Requirements

- To define indicators to evaluate the facility's management and performance on environment, health and safety, as well as the procedures to measure, record and calculate those indicators.
- To appoint individuals responsible for measurement, calculation, recording and reporting of the indicators.
- To systematically calculate the indicators of the SIGAS&SI Elements through established methodologies.
- To disseminate the results of Environment, Health and Safety indicators among interested personnel.
- To use indicators to establish objectives and goals, as well as the assessment of the results.

Element 15: Audits

Essence

To systematically assess a facility to obtain objective evidences that allow to determine its present status, based on a regulatory framework, identifying strengths, weaknesses and areas of opportunity, verifying that procedures and programs are adequate and properly implemented to comply with the Policy and objectives of the company.

Subelements

- This Element has not been divided in Subelements

Key Requirements

- To commit all the organization of the Work Center with the concept, objective and benefits of the audits.
- To elaborate formal procedures to develop audits.
- To train the team responsible to develop the audits.
- To develop audits to confirm work processes and systems.
- To prioritize and follow-up compliance with the recommendations in a formal manner.

Element 16: Emergency Response Plans

Essence

To count with a process that allows to anticipate and prevent, based on technical grounds, the type and scenario of events that facilities may face, aiming at planning the adequate and effective response to control an emergency.

Subelements

- Emergency response Planning
- Response System
- Training and Assessment

Key Requirements

- To define emergencies' scenarios based on the risk analyses.
- To appoint a multidisciplinary team to develop the Emergency Response Plan (PRE) with defined responsibilities
- To establish the PRE, addressing provisions made in the regulatory guidelines in force.
- To establish a program of drills.
- To implement training programs on emergency response.
- To disseminate the PRE –internally and externally
- To coordinate resources to respond to emergencies.
- To identify emergencies' prevention systems and to obtain equipment and materials required to address the emergencies.
- To obtain in the IU's of "the company" a typical structure to elaborate Emergency Plans

Element 17: Mechanical Integrity

Essence

To undertake activities aimed at enhancing equipment reliability and operational discipline, providing a means to reduce or eliminate undesirable events and guaranteeing the protection of the personnel, community, environment or facility.

Subelements

- Construction
- Inspection and Tests
- Operation
- Maintenance

Key Requirements

- To verify the existence of complete documentation on the facilities, equipment and processes as well as procedures for their integration and update.
- To count with maintenance programs developed on time and with quality assurance criteria as well as the mechanisms to record these activities.
- To count with training programs of the activities related to construction, inspection and tests, operations and maintenance.
- To count with Environment, Health and Safety control and measurement systems.
- To count with procedures for:
  - Receiving works, equipment and facilities in agreement with design and specifications.
  - Inspection and construction tests, reception and start-up.
  - Operation and maintenance that guarantee mechanical integrity

Element 18: Control and Restoration

Essence

To undertake identification and assessment activities of the aspects that have an impact on the environment, as well as of the management of raw material and wastes, of the restoration of affected areas, in order to elaborate plans and programs to control emissions or polluting activities and minimize their impact on the environment, and foster the restoration of contaminated sites.

Subelements

- Air Emissions
- Water Management
- Wastes
- Restoration

Key Requirements

- To identify and quantify all sources of emissions of pollutants to the atmosphere, wastewater discharge, the sites of waste generation and the affected areas.
- To count with procedures to:
  - Ensure compliance with rules and regulations.
  - Operate and maintain equipment of control and pollution reduction
  - Treat wastewater discharges.
  - Handle, treat, store, reuse and recycle wastes
  - Characterize and restore contaminated sites
- To implement programs to reduce and control emissions and discharges, minimize waste generation and restore contaminated sites.

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

SIGAS&SI

The implementation of the SIGAS&SI will be performed through Implementation Units (I.U.)

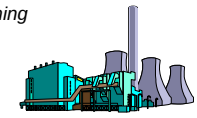
What is an Implementation Unit?

Work Center, facility or group of facilities where all the activities of the 18 elements of the SIGAS&SI are developed under the responsibility of an organization.

Some examples of Implementation Units:

- Several refineries

Refining

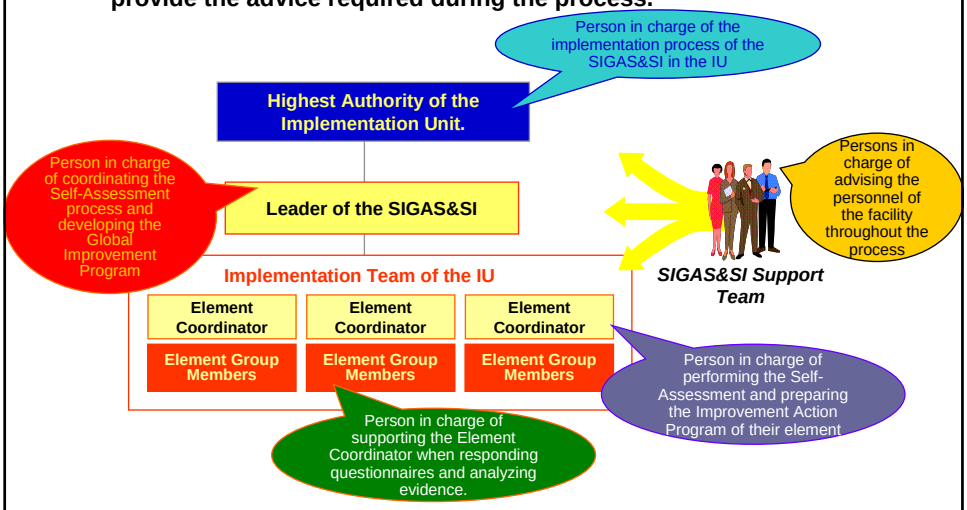


- Several E&P centers

E&P

SIGAS&SI

In order to perform the Self-Assessment, two working teams will be structured: An Implementation Team of the I.U., composed of personnel of the facility, and a SIGAS&SI Support Team that will provide the advice required during the process.



SIGAS&SI

Each participant in the SIGAS&SI implementation process has defined responsibilities

Highest Authority of the Implementation Unit (HAIU)

- Main person responsible for the SIGAS&SI implementation process
- Appointing the Implementation Team of the Implementation Unit
  - Leader of the SIGAS&SI
  - Element Coordinators
- Providing guidelines regarding the SIGAS&SI implementation process
  - Answering honestly all SIGAS&SI questionnaires, with no fear to be assigned a low level as regards compliance with requirements.
  - Providing the necessary assistance during the Self-Assessment, development and authorization of the Global Improvement Program, including the SIGAS&SI Report and process follow-up
  - Showing enthusiasm for and support to the SIGAS&SI
- Participating in the Start-Up Session and the Results Session

SIGAS&SI

Each participant in the SIGAS&SI implementation process has defined responsibilities

Leader of the SIGAS&SI

- Planning and organizing the implementation
- Coordinating the Implementation Team of the IU
- Solving issues that may arise among elements (for example, lack of consensus)
- Ensuring consistency in the process and the results
- Coordinating and conducting the meetings among Coordinators and the Highest Authority of the I.U.
- Preparing the results of the Self-Assessment and presenting them during the Results Session
- Carrying out the overall development process of the Global Improvement Program of the IU (Form 4), including the SIGAS&SI Report (Form 7).
- Preparing and performing the continuous assessments of the system
- Reporting on the progress of the Implementation (Form 8)
- Coordinating management of the implemented system

