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RESPONSIBLE CARE®  
OUR COMMITMENT TO SUSTAINABILITY



5

HEALTH &  
SAFETY CODE

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## CHAPTER ONE

### Introduction

#### History of Responsible Care®

In December 2009, the Gulf Petrochemicals and Chemicals Association (GPCA) Board of Directors formally adopted the Chemical Industry's initiative called 'Responsible Care®'.

Responsible Care® was created in 1984 by the Canadian Chemical Producers' Association, with the clear intent of establishing the following goals:

- Improved chemical processes.
- Enhanced practices and procedures.
- Reduction of every kind of waste, accident, incident, and emission.
- Reliable communication and dialogue.
- Heightened public scrutiny and input.

Responsible Care® has become an obligation of membership in GPCA Member Companies. A central idea behind Responsible Care® is the need to adopt philosophy of continuous improvement.. It is not a program that provides a checklist of activities for member companies to implement. It will be improved continually in light of new information, new technology, new expectations, and a constant reassessment of performance and objectives. Responsible Care® is a license to operate.

#### Management Codes

Responsible Care® is underpinned by GPCA through the implementation of a number of Management Codes as indicated below:

Management Code	Document Number
Community Awareness and Emergency Response (CAER)	GPCA-RC-C01
Distribution	GPCA-RC-C02
Product Stewardship	GPCA-RC-C03
Security	GPCA-RC-C04
Health & Safety	GPCA-RC-C05
Process Safety	GPCA-RC-C06
Environmental Protection	GPCA-RC-C07

Each of the above Codes includes expectations, termed Management Practices. The Management Practices provide specific technical requirements and guidance for Companies to fulfil their responsibilities in terms of Responsible Care® and can be used as a self-assessment tool.

## **Objective – Health & Safety Code**

The objective of the Health & Safety (H&S) Code is to protect and promote the Health & Safety of people working at or visiting member company work sites.

To achieve this objective, the Code provides Management Practices designed to continuously improve H&S within member Companies'. These practices provide a multidisciplinary means to identify and assess hazards, prevent unsafe acts and conditions, maintain and improve employees and contractors' health and foster communication on H&S issues.

Implementation of the employee and contractor Health & Safety Code, together with other Codes, can enable GPCA member companies to operate in a manner that further protects and promotes the H&S of employees, contractors, and the public, and protects the environment.

This Code is divided into the following four categories / elements:

1. Program Management.
2. Identification and Evaluation.
3. Prevention and Control.
4. Communications and Training.

Each category / element is composed of Management Practices as indicated in Table 1 – Health and Safety Management Practices. Individually, each Practice describes an activity or approach to implementing the requirements of this Code

The implementation of Health & Safety Code will help in fulfilling the requirements of the Responsible Care® management system specification RC 14001. Notably, the implementation will help in closing gaps related to H&S requirements of the specification, particularly those requiring a system to identify and assess the risks related to day-to-day activities.

## **Codes of Management Practices Links to RC 14001:2015 Standard**

The implementation of Health & Safety Code will help in fulfilling the requirements of the Responsible Care® management system specification RC 14001. Notably, the implementation will help in closing gaps related to H&S requirements of the specification, particularly those requiring a system to identify and assess the risks related to day-to-day activities.

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RC 14001 Responsible Care® Elements		Health & Safety Management Practices																
		HS-1	HS-2	HS-3	HS-4	HS-5	HS-6	HS-7	HS-8	HS-9	HS-10	HS-11	HS-12	HS-13	HS-14	HS-15	HS-16	HS-17
4.1	Understanding the organization and its context																	
4.2	Understanding the needs and expectations of interested parties		X															
4.3	Determining the scope of the EHS&S management system																	
4.4	EHS&S management system		X	X														
5.1	Leadership and commitment	X																
5.2	Policy	X																
5.3	Organizational roles, responsibilities and authorities	X	X							X		X						
6.1	Actions to address risks and opportunities								X									
6.1.2	EHS&S aspects							X	X		X	X			X			
6.1.3	Compliance obligations (Legal & Other Requirements)							X	X		X							
6.2	EHS&S objectives and planning to achieve them																	
6.2.2	Planning actions to achieve EHS&S objectives																	
7.1	Resources	X	X							X			X					
7.2	Competence	X		X														
7.3	Awareness																X	X
7.4	Communication																X	X
7.5	Documented Information	X			X	X	X		X			X	X		X			X
8.1	Operational planning and control			X	X	X	X		X	X	X	X	X	X		X		
8.2	Emergency preparedness and response					X											X	
9.1	Monitoring, measurement, analysis and evaluation					X	X	X	X		X	X		X				X
9.1.2	Evaluation of compliance																	
9.2	Internal audit					X						X		X				
9.3	Management Review						X				X							
10.2	Nonconformity and corrective action					X								X				
10.3	Continual Improvement					X												

Table 1 – Health & Safety Management Practices

Wherever possible these management practices should be included in the member company's existing programs which address the security management requirements. More so, these practices should be incorporated into the existing programs in such a way that these are part of the regular management review cycle.

Chapter 2 includes the Management Practices along with guidance, suggested activities / examples and self-assessment notes that can be used as a self-assessment tool to assist member companies identify gaps and an effective implementation plan to address those gaps.

## CHAPTER TWO

### Management Practices Guidance, Suggested Activities / Examples and Self-assessment

#### Program Management

##### HS-1: Policy and Management Commitment

Commitment by all levels of management to protect and promote the health and safety of people working at or visiting member company facilities, through: published policies; accountability for implementation; and provision of sufficient resources, including qualified health and safety personnel

#### 1.0 Guidance

All levels of management commit to protect and promote the H&S of people working at or visiting member company facilities through established policies. Accountability for implementation and provision of sufficient resources including qualified H&S personnel are defined.

The foundation of any effort to provide a safe workplace begins with management commitment. This degree or level of commitment is a significant factor in the overall effectiveness of the company's H&S efforts. This commitment is communicated through written H&S policies and demonstrated when management decisions are consistent with the written policies.

Long-term commitment, as evidenced by consistent application of company H&S policies, is essential to the success of programs. Inconsistent or lack of management leadership will undermine the credibility of employees in H&S policies. In addition, contractor policies shall be consistent with the Company policies.

#### 1.1 Suggested Activities / Examples

##### Example No. 1

Establish H&S policies.

- Develop clear, concise written policies so that they can be referred to and restated in a consistent manner.
  - Ensure that policies promote current and long-range purpose and goals in H&S.
  - Assign responsibilities, authorities, and accountabilities within the policy for all levels within the organization.
  - Incorporate mechanisms that ensure policies are reflected in daily decisions and actions.
  - Define how designated H&S personnel fit into the organization with defined role profiles.
  - Identification and control of H&S hazards, visitor safety, employee occupational medical surveillance programs, communications, and training.
  - Issue a written policy endorsed by a top executive to increase its impact, by demonstrating upper management commitment.
-



**Example No. 2**

Assign responsibilities and accountabilities.

- Use language that is clear, concise, specific, and definitive so that everyone will know what is expected.
- Define responsibility at every level of each organization.
- Assign responsibilities only to competent personnel to implement, direct, and control courses of action.
- Specify accountabilities by explaining how performance related to the written policy will be measured and how these measurements will be used to evaluate all employees.
- Measure employee performance of assigned responsibilities.
- Consider H&S performance as a significant factor in all employee performance reviews.
- Review policy periodically.

**Example No. 3**

Communicate the written policy to the workforce, and promote awareness of the content.

- Include the written policy in applicable employee/contractor handbooks, manuals, and/or other well publicized documents.
- Communicate the written policy through means such as meetings, postings, site newsletters, mail, internet, intranet etc.
- Educate personnel who have defined policy-related responsibilities to help ensure they have a clear understanding of the policy and what is expected of them.
- Include employee H&S issues in the agenda items in management meetings.
- Collect employees and contractors feedback on policy content.

**Example No. 4**

Provide sufficient resources to achieve H&S objectives of the company.

- Appoint qualified H&S personnel (employees and/or consultants) who can advise management as to the appropriate action for handling specific H&S issues.
- Consider H&S issues / requirements during capital and expense budget planning cycles.
- Provide appropriate training and resources to employees throughout all levels of the organization, e.g., encourage employees to attend H&S seminars, meetings, and conferences and to be active in professional organizations.
- Consider implementation of a safety incentive program.

