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Environmental Management Systems Voluntary Project Evaluation Guidance

Multi-State Working Group on Environmental Management Systems

U.S. DEPARTMENT OF COMMERCE
National Institute of Standards
and Technology
Gaithersburg, MD 20899-0001

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February 13, 1998

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February 13, 1998

Pete Wilson
Governor

Peter M. Rooney
Secretary for
Environmental
Protection

Dear Reader:

This document is the product of more than a year's work by many dedicated people. In the fall of 1996, a group of state regulators, with additional participation from two Environmental Protection Agency (EPA) program offices and the business and public interest communities, started discussing the possibility of devising pilot projects to test the idea that Environmental Management Systems (EMSs) might play a beneficial role as policy tools at the state level. At about the same time, a similar group within EPA's Office of Enforcement and Compliance Assurance began similar discussions, with a particular concern for the potential use of EMSs to meet national compliance and performance goals.

Over time, it became clear that the objectives of the two groups were virtually identical and that their mutual goal would be best served by a coordinated effort. That goal is to gather credible and compatible information of known quality that is adequate to address key public policy issues. On September 22, 1997, the EPA and Multi-State Working Group on Environmental Management Systems (MSWG) agreed develop and maintain a common, national database of information generated by state and federal EMS pilot projects in the interest of saving resources and facilitating research.

Although this guidance document originated within the MSWG, it has been reviewed by the relevant offices within EPA, and both it and the accompanying protocols document incorporate substantial input from personnel within those offices.

The MSWG will continue to play a key role in coordination of pilot projects. Together, the MSWG and EPA will work to ensure communication, cooperation and harmonization between the state and federal entities. We look forward to the results of this important experiment in reinvention. On behalf of the MSWG,

Sincerely,

Robert D. Stephens, Ph.D. Chair MSWG
Deputy Director
Science, Pollution Prevention & Technology
Program

Statement of Common Purpose
by
The Multi-State Working Group on Environmental Management Systems
and
the U.S. Environmental Protection Agency
to
Evaluate the Effectiveness of Environmental Management Systems

September 22, 1997

Federal and State environmental regulators are working in partnership to explore the utility of environmental management systems (EMS), especially those based substantially on ISO 14001, in public policy innovation.

Our goal is to gather credible and compatible information of known quality adequate to address key public policy issues. We are interested in the effect of EMSs on, among other things, environmental performance, environmental conditions, compliance with environmental regulations, stakeholder involvement, pollution prevention activities, and the costs and benefits of environmental activities. The primary mechanism to generate this information will be pilot projects. Valid, compatible data from other sources will also be used whenever possible. To make efficient use of our resources, and to ensure more robust research, EPA and States will work together on the creation of a common data base. The data base will be open and usable, while recognizing the need to insure appropriately the confidentiality of participants.

In the near term, State and federal regulators will jointly develop protocols for data collection, and ensure adequate funding for the collection, management and analysis of EMS data. By November 1, 1997, we will produce a detailed action plan to harmonize EMS assessment activities.

The success of this endeavor, in all of its aspects, depends upon the active participation of partners in the government, business, public interest and other sectors. The regulators will, therefore, work with their partners to continuously improve and implement this plan to the benefit of all.

J. Charles Fox
Associate Administrator
Office of Reinvention
U.S. Enyironmental Protection Agency

Robert D. Stephens, Ph.D., Chair MSWG
Deputy Director
Science, Pollution Prevention & Technology Program
California Environmental Protection Agency

Statement of Intent

The intent of this document is to provide a framework for the collection of information of value to regulatory agencies and others interested in determining the impact in several key areas of environmental management systems based on ISO 14001.

The use of this tool and the participation of states and organizations in pilot projects based on the ISO 14001 standard is entirely voluntary. If the value of ISO 14001 in meeting public policy goals can be demonstrated, changes in environmental policies, regulations, or statutes may be considered. The tool is not intended to encourage modifications to ISO 14001.

By establishing a framework for gathering of data and asking relevant questions, it is inevitable that a certain amount of bias will exist. However, the data categories within the framework are consistent with ISO 14001. The categories selected are critical to public policy development–the overriding concern of the states. This document represents current thinking and will be improved as the states gain knowledge and experience. It is not a final document.

The data gathered, and the ensuing public dialogue envisioned in the data evaluation process, will allow regulatory agencies to reach insightful and credible conclusions that otherwise would be difficult or impossible to achieve.