SIGAS&SI

Each participant in the SIGAS&SI implementation process has defined responsibilities

Element Coordinator(s)

- Studying and understanding the chapter of their corresponding Element
- Performing the Self-Assessment according to the tables and guidelines corresponding to the Element
- Reflecting the opinions of the members of the Element Group on compliance or non-compliance with SIGAS&SI requirements in the Self-Assessment results
- Keeping the Leader of the SIGAS&SI informed about the Self-Assessment status for their element
- Attending the meetings with Element Coordinators
- Completing Form No. 2 - "Element Self-Assessment Report", and delivering it to the Leader of the SIGAS&SI
- Developing the Improvement Action Program for their element(s)
- Presenting preliminary results to the Highest Authority of the IU during the process and during the Results Session
- Coordinating the effective implementation of the improvement actions for their element
- Coordinating the progress of the action implementation program

SIGAS&SI

Each participant in the SIGAS&SI implementation process has defined responsibilities

Element Group(s) Member(s)

- Analyzing the chapter of the element assigned to them in order to identified its requirements
- Responding to element questionnaires in a real and objective manner
- Approving or rejecting, as applicable, the evidence produced to show compliance with the requirement
- Participating in the Self-Assessment meetings
- Supporting the Element Coordinator in the development of the Element Self-Assessment Report
- Participating with the Element Coordinator in the preparation of the Improvement Action Program for the Element
- Participating, as applicable, in the implementation of the improvement actions scheduled for their element

SIGAS&SI

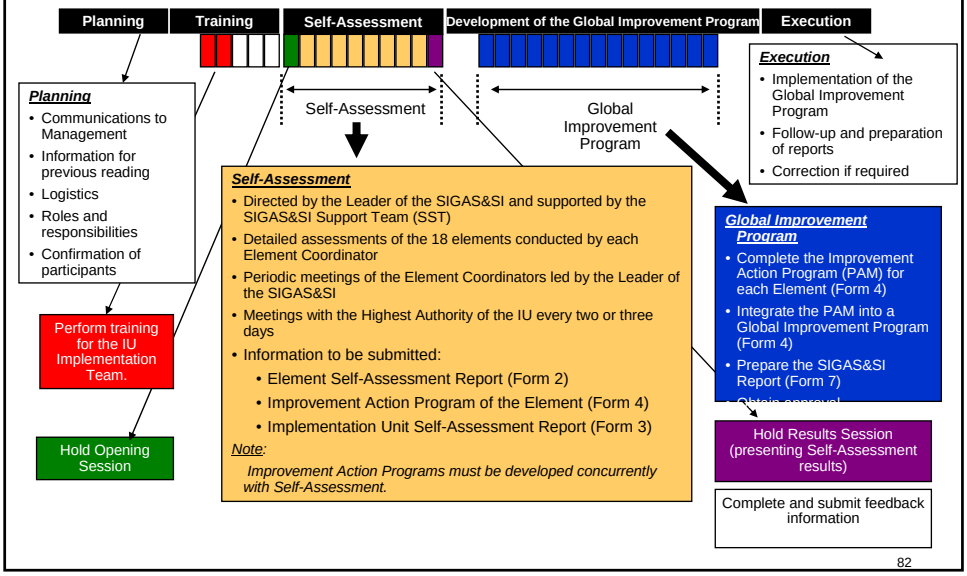
Each participant in the SIGAS&SI implementation process has defined responsibilities

SIGAS&SI Support Team

- Training the Implementation Team of the IU.
- Providing advice to the Implementation Team of the IU during the SIGAS&SI implementation process:
  - Clarifying concepts on the SIGAS&SI
  - Facilitating and making the process transparent for the personnel of the facility
  - Explaining the use of forms and instruments of the SIGAS&SI
  - Providing guidance about reporting results
  - Helping structure the Improvement Action Program of the Element
  - Helping develop the Global Improvement Program of the I.U.
- Obtaining feedback information on the process

SIGAS&SI

Summary of the SIGAS&SI Implementation in the Implementation Unit



SIGAS&SI

Opening Session

Objective	Explain the IU key personnel (specifically those who did not participate in training) the objectives of the SIGAS&SI, the Self-Assessment process and the development of the Global Improvement Program that will be carried out along the following weeks
Participants	The Highest Authority of the IU and its main authorities, key personnel of the SIPA, the Leader of the SIGAS&SI, Element Coordinators and members of the SIGAS&SI Support Team.
Duration	Approximately one hour.
Subjects to be covered	• Objectives of the implementation of the SIGAS&SI • Main responsibilities of those involved and reconfirmation of Element Coordinators and Element Group members. • Work Schedule (such as the one shown in the following page)

This meeting will be directed by the Leader of the SIGAS&SI and the Leader of the SIGAS&SI Support Team

SIGAS&SI

Work Schedule

Example:

No.	Element	Time schedule	Mon	Tues	Wed	Thurs	Fri	Mon	Tues	Wed	Thurs	Fri	Person in charge
1	Policy	9-13 hrs											
2	Organization	9-13 hrs											
3	Training	9-13 hrs											
4	Occupational Health	9-13 hrs											
5	Incidents	9-13 hrs											
6	Control of Contractors	9-13 hrs											
7	Public Relations	9-13 hrs											
8	Planning	9-13 hrs											
9	Rules and Regulations	9-13 hrs											
10	Management of Information	9-13 hrs											
11	Process Technology	9-13 hrs											
12	Risk Analysis	9-13 hrs											
13	Management of Change	9-13 hrs											
14	Performance Indicators	9-13 hrs											
15	Audits	9-13 hrs											
16	Emergency Response P	9-13 hrs											
17	Mechanical Integrity	9-13 hrs											
18	Control and Restoration	9-13 hrs											
Opening Session		9-10 hrs											
Meeting of Coordinators		16-17 hrs											
Meeting with Highest Authority		16-17 hrs											
Results Session		16-19 hrs											

SIGAS&SI

Self-Assessment Participants

Element Coordinator(s)

- Self-assessments will be conducted by the Element Coordinators.
  - –As it is a "Self-Assessment", it is very important that the Coordinators be responsible for the implementation of the processes and systems described in each element, or have the knowledge and experience required in these issues.

Element Group and Users

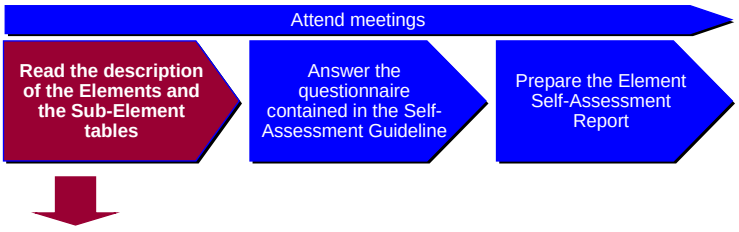
Personnel who are directly involved with the element or are "users" of the element will participate during the process. Their opinion is important to support the Coordinator during the Self-Assessment.

