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RESPONSIBLE CARE®
OUR COMMITMENT TO SUSTAINABILITY



7 ENVIRONMENTAL PROTECTION CODE

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CHAPTER ONE

Introduction

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.
- Sustainable use of resources and energy intensity.
- Reduction of every kind of waste, incident, and discharge
- 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 – Environmental Protection Code

This Code is designed to achieve further reductions in the amount of all contaminants and pollutants released to the air, water, and land from GPCA member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and environmental protection. Additionally, proper utilization of natural resources should be practiced.

In implementing the Code, each company should strive for annual reductions, recognizing that production rates, new operations, and other factors may result in increases. Despite these fluctuations, however, the goal is to establish a long-term, substantial downward trend in the amount of wastes generated and contaminants and pollutants released. Reduction in intensity targets should be established giving priority to those pollutants, contaminants and wastes of highest health and environmental concern.

This code also includes practices that address the broader waste management issues beyond source reduction and other waste and release reduction efforts. Each GPCA member company must manage remaining wastes and releases in a manner that minimizes the impact on the environment, health and safety of employees and the public.

This Code is divided into the following three elements:

1. Leadership, Planning and Prioritization.
2. Training, Communication and Community Engagement.
3. Implementation, Assessment and Improvement.

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

Codes of Management Practices Links to RC 14001:2015 Standard

The implementation of the Environmental Protection 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 environmental protection requirements of the specification, particularly those requiring the reduction of contaminants and pollutants released from GPCA member company facilities.

| RC 14001 Responsible Care® Elements | | Environmental Protection Management Practices | | | | | | | | | | | | | |
|-------------------------------------|--|---|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| | | EP - 1 | EP - 2 | EP - 3 | EP - 4 | EP - 5 | EP - 6 | EP - 7 | EP - 8 | EP - 9 | EP - 10 | EP - 11 | EP - 12 | EP - 13 | EP - 14 |
| 4.1 | Understanding the organization and its context | | | X | | | | | | | | | | | |
| 4.2 | Understanding the needs and expectations of interested parties | | X | X | | | X | X | X | | | X | | | X |
| 4.3 | Determining the scope of the EHS&S management system | | | | | | | | | | | | | | |
| 4.4 | EHS&S management system | X | | | X | | | | X | | | | | X | |
| 5.1 | Leadership and commitment | X | | | | | | | | | | | | | |
| 5.2 | Policy | X | | | | | | | | | | | | | |
| 5.3 | Organizational roles, responsibilities and authorities | X | | | | | | | | | | | | | |
| 6.1 | Actions to address risks and opportunities | X | | X | X | | X | X | | | | | | X | |
| 6.1.2 | EHS&S aspects | 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 | | X | X | | X | X | X | | X | | X | | | |
| 6.2.2 | Planning actions to achieve EHS&S objectives | | X | X | | X | X | X | | X | | | | | |
| 7.1 | Resources | X | | | | | | | | | | | | | |
| 7.2 | Competence | | | | | | X | | | | | | | | |
| 7.3 | Awareness | | | | | | X | X | | | | | | | |
| 7.4 | Communication | X | | | X | | X | X | X | | X | | | | X |
| 7.5 | Documented Information | X | | | | | | | X | X | X | | | | X |
| 8.1 | Operational planning and control | | | | | 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 | | | | | | | | | | | | | | |
| 9.3 | Management Review | X | | | | | | | | | | | X | | |
| 10.2 | Nonconformity and corrective action | | | | | | | | | | | | | | |
| 10.3 | Continual Improvement | X | | | | | | | | | | X | X | X | X |

Table 1 – Environmental Protection Management Practices

These management practices should be included in the member company’s existing environmental management systems and programs which address Environmental Protection related requirements. Moreover, these practices should be incorporated into the existing management systems and programs in such a way to fulfill the requirements of the latest edition of RC 14001.

CHAPTER TWO

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

Leadership, Planning and Prioritisation

EP-1: Environmental Policy

A clear commitment by senior management through policy, communications, and resources, to comply with relevant environmental laws and regulations, and other requirements to achieve continual improvement. The commitment includes minimization of pollution through ongoing reductions at each of the GPCA company facilities, in releases to the air, water, land, waste reduction and optimize the usage of natural resources.

