

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) COMPOSITE MODEL

Rev. 3, 11/14/02

DISCUSSION

Energy Northwest is engaged in a three-year project to develop and implement a corporate environmental management system (EMS). An EMS ensures that environmental issues are systematically identified, controlled, and monitored. Moreover, an EMS provides mechanisms for responding to changing environmental conditions or requirements and reporting on environmental performance, helps build confidence with stakeholders, and reinforces continual improvement. The ultimate desired result of an effectively designed, implemented, and continually improving EMS is improved environmental performance.

In order to determine which EMS was most suitable for its activities, Energy Northwest staff evaluated five EMS models:¹

- International Chamber of Commerce Business Charter for Sustainable Development (ICC)
- Commission for Environmental Cooperation Guidance Document (CEC)
- International Organization of Standardization ISO 14001 Standard (ISO)²
- EPA Code of Environmental Management Principles (CEMP)
- International Council of Chemical Associations Responsible Care program (RC)³.

As a result of that evaluation, a recommendation was made to develop an adapted EMS that conforms primarily to the requirements of ISO 14001 (including recently suggested revisions), and secondarily to the principles in the ICC Charter. It was also recommended that the composite model capture the strongest elements of other EMS models (e.g., employee involvement) that: 1) are not adequately addressed by the ISO 14001 standard and the ICC Charter and 2) would be compatible and appropriate for Energy Northwest's goals and activities.^{4 5} Using those recommendations as a starting point, this white paper details the elements of the composite EMS model that will be used to develop and implement an EMS at Energy Northwest. This composite EMS model is designed to be:

¹ The reports produced under Task 1a, Attachment 1, EMS Models, Rev.1, 08/16/01, and Attachment 2, Comparison of EMS Models, 08/16/01, Rev.1 describe the results of this evaluation.

² ISO 14001 is currently under review. Only minor structural changes are expected. For example, the Objective and Targets and Environmental Management Programs elements are expected to merge into one element (Objectives and Targets) and a new element, Evaluation of Legal Compliance, is planned. Some element titles may change.

³ Responsible Care is being reformatted into an ISO 14001 compatible structure and format. A final version is expected early next year.

⁴ Refer to Task 3 Report, Recommendations, 01/10/02, Rev. 0.4, including Attachment 2, Rationale for EMS Model Recommendation.

⁵ The Multi-State Working Group (MSWG) has also suggested revisions to ISO 14001. The Washington Department of Ecology EMS Alternative to Pollution Prevention Planning, Publication 97-401, February 1997 (see <http://www.ecy.wa.gov/biblio/97401.html>), along with the Coalition for Environmentally Responsible Economies (CERES) Principles, were also considered in developing this composite model.

- proactive;
- standardized but flexible;
- understandable;
- inclusive of the concepts of sustainable development; pollution prevention; compliance assurance; and employee, contractor, and community involvement;
- credible; and
- suitable for pursuit of third party registration (to the ISO 14001 standard.)

The purpose of this white paper is to capture all the relevant standards, requirements, and suggestions in one place. **The model detailed here is not intended to be specific to Energy Northwest.** It uses the generic language from the various models considered. The project management plan being developed under Task 1 of this project will use this composite model as a framework to formulate the strategy and tasks for an Energy Northwest-specific EMS. The various elements and how they are to be implemented at Energy Northwest will be described in more detail in the EMS documentation that will be prepared under the project.

During the term of this project, this EMS model may undergo further revision based on:

- The contents of this model will be reviewed with Energy Northwest senior management as part of Task 1b of the above-referenced Statement of Work (Task 1b: Prepare presentation for senior management on project plan; deliver presentation with Energy Northwest Project Manager to reach concurrence on plan.), and with the State of Washington Department of Ecology;
- The ISO 14001 standard is under review, and may change in the future; and
- Minor revisions may be recommended as the EMS project progresses.

The model will be finalized prior to the Year 3 assessment and pursuit of ISO 14001 registration.