Support Team SIGAS&SI

- They will be advised by the SIGAS&SI Support Team as required
  - –They will be supported regarding questions on the Self-Assessment process or doubts about its contents
  - –They will be advised regarding the accuracy to be maintained throughout the process

SIGAS&SI

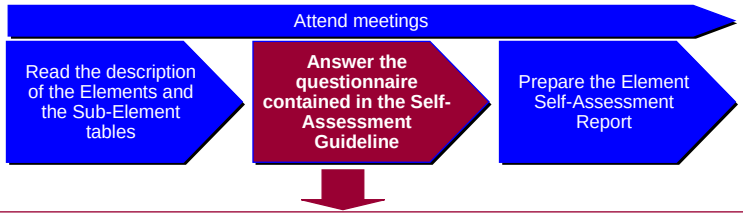
Each Element Coordinator will follow these steps during the Self-Assessment Process:



- It is important that each Coordinator read and understand, together with the persons participating with him in the Self-Assessment, what is covered by the element they are going to self-assess and the requirements of the SIGAS&SI for each level.
- The sub-element tables establish the requirements to be met during the Self-Assessment and the implementation of the system.
- If there are any doubts about the meaning of some requirements, the members of the SIGAS&SI Support Team will be present to solve them.

SIGAS&SI

Answer the questionnaire contained in the Self-Assessment Guideline



- The Coordinator will read the suggested questions and the requested evidence to the rest of the Group.
- The existing evidence will be compared with the guidelines to see if the requirements of the SIGAS&I are met
- The Analysis Guideline column will help verify if the available evidence complies with the SIGAS&SI requirements, making reference to the guidelines in some cases.
- A discussion will be carried out within the group regarding whether the answer to each question is "yes" or "no".
- The IU may be in the process of complying with a requirement established in the SIGAS&SI, but does not meet it fully yet. In that case, the answer will be "no", but the notes column will state the available information or the progress made to that moment. This information will be useful for later developing the Improvement Action Program of the Element.
- The strengths for the element will also be identified along the process.

SIGAS&SI

The long-term success of the implementation of the SIGAS&SI and the true improvement in the performance in Safety and Environmental Protection depends on conducting complete and reliable self-assessments.

- Do not base the self-assessment exclusively on your personal opinion
  - –Check with other persons with experience in the field
  - –Include users or "customers"
  - –It is better to involve more than fewer people in order to ensure that the basis of the conclusions is more solid
- A simple "no" should not be the answer to a question
  - –The answer may be "no", but there are different parts of the process that may be making some progress
  - –It is important to understand and document important activities providing a starting point to structure the Improvement Action Program of the Element.
  - –There may be IU-related activities being performed outside the IU, and they must be followed-up.

SIGAS&SI

The long-term success of the implementation of the SIGAS&SI ... (cont.)

- Make good use of the meetings among Element Coordinators to comment on the conclusions reached by your colleagues.
- Verify personally all documents to ensure that the SIGAS&SI requirements are met; do not rely exclusively on your good memory.
- Define specific improvement actions, without limiting to that established in the Improvement Action Guideline, which, as its name states, is only a guideline for more specific actions.

SIGAS&SI

The following criteria will be used to determine the current level of a sub-element.

- **For each level, the negative answers of a SIGAS&SI requirement indicate that the IU remains at that level. When all established requirements are met, the IU moves forward to the next level.**

  Examples:
  – If there are two questions for a single requirement at level 2, and the answer to one of them is "yes" and to the other one is "no", this means that the level of the IU is the one where that requirement is checked (level 2). It must be assumed that the requirement has been partially met, but something must be included in the Improvement Action Program to meet what is left.

  – If we have affirmative answers for some requirements and negative answers for other requirements within level 2, this means that the IU is at level 2 for that sub-element. The IU will not move forward to level 3 until affirmative answers are given to all questions at level 2.

SIGAS&SI

The following criteria will be used to determine the current level of a sub-element (cont.)

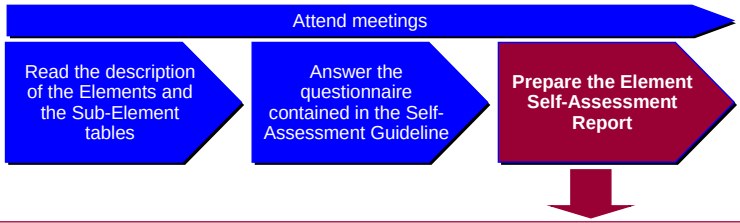
- **The current level of an element represents the lowest level among all assessed sub-elements**

Example:

– Assuming we have performed the Self-Assessment of an element containing 3 sub-elements If level 1 is assigned to a sub-element and level 2 to the other two sub-elements, the level of the element is 1. The Improvement Action Program will focus primarily on meeting the requirements of the sub-element with the lowest level.

SIGAS&SI

Element Self-Assessment Report



- The objective of the Element Self-Assessment Report is the following:
  - To show in a summarized, specific and focused manner all aspects found during the Self-Assessment of the element:
    - Introduction (who participated)
    - Current Levels (met and unmet requirements) of sub-elements and element
    - Findings (Strengths and Weaknesses)
    - The Element Coordinator is responsible for completing Form 2 with this information and submit it to the Leader of the SIGAS&SI
- **It is very important to report relevant and concise information, in order to provide a clear idea of the current element situation. This is a vital instrument for planning and decision-making.**

FORM 2: ELEMENT SELF-ASSESSMENT REPORT.

Implementation Unit: _____.

Self-Assessment Period: _____ **to** _____ **of** _____ _____ **of 200** ____.

Element: _____. **No.** ____.

Element Coordinator: _____. **Date:** _____.

I. Introduction. - Brief summary of the Self-Assessment activities, including a list of all those who participated in the process

II. Current Level.-(Current level of the sub-element that is assigned the lowest level at self-assessment)

SUB-ELEMENT		LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		LEVEL 5		TOTAL		LEVEL	
		C	NC	C	NC	C	NC	C	NC	C	NC	C	NC	TOTAL	CURRENT
Name of Sub-Element	#														
	%	####	####	####	####	####	####	####	####	####	####	####	####		
Name of Sub-Element	#														
	%	####	####	####	####	####	####	####	####	####	####	####	####		
Name of Sub-Element	#														
	%	####	####	####	####	####	####	####	####	####	####	####	####		
Name of Sub-Element	#														
	%	####	####	####	####	####	####	####	####	####	####	####	####		
Element Total	#														
	%	####	####	####	####	####	####	####	####	####	####	####	####		

C = Met Requirements. NC = Unmet Requirements.

III: Summary of Findings.

A. Strengths – Main strengths of the Implementation Unit regarding the corresponding element.

B. Weaknesses – Main weaknesses and key gaps of the Implementation Unit regarding the corresponding element.

It must summarize how the Self-Assessment of the element was developed (for example: who participated, how long it took, etc.)

It will contain the met and unmet requirements for each sub-element and for the element at all levels.

A requirement has been met when the answer to all questions is "yes".