1.0 Guidance

A well-defined, comprehensive policy is the driver for implementing and improving an organization's environmental management system to maintain and improve its environmental performance. The policy should reflect the commitment of top management to comply with applicable legal and other requirements, to prevent pollution and continual improve. The policy should form the basis upon which the organization sets its objectives and targets. The policy should be communicated to all stakeholders.

1.1 Suggested Activities / Examples

Example No. 1

Typical examples for this management practice are Company EHSS or Environmental Protection Policy signed by top management. Policies must have clear statements of recognition and compliance with relevant environmental laws and regulations. Environmental goals are established for the company and expressed to all stakeholders. Integrate corporate goals into facility and department goals, or vice-versa. Environmental responsibilities are assigned to personnel at all levels within the Company.

Example No. 2

Each company must tailor its own program of communications demonstrating company commitment to policy objectives and goals. Policies should be published and shared with all stakeholders as applicable. Communication can be through websites, media, mailings or discussions conducted through meetings. Employees must know and understand what top management expects in environmental performance. Each Business unit should communicate that environmental expectations are high and are periodically stated by each Facility Manager. Senior business unit management should periodically visit facilities and communicate to employees/contractors their commitment to environmental performance.

Each company should ensure that there is a plan for implementation of the Environmental Protection Code adopted by Senior Management with goals defined for achievement, and effectively communicated to all employees.

Example No. 3

Companies must assign adequate resources to implement the policies and goals.

Training and competency enhancement on environmental issues is required at facilities for all employees/contractors and evidence of environmental training, competency should be available.

There should be environmental knowledge on the board of directors and environmental training is required for line managers.

Example No. 4

Environmental planning is integrated with business planning so that acquisitions, divestitures, research and development (R&D) initiatives, capital projects, new products and future actions with environmental consequences can be appropriately addressed.

Environmental performance and reporting is given as much importance as production, quality and financial performance reporting. Environmental reporting is included at business meetings.

Procedures should be in place for environmental incident reporting, including their causes and corrective actions.

Environmental audits are required at all facilities on a periodic basis to achieve continual improvement.

1.2 Self-assessment

- Is there a published and visibly communicated company policy for the environmental protection?
- Does Senior Management regularly state the importance of the environmental protection in employee/contractors meetings or forums?
- Are there defined accountabilities and adequate resources at various levels in the company for meeting the environment programs?
- Are annual environmental targets established to address the company's environmental concerns?

EP-2: Establishing Reduction Targets

Establishment of priorities, goals and plans for discharge and release reduction, taking into account community concerns and the potential health, safety, and environmental impacts as determined under Management Practices 3 and 4.

1.0 Guidance

This Management Practice deals with setting priorities and goals, developing plans, and communicating them. When establishing priorities, the organization should consider goals, plans, the potential health, safety, and environmental impacts as well as community concerns. Understanding community concerns involves ongoing dialogue with employees and members of the community.

1.1 Suggested Activities / Examples

Example No. 1

Facilities have a list of environmental improvement projects prioritized based on stakeholder's

inputs. Resource needs are identified. Discharge and release reduction goals are part of the facility's business plans or performance balance score card and are incorporated into budget and planning cycle.

Example No. 2

Activities to comply with this Management Practice include the identification of resources and specialists needed to assess facility processes. Processes should be analyzed to identify reduction opportunities, recycle/reuse, or treatment of wastes and releases.

Results from environmental impact assessments and stakeholder's surveys should be prioritized based on its significance.

The mitigation plan required to reduce the environmental impacts should be prioritized in economically sound manner. Implementation schedule with resources required should be presented to management for endorsement.

1.2 Self-assessment

- Does the company have a documented self-assessment tool of all environmental legal & other requirements?
- Does the company have a prioritized list of environmental programs to achieve continual improvements?
- Are these goals monitored and tracked regularly (KPI's)?

EP-3: Environmental Impact

Evaluation of the potential impact of releases on the environment from past, current, future and emergency activities on the environment, health and safety of employees and the public.