**1.2 Self-assessment**

- Has the organization established / published an H&S policy meeting the specification of this code?
  - Does the policy allocate responsibility for implementation and provision of sufficient resources to achieve H&S objectives of the organization?
  - Does the company measure safety performance as a significant factor in all employee performance reviews?
  - Is the written policy endorsed by a top executive of the organization to increase its impact?
  - Does the organization communicate the written policy to the workforce, and promote awareness of the content?
  - Do top executives of the organization and senior management make their commitment with H&S clear to workforce by regular face to face meetings, written communication and workplace visits?
-

## HS-2: Stakeholder Engagement

Opportunities for employees and contractors to participate in developing, implementing, and reviewing health and safety programs.

### 1.0 Guidance

Workforce experience and knowledge is a key factor in the success of H&S programs and practices. This knowledge should be incorporated into programs and practices to help ensure applicability and effectiveness.

In addition, encouraging employees and contractors participation helps to promote understanding, cooperation, and a commitment to protecting the health and well-being of employees. Management should support activities that add value on a continuing basis and give feedback to employees and contractors in response to their ideas and input.

### 1.1 Suggested Activities / Examples

#### Example No. 1

Implement workforce participation.

- Request input for developing and implementing H&S programs, operating documents, procedures, and practices.
- Encourage employees and contractors to identify and communicate specific hazards and/or corrective actions.
- Involve employees in H&S activities such as H&S awareness programs directed toward the community, committees, accident investigations, etc.
- Offer all employees and contractors the opportunity to actively participate.
- Provide suggestion boxes or other readily accessible means, e.g., online, for employee input of H&S ideas or concerns.
- Recognize individuals or teams for constructive improvement.
- Request participation in H&S programs from anyone who is interested, or selectively solicit volunteers based on qualifications, experience, interest, knowledge, tenure, and/or position.
- Encourage employees and contractors who have provided beneficial input in the past to continue their participation.
- Include instances of participation as part of employee performance appraisals.
- Recognize participants for contributions to H&S programs in company communications and/or offer awards / incentives for participation.
- Involve employees and contractors on a continuous basis to achieve continuous improvement of H&S programs.

### 1.2 Self-assessment

- Are employees given opportunities to participate in the development, implementation, and review of H&S programs?
  - Does the organization recognize participants' contributions to H&S programs in company communications and/or offer awards / incentives for participation?
  - Is participation in H&S programs based on qualifications, experience, interest, knowledge, tenure, and/or position?
  - Is a culture established whereby workforces at all levels are encouraged to share the leadership, particularly by processes to voice their concerns and make suggestion for improvements?
-

- Is H&S a regular agenda item at team meetings / briefings and is feedback provided in a timely manner?

### HS-3: Contractor Management

Provisions, including selection criteria, to confirm that contractors' and sub-contractors programs are consistent with applicable Management Practices of this Code.

#### 1.0 Guidance

Contractors' and sub-contractors work can affect company personnel and properties because they share a common workplace. All contractors and sub-contractors should have H&S programs for their employees that are appropriate for the hazards encountered in their contracted work activities, accommodation (e.g. camp) which are consistent with applicable Management Practices of the H&S code.

Therefore, it is appropriate to review contractor H&S performance during the contractor selection process and to specify contractual requirements with regard to contractor H&S performance.

All contractor and sub-contractors employees and visitors should be provided with training appropriate for the particular circumstances they will encounter.

Contractor and sub-contractors commitment to H&S should be evaluated continuously throughout the term of the contract.

#### 1.1 Suggested Activities / Examples

##### Example No. 1

Establish a contractor and sub-contractors selection system that includes H&S input and review.

- Involve H&S personnel in the selection of contractors and sub-contractors.
- Assess Contractor's H&S competence against the H&S Risk involved.
- Define the interrelationship between contractor operations and normal working operations of the facilities.
- Identify necessary coordination efforts to maximize personnel safety and property protection under both normal and emergency conditions.
- Bid specifications should define how contractors and sub-contractors are to coordinate their H&S activities with those of other contractors, e.g., hazard communication, hazardous energy control, emergency response.

##### Example No. 2

Review contractor and sub-contractors submittals to ensure they

- Submit evidence of their ability to comply with Company H&S specifications. This may be a simple statement acknowledging intent to a detailed description of the contractor's H&S program.
  - Require contractors, once selected, to submit written policies, programs, and procedures applicable to the work. Clearly state that these documents must be reviewed and approved prior to initiating job-site work.
-

- Provide for the review of proposals submitted by potential contractors; ensure that submittals meet the intent and language of the contract and document the results of these reviews and any applicable comments.
- Evaluate the contractor's ability to provide appropriate H&S expertise, e.g., proposal, qualifications of personnel, management system and procedures, etc.

### **Example No. 3**

Assess contractor and sub-contractors compliance with applicable regulations, company programs, contract obligations, and contractor programs.

- Regularly observe and evaluate contractor H&S performance.
- Conduct and document formal H&S assessments during the period of the contract.
- Include visits to all contractor and sub-contractor work locations and accommodation.
- Conduct follow-up H&S assessments as work progresses to ensure that any identified corrective actions are implemented.

### **Example No. 4**

Sustain relationships with contractors who demonstrate commitment to H&S.

- Use contractor H&S performance records to identify contractors who perform satisfactorily.
- Advise contractors on a regular basis that H&S performance is an ongoing condition of the contract.
- Communicate to contractors on a regular basis feedback on their H&S performance.

## **1.2 Self-assessment**

- Has the organization established a contractor selection system that includes H&S input and review?
- Does the organization involve H&S personnel in the selection of contractors?
- Are submittals from potential contractors reviewed to ensure:
  - i. Evidence of their ability to comply with H&S specifications?
  - ii. Written policies, programs, and procedures exist that are applicable to the work?
  - iii. The contractor's ability to provide appropriate H&S expertise is evaluated?
- Does the organization conduct a regular contractor compliance assessment with applicable regulations, company programs, contract obligations, and contractor programs?
- Does the organization sustain relationships with contractors to provide feedback on a regular basis on their H&S performance to demonstrate commitment to H&S.

Written, up-to-date health and safety programs and documents (manual, procedures, guidelines, work instructions, checklists etc.)

## **HS-4: Documentation**

### **1.0 Guidance**

Written programs and documents are important for several reasons. During their preparation, many approaches to handling a given issue can be evaluated, and the best can then be identified. Additionally, written programs and procedures can provide documentation of the selected approach against which performance can be evaluated.

Once developed, written programs and documents can be evaluated against current good practice and updated as necessary.

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Actual H&S practices should follow written programs and documents. A review cycle utilizing employee participation is an excellent and effective way of keeping written programs and the resulting work practices current. Should operations change, the program or documents may need to be updated to reflect those changes.

Written programs and documents should be as concise as possible. Important information should not, however, be excluded, because the written program is intended to promote the desired practice. For more extensive programs and documents, consider gradually disseminating the information through written and verbal communications that start with and build from the key elements. Establish a realistic implementation period and schedule with measurable feedback mechanisms at each step that permit evaluation of progress.

Also, written periodic reviews are needed to determine whether programs / documents reflect current risk / hazard information and operating conditions.

## 1.1 Suggested Activities / Examples

### Example No. 1

Identify H&S issues that should be addressed by a written program and/or procedure.

- Develop risk / hazard assessment procedures to identify issues requiring written programs and documents.
- Identify regulations that require written programs, such as respiratory protection, hearing conservation, hazardous waste operations, hazard communication, hazardous energy control, hot work permits etc.
- Develop detailed safety analysis based procedures for tasks or operations that are particularly hazardous or that present particularly complex H&S requirements for employees. Examples include isolating high pressure steam lines or entry into confined spaces. This ensures that specific hazards can be identified for certain activities.

### Example No. 2

Establish programs and procedures requirements and content.

- Define the purpose, scope, application, and objectives, etc., of programs and procedures.
- Address regulatory requirements and actual hazards / risks.
- Assign responsibilities and accountabilities.
- Specify those tasks or operations that require special resources and/or skills.
- Identify effective date and revision status, e.g., Rev. 0, Rev. 1.
- Include a definitions section.

### Example No. 3

Select qualified, appropriate personnel to develop specific programs and documents.

- Ensure that persons preparing programs and documents have the necessary experience and expertise.

### Example No. 4

Establish a method for developing programs and documents.

- Ensure written programs and documents are as concise and consistent with needs and objectives.
-

- Ensure a management of change process exists to communicate the newly developed programs and documents.

**Example No. 5**

Distribute written information to accountable / affected personnel.

- Develop applicable training materials that detail the requirements of the program / documents.