The information contained in this section will enable any person to understand easily what are the main aspects representing strengths and what are the opportunity areas of the element. Its contents are very important, as they may help the highest authorities understand essential aspects of the element.

SIGAS&SI

With the reports received form the 18 elements, the Leader of the SIGAS&SI will summarize the Self-Assessment results in the "IU Self-Assessment Report"

- This report summarizes the results of the Self-Assessment for each element.
- It provides the basis for presentation of the summarized Self-Assessment results of the Implementation Unit during the Results Session.

FORM 3: **IU SELF-ASSESSMENT REPORT.**

Implementation Unit: _____.

Self-Assessment Period: _____ **to** _____ , _____ , **200** ____.

Leader of the SIGAS&SI: _____. **Date:** _____.

- **Introduction –** Brief summary of Self-Assessment activities, including a listing of all those who participated in the process.
- **Current Level.-** (Level of the element that is assigned the lowest Level)

ELEMENT			LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		LEVEL 5		TOTAL		LEVEL	
			C	NC	C	NC	C	NC	C	NC	C	NC	C	NC	TOTAL	CURRENT
1	Policy, Leadership and Commitment	#														
		%														
2	Organization	#														
		%														
3	Training.	#														
		%														
18	Control and Restoring	#														
		%														
TOTAL		#														
		%														

C = Met Requirements. NC = Unmet Requirements.

III. Summary of Findings.

- **Strengths.-**Main strengths of the Implementation Unit regarding the SIGAS&SI.
- **Weaknesses.-** Main weaknesses and key gaps of the Implementation Unit that must be included regarding the SIGAS&SI.
- **Annexes.-**(Self-Assessment Reports and Improvement Action Plans of the 18 Elements).

It must summarize how the Self-Assessment was developed (for example: who participated, how long it took, etc.)

It will contain the met and unmet requirements for each element at all levels.

The information contained in this section will enable any person to understand easily what are the main aspects representing strengths and what are the opportunity areas in the Implementation Unit. Its contents are very important, as they may help the highest authorities to understand essential aspects.

SIGAS&SI

Working Meetings during the Self-Assessment Process

Attend meetings

Read the description of the Elements and the Sub-Element tables

Answer the questionnaire contained in the Self-Assessment Guideline

Prepare the Element Self-Assessment Report

- The Element Coordinator will assign some time to attend the following working meetings:
  - Meetings of Element Coordinators
  - Meeting with the Highest Authority of the Implementation Unit

SIGAS&SI

Meetings of Element Coordinators

Objectives	• Share information • Discuss relations among elements • Motivate every member about the importance of generating valuable process information
Participants	Leader of the SIGAS&SI, Element Coordinators and members of the SIGAS&SI Support Team.
Frequency	Every two or three days
Activities	• Check the progress of the Self-Assessment, the preliminary results and the obstacles found • Provide any information or comments that are important to the process • Show the inter-relations found among elements • Share preliminary conclusions

This meeting will be directed by the Leader of the SIGAS&SI, supported by the SIGAS&SI Support Team if required.

SIGAS&SI

Meetings with the Highest Authority of the IU

Objectives	• Detailed revision of preliminary results of the IU • Solve aspects or obstacles to the Self-Assessment process
Participants	Highest Authority of the IU and members of its working team who can be present, Leader of the SIGAS&SI, "active" Element Coordinators (attendance by other Coordinators is optional) and members of the SIGAS&SI Support Team
Frequency / Duration	Every two or three days. From one to two hours.
Activities	• Discuss substantial findings with the Highest Authority for elements under the self-assessment process or already completed • Report and solve process problems or obstacles

These meetings will be conducted by the Leader of the SIGAS&SI.

SIGAS&SI

To conclude the Self-Assessment, it is necessary to hold a Results Session

Objectives	Communicate the results of the Self-Assessment to the Highest Authority of the IU (comprehensively and by element).
Participants	The Highest Authority of the IU and its main authorities, the IU Implementation Team (including Element Coordinators), the SIGAS&SI Support Team, personnel of the Subsidiary and occasionally, Corporate Managers.
Duration	From two to three hours.
Activities	• The Leader of the SIGAS&SI presents an overview of the objectives and the Self-Assessment process, followed by the general results (strengths and gaps of the elements) and an explanation of the steps of the Global Improvement Program. • Each Element Coordinator presents the strengths and gaps, and the key improvement actions for his element (1-2 pages, approx. 5 minutes per element)

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

SIGAS&SI

General Process of Development of the Global Improvement Program

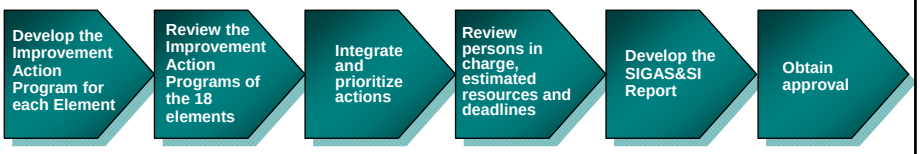
Personnel involved:

Set up a small team with key personnel of the IM, including the Leader of the SIGAS&SI and some Element Coordinators (preferably not only EHS personnel)

Duration:

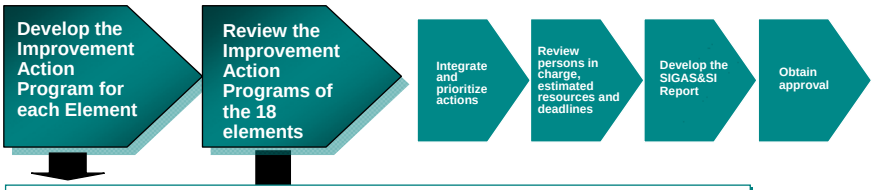
Develop a draft Global Improvement Program for the IU within the two weeks following the Results Session

The process of development of the Program includes the following steps:



SIGAS&SI

The activities to be carried out in the first two steps are as follows:



- Identify actions required to comply with all the requirements of level 3 of the element.
- Complete a Form No. 4 for each element:
  - To the extent possible, recommend persons to be in charge, necessary resources and duration
  - Note interdependencies with other elements
  - Rank the importance of each action as low, medium or high.

Note:

Improvement Action Programs must be develop concurrently with Self-Assessment.

- Make sure that all members participating in the development of the Global Improvement Program are familiar with the 18 Improvement Action Programs (IAPs)
- Identify those actions that may be candidates for consolidation
- Verify the consistency with the element and the general quality of the Improvement Action Programs of the 18 elements

Form 4: Element improvement action program and Global Improvement Program.

PAGE: ___ OF ___.

Implementation Unit: _____.