1.0 Guidance

This Management Practice calls for each company to perform an evaluation of the potential impacts on human health and the environment of the releases and discharges identified in Management Practice 2. This analysis will vary in complexity from facility to facility.

The purpose of evaluating impacts is threefold. First, it can serve as an aid to the company in prioritizing environmental projects. Second, it can aid company representatives when discussing the facility's potential impacts and environmental programs with neighbors. Third, it can provide a basis for communicating the environmental programs and its priorities to employees.

Each facility is responsible for developing priorities for controlling environmental releases. Each facility should evaluate specific conditions including evaluation of proximity to population and existence of sensitive receptors.

1.1 Suggested Activities / Examples

Example No. 1

The organization develops and implements procedures to identify its environmental aspects and impacts. Typical activity is evaluation of the impact on the environment due to atmospheric releases to air, water body and releases to land. The facility evaluates the specific spill control measures

and waste disposal practices and establishes priorities, taking into account volumes and toxicity.

Possible considerations for evaluation are:

- Regulations.
- Odors and visible releases.
- Employee and public sensitivities.
- Population distance and density.
- Volume and toxicity.
- Release pathways.
- Modelling and monitoring.

Example No. 2

Each facility needs to develop and implement an Emergency Response Plan that addresses credible environmental incidents.

1.2 Self-assessment

- Does the company have a system in place to report and track environmental incidents?
- Are system is in place to monitor and control regulated environmental releases and discharges?
- Does the company have control measures to reduce the impact of environmental releases and discharges?
- Does the company have an emergency plan for environmental incidents?

EP-4: Environmental Planning

Inclusion of waste and release prevention objectives in the research and design of new or modified facilities, processes, and products.

1.0 Guidance

Consider integrating the concept of environmental protection throughout the lifecycle assessment of products starting from the research and development, engineering design of new or modified facilities, manufacturing, storage, distribution, usage and disposal. Internal integration of comprehensive environmental programs throughout the lifecycle of the product can help reduce discharges and releases.

While integrating environmental programs into strategic planning, product development and lifecycle, consider issues such as:

- Compliance to regulations.
- Quantity of waste.
- Cost of waste management.
- Environmental and safety liability.
- Potential for minimization and utilization.
- Potential recovery of valuable by-products.
- Emerging process technologies that may improve performance.
- Finding new markets, etc.

Integration of environmental management practices throughout the cycle of products could benefit the quality of products, minimize material loss, improve health and environment performance, stakeholder confidence and result in higher returns.

1.1 Suggested Activities / Examples

Example No. 1

Conduct workshops / awareness sessions, and have dialogue with operations staff, process and design engineers and environmental specialists who may help to develop ways to reduce the generation of wastes and/or releases.

Example No. 2

Evaluate technological options and new markets for recycle / reuse / reclaim of by-products and wastes to minimize the material loss and reduce waste disposal costs.

Example No. 3

Conduct periodic reviews based on self and internal evaluation to track and measure the actual performance of implemented environment programs, ensuring the learning's are feedback for continuous improvement.

1.2 Self-assessment

- Are environmental implications considered at an appropriate stage of a new facility, process or product?
- Are the identified aspects and impacts formally assessed and where applicable followed through during future development phases?
- Is there evidence of the outcome of this assessment resulting in alternative solutions being selected?

EP-5: Waste Management Hierarchy

Ongoing reduction of wastes and releases, giving preference to:

1. Reduce the source.
2. Recycle / Reuse / Recover.
3. Treatment and disposal

These techniques may be used separately or in combination with one another.

1.0 Guidance

Being a Responsible Care® organization, the management is focused on the ongoing waste and releases reduction programs by adopting the '4Rs' principle to sustain environmental performance and ensure continuous improvement. The '4Rs' programs followed in the order of preference are:

- 1. Reduce.**
Minimizing the wastes and releases at source.
- 2. Reuse.**
Recovered material used by the outside customers.
- 3. Recycle.**
Utilizing the waste and releases within the process.
- 4. Recover.**
Partially utilizing the waste or byproduct in the process.