In this document, each element that makes up the composite model is identified as to its source (e.g., ISO 14001 requirement). All ISO 14001 requirements are included in this model as required elements, since one of the goals of this project is to certify the Energy Northwest EMS to the ISO 14001 standard. Language that is taken from the current version of ISO 14001 standard is in **bold text**. Note: In some cases, ISO 14001 language has been modified to make it easier to read. For example, in ISO 14001, the standard repeats “activities, products, and services” in numerous locations. In this model, the term “activities” is defined to include these items.

The terms “shall,” “should” and “may” are used in this model as follows:

- **shall** - required because either it is in the ISO 14001 standard, or is considered essential to implementation of an ISO 14001 EMS;
- **should** - a management expectation. Management approval would be expected for deviation. Equivalent to a voluntary commitment.
- **may** – suggested. Non-mandatory and optional.

These distinctions are significant because during ISO 14001 registration, Energy Northwest’s conformance to both the ISO 14001 standard *and* voluntary commitments (signified by the term “should”) will be evaluated.

THE COMPOSITE EMS MODEL

Notes:

- 1) Key definitions are included at the end of this document.
- 2) The source of the language included in this model is listed in parentheses after each section (e.g., CEMP = Code of Environmental Management Principles.) "Z" designates input from Battelle.
- 3) The first use of defined terms is highlighted. Clicking on the highlighted text on the electronic version will bring the reader to a bookmark that contains a definition of that term.

ENVIRONMENTAL MANAGEMENT SYSTEM (COMPOSITE MODEL)

1. GENERAL CRITERIA, ENVIRONMENTAL STEWARDSHIP, AND INTEGRATION

The **organization**:

- **should** recognize **environmental** management as a corporate priority and strive to facilitate a culture of **environmental stewardship**; (ICC, CEMP)
- **shall** establish, institutionalize, and maintain an **environmental management system (EMS)** that includes policies, programs, and practices for conducting **activities** in an environmentally responsible manner; (ICC, CEMP, ISO, Z); and
- should fully integrate the EMS into all its activities, including overall decision-making and planning (e.g., investments, capital improvements, product and process design, training programs, and maintenance activities). (ICC, CEC, Z)

The organization **may** also promote adoption of sound environmental principles by contractors (including suppliers, contractors, distributors and onsite service providers) acting on behalf of the organization, by encouraging, where appropriate, improvements in their practices and adoption of comparable environmental stewardship principles. (ICC, CEC, RC, ISO)

2. ENVIRONMENTAL POLICY

After considering environmental requirements and **stakeholder** expectations and concerns, **top management** shall define the organization's **environmental policy** and ensure that it: (CEMP, Z, ISO)

- **is appropriate to the nature, scale, and environmental impacts** of the organization's activities; (ISO)
- **includes a commitment to:**
 - achieve and maintain **compliance with environmental requirements**; (ISO)
 - conform to **other voluntary commitments to which the organization subscribes**; (ISO)
 - conduct operations in an environmentally responsible manner, including managing and reducing environmental impacts/**risks**; (ICC, CEC, Z)
 - **prevent pollution**; (RC, CERES, Ecology, ISO, Z)

- share information, as appropriate, with employees, the public, and stakeholders on the organization's policy, EMS, and environmental performance; (CEC) and
- **continually improve**. (ISO)
- **provides the framework for setting and reviewing environmental objectives and targets**; (ISO)
- **is documented, implemented, maintained, and clearly communicated to all employees**; and (ISO, CEC)
- **is available to the public**. (ISO)

The Chief Operating Office (CEO) should sign the environmental policy. Other members of top management may also sign the environmental policy as a visible sign of senior management commitment to the policy. (RC)

3. ENVIRONMENTAL ASPECTS AND IMPACTS

The organization shall establish and maintain (a) procedure(s) to identify the environmental aspects of its activities, taking into account planned, new, or modified activities **that it can control and those which it can influence**. The procedure(s) shall also describe the criteria or method the organization uses to determine those aspects that have or **can have significant impacts on the environment** (i.e., significant environmental aspects). (ISO and revisions, RC, ICC)

The organization shall ensure that the aspects related to these significant impacts are considered in setting its environmental objectives, and in developing, implementing, and maintaining its EMS. (ISO and revisions)