Date of Issuance / Review: _____

Check one of the following boxes (stating element name when applicable) to indicate the type of program:

☐ Improvement Action Program: _____. ☐ Global Improvement Program

(name of element)

When using this form for the Improvement Action Program, check the first box and add the name of the element on the adjacent line

This column should be used to note if the action depends on any other action to be carried out before

This is where the names of the persons in charge of taking the action should be indicated

#	DESCRIPTION OF ACTIONS	APPLICABLE REQUIREMENTS	PERSON IN CHARGE	RESOURCES REQUIRED (1)		DURATION (WEEKS)	SCHEDULE (3)		COMMENTS (DEPENDENCIES, RELATED ACTIONS)	PRIORITY (optional)
				Man– (2) Days	Pesos (thousand)		Starting Date	Completion Date		

This consecutive number is useful to follow up each one of the actions

In this column, the actions are directly related to the SIGAS&SI requirements expected to be complied with through such action

This column should state the duration of the action

This columns should state the resources required to carry out the action: man-days and estimated cost in thousand of pesos

This column should state the Improvement Actions ordered by priority, starting by the most important for this element

Approved by: (4)

Name and signature of the Highest Authority of the Implementation Unit

Checked by (4)

Name and signature of the Person in Charge of the SIGAS&SI at the Subsidiary Organization

Authorized by: (4)

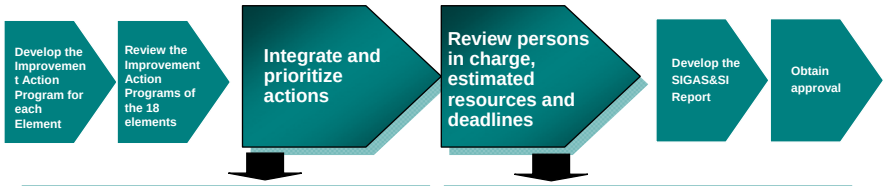
Name and signature of the Highest Authority of the Implementation Unit

NOTES: (1) Resources required include resources necessary to complete an action (not currently included in the budget). (2) Consider 8 hours per day-man. In the column "Days – Man", state only the time required by personnel of "the company". When human resources are external, their equivalent cost must be included in the "Pesos" column. (3) The starting and completion dates are not needed for the Improvement Action Plan (only the duration column is used), however, they are required for the Global Improvement Program. (4) The Action Improvement Program does not require the inclusion of authorization signatures at the bottom, which are only required for the Global Improvement Program.

SIGAS&SI

Development of the Global Improvement Program

The activities to be carried out in steps 3 and 4 are as follows:



- Consolidate actions in a comprehensive manner through the various IAPs
- Establish criteria to set priorities among all the actions already integrated.
- Assess the actions that have been integrated according to such criteria
- Identify interdependencies among the list of integrated actions
- Re-arrange the list of integrated actions according to the criteria established and ensure that interdependent actions are carried out in the correct sequence

- Review and correct proposals made by the persons in charge, the effort in man-days, and the financial resources required to carry out each action initially performed in forms No. 4.
- Set the starting and completion dates committed for all the actions, and develop a schedule.

Form 4: Element improvement action program and Global improvement program. (Continued)

SHEET: ___ OF ___.

Implementation Unit: _____.

Date of Issuance / Review: _____

Check one of the following boxes (stating element name when applicable) to indicate the type of program:

☐ Improvement Action Program: _____. (name of element) ☐ Global Improvement Program

Form 4 should be completed for the Global Improvement Program of the IU, but checking the second initial box.

#	DESCRIPTION OF ACTIONS	APPLICABLE REQUIREMENTS	PERSON IN CHARGE	RESOURCES REQUIRED (1)		DURATION (WEEKS)	SCHEDULE (3)		COMMENTS (DEPENDENCIES, RELATED ACTIONS)	PRIORITY (optional)
				Man – (2) Days	Pesos (thousand)		Starting Date	Completion Date		

These columns should contain the revised data on persons in charge and resources required.

In this Program, the columns corresponding to starting date and completion date should be completed

Actions should be ordered according to the interdependencies detected and priorities set.

Approved by: (4)
Name and signature of the Highest Authority of the Implementation Unit

Checked by (4)
Name and signature of the Person in Charge of the SIGAS&SI at the Subsidiary Organization

Authorized by: (4)
Name and signature of the Highest Authority of the Implementation Unit

NOTES: (1) Resources required include resources necessary to complete an action (not currently included in the budget). (2) Consider 8 hours per day-man. In the column "Days – Man", state only the time required by personnel of "the company". When human resources are external, their equivalent cost must be included in the "Pesos" column. (3) The starting and completion dates are not needed for the Improvement Action Plan (only the duration column is used), however, they are required for the Global Improvement Program. (4) The Action Improvement Program does not require the inclusion of authorization signatures at the bottom, which are only required for the Global Improvement Program.

Form 4: Element improvement action program and Global Improvement Program. (Continued)

PAGE: ___ OF ___.

Implementation Unit: _____.

Date of Issuance / Review: _____

Check one of the following boxes (stating element name when applicable) to indicate the type of program:

☐ Improvement Action Program: _____. (name of element) ☐ Global Improvement Program

#	DESCRIPTION OF ACTIONS	APPLICABLE REQUIREMENTS	PERSON IN CHARGE	RESOURCES REQUIRED (1)		DURATION (WEEKS)	SCHEDULE (3)		COMMENTS (DEPENDENCIES, RELATED ACTIONS)	PRIORITY (optional)
				Man – (2) Days	Pesos (thousand)		Starting Date	Completion Date		

Each Global Improvement Program should be approved and authorized by the following authorities related to the Implementation Unit. This approval should be given at the time of submitting the SIGAS&SI Report of the Implementation Unit (form 7)

Approved by: (4)
Name and signature of the Highest Authority of the Implementation Unit

Checked by (4)
Name and signature of the Person in Charge of the SIGAS&SI at the Subsidiary Organization

Authorized by: (4)
Name and signature of the Highest Authority of the Implementation Unit

NOTES: (1) Resources required include resources necessary to complete an action (not currently included in the budget). (2) Consider 8 hours per day-man. In the column "Days – Man", state only the time required by personnel of "the company". When human resources are external, their equivalent cost must be included in the "Pesos" column. (3) The starting and completion dates are not needed for the Improvement Action Plan (only the duration column is used), however, they are required for the Global Improvement Program. (4) The Action Improvement Program does not require the inclusion of authorization signatures at the bottom, which are only required for the Global Improvement Program.

SIGAS&SI

The activities to be carried out in the last two steps are as follows:

- Develop the SIGAS&SI Report with the following contents (see form No. 7):
  - Executive summary
    - Written summary of Implementation
    - Tables (Results, Implementation Program and Resources Required)
  - Global Improvement Program of the Implementation Unit

- Obtain the approval of the Highest Authority of the Implementation Unit, of the EHS division of the Subsidiary, and of the Head of the Highest Authority of the Implementation Unit.

SIGAS&SI

The tables included in the executive summary of the SIGAS&SI Report include the current level of the IU, the implementation program and the resources required.

- This information should be noted in three formats specifically designed for this purpose:
  - *–Form 3 (Section II): Current Level of the Implementation Unit*
    - Previously explained
  - *–Form 5: Implementation Program*
    - This form shows the anticipated schedule for the implementation of each SIGAS&SI element until completion of level 3 requirements.
  - *–Form 6: Resources Required*
    - This form presents a summary of the resources required to implement the SIGAS&SI through compliance with the level 1, 2 and 3 requirements, which have not been met.

SIGAS&SI

Form 5: Implementation Program.

State in the schedule the month when the Level (1, 2 and 3) requirements for each element are met.