Several techniques can be adopted that will help in reducing the waste and releases, which include:

- **Process modifications.**
Evaluating the entire manufacturing process and modifying the process parameters to obtain high yields and reduced wastes and releases.
- **Materials substitution**
Substitution of process chemicals, as appropriate with high efficiency and high selectivity materials and modification of equipment to reduce generation of wastes and releases.
- **Housekeeping**
Improved housekeeping including material stock control, segregation of wastes, preventive maintenance, spills and leak prevention to assist in improved material utilization and reduced disposable wastes.
- **Recycle, reuse and recover**
Recycling and reuse of waste and releases to generate valuable by-products and reduce material loss.

Pollution reduction programs will help in managing environmental responsibilities, compliance with the applicable local / international legislation, improved material utilization and reduced wastes and releases. The engineering and technical experts of the organization can contribute by proposing new materials, equipment modification, recycle / reuse of waste.

1.1 Suggested Activities / Examples

Example No. 1

Conduct meetings, discussions, and have dialogue with engineering and technical experts to review the sources / causes of generating waste and releases and the potential solutions to minimize and recycle / reuse/recover wastes and releases.

Example No. 2

Re-evaluating the entire operations and operating parameters, and modification / fine tuning of these parameters could result in effective reduction of waste and releases. For example, adjusting the combustion temperatures and excess air supply could result in reduced carbon monoxide (CO) and nitrous oxide (NOx) emissions. Regular monitoring and preventive maintenance of steam traps and pressure relief valves could result in energy savings, water conservation and minimized flaring.

Example No. 3

Material substitution, such as the use of high efficiency / selectivity catalysts can give higher productivity and reduced waste and releases. Equipment modifications such as combustion zone modifications and use of low NOx burners could help in reducing air emissions.

Example No. 4

Good operating practices and housekeeping is a basic environmental practice. An efficient material inventory system is supported by acquiring only the material that is needed, combined with storing materials in labelled containers with clearly marked expiry dates ensures the use of the material within the shelf life thereby reducing the generation of wastes from unused materials.

Example No. 5

Segregate different types of wastes to increase opportunities for waste recycling, recover, reuse and reduction of disposable wastes. Evaluate technological options for recycling and reuse of wastes and releases. Spent catalyst regeneration, waste oil reuse as fuel, use of process gases and hydrocarbon waste for energy recovery, lead recovery from used batteries, reuse of treated wastewater and recovered condensate, are some of the potential reuse / recycle/recover areas that help reduce waste and releases. The use of secondary containments, dip trays, splash guards are other examples to contain and recover material during spills and leaks.

Example No. 6

Sharing of waste and release reduction programs with customers, suppliers and business partners to help reduce wastes and releases throughout the product cycle.

1.2 Self-assessment

- Is there an appropriate accountable person(s) appointed for the environmental reduction plan?
- Is there data demonstrating the progression of ongoing reduction for the prioritized wastes and releases?
- Does the plan show preference of reduction hierarchy? Source > recycle / reuse/recover > treatment.

Training, Communication and Community Engagement

EP-6: Training

Education of, and dialogue with, stakeholders, impact evaluation, and risks to the community.

1.0 Guidance

Effective education of workers (employees/contactors) is the key for the environment protection and shall not be limited to newsletters, mails, posters, bulletins, etc. Workers technical empowerment programs should involve interactive hands-on process, classroom training, higher education programs, workshops, meetings, etc. The education efforts shall provide an opportunity for all organization levels to function effectively in a team.

Nearby communities are also important stakeholders in the successful operation of the business. It is very important to win the confidence of the community and to convince them about the environmental risks from the organization's activities, and the plans and programs being implemented to prevent pollution and make the environment safe. Environmental awareness sessions tailored specifically to the community at pre-arranged meetings are means of educating the community. The effective education of workers and community awareness could be implemented by establishing a training needs assessment and awareness requirements based on the risk assessment studies. It is important to establish a mechanism to receive and act on workers and public feedback relating to environmental practices to enhance the effectiveness of education and community awareness.

1.1 Suggested Activities / Examples**Example No. 1**

Identify the activities that have potential significant environmental risks. Develop standard operating procedures (SOPs) and provide hands on training to the workers associated with these activities and brief them on the impacts of deviating from the SOPs. Conduct regular meetings, training or

workshops with workers to refresh their knowledge and track concerns.