The organization shall document this information on environmental aspects and **keep it up-to-date**. (ISO)

4. ENVIRONMENTAL REQUIREMENTS AND VOLUNTARY COMMITMENTS

With regard to **environmental requirements**, and other voluntary commitments, the organization:

- **shall establish and maintain a procedure** to monitor and **identify**, determine **applicability**, and **have access to those requirements/commitments that** are related to the **organization's environmental aspects**; (ISO, CEMP, CEC, RC)
- should, where possible, anticipate changes including new requirements that may apply as a result of changes in activities; (CEC, Z)
- should incorporate them, or changes to them, into the EMS; and (CEC, ISO revisions)
- should have a process(s) to implement them. (RC, CEC)

5. OBJECTIVES, TARGETS, AND ENVIRONMENTAL MANAGEMENT PROGRAMS

The organization shall establish and maintain documented environmental objectives and targets at [each relevant function and level](#) within the organization. (ISO, Z)

The objectives and targets shall be consistent with the environmental policy, including the commitments to pollution prevention, compliance, communication, and continual improvement. (ISO, RC)

When establishing and reviewing its objectives, the organization shall consider environmental requirements and voluntary commitments; its significant environmental aspects; technological options; financial, operational and business requirements; and the views of stakeholders. (ISO, RC, CEMP, Z)

The organization shall establish and maintain programs for achieving its objectives and targets. These [environmental management programs](#) shall include: (ISO)

- **designation of responsibility and accountability for achieving objectives and targets at each relevant function; and (ISO, RC)**
- **an action plan that includes measurable milestones and the means and timeframe by which they are to be achieved. (ISO, CEC, Ecology)**

If a project relates to new developments or new activities, program(s) shall be amended where relevant to ensure that environmental management applies to such activities. (ISO)

Note: Objectives and programs that support environmental stewardship may include:

- Developing, designing, and operating facilities and conducting activities, taking into consideration efficient use of energy and materials, sustainable use of resources, minimization of adverse environmental impact and waste generation, and the safe and responsible disposal of wastes. (ICC)
- Identifying and implementing opportunities for reducing hazardous substance use and hazardous waste generation. (Ecology)
- Identifying and adopting improvements in the EMS that allow the organization to identify, evaluate, and implement pollution prevention opportunities in the future. (Ecology)

6. STRUCTURE AND RESPONSIBILITY

Roles, responsibilities and authorities shall be defined, documented, and communicated in order to facilitate effective environmental management. (ISO)

The organization may establish clearly defined employee performance standards that include environmental issues, as appropriate; and recognize and reward exceptional environmental performance. (CEMP)

Management:

- should seek to instill the attitude that all employees are responsible for implementing the EMS and improving environmental performance; (CEMP)
- should have a system in place for the identification of needs and allocation of resources to implement the environmental policy; and (RC)

- should commit and **shall provide**, or assure the availability of, **resources essential to the implementation and control of the EMS** (including achievement of objectives and targets, and implementation of environmental management programs.) **Resources include human resources** (i.e., the availability and assignment of sufficient personnel), **specialized skills, and technology, and** allocation of **financial resources**. (ISO, CEMP, RC, CEC)

Top management shall appoint a specific management representative who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for: (ISO)

- **ensuring that EMS requirements are established, implemented, and maintained in accordance with ISO 14001;** and (ISO)
- **reporting on the performance of the EMS to top management for review and as a basis for improvement of the EMS.** (ISO)

7. TRAINING, AWARENESS, AND COMPETENCE

The organization shall:

- educate and train employees to conduct their activities in an environmentally responsible manner; (ICC)
- **identify training needs;** (ISO)
- **require that all personnel whose work may create a significant impact upon the environment or result in noncompliance have received appropriate training** to carry out the environmental responsibilities of their positions. (CEMP, MSWG, ISO) The training program should include task specific skills; and (RC)
- **establish and maintain procedures to make persons working for the organization or on its behalf aware of:** (ISO)
 - **the importance of conformance with the environmental policy** (including the importance of compliance), **procedures, and the requirements of the EMS;** (ISO)
 - environmental requirements associated with their tasks; (RC, Z)
 - **their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the EMS, including emergency preparedness and response requirements;** (MSWG)
 - **the significant environmental aspects and impacts, actual or potential, of their work activities;** (ISO)
 - **the environmental benefits of improved personal performance;** and (ISO, CEMP)
 - **the potential consequences of departure from specified operating procedures.** (ISO)