Why This is A Winning Approach

It is said "what gets measured gets managed; and what gets managed gets done." That principle guided the preparation of this guidance. It is also true that non-quantitative data - words with meaning - provide insight as to "why" something happened. Non-quantitative data was captured in categories like pollution prevention and interested parties. The goal is to help you find and organize information you can use to evaluate your ISO 14001/EMS. As Green Bay Packer coach Vince Lombardi said, "If you don't keep score, it's only practice." this tool should help everyone keep better "score" than the present system.

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Environmental Management Systems Voluntary Project Evaluation Guidance

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I. INTRODUCTION

Background

Just as the price of freedom is eternal vigilance, the cost of needed continual environmental improvement may be the constant need to balance the use of regulations with voluntary initiatives. State and federal agencies are testing ways to achieve environmental gains through more effective, less costly compliance and through promotion of pollution prevention methods and technologies. There are efforts in all sectors to address both the resource and environmental performance issues which face regulator and regulated alike.

The ISO 14001 Environmental Management Standards series, developed within the International Organization for Standardization, may prove helpful for focusing on allocation of resources and on performance issues. The principal document of this series, ISO 14001, Environmental Management Systems (EMS), provides a framework for implementing an organization's environmental policy and meeting its EMS objectives. Compliance and prevention are specifically mentioned as two required policy elements which the 14001 system must address. Measuring the impact of an ISO 14001 EMS on the actual environmental performance of an organization is the subject of pilot projects being conducted by both federal and state agencies.

EPA and a number of states have expressed interest in coordinating the implementation and data collection/analysis phases of their ISO 14001 pilot projects. Sharing project performance information and results can substantially increase the value of the projects for all interested parties.

This group, known by its participants as the Multi-State Working Group (MSWG) on Environmental Management Systems, includes California, Texas, Oregon, Arizona, Illinois, Minnesota, Wisconsin, Pennsylvania, Massachusetts, and North Carolina. The Working Group has prepared this voluntary project design document, known as the Project Evaluation Guidance (Guidance), which can be used by the states and is consistent with their pilot project implementation schedules

Other participants were included in the discussions since the innovative approaches represented by ISO 14001 will require new partnerships and relationships. Representatives of two USEPA offices, two representatives of the environmental community, one from National Institute of Standards and Technology (NIST), two from academia and one from the regulated community also participated in the development of this Guidance. The group also received input from other EPA offices.

State regulatory agencies and EPA are experimenting with new models for more effective and efficient ways to ensure compliance with regulatory requirements and meet environmental, enforcement, and performance goals. One model is to test the hypothesis that the use of an ISO 14001 environmental management system has a positive effect on environmental performance,

including compliance with regulatory requirements. The idea is to encourage a system that will maintain not only compliance but enhance overall environmental and organizational performance.

Systematic management of environmental responsibilities may prove helpful to an organization to achieve improved environmental compliance along with additional goals. The ISO 14001 standard is one framework for such a system, but not the only one. ISO 14001 does not set specific levels of performance. ISO 14001 provides a framework for establishing an environmental policy, setting performance objectives for the EMS, and continually improving the system. Analysis of impacts (potential and actual), implementation plans, training, auditing and management feedback are all elements within the EMS system. Specific goals and objectives are unique to each organization. The environmental policy uniquely reflects the character of the organization. ISO 14001 EMS systems can help any organization achieve multiple and mutually-reinforcing goals to benefit a wide range of interested parties: management, employees, the community, citizen advocates, customers, and government. The MSWG evaluation format can be used to credibly and uniformly test the system.

As the state agencies evaluate EMS performance, they will also need to assess the degree of meaningful involvement of interested parties in the process, as well as the quality and transparency of the information produced.. Credibility of the process and the performance data will be critical to future policy decisions. To the extent that ISO 14001 is used as a tool to achieve certain regulatory and public policy goals, organizations should realize that there may be requirements to involve and to report to interested parties that go beyond those specified in the ISO standard. Making good faith efforts in meeting those requirements/needs should promote a climate which enhances the regulatory policy review process. Discussions on approaches to interested party involvement can be found in a recent publication from the Aspen Institute. 1

The MSWG anticipates that, at a minimum, pilot project evaluation will be based upon the environmental performance, environmental compliance, pollution prevention and interested party involvement categories included in the Guidance. The MSWG expects that each project manager will take all reasonable steps to ensure that all the data called for under the environmental performance and environmental compliance categories in this Guidance are collected in all pilot projects. Information from other categories such as pollution prevention and interested party involvement will also be very important in the analysis of pilot projects. However, the needs of various pilot projects will vary and insight will be gained by looking at the accumulated information from all pilot projects as well as comparisons between and among pilots. The long term goal is to collect the most complete set of data possible, to ensure unbiased and reliable analysis. Careful technical review will be needed on how to handle incomplete data sets.