Example No. 2

The use of audio-visual aids used during a presentation will drive and focus dialogue, particularly when carrying out community information awareness sessions.

Example No. 3

Conduct surveys, interviews, tests to measure the effectiveness of education, awareness and dialogue, and the perception of employees and community about the organization's environment efforts.

1.2 Self-assessment

- Is there provision of environmental awareness and refresher training for stakeholders?
- Is there a schedule of awareness sessions targeting the local community associated with a company facility(s)

EP-7: Communication

Ongoing dialogue with workers and members of the public regarding discharges and release information, progress in achieving reductions and future plans. This dialogue should be at a personal, face-to-face level, where possible, and should emphasize listening to others and discussing their concerns and ideas.

1.0 Guidance

Workers are the assets of the organization and play a key role in the environment. Discussing the environment with workers is challenging and requires continual enhancement of their technical knowledge in developing and evaluating the emissions inventories, estimating the release / spill quantities, assessing the impacts, developing and implementing plans to achieve emission reductions, and risks mitigations from the releases.

Nearby communities are also important stakeholders in the successful operation of the business. It is very important to win the confidence of the community and to convince them about the environmental risks from the organization's activities, the plans and programs being implemented to prevent pollution and make the environment safe.

Identify the spokesperson(s) (internal and external) for the facility and the effective methodologies to facilitate effective education and dialogue.

1.1 Suggested Activities / Examples

Example No. 1

Prepare newsletters, brochures, hand-outs, audio-visual aids and presentations to convey environment information and programs. Simplify and provide the information to be appropriate to the competency of the workers and in a language they can easily absorb.

Example No. 2

Emissions release and discharge generation data provides an accepted method for highlighting ongoing results associated with the environment protections programs. The data reported should be provided in a language that can easily understood and it should combined with local regulatory standards.

Example No. 3

The community is not knowledgeable about the organizations activities, releases, discharges, and chemicals handled. Therefore the dialogue should begin with a brief introduction about facility operations and environmental release obligations. This introduction can be supported by brochures and other appropriate hand-out materials. After the introduction, the audience will have a basic understanding of the organization and will be ready to learn about a facility's environmental efforts. For this portion of the presentation, data should be updated and presented annually. The format should be simple, clear and easy to revise from year to year. Histograms (bar charts) may be the easiest way to show comparisons and differences. An improving trend in emissions from year to year is an impressive and effective message about reduction efforts.

Example No. 4

Consider dialogue about the way in which the facility is making progress toward reducing discharges and releases. Declare the ongoing costs for environment improvement programs and activities. Highlight voluntary efforts and describe specific reduction programs, or innovative strategies that are underway or planned for implementation.

1.2 Self-assessment

- Is regular dialogue carried out with stakeholders on environmental issues?
- Is there evidence to demonstrate that feedback received during dialogue is utilized when developing future environment improvement plans?

EP-8: Environmental Awareness

An ongoing program for promotion and support of waste and release reduction by others which may include:

1. Sharing of technical information and experience with customers and suppliers.
2. Support of efforts to develop improved waste and release reduction techniques.
3. Assisting in establishment of regional ambient air monitoring networks.
4. Participation in efforts to develop consensus approaches to the evaluation of environmental, health and safety impacts of releases.
5. Providing educational workshops and training material.
6. Assisting local governments and others establishing waste reduction programs benefiting the general public.

1.0 Guidance

The implementation of integrated environmental programs helps in managing environmental responsibilities and acts as a means to guide business organization compliance with applicable local and/or international legislation.

Being a responsible member of the society and a Responsible Care® organization, promote Responsible Care® by sharing internal integrated environmental programs and experiences and offering assistance to others involved throughout the product lifecycle. The Environmental Protection Code requires an active waste and release reduction program, and reduced environmental impacts that include an ongoing effort by others for promotion and support of these environment efforts throughout the lifecycle of products.

An ongoing dialogue, communication, information sharing and feedback mechanism with

employees and the stakeholders will help in meeting the outreach obligations.