Personnel performing tasks which can cause significant environmental impacts or which can result in noncompliance shall be competent on the basis of appropriate education, training, skills, and/or experience. (ISO, MSWG)

The organization should also have a program to provide appropriate guidance, information, and provide training or require it as a prerequisite, to contractors and leaseholders on the risks associated with the work they will be performing. In addition, it should have a program/process for receiving information from suppliers on goods and services that the organization will use. (RC, CEC).

8. COMMUNICATION

With regard to its environmental aspects and EMS, the organization shall establish and maintain procedures for: (ISO)

- **internal communication between the various levels and functions of the organization.** (ISO) This may include how environmental requirements and environmental performance will be communicated; and (CEC)
- **receiving, documenting, and responding to relevant communication from external interested parties** (ISO), including concerns regarding environmental performance and compliance. (CEC, ICC)

The organization also:

- **shall communicate relevant procedures and environmental requirements** to persons working on behalf of the organization (e.g., employees, **contractors**) and **suppliers**; (ISO, CEC)
- **shall consider processes for external communication on its significant environmental aspects, and record its decision.** (ISO).
- should fully inform top management about pertinent environmental issues. (CERES)

In order to foster openness and dialogue with stakeholders, the organization:

- Should, at intervals it deems appropriate, prepare an environmental statement, report, or other communication that is available to stakeholders. (ICC, MSWG, RC). The statement should be presented in a clear and comprehensible manner and may include:
 - the organization's significant environmental aspects;
 - its targets and objectives relative to significant environmental aspects;
 - the organization's environmental requirements;
 - its environmental performance;
 - progress relative to its significant environmental aspects, and its targets and objectives (including environmental leadership); and (CEC, RC)
 - numerical data, where applicable. (MSWG)
- should encourage employee feedback on pollution prevention and other means to reduce environmental impact; (RC, CEMP, Z)
- may assess employee and community concerns about the organization's activities; and anticipate, where possible, and respond to, their concerns about the potential environmental hazards and impacts of activities; (ICC, Z)
- may periodically seek advice and counsel through dialogue with persons in communities near its facilities; (CERES)
- may involve stakeholders in the development of its EMS; (MSWG)
- may encourage employee involvement in development and implementation of the EMS. (RC, CEMP)

The organization may also consider sharing knowledge and lessons learned with other nuclear utilities. (RC, ICC)

9. EMS DOCUMENTATION

EMS documentation shall include:

- the documented environmental policy, objectives and targets; (ISO, CEC)
- a description of the **main elements of the EMS**, and their **interaction** and **reference to related documentation**; (ISO)
- documents required by ISO 14001; (ISO)
- documents determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects; (Z) and
- records required by ISO 14001. (ISO and revisions)

10. DOCUMENT CONTROL

Documents **required by an EMS and by ISO 14001 shall be controlled.** (ISO, CEC) **A procedure(s) shall be established and maintained** to define the controls needed to: (ISO, CEC)

- **Approve documents for adequacy** prior to issue; (ISO)
- **Review, update as necessary and re-approve documents**; (ISO)
- Ensure that changes and the current **revision status** of documents are identified; (ISO)
- Ensure that **relevant versions of applicable documents are available** at points of use; (ISO)
- Ensure that documents remain **legible and readily identifiable**; (ISO)
- Manage documents of external origin determined by the organization to be necessary for the planning and operation of the EMS; and (Z)
- **Prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.** (ISO and revisions)

Records are a special type of document and shall be controlled according to the requirements given below (see Records). (ISO revisions)

11. RECORDS

The organization shall establish and maintain procedures to define controls needed for the identification, storage, protection, retrieval, retention, and disposition of environmental records. (ISO)

Environmental records shall be and remain legible, identifiable and traceable. (ISO and revisions)