The data categories which appear in this document were, to the extent possible, developed around the kinds of data that the MSWG believes will or could be generated by ISO 14001. The EPA and States recognize that a number of groups are working on data collection and will strive to have comparable data collection efforts.

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1 The Alternative Path, A Cleaner, Cheaper Way to Protect the Environment. The Aspen Institute, 1996.

Purpose and Description

Testing the impact of pilot projects on environmental and economic outcomes is key to determining public policies relative to ISO 14001. It is important to note what an organization using ISO 14001 considers important may differ from what regulators or communities consider important. The Project Evaluation Guidance designed by the MSWG identifies important categories of measurables that are likely to be of interest to various interested parties, and provides the opportunity for standardization of the measurables among participating programs. The value of the approach is to generate multiple data points across a variety of state regulatory schemes and geographic communities, thus allowing the evaluation of outcomes in the range of pilot designs.

Who Benefits From The Use of the Guidance ?

This Project Evaluation Guidance is designed to produce performance information of value to three interested party groups, helping them determine whether an ISO 14001 system meets their individual and consensus needs better than the old way of doing things did.

- *Government*: All elected, appointed and hired officials at local, state or Federal levels who enact and implement laws, protect the environment, manage (defense and other) facilities and balance competing needs with limited resources
- *Business*: All who are involved in or important to the efficient and profitable production and sale of goods and services and environmental protection. This includes lenders, analysts, shareholders, insurers, directors, managers, workers, suppliers, customers and consumers.
- *Public Interest*: All who have an interest in environmental protection, including neighbors, the community, and advocates at various levels.

This Project Evaluation Guidance enables pilot project design teams to evaluate the use of ISO 14001 EMS as a tool to improve environmental performance and assure regulatory compliance. Teams must consider the specific measurable objectives, data and results of the project. The Guidance lists measurement indicators, (Figure 1), that are deemed valuable to understand the key technical and policy questions arising out of the use of ISO 14001 and to address the wide range of needs the interested parties identify (see Needs on pg. 29). A wide variety of organizations and facilities will participate in pilot projects, and each project will have unique design aspects including performance measurements. The Guidance is neither intended as a totally comprehensive listing of all possible relevant indicators to ISO 14001 pilot project nor as a mandatory listing of requirements for all ISO 14001 projects.

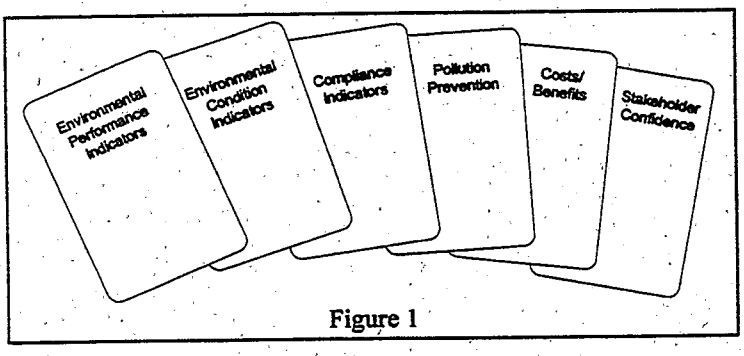

Figure 1

Who Uses The Guidance

Pilot project teams will assign data collection responsibilities based on likely data sources. As an example, discharge and emission information, EMS design and compliance costs would, in many pilots, be available from organization records. Information on interested party involvement, environmental conditions, and agency costs, would likely come from local, state, or Federal records. Although each pilot project management team will assign responsibilities as appropriate, these are strongly encouraged to maintain close coordination in all areas. In all cases the data will need to fit the prescribed protocol to ensure credibility and comparability . For a copy of the data collection protocols, contact Professor John Villani at 919-962-2789 at University of North Carolina at Chapel Hill.