**Example No. 6**

Periodically review and update programs, documents, and training materials.

- Establish a review frequency for each program and/or documents to ensure they reflect current operating conditions.
- Assign responsibility to specific individual(s) for reviews and updates.
- Conduct reviews whenever there is a significant change in operations, technology, or regulations.
- Conduct appropriate training following revisions.

**Example No. 7**

Develop a system to Capture:

- Appropriate Supplier and Contractor information.
- Critical information for Safety Data Sheets (SDS)

**1.2 Self-assessment**

- Has the organization developed risk / hazard assessment procedures to identify activities requiring written programs and documents?
- Does the organization identify H&S issues that should be addressed by a written program and/or documents?
- Do persons preparing programs and documents have the necessary experience and expertise?
- Does the organization distribute written information to all accountable / affected personnel of written programs and/or documents?
- Has the organization developed and implemented programs, documents, and training materials for periodic review and update?

**HS-5: Assessment and Verification**

Means to verify that health and safety programs and documents are effective and that actual practices are consistent with them

**1.0 Guidance**

Establishing written programs does not guarantee that progress is being made towards meeting intended goals and objectives. Several factors influence overall effectiveness. These factors include the thoroughness and appropriateness of the program requirements, the degree to which the requirements have been communicated, and the degree to which the requirements have been implemented. To ensure the effectiveness of programs, actual work practices should be examined and compared with programs and procedures. Discrepancies can then be corrected.

Assessments and development of corrective and preventive measures are excellent activities for employee participation. They not only provide opportunities to use employee expertise, but also are a good training exercise for all involved.

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H&S Assessment and Verification plan shall include contractor and sub-contractors.

## 1.1 Suggested Activities / Examples

### Example No. 1

Establish procedure for H&S program review and define the means to assess work practices.

- Use formal, documented audits to provide detailed information regarding program adequacy, applicability, and work practices to identify discrepancies.
- Use walk-through inspections to provide a general overview of work practices, identify discrepancies, and assess housekeeping.
- Develop checklists that define specific observations.
- Use announced and unannounced assessment strategies.
- Use a combination of assessment techniques to help ensure the continued effectiveness of written programs and procedures, e.g., walk-throughs, formal audits, planned inspections, etc.

### Example No. 2

Develop a master schedule to coordinate program assessment activities.

- Define when and by whom each program and procedure is to be assessed. Provide opportunities for employees to participate in the assessment process.
- Record dates of completed assessments, and indicate any reasons for missed assessments.
- Distribute the schedule to those persons who have assessment responsibilities.

### Example No. 3

Conduct assessment and report findings.

- Perform assessments as described in the written programs and report findings.

### Example No. 4

Analyse findings and develop corrective and preventative measures.

- Identify and document gaps between observed practice and written procedure together with recommended solutions.
- Obtain employee input when identifying potential corrective measures.
- Select appropriate corrective measures and establish a reasonable time frame for implementation.
- Validate the identified corrective measures to ensure they address the findings appropriately.
- Revise programs to reflect findings.
- Incorporate corrective measures into the written program to prevent recurrence.
- Change program revision status and effective dates, as appropriate.
- Communicate new / revised information to all affected personnel.
- Perform follow-up assessments to determine whether the identified corrective measures have been implemented and whether they have been effective.

### Example No. 5

Maintain an effective control process to ensure that:

- Only personnel, who have received adequate training, shall lead audits, inspection, etc...
- Best practices and lessons learned are shared with all locations/assets as appropriate.

## 1.2 Self-assessment

- Has the organization established the means to verify that H&S programs and documents are effective and that actual practices are consistent with them?
-

- Has the organization developed a master schedule to coordinate H&S program assessment activities?
- Does the organization perform assessments as described in the written H&S programs and report findings?
- Does the organization analyse findings of assessments and develop corrective and preventive measures?

## HS-6: Recording and Data Analysis

Systems for maintaining records and analyzing data to evaluate health and safety performance, determine trends, and identify areas for improvement.

### 1.0 Guidance

Data collection and analysis systems, including Incident Investigation Reports, Audit and Inspection Reports and Medical Surveillance Reports etc. provide an assessment of the overall quality and performance of the H&S program and identify areas where action may be necessary to improve the program.

Data analyses may include frequency, severity, types of injury or illness and their relationship to time, process or operations, locations, company, or industry.

One of the most common difficulties in H&S record keeping efforts is the failure of employees to report minor incidents and 'near misses'. The latter refers to those incidents that could have resulted in an employee injury or illness, or equipment / property damage, but did not. Quite often, the absence of an actual harmful / negative result is due to luck. Employees shall be trained to report all incidents and near misses so that necessary corrective actions can be implemented to prevent recurrences with serious consequences.

### 1.1 Suggested Activities / Examples

#### Example No. 1

Determine what H&S data is to be collected.

- Become compliant with the applicable codes and standards relative to the collection and analysis of H&S records.
- Determine what additional data and analysis will be necessary to evaluate and improve company, as well as location, H&S programs.

#### Example No. 2

Establish procedures to standardize the collection and analysis of data.

- Develop formal, written procedures to ensure consistency in collecting and analysing H&S data..

#### Example No. 3

Analyse H&S data, and communicate the results of this analysis.

- Identify short-term concerns, such as a sudden increase in a particular type of injury occurring in a specific department or area as well as improvements in performance.
  - Identify long-term trends (areas of improvement or regression that occur over a period of time) warranting attention.
-



**Example No. 4**

Communicate the results of the H&S data analysis to appropriate persons.

- Communicate to management the short-term and long-term analysis to implement corrective measures.
- Communicate H&S program performance data to all employees so that they are aware of progress and areas where improvement is needed.

**Example No. 5**

Conduct periodic evaluations of the H&S record keeping program.

- Establish a procedure and a schedule for the evaluation of program accuracy, relevance, and effectiveness.
- Consider having a record retention program.

**Example No.6**

Management shall ensure the collection and analysis of appropriate H&S data as well as provide the resources needed to capture all relevant H&S data.

**1.2 Self-assessment**

- Has the organization established systems to standardize the collection of H&S data for maintaining records and analyzing data to evaluate H&S performance, determine trends, and identify areas for improvement?
- Has the organization determined what H&S data is to be collected?
- Does the organization analyze H&S data, and communicate the results of this analysis?
- Are the results of H&S data analysis communicated to appropriate persons?
- Does the organization conduct periodic evaluations of the H&S record keeping program?

## ..... **Identification and Evaluation** .....

### HS-7: Risk Identification

Methods to identify and evaluate potential health and safety hazards in planned or existing facilities including facilities to be modified

**1.0 Guidance**

Workplace hazards shall first be identified before they can be further evaluated and controlled. Inspections of the workplace should be conducted on a regular basis. Employees should be encouraged to provide input regarding H&S issues. Plans for construction or modification of facilities should be reviewed for H&S issues.

Walk-through assessments should be performed carefully and methodically on a regular basis to avoid overlooking obvious concerns or deficiencies. Once schedules are established, adhere to the schedule for periodic walk-through assessments. Remember that change is inevitable and that some conditions existing at the time of an assessment may be different during a subsequent assessment.

## 1.1 Suggested Activities / Examples

### Example No. 1

Review sources of information for potential workplace hazards.

- Compile an inventory of all raw materials, intermediates, waste streams, and products associated with each process and operation.
- Obtain Safety Data Sheets (SDS) for all chemicals on the chemical inventory.
- Determine the quantities of the various chemicals used during operations. The quantity, toxicity, and potential for exposure to chemical hazards handled or processed at a particular operation may indicate the need for a more in-depth evaluation.
- Establish a mechanism whereby products being considered for purchase are reviewed for potential adverse H&S impacts prior to purchase.
- Understand how each process operates. Concerns, conditions to avoid, or critical parameters specific to each process should be identified.
- Review injury / illness records, e.g., Occupational Safety & Health Administration (OSHA) 200 Log, worker's compensation reports, etc., for prior years to determine whether a disproportionate number of injuries are occurring in a particular facility department or area.
- Review recent incident reports and descriptions of 'near misses' to identify potential areas of concern.

### Example No. 2

Conduct regular walk-through assessments of plant processes and operations.

- Compile a listing of engineering or administrative controls that have been installed or implemented in particular areas. Verify that controls are in place and are functioning as designed.
- Observe work practices and activities to determine if established procedures are being followed. Record observations and identify trends. Follow up actions are essential.
- In addition to work practices, look for obvious safety deficiencies, e.g., poor housekeeping, unguarded floor openings, exposed electrical wiring, deteriorated ladders or stairways, equipment not properly prepared for performing work, incomplete or improper setup of equipment, etc.