NAME OF IMPLEMENTATION UNIT		MONTH																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ELEMENT																									
1	Policy, Leadership and Commitment		L1					L2						L3											
2	Organization		L1				L2		L3																
3	Training			L1				L2								L3									
4	Occupational Health							L1								L2								L3	
5	Analysis and Dissemination of Incidents and Good Practices				L1			L2			L3														
6	Control of Contractors				L1				L2					L3											
7	Public Relations and Relations with Communities								L1				L2			L3									
8	Planning and Budget							L1				L2				L3									
9	Rules and Regulations				L1								L2									L3			
10	Information Management								L1				L2					L3							
11	Process Technology				L1								L2						L3						
12	Risk Analysis		L1						L2					L3											
13	Change Management				L1					L2				L3											
14	Performance Indicators				L1				L2				L3												
15	Audits					L1					L2			L3											
16	Emergency Response Plans				L1						L2											L3			
17	Mechanical Integrity				L1								L2						L3						
18	Control and Restoration				L1									L2										L3	
SIGAS&SI																									
	LEVEL 1																								
	LEVEL 2																								
	LEVEL 3																								

NOTES:
(1) The levels showed in this graph are merely illustrative. (2) The letters/numbers in the blue areas state the month when all requirements for that level are met for that element (e.g. 1 is level 1, 2 is level 2. (3) The SIGAS&SI levels at the end of the form show the first and last dates when a level begins and ends for the total 18 elements
.

This summary shows the time required to comply with levels 1, 2 and 3 in all 18 elements of the SIGAS&SI

FORM 6: Resources Required.

Note: To meet all requirements up to level 3 inclusive. Figures in thousands of pesos.

State the resources required in thousands of pesos and man-days to meet the requirements 1, 2 and 3 of the SIGAS&SI.

#	ELEMENT	PESOS (THOUSAND)	MAN - DAYS
1	Policy, Leadership and Commitment		
2	Organization		
3	Training		
4	Occupational Health		
5	Analysis and Dissemination of Incidents and Good Practices		
6	Control of Contractors		
7	Public Relations and Relations with Communities		
8	Planning and Budget		
9	Rules and Regulations		
10	Information Management		
11	Process Technology		
12	Risk Analysis		
13	Change Management		
14	Performance Indicators		
15	Audits		
16	Emergency Response Plans		
17	Mechanical Integrity		
18	Control and Restoration		
TOTAL			

Form 7: SIGAS&SI Report.

This written summary of the implementation is structured according to the five paragraphs A to E.

I. Executive Summary.

A. Introduction. Written summary of the objectives and focus of the SIGAS&SI Implementation, specifically of the Self-Assessment and the development of the Global Improvement Program.

B. Self-Assessment Result.- Written summary of the Self-Assessment results, including general and key findings of the level of all elements. This may be obtained directly from Form 3, Section III.

C. Summary of the Global Improvement Program.– Written summary of priority actions for Implementation, Implementation schedule and resources requirements.

D. Benefits.– Written explanation of the benefits for the IU when implementing the SIGAS&SI, including reduction of the number of labor accidents and injuries, reduction of the environmental impact, improvement of productivity, etc.

E. Potential Obstacles.– Written discussion of key obstacles and barriers for the effective implementation of the program and the strategies to solve them.

F. Tables.- Note: These tables may be integrated into the above-mentioned text if so desired.

1. **Current IU Level** [Form 3, Section II].
2. **Program Implementation Schedule** [Form 5].
3. **Resources Required** [Form 6].

The tables contained in this report derive from forms 3, 5 and 6

II. Global Improvement Program. – This is the final program, Form 4, after integrating the 18 Improvement Action Programs and assigning priorities to individual actions.

Follow-up

SIGAS&SI

The Leader of the SIGAS&SI should report the progress of the SIGAS&SI implementation in the Implementation Unit every month.

- Form No. 8 is used for this purpose. It enables visualization of the progress in relation to the completion of scheduled actions for each element in each level (1, 2 and 3)
- This form includes a column where problems or obstacles to achieve the actions may be noted.

Form 8: Implementation Progress Report. Page 1 of 2

Month: _____. Year: _____. Progress at end of month (%): ___% . Date of issuance: _____.

#	ELEMENT	LEVEL	TOTAL ACTIONS	SCHEDULED ACTIONS	COMPLETED ACTIONS	% SCHEDULED ACTIONS	% COMPLETED ACTIONS	REMARKS / COMMENTS
1	Policy, Leadership and Commitment	1						
		2						
		3						
		Total						
2	Organi	1						
3	Trainin	Total						
4	Occupational Health	1						
5	Analysis and Dissemination of Incident Practices	1						
6	Control of Contractors	1						
		2						
		3						
		Total						
7	Public Relations and Relations with Communities	1						
		2						
		3						
		Total						
8	Planning and Budget	1						
		2						
		3						
		Total						
9	Rules and Regulations	1						
		2						
		3						
		Total						
10	Information Management	1						
		2						
		3						
		Total						
11	Process Technology	1						
		2						
		3						
		Total						
12	Risk Analysis	1						
		2						
		3						
		Total						

All the actions by level for each element should be noted in this column

All the actions by level for each element scheduled for this month should be noted in this column

All actions completed by level for each element should be noted in this column

The progress percentages in scheduled and completed actions vs the total of actions should be noted in this column.

Form 8: Implementation Progress Report. Page 2 of 2

Month: _____. Year: _____. Progress at end of month (%): ___% . Date of issuance: _____.

#	ELEMENT	LEVEL	TOTAL ACTIONS	SCHEDULED ACTIONS	COMPLETED ACTIONS	% SCHEDULED ACTIONS	% COMPLETED ACTIONS	REMARKS / COMMENTS
13	Change Management	1						
		2						
		3						
		Total						
14	Performance Indicators	1						
		2						
		3						
		Total						
15	Audits	1						
		2						
		3						
		Total						
16	Emergency Response Plans	1						
		2						
		3						
		Total						
17	Mechanical Integrity	1						
		2						
		3						
		Total						
18	Control and Restoration	1						
		2						
		3						
		Total						
TOTALS		1						
		2						
		3						
		Total						

Each month, the Leader of the SIGAS&SI will complete this report and submit it to the Highest Authority of the Implementation Unit for approval

Checked by:

_____

Name and signature of the Leader of the SIGAS&SI (state date)

Reviewed / Authorized by:

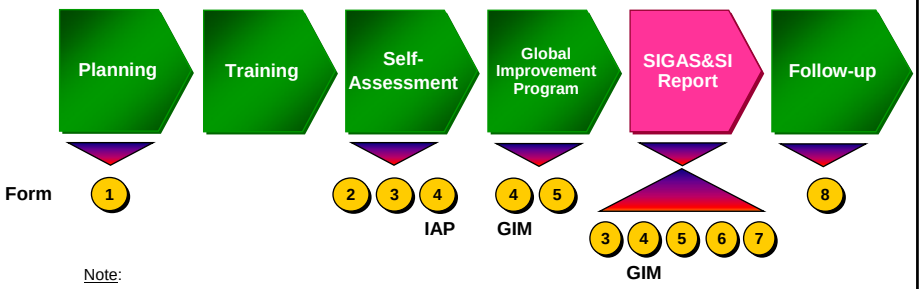
_____

Name and signature of the Highest Authority of the Implementation Unit (state date)

SIGAS&SI

Summarizing, the processes of Self-Assessment and Development of the Global Improvement Program of the IU require completion of eight forms, the main purposes of which are summary of information and follow-up.