The MSWG Evaluation Guidance is designed to meet a wide range of pilot project needs. This Guidance creates a centralized pilot data collection system (using common reporting format) with decentralized pilot decisions (using the strength of state diversity). The Guidance may be applied in numerous ways as shown below:

- Applied to a organization: It can fit an entire site, a single process within a site, or number of processes or environmental aspects within the site.
- Applied to a firm: It can fit a company whether it includes one or a number of facilities, operations, land holdings and employee commuting patterns.
- Applied to a business sector: It can fit a number of firms or interests (including professional interests) that are joined by common functions, interests, principles or goals that relate to the environment.
- Applied to a government/not-for-profit: It can be used by a government, not-for-profit or public interest organization (that has regulated or unregulated environmental aspects) to address environmental indicator, cost, benefit, pollution prevention or interested party involvement goals.
- Applied to a statute: It can be used when statute or science establishes a pollution reduction or environmental goal that can be better achieved through cooperative action among different parties, including organizations and individuals.
- Applied to a substance: It can be used by a single organization or organizations or jurisdictions to address the environmental aspects of a particular substance such as volatile organics, lead, mercury, chemicals or nutrients (e.g. to protect groundwater).
- Applied to a geographic area: It can be used by a group of urban or rural organizations (public or private) to effectively accomplish goals such as improvements clean air, biodiversity, ecologically managed watershed, brownfield neighborhood redevelopment or sustainable forestry.

Some recommended objectives in the Guidance may be inappropriate for some pilot projects. The evaluation of specific objectives and indicators is the responsibility of the project design team.

What Will Happen In The Future?

Participating states will work with pilot project organizations and other interested parties to achieve agreements that acknowledge special pilot project efforts and risks. The data from these organizations will provide focused insight into the decisions and actions of the organization and its community. It also will contribute to a larger state and EPA data pool.

The pilot project evaluation process relies on the competency, credibility and independence of higher educational institutions. The University of North Carolina, in concert with other participating academic interests, will maintain the consolidated data base as recommended by the Environmental Council of States and supported by The Environmental Protection Agency. A strategy is being developed that will help government, business and other interested parties effectively use the data.

The Guidance will hopefully result in the design of many projects with many common objectives and measurables. The Project Evaluation Guidance is a voluntary tool to help the organization's designing and implementing ISO 14001 EMS pilot projects. As project data is compiled over time, all interested parties, including the Federal and state executive and legislative branches, will be able to evaluate the efficacy of environmental management systems in helping the nation accomplish environmental, social and economic goals.

EMS Project Evaluation Categories

The Guidance covers six different categories. Each category will help users generate part of the information needed to evaluate how organizations set goals and track progress toward those goals. Each category will provide useful for considering potential public policy changes. Pilot projects can use benchmarking to answer the basic question: "Are we better off using the ISO EMS than not using it ?" For greatest benefit, benchmarking should establish reliable baseline data and track progress in specific target areas.

TABLE 1: ENVIRONMENTAL PERFORMANCE INDICATORS

This section seeks information about potential and actual impacts on air, water and land of the organization implementing ISO 14001. Indicator data provide the means to understand whether environmental impacts are greater or lesser under voluntary EMS .

This category includes measures of emissions, their relative priority factors, the use of energy and natural resources, accidents and other impacts, normalized to production.

The basis for this information is assumed to be the significant aspects/impacts inventory required by ISO 14001. The project teams are encouraged to develop measures for regulated, as well as non-regulated significant environmental aspects. The data source on discharges are assumed to be a mix of existing monitoring programs, inventory management and documentation, and project specific measurements. Project teams are encouraged to explore opportunities for non-conventional performance measures such as continuous real time emission monitoring, and feedstock-product-emission/discharge/waste mass balance. Project teams are further encouraged to develop relative impact weighing schemes for these discharge performance indicators. Such weighing schemes will allow assessment of changes in overall environmental and public health risks as a result of the pilot projects. The complete Table 1, Environmental Performance Indicators is in Section II page T1-1.

TABLE 2: ENVIRONMENTAL CONDITION INDICATORS

One outcome the of an environmental management systems may be an improved environment. Knowledge relating organizational environmental aspects to resultant environmental conditions is important in the selection, and prioritization of environmental impacts. The current draft of ISO 14031 states that environmental condition indicators (ECIs) "provide an organization with an environmental context to support the identification and control of its significant environmental aspects".