### Example No. 3

Evaluate the need for additional H&S testing of proposed products, new agents, or formulations.

- Review needs with appropriate experts.
- Consult the Product Stewardship Code Management Practices for further information on toxicological testing and hazard identification.

### Example No. 4

Encourage input from employees and contractors on the H&S aspects of their jobs.

- Encourage employees and contractors to identify and report H&S hazards as part of their job.
- Hold site or department meetings on H&S issues periodically.
- Investigate thoroughly, all potentially unsafe conditions or actions reported by employees.
- Provide opportunities for employees to raise questions regarding H&S issues with management.

### Example No. 5

Review plans with specialist H&S personnel prior to the construction of new processes, operations, or facilities (or the modification of existing processes, operations, or facilities).

- Review safe operating parameters of a process to be designed or modified, i.e., pressure, temperature, concentrations of reactants, etc.
-

- Review design for a new process, or proposed modifications of equipment, work practices, or materials with H&S personnel.

### Example No. 6

There shall be procedures for the systematic identification of the H&S 'hazards & effects that may either affect, or arise from, the activities and Services.

- Identification of 'hazards & effects, aspects & impacts' shall be based on judgment of adequately experienced personnel who are competent in the use of established procedures. The scope of the identification process:
- Includes those activities under the immediate control of the company or which it can be expected to influence.
- Covers the full lifecycle of projects (e.g. from inception through to decommissioning and disposal) and consider routine, non-routine and emergency operating conditions.
- There shall be a comprehensive and up-to-date registers of H&S 'hazards & effects,
- Company shall communicate this register to its Employees and Contractors and the community.
- There shall be an up-to-date quantitative inventory of chemicals stored on-site, wastes and releases to land, air and water generated from all company operations. The inventory shall be updated with progress on waste and release reductions on an annual basis.
- A culture of risk awareness shall be continually maintained and improved. Training shall also be in place to recognize hazards, create risk awareness, communicate risks to colleagues and report observed hazards.

## 1.2 Self-assessment

- Does the organization establish methods to identify and evaluate potential H&S hazards in planned or existing facilities, including facilities to be modified as well as the products?
- Does the organization review sources of information regarding potential workplace hazards?
- Does the organization conduct regular walk-through assessments of plant processes and operations?
- Does the organization evaluate the need for additional H&S testing of proposed products, new agents, or formulations?
- Does the organization encourage input from employees on the H&S aspects of their jobs?
- Does the organization review expansions and modification plans with H&S personnel during the design and/or prior to the construction of new processes, operations, or facilities, or the modification of existing processes, operations, or facilities?
- Does the company have risk register, is it communicated to all workforce?

## HS-8: Risk Evaluation and Management

Establish exposure assessments and safety analysis to evaluate health and safety hazards to employees from processes, equipment; potentially hazardous chemical, physical, or biological agents and/or other workplace conditions

### 1.0 Guidance

Hazard evaluations can be performed to determine whether workforce exposure to chemical, physical, biological agents or conditions encountered in the workplace will result in injury/illness or adverse health effects. Management should review and be familiar with regulations and standards that contain industrial hygiene and safety requirements. As appropriate, controls can be established to eliminate or significantly reduce the potential adverse effects from exposure to chemicals,

physical, biological agents, or from workplace conditions.

In addition to evaluating and controlling identified hazards, employers should strive to develop workplace H&S programs that are proactive in nature. Programs designed to identify and control hazards before they result in injury or illness provide the greatest benefits.

## 1.1 Suggested Activities / Examples

### Example No. 1

Establish and implement a hazard evaluation plan.

- Procedures and programs shall be in place to evaluate all potential hazards and risks at work.
- Perform industrial hygiene evaluations of worker exposure to chemicals, physical, and biological agents.
- Use a systematic approach, e.g., job safety analysis, preliminary hazard analysis, Failure Modes and Effects Analysis (FMEA), etc. to analyze jobs or tasks performed by employees to identify health or safety hazards associated with their activities.

### Example No. 2

Compare the information obtained from hazard evaluations with accepted levels of exposure or conditions.

- Become familiar with applicable H&S standards.
- Company specific acceptable levels of exposure should be documented and communicated appropriately.

### Example No. 3

The assessment and significance evaluation methodology shall take into account:

- Legal and regulatory requirements
- Company policies and standards.
- Reputation consideration of the concerns of Stakeholders and in particular the public and Employees.
- Industry and international standards.
- Lack of available information/competency to determine risk or significance.
- Financial/cost benefits considerations of risk reduction measures.

### Example No. 4

A process shall be in place where 'hazards & effects' which are deemed significant, require additional controls. In determining these controls, in all cases consideration shall be given to risk reduction to achieve a level deemed 'As Low As Reasonably Practicable' (ALARP), reflecting cost-benefit considerations.

## 1.2 Self-assessment

- Does the organization undertake exposure assessments and safety analysis to evaluate H&S hazards from processes; equipment; potentially hazardous chemicals, physical or biological agents?
  - Does the organization perform industrial hygiene evaluations of employee exposure?
  - Does the organization compare the information obtained from hazard evaluations with accepted levels of exposure or conditions?
  - Are job hazards regularly reviewed to take in to account changes and feedback from incident and injury investigation?
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- Are risks assessed by appropriate trained and qualified people, with documentation of the analysis and recommended actions?

## HS-9: Medical Fitness

Health assessments to determine employee medical fitness for specific job tasks

### 1.0 Guidance

An employee's ability to perform tasks safely can be affected by his medical fitness. Steps that support employee assignment include evaluation of job task requirements and development of criteria to assess an employee's ability to perform job tasks. Medical personnel can then recommend appropriate medical restrictions, if necessary.

Evaluate plant tasks and assignments to identify any specific physical and medical fitness requirements associated with a specific task.

- Qualified Occupational Health & Safety personnel along with occupational health medicine specialist should observe work being performed and review job descriptions and duties of the various jobs and tasks performed throughout the workplace.
- Prioritize jobs for which assessment criteria will be established. OH Professionals can assist in determining the potential risk(s) to an employee for an adverse health outcome on an individual basis that may result from the performance of essential job functions.

#### Example No. 1

Assess an individual's ability to perform a particular task or assignment using medical criteria that are task related.

- Health professionals should identify any special medical tests that would be useful for evaluating individuals for a particular job, e.g., visual acuity for persons driving a motorized vehicle, and incorporate them into pre-placement health assessments.
- Health professionals should only review the results of medical testing to maintain confidentiality of medical results.
- Health professionals should ensure that statements of risk of adverse health outcomes should be based solely on the medical tests that relate to the job requirements, and not on any other tests that might be conducted as part of routine health assessments.
- Health professionals should conduct baseline medical testing of employees, when appropriate, to detect conditions that would interfere with their ability to perform a specific job safely.

#### Example No. 2

Document the results of all health assessments.

- Health professionals should maintain medical files as confidential documents and must make them accessible to the employee and to the employee's representative (after securing the written permission from the employee and according to local legislation) or other medical practitioners.
  - The health professionals should maintain records of any recommendations made as a result of health assessments.
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### Example No. 3

Communicate specific job task restrictions.

- Inform the affected employee of the results of a health assessment that result in a job task restriction.
- Recommend to management any job task restrictions that should be placed on an employee. However, medical testing and examination results of the employee should be kept confidential.
- Management should determine if a job task restriction can reasonably be accommodated.
- Management should document any action taken in response to recommended work restrictions.
- Has the organization established a health assessment system to determine employee medical fitness for specific job tasks?
- Does the organization evaluate tasks and assignments to identify any specific physical and medical requirements associated with a specific task?
- Have an individual's ability to perform a particular task or assignment using medical criteria that are task related been assessed?
- Are the results of all health assessments documented?
- Are specific job task restrictions communicated?

## HS-10: Health Surveillance Programs

Employee Health surveillance programs tailored to workplace hazards.

### 1.0 Guidance

Occupational health surveillance is distinct from general health screening and health promotion. It involves watching out for early signs of work-related ill health in employees exposed to certain health risks. Such risks could be exposure to noise, vibration, ionizing radiation, asbestos, lead, fumes, dusts, biological agents, solvents or any other substances that could be hazardous to health. Health surveillance is necessary when:

- there is an identifiable disease or adverse health effect associated with the exposure to the substance/s in the workplace, for example, dermatitis, cancer or asthma;
- it is possible to detect the disease/adverse health effect;
- The techniques for detecting the disease/adverse health effect pose no risk to employees.