Records shall be maintained as appropriate to the system and to the organization, to demonstrate conformity to the requirements of ISO 14001. (ISO)

12. OPERATIONAL CONTROL

The organization shall identify those activities that are associated with the identified significant environmental aspects and compliance with environmental requirements, consistent with its policy, objectives and targets. (ISO, MWSG)

The organization shall plan these activities in order to ensure that they are carried out under specified conditions by: (ISO, MSWG)

- **establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the environmental policy and the objectives and targets. (ISO)** This may include engineering and operational controls to detect and prevent unplanned releases to the environment and minimize human error, and other precautionary approaches to prevent environmental degradation such as pollution prevention; (RC, ISO, ICC)
- **stipulating operating criteria in the procedures; (ISO)**
- **enabling personnel to perform their functions consistent with policies and environmental requirements; and (CEMP)**
- **establishing and maintaining procedures related to the identifiable significant environmental aspects of goods and services used by the organization. (ISO)**

13. EMERGENCY PLANNING, PREPAREDNESS, AND RESPONSE

The organization shall establish and maintain (a) procedure(s) to identify potential emergency situations and potential accidents that can have (an) environmental impact(s), and how it will respond to them. (ISO)

The organization should coordinate emergency planning, preparedness, and response with emergency services, relevant authorities, and the local community, as appropriate. (ICC, CEMP, RC)

The organization **shall respond to** actual emergency situations and accidents, and prevent or mitigate associated environmental impacts. (ISO)

The organization shall periodically test such procedures where practicable. (ISO)

The organization shall periodically review and revise, where necessary, its emergency preparedness and response procedures, in particular after the occurrence of accidents or emergency situations. (ISO)

14. MONITORING AND MEASUREMENT

The organization shall establish and maintain (a) procedure(s) to monitor and measure, on a regular basis, the key characteristics of its activities that can have a significant impact on the environment. This shall include recording information to track performance, relevant operational controls and conformance with the organization's environmental objectives and targets. (ISO)

The procedure may describe the organization's system for periodically gathering, analyzing, managing, and recording information to track, assess, and determine trends on environmental

performance, applicable operational controls, and conformance with the organization's environmental objectives and targets, and identify areas for improvement (including areas where performance is or is likely to become substandard). (CEMP, RC)

The organization shall calibrate and maintain monitoring and measurement equipment, and shall retain associated records. (ISO)

15. NONCONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION

The organization shall establish and maintain (a) procedure(s) for dealing with nonconformances and associated preventive and corrective actions (e.g., for incidents such as equipment malfunction, operator error, and accidental release of hazardous substances that could cause an adverse environmental impact.) (CEC, ISO and revisions)

The procedure shall address: (ISO, CEC, CERES)

- detecting and **investigating nonconformance** or situations that could lead to nonconformances; (Note: This should include evaluating the cause of nonconformances and the need to take corrective or preventive action);
- **defining responsibility and authority for handling and investigating nonconformances;**
- **promptly initiating and completing corrective action to mitigate any adverse environmental impacts caused, and taking preventive action** to eliminate the cause of actual nonconformances in order to prevent recurrence; and
- reporting nonconformance (internally, and as required, externally.)

Any action taken to identify, correct, mitigate or eliminate the causes or effects of actual and potential nonconformances shall be appropriate to the magnitude of problems and the environmental impact encountered. (ISO and revisions)

The organization shall review the actions taken and implement and record procedural changes resulting from preventive and corrective action. (ISO and revisions)

The organization should have a system to track key corrective and preventive actions to closure. (CEC)

16. COMPLIANCE ASSURANCE (EVALUATION OF COMPLIANCE)

The organization should have a program to proactively identify and resolve potential compliance problems. (ICC, CEMP).