1.1 Suggested Activities / Examples

Example No. 1

Host meetings / workshops / seminars to promote dialogue and awareness with employees and stakeholders and to demonstrate environment programs implemented along with the performance data. Discuss the importance of employee and stakeholder contribution and support for environment programs, resource conservation, household hazardous waste collection / segregation / recycle / disposal, etc.

Example No. 2

Develop newsletters and posters; use the media and organization magazines to publish data related to waste and release reduction, material utilization, reduction in environmental impacts, environment programs and associated costs, and recycling programs.

Example No. 3

Provide environmental information to customers related to product usage, emissions, storage, loading and unloading, waste handling and disposal.

Example No. 4

Share organization's Responsible Care® experiences and environment programs with customers and suppliers, business partners, industry committees and government agencies.

1.2 Self-assessment

- Is there information relating to the progress of wastes and release reduction detailed in official company media, i.e., annual reports, newsletters, and website?
- Do representatives from the company participate in industry committees or government agencies to promote exchange of environmental information?
- Does the company provide environmental training or awareness material for external use?

Implementation, Assessment and Improvement

EP-9: Monitoring and Reporting

A quantitative inventory at each facility of chemicals stored, wastes generated and releases to the air, water and land, measured or estimated at the point of generation or release.

1.0 Guidance

A major task in environment efforts is to develop a quantitative inventory of chemicals, wastes and releases. This involves an evaluation of production processes with particular emphasis on identifying, quantifying, and characterizing wastes and release reduction streams. The results of these activities can provide a quantitative inventory of wastes and releases, and form the basis for making informed decisions in setting priorities, plans, and goals.

An organization will need to prepare inventory of the quantities of routine and accidental releases, and releases resulting from catastrophic or other one-time events of hazardous chemicals as well as the maximum amount of hazardous chemical used, i.e., manufactured or processed on the facility during the year and the wastes managed on the facility or transferred off the facility.

1.1 Suggested Activities / Examples

Example No. 1

Possible activities to comply with this Management Practice could be:

- Develop and maintain an inventory using existing information and data.
- Identify sources of multimedia wastes and releases.

Example No. 2

Appoint a competent person(s) to manage the quantitative inventory of chemicals, ensuring that all waste streams are identified, recorded and updated periodically, based on risk.

1.2 Self-Assessment

- Is there a system to identify and maintain inventory records of wastes and releases?
- Do the inventory records show up-to-date and accurate data of all generated waste streams?
- Do the inventory records show up-to-date and accurate data of the various types of environmental releases?

EP-10: Evaluation and Target Setting

Measurement of progress at each facility in reducing the generation of wastes and in reducing releases to the air, water and land, by updating the quantitative inventory. It is suggested to carry out this exercise at least annually, but can be on quarterly or less frequently.

1.0 Guidance

Tracking and measuring the progress of environment efforts are important for the success of any improvement program.

Effective tracking and measuring can help to:

- Develop effective plans and establish credible goals.
- Measure progress against goals.
- Document the program's effectiveness.
- Assure workers, the public and/or other relevant stakeholders that there is progress.
- Satisfy regulatory requirements.
- Track material loss.

1.1 Suggested Activities / Examples

Example No. 1

A company should regularly analyze the annual inventory records for an agreed number of years and identify opportunities for future improvement.

1.2 Self-assessment

- Are the latest planned environmental performance targets monitored?
 - Are management informed on the progress of reduction trend and inventory records?
 - Are historic performances used as a comparison to identify key areas for improvement?
 - Do operating instructions include early detection of abnormal environment parameters and detail necessary and appropriate reporting and corrective action?
-

P-11: Environmental Review

Periodic evaluation of waste management practices associated with operations and equipment at each company facility, taking into account community concerns and environmental impacts and implementation of ongoing improvements. The Waste Minimization concept can be used, and companies can adopt one of the industry practice that suits them.

1.0 Guidance

This Management Practice deals with evaluating waste management practices of company facilities that extend beyond regulatory compliance. Activities that enhance a facility's ability to cope with change, to advance, and to reduce health and environmental impacts on the community, employees, and surrounding area should be encouraged. Given the ever changing regulatory and legislative climate, heightened public expectations, and increased financial liabilities, improvements in a facility's overall environmental program should be promoted.