The aim of occupational health surveillance is not only to carry out tests, questionnaires or examinations, but to interpret these results and take action to eliminate or control further risk where necessary. The findings can also provide some reassurance that control measures are effective. Thorough historical data should be obtained to determine potential non workplace exposures, e.g., hobbies such as making stained glass windows or furniture refinishing that could influence medical surveillance testing data. Laboratories being considered for the analysis of biological samples should be required to produce evidence that they have implemented rigorous quality assurance / Quality control programs. If non-standard medical tests or special studies are anticipated, the informed consent of the employees affected by such tests or studies should be obtained.

Statutory medical checkups for a specific occupation (that must be carried out by a doctor appointed by the EHS&S) is required to be part of the health surveillance /medical programme by law when certain high-hazard substances are present in the workplace.

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Consider sponsoring 'wellness' programs, such as weight reduction, exercise, smoking cessation, and stress management, within the company. The successes obtained through these types of programs are often dramatic and serve to bolster morale, promote health, decrease absenteeism, and increase productivity.

**Example No. 1**

Employees to participate in Health surveillance programs.

Implement periodic health surveillance examinations or tests for workers at risk for agent-specific adverse health effects due to chemical, physical, biological, or ergonomic hazards.

Design health surveillance protocols to detect the effects of exposure to specific hazards. For example, pulmonary function testing may be performed on workers with exposure to isocyanates; liver function studies are typically included in the medical surveillance examination administered to workers exposed to hepatoxins such as chlorinated solvents.

Utilize the results of hazard assessments to identify employees who should be part of a medical surveillance program and to evaluate medical testing results.

Periodic general physical examinations, although desirable for early identification of general medical problems such as high blood pressure and diabetes, may not be appropriate or necessary as part of medical surveillance program.

**Example No. 2**

Perform additional tests and examinations when the results of medical monitoring, medical surveillance, and biological monitoring exceed acceptable limits.

- Establish repeat testing action levels, i.e., the amount of change from the norm in a particular medical parameter that will trigger repeat testing.
- Provide follow-up recommendations on abnormal test results.
- Provide and document feedback to employees about results of testing and assessments.

**Example No. 3**

Maintain records of employee Health and medical surveillance programs in accordance with all regulatory requirements.

- Ensure the confidentiality of all employee medical records. Only qualified health professionals, such as occupational medicine physicians, occupational health nurses, or medical technicians, should have access to such records. Management should be informed only of any job task restrictions placed on an employee.
  - Provide access to medical records, upon request, to employees or their designated representatives with the written consent of the employee.
  - Maintain records of any trend analyses performed on health and medical surveillance data.
  - Document any actions implemented in response to health and medical surveillance results.
  - Obtain the employee's written, informed consent prior to releasing medical records to parties other than the affected employee.
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#### **Example No. 4**

Inform employees of the results of health surveillance.

- Provide the results of an employee's medical surveillance examination, including laboratory data, directly to the employee in a timely fashion.
- Promptly communicate to the employee any abnormal results, the significance of these results, and any associated health effects

### **1.2 Self-assessment**

- Are employee Health surveillance assessment programs established and tailored to work site hazards?
- Have periodic medical surveillance examinations or tests for workers at risk for agent-specific adverse health effects due to chemical, physical, biological, or ergonomic hazards been implemented?
- Are the results of hazard assessments utilized to identify employees who should be part of a medical surveillance program and to evaluate medical testing results?
- Are additional tests and examinations when the results of medical monitoring, medical surveillance, and biological monitoring exceed acceptable limits being performed?
- Does the organization maintain records of employee occupational medical surveillance programs in accordance with all regulatory requirements?
- Are employees informed of the results of Health surveillance?

## **Prevention and Control**

### **HS-11: Management of Change**

Mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls: inherent safe design, material substitution, engineering controls, administrative controls, and personal protective equipment

#### **1.0 Guidance**

Establish mechanisms for reviewing the design and modification of facilities and job tasks, taking into account the following hierarchy of controls:

- Inherent safe design.
- Material substitution.
- Engineering controls.
- Administrative controls.
- Personal protective equipment.

No single systematic approach to safe design will cover all H&S issues. Therefore, it is extremely important that the review team be familiar with the purpose and limitations of the various approaches and consider all relevant hazards so that the most appropriate design(s) can be selected. In most instances, these will be trade-offs, e.g., flammability versus toxicity. The review team will need to ensure the right balance between administrative and engineering controls and to specify personal protective equipment requirements.

#### **1.1 Suggested Activities / Examples**

##### **Example No. 1**

Establish design / modification reviews that consider H&S.

- Review for inherent safety early in projects while design is still flexible.
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- As necessary, include representatives of relevant disciplines and departments on the design / modification teams, such as engineering, H&S, chemistry / toxicology, purchasing, etc.
- Establish mechanisms to provide for systematic reviews.

**Example No. 2**

Use systematic approaches to review the design / modification of existing and future facilities and job tasks.

- Consult any applicable regulatory requirements specific to the process / task undergoing design review, e.g., OSHA regulations on machinery and machine guarding, occupational health, ventilation controls, and environmental protection requirements.
- Determine the impacts on utilities, services, and materials involved in the process / task being designed or modified. This should include such items as process raw materials, catalysts, intermediates, by products, materials of construction, and maintenance.
- Consider the impact of the process / task on planned or existing adjacent operations, e.g., common vents and steam headers, etc.
- Evaluate whether system safety analysis techniques are applicable to the design / modification, e.g., checklist, preliminary hazard analysis, Failure Mode and Effects Analysis, and Hazard / Operability Fault Tree Analysis. Hazard and complexity should be evaluated to determine appropriate review tools to use.
- Consider the use of models and/or pilot studies to enhance efforts for identifying hazard potentials and system failures.

**Example No. 3**

Develop safe work procedures for critical jobs and tasks performed in the plant.

- Implement a safe work permit system for jobs / tasks involving welding or burning, control of hazardous energy sources (lockout / tagout), confined space entry, etc.

**Example No. 4**

Incorporate inherently safe designs whenever possible.

- Consider the use of automatic activation / de-energizing devices to control risks. One example of this type of device is a level alarm that automatically measures the level of material in a storage tank being filled and alarms and shuts-off flow when the level in the tank is critically close to a preset tank level.

**Example No. 5**

Substitute materials of lesser hazard for more hazardous materials.

- For cleaning of metal parts and equipment, choose a solvent of low toxicity, low volatility, low flammability, etc.
- For abrasive blasting, consider using non-silica abrasive materials.
- For insulation, consider using foamed glass rather than asbestos.

**Example No. 6**

Develop engineering controls that address H&S issues.

- Consult with other organizations, such as manufacturers, suppliers, and consultants that have processes / tasks similar to the one undergoing review to determine whether any successful engineering approaches have been implemented to control the hazard.
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- Install appropriate guards at points of operation on plant machinery.
- Prevent equipment overpressure with interlocks / shutdown systems and such.
- Equip high pressure vessels with pressure relief valves that are automatically activated when the pressure exceeds a limit.
- Install equipment systems that prevent the release of airborne contaminants. When necessary, use local exhaust ventilation systems to control the concentration of airborne contaminants.

#### **Example No. 7**

Implement administrative measures to address H&S issues unable to be resolved by design, substitution, or engineering controls.

- Provide work procedures and employee training to minimize potential exposure to hazards.
- Require employees to follow appropriate personal hygiene and other practices, such as showering at the end of the work shift, and refraining from drinking or eating in the work area.

#### **Example No. 8**

Provide personal protective equipment (PPE) needed to control potential exposure to H&S hazards.

- Identify types of PPE, based on possible exposure pathways, such as inhalation, ingestion; or skin absorption, for the chemical and physical agents identified.
- Select appropriate types of PPE, based on materials of construction, durability, effectiveness, and degree of protection afforded against the identified hazard(s).

### **1.2 Self-assessment**

- Has the organization established mechanisms for reviewing the design and modification of facilities and job tasks considering H&S?
- Is a systematic approach used to review the design / modification of existing and future facilities and job tasks?
- Has the organization developed safe work procedures for critical jobs and tasks performed in the plant?
- Does the organization incorporate inherently safe designs whenever possible?
- Does the organization substitute materials of lesser hazard for more hazardous materials whenever possible?
- Has the organization developed engineering controls that address H&S issues whenever possible?
- Does the organization implement administrative measures to address H&S issues unable to be resolved by design, substitution, or engineering controls?
- Is PPE provided when needed to control potential exposure to H&S hazards?