Environmental condition indicators are commonly developed by governments and research institutions rather than by individual business organizations. Current research shows both the difficulty and importance of understanding environmental conditions as well as attributing specific operations to ambient conditions. Organizations and project teams which identify a linkage between an environmental aspect and an environmental condition are encouraged to

develop appropriate performance indicators for both the aspect (i.e. emission, discharge, energy use) as well as the environmental condition (i.e. air quality, sediment quality, ecosystem health).

The table poses a common series of questions regarding environmental conditions which may be of importance when evaluating the aspects and/or performance of a facility. The conditions in column 1 are examples from the draft standard ISO/CD14031.2. Each of the 56 cells in the matrix should prompt pilot project managers to examine the environmental consequences of a facility operation. *The list of condition indicators in column 1 is neither exhaustive nor fully applicable to all facilities. Each facility and project team should evaluate which environmental condition(s) is (are) applicable to its operation and location.*
The identification of environmental conditions indicators may be especially appropriate for baseline and goal setting purposes when designing EMS as applied to a statute, substance or geographic area as defined on page 9.

TABLE 3: ENVIRONMENTAL COMPLIANCE INDICATORS
An environmental management system is structured to achieve an organization's environmental policy. The organization's environmental policy provides a framework for setting organizational environmental targets and objectives. The environmental targets and objectives lead to detailed, quantified performance requirements. ISO 14001 requires a commitment to environmental compliance as part of an organization's policy statement. State and Federal regulators are responsible for ensuring compliance , and thus are interested in understanding the relationship between an ISO 14001 EMS and compliance. There is a debate about what this commitment means and how it is implemented. Accordingly, this Guidance document, strongly encourages that the EMS pilots evaluate compliance through indicators specified in Table 3. Parts 1 and 2 of Table 3 can be used to collect information about the impact of the environmental management system on the organization's compliance with applicable state and federal environmental laws and other legal requirements. Table 3 also attempts to measure the organization's compliance performance as it relates to the significant environmental aspects the organization itself has identified pursuant to its EMS and other voluntary commitments. Finally, Parts 1 and 2 measures how effectively an organization deals with a regulatory noncompliance issue after it has been identified.

If an organization has not had a thorough compliance tracking system prior to instituting an EMS, it is possible that the number of violations may actually increase after an EMS is initiated. It is important, therefore, in evaluating the effectiveness of an EMS in increasing compliance rates, to look at compliance trends over time to see if the number of violations and seriousness of violations decreases and repeat violations are avoided, as well as to look at the aspects of the EMS (training, pollution prevention, etc.) that produced the change.

Part 3 of Table 3 measures environmental compliance performance with specific discharge limits for air and water during time periods when no violation have been identified, against both specific permits limits and EMS objectives, if the objectives are more ambitious than existing permit limits. This information can be reported by chemical or as a permit total, i.e. in compliance with all limits. It should reflect the number of consecutive months in compliance. It

is recognized that the different issuing dates of the permit could cause differing permit limits for similar facilities. This needs to be considered if comparisons are undertaken.

Part 4 of Table 3 measures environmental compliance performance unrelated to specific discharge limits for the five major federal environmental laws and their state counterparts, during time periods when no violations have been identified.

Part 5 of Table 3 collects information regarding the effect of an environmental management system on the organization's regulatory compliance state. Achieving greater efficiency in regulation and less pollution are important measures of the effectiveness of an EMS. So too are the tracking and monitoring of pollution and regulatory compliance. Collection of this data, including objectives and targets, not only allows for continuous improvements of the EMS, but it also gives the interested parties a basis upon which to weigh regulatory changes. The following example demonstrates the possible changes in regulatory compliance status using an EMS: Major to synthetic minor air permit; a firm is classified as a major source for hazardous air pollutants and may emit more than 10 tons a year. It does not reach that ceiling. The firm then uses an EMS to eliminate fugitive emissions of the hazardous pollutant. It also finds an acceptable substitute material. As a result, the firm no longer has the potential to emit 10 tons a year of the hazardous pollutant. This results in the facility being reclassified as a synthetic minor source, a change in regulatory status.

This category of compliance measurement provides the voluntary opportunity for the facility to use an environmental management system (EMS), in the context of legal environmental requirements, to demonstrably show improvement in performance by moving from a higher (more consequential) regulatory status to a lower (less consequential) regulatory status. The EMS can also link all environmental media to the same criteria for setting goals and establishing priorities, such as reducing a particular chemical from all waste streams.