This practice requires that each company has a mechanism in place such as waste minimization program to ensure a systematic and periodic review of the facility's operations that enables companies to:

- Determine the facility's compliance with existing environmental regulatory requirements – the environmental compliance component.
- Further reduce or eliminate the facility's wastes and releases - the waste management component.
- As possible, include economic value on recommended waste minimization opportunity to enhance the incentive for implementation.
- Review those aspects of a facility's environmental program that go beyond regulatory compliance, and implement improvements - the continuous improvement component.

Implementation of this practice can utilize on-facility personnel, contractors, and/or other off-facility personnel.

1.1 Suggested Activities / Examples

Example No. 1

Establish frequency for conducting facility assessments of current waste management standards and practices.

Example No. 2

Prepare for an on-facility review, which may include:

- Selecting a review team and assigning responsibilities.
- Assembling and reviewing background information.
- Preparing a checklist for on-facility review.

Example No. 3

Conduct an on-facility visit, which may include:

- Participation in a meeting with facility management.
 - Performing facility assessments and observing operations.
 - Assessing and reporting on environmental findings and recommendations.
 - Evaluating progress with respect to the waste management practices.
-

1.2 Self-assessment

- Are there sufficient resources and expertise allocated to evaluate employee feedback and neighbors' concerns?
- Is an evaluation of waste management practices carried out at regular intervals?
- Are review findings discussed with senior management and effectively managed to close out?

EP-12: Contractor Competency

A process to ensure review of selected contractors and sub-contractors of sustainable disposal practices, waste reduction focus and recycle efforts is required, further, continuous improvement must be considered for waste management practices, including personnel safety and mitigation of potential environmental impacts.

1.0 Guidance

The purpose of conducting these reviews of contractors and sub-contractors is to ensure the responsible handling of wastes, drive continuous improvement of environmental performance of external contractors and sub-contractors, and minimize the company's potential environmental liabilities.

Given the variety of commercial relationships and circumstances involved, companies are to exercise their own judgment as to how to conduct reviews. Companies must be transparent of their review process (es), and inclusive for all stakeholders. The following areas can be considered while developing a review mechanism:

1. **Management.**

Structure, procedures, continuous improvement and awareness of sustainable waste reduction initiatives, financial conditions, industrial hygiene & safety and community relations.

2. **Regulatory considerations.**

Regulatory compliance, permit status, enforcement actions, proper and thorough review of past practices / litigation, agency relations.

3. **Operations.**

Operation and maintenance, facility practices and housekeeping appearance, programs for proper management and reduction of types of wastes disposed and management, employee awareness and training, record keeping, security and emergency response capability.

4. **Physical setting.**

Geology and hydrogeology, potential environmental impact and mitigation practices from or to adjacent property and history / past use.

1.1 Suggested Activities / Examples

Example No. 1

Establish waste management requirements and capabilities into the technical tender selection criteria of the procurement process.

Example No. 2

The tender review process should include a review of evidence provided by tenderers with respect to waste management knowledge and previous practices.

Example No. 3

A process should be established to educate contractors on the company's continuous improvement for waste management practices and to align both company and contractor practices.

1.2 Self-assessment

- Is there documented assessment criteria for selecting contractors involved in the environmental aspects of company activities?
- Do selection processes include contractor's awareness on regulatory environmental requirements?
- Is past performance in similar work activities considered during the assessment?
- Is there a process established to monitor continual performance during the contract execution?

EP-13: Groundwater Protection

Verification of engineering and operating controls at each member company facility to continuously improve prevention and early detection of releases that may result in groundwater impact.

1.0 Guidance

Groundwater protection has become an increasingly important issue. The public is concerned about incidents of groundwater contamination, the potential risks posed by groundwater contamination, and avoidance of future contamination. The objective of a groundwater protection program is to protect the groundwater resource. Prevention of contamination is emphasized since it is more practical in the long term to prevent the contamination of groundwater than it is to remediate or clean-up a groundwater resource. Prevention of groundwater contamination is in a company's interest due to potentially adverse legal, financial, and public relations impacts from incidents of contamination.