The above-mentioned forms will be applied through the stages of the SIGAS&SI implementation process.



Note:
In order to improve the SIGAS&SI implementation process continuously, the Support Team will request feedback regarding specific aspect from the Element Coordinators. (e.g., training)

IAP. - Improvement Action Program
GIM.- Global Improvement Program

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

SIGAS&SI

Purpose:

Perform a simulation of the self-assessment process using the Manual of the SIGAS&SI so that Element Coordinators and Element Group members become familiar with the structure and process to follow during the Self-Assessment and the development of an improvement plan

Available time: 3-4 hours

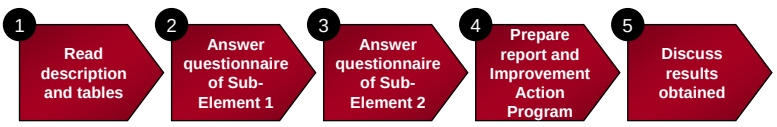
Participants: All course participants

SIGAS&SI

General Process:

- Depending on the size of the group, this may be divided or not.
- A set of copies with the description and tables of sub-elemetns of the selected chapter of the SIGAS&SI will be distributed to all participants.
- Two persons will be selected from each group to act as Element Coordinators. Each one will be in charge of reading the quesitons of the Self-Assessment Guideline of one of the sub-element. The rest of the group will act as members of the team helping to answer the questionnaire.

Steps



SIGAS&SI

Mechanics:

- Each participant takes 15 minutes to read the description and tables of the sub-elements of the selected SIGAS&SI Element in order to understand the scope of it and the requirements established by the SIGAS&SI.
- The Coordinator of Element No. 1 takes the section of the Self-Asessment Guideline and reads each question aloud, as well as the requested evidence, including the analysis guideline.
  - The team members participate actively to answer the questionnaire according to the actual information they have available in their Implementation Unit.
  - The Coordinator of Element No. 1 writes down the answers (yes or no) in the corresponding columns of the Self-Assessment Guideline for his/her sub-element. In addition, he/she writes down any relevant information in the notes column.
    - –The group has 45 minutes to answer the questionnaire for the first sub-element.

SIGAS&SI

Mechanics (cont.):

- Once sub-element No. 1 is completed, they continue with sub-element No. 2 following the same process; however, this time the Coordinator 2 takes the second sub-element.
- Once the time is over, the group will complete the following forms:
  - Form 2: Element Self-Assessment Report
  - Form 4: Improvement Action Program of the Element
- Time available for this task: 1 hour
- Suggestions for completing this forms:
- <u>Form 2: Element Self-Assessment Report:</u>
  - Perform a brief brainstorming led by Element Coordinator No. 1, where essential information is obtained on the group to complete these reports:
    - Current level of each sub-element and of element
    - Main strengths
    - Main weaknesses

Mechanics (cont.):

- Form 4: Improvement Action Program of the Element
  - Perform a brief brainstorming led by Element Coordinator No. 2 with the purpose of developing an Improvement Action Program:
    - Based on the areas of opportunities and on the unmet requirements of the SIGAS&SI, the corresponding improvement actions will be established and their priorities will be set.
    - The improvement actions will be developed in order to meet most of the requirements for level 3 of the SIGAS&SI in a period of two years.

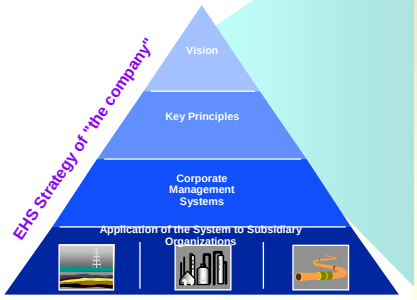
↪ Once the forms have been completed, the results obtained are discussed with the Group.

SIGAS&SI

- Introduction
- Overview of the SIGAS&SI
- Manual of the SIGAS&SI and Toolbox
- SIGAS&SI Workshops
- Self-Assessment Process
- Development of the Global Improvement Program
- Self-Assessment Simulation
- Summary

Overview of the SIGAS&SI - The AS&SI Policy

This Policy contains two parts: a vision and eleven key principles.

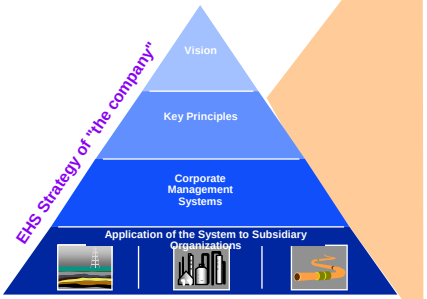


Vision of Environment, Health and Safety of "the company"

- **Good performance of "the company" in Environment, Health and Safety should make its workers and employees feel proud.**
- **Environment, Health and Safety are the responsibility of all workers and employees of "the company".**
- **In the effort to achieve success, Environment, Health and Safety are a fundamental component.**
- **"The company" is to be a national leader in all aspects related to the Environment, Health and Safety.**

Summary

The key principles on which the policy is based are the following:



- ***Custodian***
- ***Occupational Health and Safety***
- ***Natural Resource Management***
- ***Resource Allocation***
- ***Risk Management***
- ***Compliance***
- ***Training and Learning***
- ***Integration with "the company's" Culture and Functions***
- ***Interaction with Communities***
- ***Relations with Stakeholders***
- ***Accountability***

SIGAS&SI

Summary

To provide support to and ensure compliance with the Policy and its continuity in time, the Corporate Directors of AS&SI, in coordination with subsidiary organizations, felt it was necessary for "the company" to design an Integral System for Environment, Health and Safety:

SIGAS&SI

Whose Objective is:

To improve performance in Environment, Health and Safety in the short and long term, and integrate their effective management into the culture of "the company", consistently with the institutional policy on Environment, Health and Safety.

SIGAS&SI

Summary

The SIGAS&SI was developed by "the company" and comprises 18 elements related to the human factor, work methods and facilities. The system manages 5 levels of development.