The organization shall establish and maintain a documented procedure for periodically evaluating compliance with applicable legal environmental requirements. (ISO proposed revisions)

The organization should also monitor the performance of its contractors with regard to environmental requirements, and applicable requirements of the EMS. (RC, Z)

17. INTERNAL ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT

The organization shall ensure that internal EMS audits are conducted at planned intervals in order to: (ISO, Ecology)

- **determine whether the EMS:**
 - **conforms to planned arrangements for environmental management including the requirements of ISO 14001; and**
 - **has been properly implemented and maintained;**
- **provide information on the results of audits to management; and**
- **make appropriate adjustments to objectives and targets as changing conditions warrant.** (ISO, Ecology)

Note: The audit may be either third party or internal. The periodic assessment may include an assessment of the entire EMS. However, annual assessment should be conducted that, at a minimum, addresses the elements contained in the EMS Alternative to Pollution Prevention Planning, February 1997 (i.e., pollution prevention, objectives and targets, responsibilities and resources, and training) in order to determine whether each of these elements is continuing to operate within the EMS. (Ecology)

The audit program shall be planned, established and maintained by the organization, taking into consideration the environmental importance of the activity concerned and the results of previous audits. (ISO and revisions)

The audit procedure shall be established and maintained, and include the following:

- **audit criteria, scope, frequency and methods; and**
- **responsibilities and requirements for planning and conducting audits, and for reporting results.** (ISO)

Selection of auditors and conduct of audits should ensure objectivity and the impartiality of the audit process. (ISO revisions)

18. MANAGEMENT REVIEW

The organization's top management shall, at intervals that it determines, review the EMS to ensure its continuing suitability, adequacy and effectiveness. (ISO)

The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation. (ISO)

The management review shall address the possible need for changes to policy, objectives and other elements of the EMS, in light of EMS audit results, changing circumstances; and the commitment to continual improvement. (ISO)

The management review may also address:

- internal and external audit results; (Z)
- results from any [benchmarking](#) conducted to compare its environmental operations and EMS with other organizations and management standards, where appropriate; (CEMP, RC)
- stakeholder expectations; (RC) the adequacy of resources assigned to EMS programs; and
- (RC) performance against objectives and compliance requirements. (RC)

This review shall be documented. (ISO)

KEY DEFINITIONS

Activities. Operations and functions of all organizational units. Includes projects, products and services. (CEC, ICC, Z) Includes maintenance, design and operation of facilities, decommissioning, and leaving a site. (ICC, Z)

Benchmarking. Comparing one organization to others, particularly those recognized as effectively employing best management practices or processes, in order to benefit from the experience of peak performers, and to improve processes or organizational practices. (CEMP, ⁶, Z)

Compliance. Conforming to relevant and applicable [environmental requirements](#).

Continual improvement. Process of enhancing the EMS to achieve improvements in overall environmental performance in line with the organization's environmental policy. (ISO) (Note: It is assumed that as the organization continually improves its EMS, environmental performance will improve as a result. However, the definition applies strictly to operation of the EMS, and does not automatically apply to environmental performance.) It includes continually improving policies, programs, and processes; taking into account environmental requirements (as a starting point), technical developments, scientific understanding, consumer needs, and community expectations. (ICC, Z) For example, continual improvement includes adoption and implementation of policies and procedures associated with the ongoing identification, evaluation (both technical and economic), and implementation of pollution prevention opportunities in decisions with environmental consequences. (Ecology) The process of continual improvement need not take place in all areas of activity simultaneously. (ISO)

Each relevant function and level. Refers to parts of the organization or staff whose jobs involve activities with a potential to impact the environment. (Ecology)

Environment. Surroundings in which an organization operates; including air, water, land, flora, fauna, other natural resources, habitat, humans, and their interrelation (i.e., the ecosystem). (ISO, Z)

Environmental aspect. Element of an organization's activities that can interact with the environment. (ISO) A significant environmental aspect is one that has or can have a significant [environmental impact](#).

⁶ Spendoli, M.J., The Benchmarking Book, Second Edition, April 2003.

Environmental impact. Any change to the environment, (including resource use), whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services. (ISO, Z) Environmental impacts may be past, present, or potential (in the future). (Z) Environmental impacts may have local, transboundary, or global significance. (ICC)

Environmental management program. An action plan for achieving the organization's environmental objectives and targets, including identification of who has responsibility, other resource needs, tactical steps describing how it will be done, and a defined schedule.