## **HS-12: Health and Safety Equipment**

Systems to verify that health and safety equipment is properly selected, maintained, and used

### **1.0 Guidance**

H&S equipment is an integral part of employee protection programs. Care should be taken to choose the proper equipment for the hazards associated with the job task. Other important considerations include maintenance of H&S equipment and training of employee in proper use of the equipment.

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## 1.1 Suggested Activities / Examples

### Example No. 1

Select and acquire equipment based on hazard assessment.

- Perform an assessment of workplace equipment needs to clearly identify the types of H&S equipment that would be appropriate. Consider the nature and extent of possible hazards and the probable frequency of occurrence.
- Determine the quantity and type of equipment necessary for the specific locations within the workplace, where applicable. For example, at some locations portable fire extinguishers may be adequate whereas at other locations, a permanent, fixed extinguishing system (such as foam generation) may be required. Deluge showers and eye wash stations are typically provided in areas where workers handle corrosive materials.
- Properly locate and/or install the equipment in the workplace, and clearly identify the selected locations in a uniform manner using signs, high-visibility marking tape, lighting, or other means. Consider applicable codes and regulations specific to the equipment, where applicable / available.

### Example No. 2

Maintain and use equipment in a safe and healthy manner.

- Identify all personnel who may use the H&S equipment, and train them in its proper use, location, and limitations. For example, when workers are expected to use fire extinguishers to fight fires or to use gas detection equipment for testing atmospheres in confined spaces.
- Develop and implement procedures to maintain an up-to-date inventory of all H&S equipment. An inventory is necessary for replenishment of supplies.
- Develop and implement any necessary (written) equipment programs. Examples include PPE programs and fire prevention and protection programs.
- Develop and implement regular, periodic inspection programs for H&S equipment. These could include portable fire extinguishers, shower / eyewash stations, employee alarm systems, and the condition and use of PPE.
- Identify and train personnel who will be authorized to perform H&S equipment maintenance and inspection duties.
- Inspect other equipment, such as ladders, cranes, man lifts, and electrical lines, on a regular basis to ensure that the equipment is structurally sound and safe and that it complies with applicable requirements.
- Consider environmental aspects for storage of PPE on site.
- Implement a policy that requires that any non-functioning or unreliable equipment be immediately taken out of service and replaced.
- Implement a policy to ensure contaminated PPE is properly disposed.

### Example No. 3

Develop and implement H&S equipment evaluation procedures.

- Perform periodic evaluations of equipment reliability.
  - Obtain feedback from equipment users.
  - Re-evaluate equipment needs due to changes in the workplace, such as process modifications / additions or turnover in the work force. For instance, the installation of a new process may require the purchase of a specific monitoring device or a particular type of PPE.
  - Consider new products as they become available.
  - Establish procedures for the maintenance of records relevant to H&S equipment. This may
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include monitoring equipment calibration logs, air cylinder hydrostatic test date records, ladder inspection records, and the like.

## 1.2 Self-assessment

- Has the organization established systems to verify that H&S equipment is properly selected, maintained, and used?
- Is H&S and emergency equipment selected, provided or available as part of the facility design or as result of subsequent ongoing hazard /risk assessments?
- Is equipment selected and acquired based on hazard assessment?
- Is equipment maintained and used in a safe and healthy manner?
- Have H&S equipment evaluation procedures been developed and implemented meeting the specification of this Management Code?
- Are all employees trained to use appropriate H&S equipment?

## HS-13: Preventive Maintenance and Housekeeping

Preventive maintenance and housekeeping programs to maintain the safety of facilities, tools, and equipment

### 1.0 Guidance

Preventive maintenance and housekeeping programs can reduce accidents; improve morale, and increase efficiency and productivity. Accidents are reduced through minimization of safety hazards such as obstacles in walkways, broken railings, electrical short circuits in power tools, broken ladder rungs, and unsafe material-handling equipment such as cranes, hoists, and powered industrial trucks. Morale is improved because the work environment is clean and orderly. An integral part of a good preventive maintenance and housekeeping program is scheduled inspections of facilities, tools, and equipment to identify which items are in need of repair.

### 1.1 Suggested Activities / Examples

#### Example No. 1

- Identify facilities, machinery, tools, and equipment that require scheduled inspection and/or maintenance.
- Identify machinery, tools, and equipment to be included in the preventive maintenance program. Some of the items to consider include:  
Ladders, scaffolds, suspended work platforms, hoisting equipment, cranes, respiratory protection, fall protection devices, powered industrial trucks, fire protection equipment, elevators, relief devices, power transmission apparatus, or grounding of power tools, grinding wheels and welding equipment.
- Use injury / illness and near-miss reports to identify conditions and/or trends in need of attention.
- Inspection and maintenance of emergency equipment should be performed on a priority basis.

#### Example No. 2

Establish an inspection and maintenance schedule and keep the schedule up-to-date.

- When determining inspection frequencies, consider factors such as age of equipment, hours of daily use, past experience, manufacturer's recommendations, and regulations.
  - Identify what action is to be taken, e.g., inspection, lubrication, belt adjustment, belt replacement, etc.
  - Use computer systems to manage information.
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**Example No. 3**

Develop written procedures and/or checklists for inspections, maintenance, and repair.

- Start with critical equipment as well as equipment that are particularly complex or hazardous.
- Include the manufacturer's specifications.
- Obtain employee input to procedures and checklists.
- Consult regulations.
- Consider safety / health concerns that may be involved in performing non-routine tasks such as preventive maintenance efforts.

**Example No. 4**

Assign qualified personnel to conduct inspections and to perform maintenance and repair.

- Provide appropriate training to personnel who conduct inspections.
- Consider using outside services for special projects, such as load testing of hoisting equipment, when necessary.
- Use written procedures or checklists during each inspection and maintenance activity to help ensure thoroughness.

**Example No. 5**

Maintain a spare parts inventory.

- Catalogue existing inventory by the type of facility, department, or location as needed. Establish a mechanism for cataloguing new inventory as it arrives, for deleting inventory as it is removed, and for tracking inventory that is transferred to another location.
- Anticipate spare parts needs to avoid downtime and ensure that the correct parts and tools are available.
- Consider delivery schedules.

**Example No. 6**

Maintain records.

- Consider using tags or a color-coding system to document inspections.
- Consider using computer systems to track inspections, maintenance activity, repairs, costs, parts delivery, downtime, failures, and accidents attributable to the preventive maintenance and/or housekeeping program(s).
- Use records to identify trends or improvement needs.
- Facilities shall have an established record retention policy.

**Example No. 7**

Identify housekeeping needs.

- Consider:
    - i. Pest control, locker room hygiene and break room hygiene.
    - ii. Maintenance of aisles, walking / working surfaces, and railings.
    - iii. Means of egress.
    - iv. Maintenance of work stations, office space, eating areas, and lavatory facilities.
  - Consult applicable H&S regulations.
  - Consider using injury/illness records to identify potential problem areas.
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### **Example No. 8**

Schedule housekeeping efforts and keep schedule up-to-date.

- Use past experience to determine frequency of housekeeping efforts.
- Perform housekeeping efforts as scheduled.
- Consider computer systems to manage information.

## **1.2 Self-assessment**

- Has the organization established preventive maintenance and housekeeping programs (written procedures and/or checklists for inspections, maintenance, and repair) to maintain the safety of facilities, tools, and equipment as specified by this code?
- Does each workplace have in operation an ongoing program of good housekeeping, appropriate to the nature of the operation and potential risks by all workers?
- Have facilities, machinery, tools, and equipment that require scheduled inspection and/or maintenance been identified?
- Has an inspection and maintenance schedule been established and is it kept up-to-date?
- Are inspections, maintenance and repair conducted by qualified personnel?
- Has a spare parts inventory been developed, and is it maintained up to date as per the record retention policy?
- Are records maintained up to date as established retention policy, and used to identify trends or improvement needs?
- Are housekeeping needs identified and applicable H&S regulations reviewed during identification process?
- Are housekeeping schedules implemented and kept up-to-date?

## **HS-14: Incident Investigation**

Timely investigation of work site illnesses, injuries, and incidents; and set corrective actions to prevent recurrence and evaluation of the effectiveness of corrective actions taken.

### **1.0 Guidance**

Any investigation should be directed at identifying the underlying factors that led to the incident, commonly referred to as the 'root causes'. Corrective actions should be aimed at treating the disease, and not the symptoms. Essential elements in successful incident investigations include timeliness, attention to detail, and objectivity.