Components of the SIGAS&SI

Human Factor	Methods	Facilities
1. Policy, leadership and commitment	8. Planning and budget	16. Emergency response plans
2. Organization	9. Rules and Regulations	17. Mechanic integrity
3. Training	10. Information management	18. Control and Restoration
4. Occupational health	11. Process technology	
5. Analysis and dissemination of incidents and good practices	12. Risk analysis	
6. Control of contractors	13. Change management	
7. Public relations and relations with communities	14. Performance indicators	
	15. Audits	

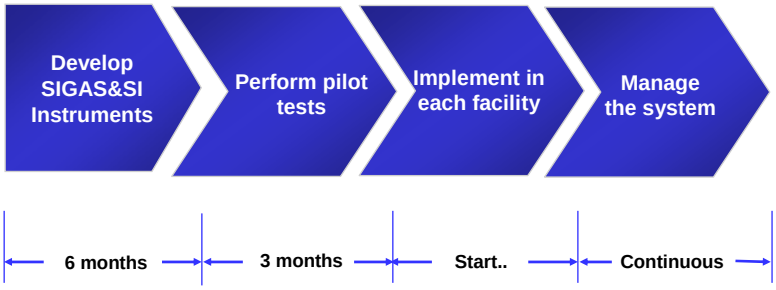
Levels of the SIGAS&SI

1	2	3	4	5
AWARENESS	DESIGN AND DEVELOPMENT	UNDER IMPLEMENTATION	IMPLEMENTED PROCESS	IN SEARCH FOR EXCELLENCE

Overview of the SIGAS&SI - Project Activities

SIGAS&SI

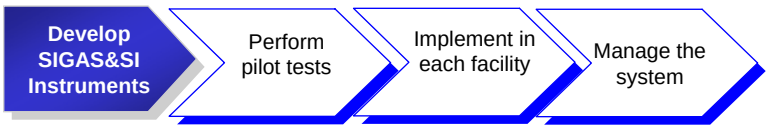
The program for development and implementation of the SIGAS&SI involves four major blocks of activities with active participation of personnel of "the company" from different areas.



SIGAS&SI

Summary

The development of SIGAS&SI instruments included the preparation of a Manual of the SIGAS&SI and a Toolbox



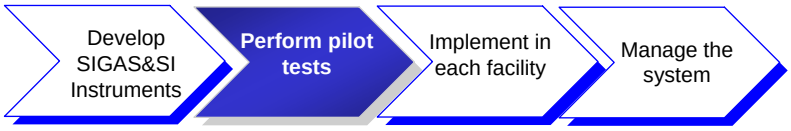
The Support Group comprising personnel of the Corporation and subsidiaries and an external consultant

- A Manual of the SIGAS&SI to be used in the implementation in each facility
- A Toolbox containing supporting documentary information for the Implementation

SIGAS&SI

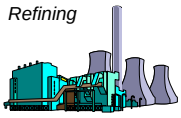
Summary

Pilot tests of the Self-Assessment process have been carried out in selected facilities of "the company".



- Several refineries
- Several E&P centers

Refining

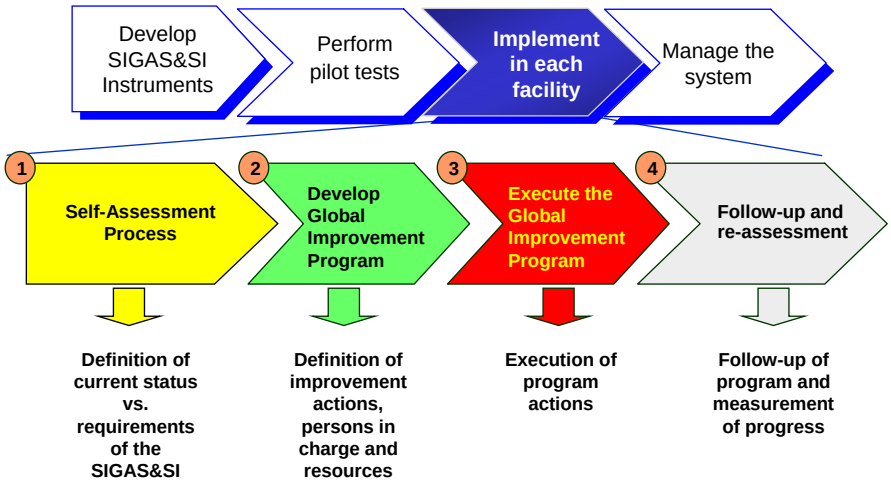


E&P

SIGAS&SI

Summary

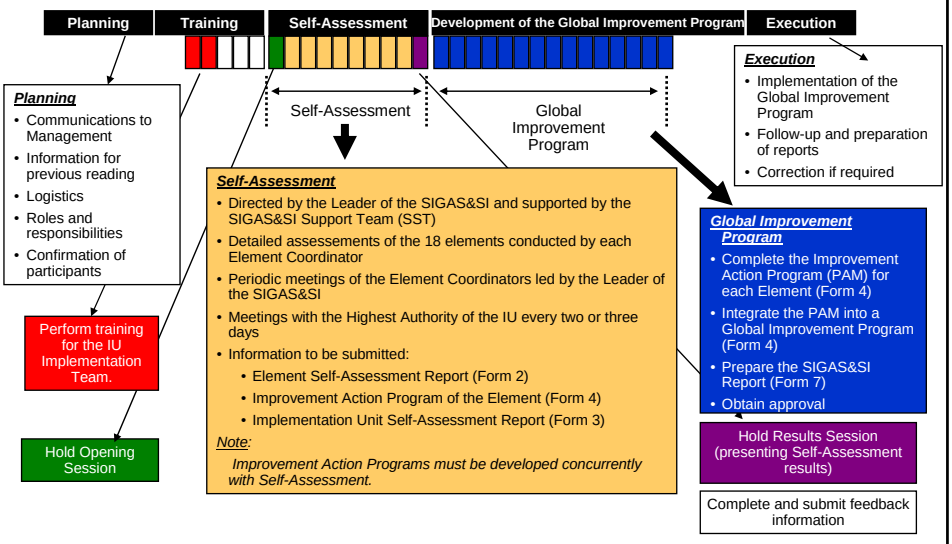
The implementation of the SIGAS&SI in each facility of "the company" will have the following stages:



SIGAS&SI

Summary

Summary of the SIGAS&SI Implementation in the Implementation Unit



SIGAS&SI

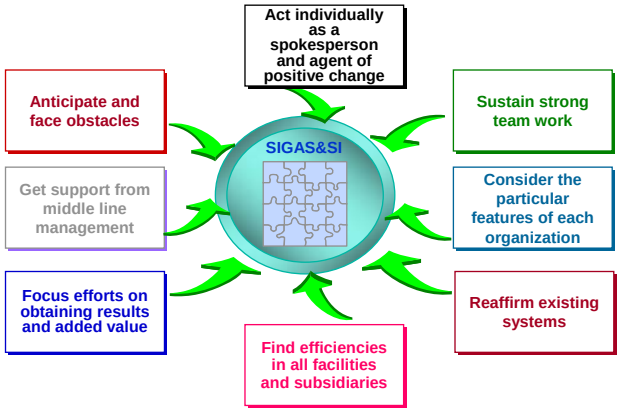
Summary

The successful implementation of the policy and the SIGAS&SI will bring important benefits for "the company".

- Increase in productivity and use of assets
- Reduction of costs arising from poor safety performance and environmental protection
- Reduction of incidents and accidents (e.g. injuries/diseases, environmental impact).
- Better environmental performance
- Higher motivation of employees
- Better relations with the community and governmental institutions
- Higher value for the company
- Better health levels of workers
- Better image of "the company"

Summary

Several factors play an important role in the successful implementation of the SIGAS&SI in "the company" and its integration into the management system of the facilities.



However, the success of all these efforts depends mainly in a reliable and accurate Self-Assessment.