EXHIBIT 1: COSTS AND BENEFITS- RELEVANT QUESTIONS

Exhibit 1 lists questions designed to help facilities produce relevant and consistent information about the costs and benefits of utilizing an EMS. The MSWG hopes to use the answers document the ways in which costs and benefits associated with developing and implementing an EMS are determined. The answers will also serve as a frame of reference to compare the costs and benefits of facilities that do not operate under an -EMS with the costs and benefits of facilities operating under an EMS. The answers should include as much quantitative and qualitative detail as possible. and should consider the value of benchmarking. Exhibit 1 is in Section II.

EXHIBIT 2: POLLUTION PREVENTION - RELEVANT QUESTIONS

Exhibit 2 reports pollution prevention performance information. These qualitative indicators give added detail to the pollution prevention methods and techniques cited in Section III, Exhibit 2 is in Section II.

EXHIBIT 3: INTERESTED PARTY INVOLVEMENT- RELEVANT QUESTIONS

This section seeks qualitative information about interested party involvement. The ISO 14001 standard does address communication with interested parties in two sections without specifying how this communication is to occur. Section 4.3.3 (Objectives and Targets) requires that the views of interested parties be considered when an organization's objectives are established. Section 4.4.3 requires an organization to develop a process for responding to communication from external interested parties. In assessing the credibility of ISO 14001 EMS as a potential tool for achieving certain public policy goals, the MSWG is interested in gathering information about the extent and nature of interested party involvement in the implementation process. The MSWG are also interested in the credibility of the implementation from the point of view of external interested parties and employees.

The MSWG seeks answers to the questions in Exhibit 3: Interested party involvement. There is no requirement that every question be answered, but the information would be useful for the evaluation process. Exhibit 3 is in Section II.

HOW TO USE THE GUIDANCE: EXAMPLE

This section shows a brief example of how the Tables and Exhibits included in the Guidance may be used. **NOTE: Project designers should note that in order to effectively gather information based on the Guidance categories, the use of standardized protocols will be required. The protocols are available from the University of North Carolina and will facilitate the use of the Tables and Exhibits. Contact information for the data collection protocols may be found on page 30. The Guidance is intended to provide the categories of interest and are not detailed data collection protocols.**

Facility XYZ has completed its aspects inventory and has determined that VOC emissions from a painting operation are significant. The VOC emissions are regulated by a state permit. As part of the ISO 14001 EMS, the organization has set an objective and target to reduce VOC emissions from the painting operation by 100% in two years. The organization has switched to a water based system. Prior to the EMS, the organization was emitting 50 tons of VOC per unit of production.

Table 1 below indicates that the VOC emission from Facility XYZ can be characterized as (1) significant based on their EMS aspect and impact determination, and (2) subject to a specific legal environmental discharge because the emission is regulated by a state permit. Prior to the adoption of the EMS, XYZ was emitting 5 tons of VOC/ unit. After the EMS was implemented, XYZ 's emissions of VOC decreased to 0 tons of VOC/unit. This decrease in emissions was attributed to a pollution prevention technique. This technique was solvent substitution and is found in Table A as option # 20.

This is simply an example to demonstrate the meaning of the data categories in Table 1. It is not expected that project teams will actually fill out the Table. Rather, teams will make use of data collection protocols that are based on the categories of information contained in Table 1 to extract the necessary data.

Table 1: Environmental Performance Indicators

OBJECTIVE	MEDIA	Significant as Identified through Organizational EMS	Non-significant as Identified through Organizational EMS	Subject to Specific Legal Environmental Discharge Limits	Subject to Other Legal Environmental Requirements	Normalized to Production Levels	Method of Reduction Tech. # (Table pg. 22) Poll. Prev? (Y/N)
ENVIRONMENTAL PERFORMANCE INDICATORS (ISO/CD 14031, SEC 4.1.2, ASPECTS, IMPACTS INVENTORY)							
1. Specific pollutant discharges VOC emission	Air X Water Land	X		X		Pre EMS: 5 tons/unit Post EMS: 0 tons/unit	#20 Y
2. Aggregated pollutant discharge (Aggregate using appropriate substance or risk categories)	Air						

Table 2: Environmental Condition Indicators

OBJECTIVE	MEDIA	Significant as Identified through Organizational EMS	Non-significant as Identified through Organizational EMS	Subject to Specific Legal Environmental Discharge Limits	Subject to Other Legal Environmental Requirements	NOT Subject To Legal Environmental Requirements	Performance Relative To Legal Environmental Requirements
ENVIRONMENTAL CONDITION INDICATORS (ISO/CD 14031, SEC 4.1.2.3, ANNEX A)							
1. Ambient air quality (near organization) [pollutant levels, odor, opacity, noise, temperature]	Air						
2. Ambient water quality (near organization) [contaminant levels, grd & surface, D.O., turbidity, temperature]	Water						
3. Land quality [ambient contaminant, nutrient, erosion]							

How to Use The Guidance Example: As a result of the implementation of the EMS, the organization has uncovered a violation of a state air permit that is considered to be serious and a significant aspect. The organization has promptly corrected the situation and has placed a corrective action procedure in place.