Common pitfalls related to incident investigation include failure to identify the root cause(s) of the event and/or failure to report near-misses. Such failure can permit a dangerous condition to continue to exist.

The most effective corrective measures frequently involve engineering controls, such as process modification or machine guarding devices or administrative controls. Far too often, additional employee training or personal protective equipment is selected as a corrective measure. Although there are instances where these measures are appropriate, it must be recognized that often the inappropriate use of these controls can permit the hazardous condition to continue to exist.

## **1.1 Suggested Activities / Examples**

### **Example No. 1**

Develop investigation procedures for the reporting and investigation of hazardous situations, near misses, illness, security, process safety, distribution incidents:

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- Preserve evidence, both factual and objective.
- Use systematic investigation approaches.
- Establish procedures for documenting investigatory efforts, such as photographic logs, questionnaires, and incident reports.

### **Example No. 2**

Implement investigation procedures.

- Perform preliminary investigation on notification of an incident.
- Effect immediate, short-term, corrective measures to minimize potential property damage and/or additional injuries or illnesses.
- Form an investigation team that includes personnel from the necessary disciplines, including equipment or process operators, H&S personnel, engineers, medical personnel, etc.
- Document investigation activities and efforts, such as photographs or witness statements.
- Investigations are facilitated by competent personnel.

### **Example No. 3**

Establish corrective action and preventive action plans.

- Corrective action plans should be directed at root causes, not effects (or results) of the incident.
- Identify as many options as possible to correct the condition(s) that resulted in the incident, and prioritize the options.
- Consider necessary resources involved with corrective action options.

### **Example No. 4**

Follow-up on investigation findings.

- Report recommended corrective actions to management.
- Ensure corrective measures are incorporated.
- Re-inspect to ensure that appropriate measures have been implemented and that they are effective.

### **Example No. 5**

Implement effective employee training and education programs.

- Train employees to report all incidents immediately.
- Employees shall be aware of the incident reporting procedures and participate in incident investigations.
- Training shall be provided in incident investigation to appropriate Personnel.
- Communicate incident investigation findings to all potentially affected employees as a part of ongoing training / education efforts.
- Use the information obtained from incident investigations to modify procedures; provide training on procedure modifications to affected workers.
- Feedback procedures should be encouraged and rewarded.

## **1.2 Self-assessment**

- Has the organization developed and implemented an investigation procedure to ensure a standardized approach to systematic investigation?
  - Are timely investigations conducted into work site illnesses, injuries, and incidents? Have corrective and preventive actions been identified and the effectiveness of actions taken evaluated?
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- Are incident investigations conducted by qualified personnel?
- Are corrective and preventive action plans directed at root causes, not effects (or results) of incidents?
- Are investigation findings followed-up within a defined period?
- Does the organization implement effective employee training and education programs to ensure all incidents and near misses are reported immediately?
- Are incident investigation findings communicated to all potentially affected employees as a part of ongoing training / education efforts?
- Is the information obtained from incident investigations used to modify procedures?
- Is training provided on procedure modifications?

## HS-15: Medical Emergency Response

Provisions for emergency medical assistance for people at work sites

### 1.0 Guidance

Emergency medical assistance may be needed to respond to facility accidents, acute employee exposures to chemicals, and other emergencies unrelated to the facility operations, such as heart attacks. When planning how to provide this assistance, consider the level of training or certifications required of responders and the site first aid supplies and equipment that may be needed.

Although the Health and Safety Code and Management Practices have been designed to assist facilities in the elimination of on the job injuries, emergency medical assistance may, nevertheless, still be required. In many instances, prompt and proper medical treatment is essential and can mean the difference between speedy recovery, with limited after effects, or disability or fatality.

In many instances, off-site emergency medical organizations cannot respond quickly enough to a medical situation. Having an on-site medical response capability can limit the extent of injuries, minimize pain and suffering, plus speed recovery. However, medical responders should only manage medical treatment that is consistent with their training and certification level, i.e., first aider, emergency medical technician, nurse, paramedic, medical technician, etc.

### 1.1 Suggested Activities / Examples

#### Example No. 1

Assess emergency medical response needs.

- Evaluate existing on-site emergency medical response capability.
- Identify off-site emergency response organizations that may be called on to render medical assistance in the event of an emergency, e.g., paramedics, ambulance service, hospitals, clinics, company doctor, fire departments, police departments, etc.
- Identify high hazard areas where medical assistance may be required, e.g., confined spaces, process units, maintenance shops, storage areas, elevated platforms, etc.
- Exchange information with emergency medical facilities that may be called on to handle medical emergencies, e.g., provide access to plant information on toxic chemicals and identify facility personnel responsible for employee health records.

#### Example No. 2

Identify and provide on-site emergency medical resources.

- Identify personnel certified or trained to serve as medical responders and ensure that an
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adequate number of responders are available when needed.

- Provide emergency medical equipment, such as basic first aid kits or emergency assistance kits, needed for the number of people and types of hazards.
- Ensure that any specialized medical equipment that may be required due to the unique hazards of certain operations is readily available;
- Provide medical responders with any specialized personal protective equipment needed to enter in an area where potential hazards may be present.
- Provide equipment and procedures to protect medical responders from blood-borne pathogens.
- Provide medical responders with adequate transportation to reach the scene of a medical emergency quickly with required medical equipment and supplies.

### **Example No. 3**

Locate emergency medical equipment at strategic work areas.

- Analyze the workplace for appropriate areas to establish first-aid stations based on such factors as need, hazard, location, and isolation.
- Identify high-hazard areas where emergency medical equipment or supplies should be located. For example, areas where acutely hazardous substances are located or produced.
- If first-aid stations are located throughout the site, maintain an appropriate inventory of first-aid supplies in each station.

### **Example No. 4**

Establish procedures for responding to medical emergencies.

- Plan for emergencies and integrate medical emergency response plans into site and area emergency and disaster plans.
- Provide a centralized communications center or contact to which medical emergency situations would be reported, and that is capable of both dispatching emergency medical responders to the scene and obtaining additional medical assistance.
- Institute a step-by-step notification process for employees to follow in the event of a medical emergency.
- Develop procedures to provide additional personnel to assist medical responders at the scene, when necessary.
- Develop procedures for requesting assistance from off-site emergency response organizations and for directing response units to the medical emergency scene.
- Establish a means of communicating with emergency medical facilities and alerting them to the type of injuries that have been or may be encountered.
- Develop procedures to decontaminate medical response personnel and equipment and, if necessary, the victim prior to transport to an outside medical facility.

### **Example No. 5**

Train emergency medical responders and employees.

- Provide training for medical responders.
  - Provide opportunities for medical responders to obtain and maintain certified skills such as cardio-pulmonary resuscitation (CPR).
  - Conduct emergency response drills and other training exercises.
  - Ensure that employees are aware of the chemicals and processes that are associated with a high risk of injury as well as the proper procedures to follow should an injury occur. This can be accomplished through such means as hazard communications training and SDS.
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- Ensure that employees are aware of any unique hazards requiring immediate medical treatment, e.g., hydrogen sulphide exposure.

## 1.2 Self-assessment

- Has the organization established a procedure for responding to medical emergencies and insured provisions for emergency medical assistance for people at work sites?
- Have emergency medical response needs been assessed?
- Have emergency medical resources been identified and provided on-site?
- Is emergency medical equipment located at identified strategic work areas and communicated to all effected personal?
- Has the workplace been analyzed based on such factors as need, hazard, location, and isolation and have appropriate areas for first-aid stations been designated?
- Are high-hazard areas identified and emergency medical equipment or supplies located there?
- Have emergency medical responders and employees been properly trained?

# Communications and Training

## HS-16: Communication

Communication of health and safety information that is relevant to specific job tasks and the work site

### 1.0 Guidance

Ensure effective two-way communication of H&S information relevant to specific job tasks and the work site is cascaded throughout the workforce.

Target audiences for communication include employees, on-site contractors, visitors, emergency responders, H&S professionals, customers, and the community and other stakeholders.

### 1.1 Suggested Activities / Examples

#### Example No. 1

Management commitment.

- Communicate the written policy through means such as meetings, postings, and site newsletters. This ensures that everyone who has defined responsibilities has a clear understanding of what is expected of him/her.
- Communicate information about the H&S resources furnished by the company.
- Inform employees about their rights and responsibilities under various H&S related regulations.
- Involve top management in the process, using means such as videos if it is not possible for management to attend scheduled meetings.
- Establish an easily recognizable H&S identity. For example, a logo depicting H&S commitment can be developed for hard-hat decals, a header for posters or newsletters, or banners to be used at safety awareness meetings.