Generally, groundwater protection programs are usually facility specific, and must be tailored to the unique geographical and hydrogeological characteristics of each location (or facility) and hence it's potential impact to groundwater quality.

Engineering and administrative controls must be effectively implemented to ensure groundwater protection.

1.1 Suggested Activities / Examples

Implementation of a groundwater protection program is usually a stepwise process that involves the following examples.

Example No. 1

Facility assessment:

Facility assessment serves as a guide to planning groundwater protection activities. An assessment can provide an understanding of a facility. Groundwater monitoring may be used to help compile some of the physical and chemical characteristics data and to enable a facility to identify sensitive areas that may warrant collection of additional data.

Example No. 2

Selection of priority alternatives:

Determination of priorities for addressing potential sources of groundwater contamination. Protection planning should focus on the detection and prevention of releases from sources that have the greatest potential to adversely impact beneficial uses of groundwater.

Example No. 3

Implementation of groundwater protection measures

The basis of groundwater protection is good engineering design and proper operating controls and evaluation of the effectiveness of these protection measures.

Example No. 4

Ongoing management of the program

Ongoing management helps manage risks over the long term and helps maintain a company's ability to prevent and respond to releases.

1.2 Self-Assessment

- Is there a list of potential sources of ground contamination?
- Is there a recovery plan should ground contamination occur?

EP-14: Continuous Improvement

Implementation of a continuous improvement plan to effectively address past operations and waste management practices is required. Decommissioning and decontamination programs must be planned, effectively reviewed, implemented, and communicated to all stakeholders.

1.0 Guidance

The first step is to obtain sufficient knowledge about the given facility to make a decision regarding what, if any, actions need to be taken to address potential health, safety and environmental concerns resulting from waste handling, storage and disposal. This includes properties that are still owned but no longer have ongoing operations. Inactive facility(s) must be investigated and assessed to determine the need for any required remedial actions.

Stakeholder's engagement is important, therefore continuous communication of issues, plans, and progress to all stakeholders including contractors and sub-contractors is required.

If remedial action is needed, establish performance objectives based on various factors that may include: stakeholders input, deadlines (regulatory, corporate, public), cost versus benefit, cost versus time, permit requirements, corporate requirements and risk reduction considerations.

Consult with legal counsel regarding liability and insurance issues and take appropriate steps to secure insurance cover if available.

Select preferred remediation option after consideration of such factors as: performance objectives, relative risks, long-term liability, community concerns, regulatory requirements, costs and technology availability.

Communicate issues, plans and progress to the regulatory agencies and the community, as appropriate, throughout the above process of investigation and remediation to inform them and to resolve their concerns.

Periodically monitor and evaluate effectiveness of remediation projects to assure resolution of regulatory and community concerns and health, safety and environmental impacts, relating to waste management. Carry out additional remediation as needed.

1.1 Suggested Activities / Examples

Example No. 1

Maintain a list of facilities which have potential environment impacts that could lead to employee or community concerns.

Example No. 2

Prioritize facilities based on results of the facility past practices, review, community concerns, legal requirements and potential EHS&S risks.

Example No. 3

Identify projects for highest priority facilities / locations including funding commitments, defined project objectives, and timetables.

Example No. 4

Periodically review the priority list and remedial project performance against project objectives. As projects are resolved, it may be necessary to reprioritize remaining projects.

1.2 Self-Assessment

- Has the company conducted an assessment of past operation(s) including any previously used company owned disposal facilities, and documented the potential impact formally?
 - Has the company identified a remediation strategy(s) based on the assessment?
 - Does the remedial plan show willingness to assist regulatory agencies to assess non-company operated disposal facilities, which the company has used in the past; with a view to co-operating as appropriate in future actions?
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CHAPTER THREE

References:

- Implementation Guide for Responsible Care® Environmental Protection Code of Management Practices; American Chemistry Council.
 - GPCA-RC-C07, Issue 15-06-2011.
 - American Chemistry Council ACC RC 14001® 2015 TITLE: RESPONSIBLE CARE MANAGEMENT SYSTEM® TECHNICAL SPECIFICATION
 - ISO14001-2015 Environmental Management System
 - American Chemistry Council RCMS®: 2013
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