Environmental Management System (EMS). The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining environmental management. (ISO)

Environmental policy. A statement establishing environmental commitments, goals, priorities, and attitudes. It incorporates the organizations' mission, vision, and core values with respect to the environment. (CEMP, Z)

Environmental requirements. Local, state, and federal statutes, laws, or legislation; regulations; permits; and enforceable agreements that the organization is subject to and must comply with. (Z, CEC).

Environmental stewardship. Recognizing the life-cycle impacts of activities on the environment and adopting environmentally responsible practices that not only eliminate or reduce negative environmental impacts, but also sustain and develop natural resources and the natural world for present and future generations. (CEMP, Z) Environmental stewardship is part of [sustainable development](#), which also involves social and economic responsibility. (Z)

May. Suggested. Non-mandatory and optional.

Nonconformance. Non-fulfillment of a requirement.

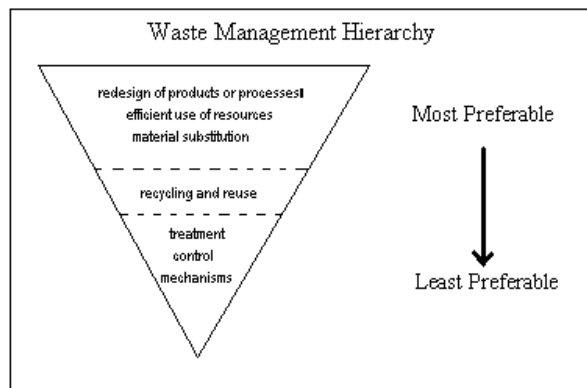
Objective. A goal towards which an endeavor is directed. (Webster's Dictionary). Notes: Objectives can be determined by systematically analyzing current environmental efforts, enhancing good programs, and strengthening areas that need improvement. (CEMP)

Organization. All organizational units included within the defined scope of the EMS.

Pollution Prevention. Use of processes, practices, materials, or products that avoid, reduce, or control pollution. In order of preference, options may include:

- source reduction, and resource and energy conservation (e.g., redesign of products or processes to reduce hazardous substances at the source, efficient use of resources, and material substitution);
- reuse and recycling; and
- treatment and control mechanisms (see Waste Management Hierarchy). (MSWG, CEMP, CERES, Z, Ecology) Note: Some definitions of pollution prevention do *not* include pollution control/end of the pipe treatment. (Ecology)

Notes: Aggressive pollution prevention strategies are central to maintaining compliance, improving environmental performance, reducing risks, and controlling costs. (CEMP) Pollution prevention should be the preferred approach to pollution management. (Ecology)



Note: The State of Washington

Department of Ecology definition of pollution prevention does include treatment control mechanisms.

Risk. A factor, course, or element involving uncertain danger; hazard. (Webster’s Dictionary)

Shall. Required either because it is in the ISO 14001 standard, or is considered essential to implementation of an ISO 14001 EMS. (Z)

Should. A management expectation. Management approval would be expected for deviation. Equivalent to a voluntary commitment. (Z)

Sustainable Development. Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.⁷

Stakeholders. Internal and external interested parties. Includes employees, the Board of Directors, the public, regulatory agencies and authorities, and environmental groups.

Target. A specific task associated with achieving an objective. Targets should be quantified where practicable, and measurable. (ISO, Z).

Top management. Top management includes the senior manager(s) ultimately responsible for the environmental performance of the organization. It typically includes the Chief Executive Officer, Chief Operating Officer, and senior managers responsible for operations that have significant environmental aspects. It also typically includes senior managers responsible for the organizational units responsible for the functions within the EMS (even if they do not report directly to the CEO). (Z)

(Other) Voluntary Commitments. (referred to as “other requirements” in ISO 14001) Environmental principles or industry norms that an organization may choose to adopt or subscribe to. Voluntary commitments or undertakings go beyond compliance, and may relate to regulated and/or non-regulated areas. (CEMP) For example, they could include the ICC Charter for Sustainable Development, voluntary agreements, etc. Indicated by the use of the term “should.” (Z)

⁷ World Commission on Environment and Development (WCED). Our Common Future. Oxford: Oxford University Press, 1987