#### Example No. 2

Employee participation.

- Encourage upward communication to management by getting employees involved in the development and implementation of procedures and programs.
  - Establish programs to make employees more aware of their role in identifying and communicating specific hazards and/or corrective actions.
  - Involve families through home mailings, safety awareness events at company picnics,
-

competitions of children's art that use H&S, and other opportunities for participation.

- Recognize all Employees and relevant Stakeholders participation or contributions to H&S programs in company publications or through award programs.
- Provide suggestion boxes for input of H&S ideas or concerns. Communicate follow-up actions and provide feedback on suggestions.

### **Example No. 3**

Results of studies and assessments.

- Communicate information to employees at all stages of H&S studies, while maintaining right-to-privacy concerns.
- Communicate the results of area monitoring or individual exposure assessments, including monitoring.
- Inform employees and relevant Stakeholders about the results of safety assessments and hazard evaluations.
- Provide feedback on the results of H&S investigations triggered by employee complaints, and seek input on areas needing improvement.
- Present, in an understandable way, non-confidential medical data that represent findings for the work group.
- Keep employees and relevant Stakeholders posted on past or ongoing studies of H&S trends, including epidemiological studies.
- Make sure that individual employees are fully informed of the results of health assessments used to determine medical fitness, medical surveillance examination results, and any abnormal findings.

### **Example No. 4**

Work site hazard information for contractors and visitors.

- Communicate work-site hazard information to contractor personnel prior to the start of a job, and when changes are planned in processes and procedures.
- Communicate appropriate work-site hazard information to visitors, as part of your program to protect the H&S both of visitors and of others at the site that might be affected by visitors' actions.

### **Example No. 5**

EHS&S Committees shall focus on relevant EHS&S issues and provide a framework for communication on the management of these issues.

- Stimulating effective two-way communication on EHS&S issues between management and personnel.
  - Engaging all staff in the implementation of EHS&S management.
  - Serving as EHS&S advisory bodies to management and promoting suggestions for improvement.
  - Monitoring measures taken for the prevention of accidents, their implementation and adherence.
  - Organizing inspections and audits focused on unsafe or environmentally unfriendly practices.
  - Reviewing reports of inspection and audits.
  - Monitoring follow-up to accidents and incidents that have occurred.
  - Securing the co-operation of all persons in the promotion of EHS&S.
  - Advising on EHS&S training, instructions and guidance of workers.
-

## 1.2 Self-assessment

- Has the organization established a systematic procedure to define its strategy and commitment and ensure it is cascaded throughout the workforce?
- Is employee participation and upward communication to management encouraged?
- Are employees involved in the development and implementation of procedures and programs?
- Are employees contributions to H&S programs recognized in company publications or through award programs?
- Are families involved in H&S communication program and other opportunities for participation?
- Are results of studies and assessments communicated to the workforce?
- Is work site hazard information communicated to all employees, contractors and visitors

## HS-17: Effective Training Programs

Health and safety training programs, including documentation of these programs, and methods to evaluate the effectiveness of both training and communications activities

### 1.0 Guidance

Effective protection of employee H&S can only be achieved if employees and contractors understand and recognize hazards, perform their jobs in a safe manner, use the appropriate protective controls, follow prescribed procedures in emergency situations, and know where to go for information and help. Through training, employees can become partners with management in implementing and maintaining a successful H&S program.

The effectiveness of training is generally based on the quality of the programs and procedures on which employees are to be trained. An unworkable procedure or faulty program will not be improved by training; employees will simply learn to perform the wrong steps or to perform them in an unsafe manner. Pressure is often applied to trainers to employ training solutions as a quick fix in situations where lack of training is not the root cause of the problem. Management should also be encouraged to view training and communications as continuing, long-term programs, rather than as one-shot efforts.

Several valuable types of training do not traditionally fall under the umbrella of employee and contractors H&S training. These include:

Training a cadre of in-house instructors to implement employee H&S training. This process is known as 'Train-the-Trainer'. Training engineers and others who do not have direct H&S responsibility to be aware of H&S requirements and alert to opportunities to improve the program.

Training a few selected and interested employees to assist in implementing the program. In the safety area, these employees are often called 'key persons'; for industrial hygiene, they may be called 'industrial hygiene technicians.'

### 1.1 Suggested Activities / Examples

#### Example No. 1

Company H&S policies, procedures, and programs.

- Design and develop H&S training materials and techniques for all levels of the organization. These can potentially include management briefings, inclusion of materials in ongoing supervisory training programs, and integration of information about policies, procedures, and programs in regularly scheduled safety meetings. Self-study materials may be appropriate for

new employees if turnover is low.

- Develop training materials that detail the requirements of the program / procedure, and also the procedural steps needed to achieve compliance. Materials could range from simple checklists or pocket cards to full-blown training programs for the introduction of complex procedures, such as a new confined space entry procedure.
- Require accountable/affected employees to complete and acknowledge the appropriate training, and maintain records;
- Conduct additional training when programs / procedures are revised. Even if revisions are infrequent, conduct refresher training.

### **Example No. 2**

Data collection and analysis.

- Train all employees and inform all site contractors on timely reporting of incidents and near incidents. Make sure that reporting procedures are clear, and also that employees understand that they will not be penalized for reporting.
- Train the persons responsible for recordkeeping to perform in a clear, consistent manner. Periodically, assess the quality of recordkeeping and retrain, if necessary.

### **Example No. 3**

H&S equipment.

- Identify all personnel who may use equipment such as eyewash stations, first-aid kits, or portable fire extinguishers, and train them in its proper use, location, and limitations.
- Identify and train those persons who will be performing H&S equipment maintenance and inspections.

### **Example No. 4**

Preventative maintenance and housekeeping programs.

- Train all employees to be alert to preventive maintenance and housekeeping needs. Encourage participation through recognition of exemplary work groups in facility newsletters or bulletin board announcements.
- Train the personnel who conduct inspections and perform maintenance and repair work. Use written procedures and checklists. Conduct some training on simulated problems if you have equipment available.

### **Example No. 5**

Incident investigation.

- Train investigation team members in order to obtain valid and consistent results.
- As part of the ongoing program to train employees to report all incidents and near-incidents, and to follow all safety procedures, incident investigation findings and corrective action plans should be communicated to all affected employees.

### **Example No. 6**

Emergency medical assistance.

- Determine which facility personnel should receive CPR and first-aid training. If it is not feasible to conduct training on-site, ensure identified employees become certified through external programs.
  - Make sure that all employees are trained in the location, proper storage, and replacement
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procedures of first-aid supplies.

- Train all employees to know when and how to obtain emergency medical assistance. If injuries may be caused by exposure to a chemical or chemicals, train designated employees to make sure that the Safety Data Sheets (SDS) for the chemical that the injured person has been exposed to are submitted to the hospital where the injured person is to be treated.
- Train employees in high-hazard areas, such as an area where a release of phosgene might occur, to follow any special procedures that are necessary for treating exposure to that hazard.
- Train employees in high-hazard areas in procedures to take care of routine medical emergencies in these areas that are not related to the hazard, such as heart attack. Consider in this training the potential problems of medical emergencies in elevated areas, confined spaces, or other physically limiting conditions.

### **Example No. 7**

Emergency Preparedness and Response

- The system shall include training on emergency response.

### **1.2 Self-assessment**

- Has the organization established H&S training programs, including documentation for these programs and methods to evaluate the effectiveness of both training and communications activities?
  - Are training materials developed that detail the requirements of the program / procedure, and also the procedural steps needed to achieve compliance for the following programs and activities:
    - i. Hazards associated with jobs
    - ii. H&S data collection, analysis, and reporting
    - iii. H&S equipment
    - iv. Preventive maintenance and housekeeping programs
    - v. Incident investigation
    - vi. Emergency medical assistance and emergency response
    - vii. Does the training program include at least the following features:
      - Structured training sessions and competency assessment before accepting responsibilities. Regular retraining on competency gaps.
      - Tailored to specific job requirements.
      - Conducted regularly when reviewed and updated of programs and procedures.
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## CHAPTER THREE

**References:**

- Implementation Guide for Responsible Care® Health & Safety Code of Management Practices; American Chemistry Council.
  - GPCA-RC-C05, Issue 15-06-2011.
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