Table 3: Environmental Compliance Indicators

OBJECTIVE	MEDIA	Significant as Identified through Organizational EMS	Non-significant as Identified through Organizational EMS	Subject to Specific Legal Environmental Discharge Limits	Subject to Other Legal Environmental Requirements	NOT Subject to Legal Environmental Requirements	Performance Relative To Legal Environmental Requirements
ENVIRONMENTAL COMPLIANCE INDICATORS (ISO/CD 14031, SEC.4.1.2.3, ANNEX A)							
Serious violations X	air	X		X			
Non-serious violations							
Prompt discovery of violations							

How to Use the Guidance Example: As a result of switching to a water based system, Facility XYZ experienced a reduction in air emissions. Since a pollution prevention alternative was chosen for the *Method of Reduction* column, the Pollution Prevention Exhibit was answered as follows.

Exhibit 1: Pollution Prevention

		Interested parties Input		
OBJECTIVE		Employees	Public Interest	Government
To what degree was emphasis in policy statement on pollution prevention	High	X	X	
Pollution prevention plan developed. If yes, required by state law?	Yes, not reqd by state law	X		X

This section examines to what extent the implementation of an EMS results in an increase of the use pollution prevention methods and technologies within the organization. It will work in conjunction with the Performance Indicators in that any reduction or increase of emissions within the Performance Indicators section will be examined to determine what specific technologies (Pollution Prevention or control techniques) were employed to achieve the reduction.

II. EMS PILOT PROJECT EVALUATION TABLES AND EXHIBITS

Column Headings for Tables 1, 2, and 3.

1. ***Media***: Environmental media into which pollutant is discharged

2. ***Significant as identified through organizational EMS***: Significant environmental aspects as per ISO 14001 and the aspect identification process.

3. ***Non-significant as identified through organizational EMS***: Non-significant environmental aspect as per ISO 14001 and the aspect identification process.

4. ***Subject to specific legal environment discharge limits***: Legally required discharge, emission, waste management, or other performance limits.

5. ***Subject to other legal environmental requirements***: Subject to management, reporting, monitoring or other administrative, non-quantitative requirements

6. ***Not subject to legal environmental requirements***: Not subject to mandatory regulation under local, state, or Federal laws.

7. ***Subject to other voluntary requirements***: Subject to voluntary industry standards, i.e. Responsible Care, ICC Charter, Great Printers Project, etc.

8. ***Performance relative to legal environmental requirements***: The degree to which performance exceeds or falls short of regulatory standards (as quantitative as feasible).

9. ***Normalized to production levels***: Normalize performance measures to account for changes in organization activity

10. ***Source of data***: Description of data sources

11. ***Quality of data***: Assessment of confidence in data, statistical limits of quantitative data where possible, description of confidence in qualitative data/information

12. ***Relative value***: A statement, or a ranking of the value or importance of a specific performance measure in assessing overall performance of organization

13. ***Comments***: Any supplemental information which will aid in the understanding of performance data/information

14. ***Violations:*** Environmental violations are violations of federal, state or local or environmental statutes, regulations, rules, permits, decrees, orders or agreements.

15. ***Serious Violations***: Serious violation is as defined by EPA penalty policies, major, significant minor or state policies if state violations only.

16. ***Non-Serious Violations***: Non-serious violation is as defined by EPA penalty policies, major, significant minor or state policies of state violations only.

17. ***Repeat Violations***: Repeat violation is as defined under the EPA Audit/Self-Policing Policy: an environmental violation (or closely related environmental violation) that has occurred previously within the past three years at the same facility, or is part of a pattern of federal, state or local violations by the facility's parent organization (if any), which have occurred within the past five years.

18. ***RCRA***: 42 U.S.C.A Section 6901 et. seq.

19. ***TSCA***: 15 U.S.C.A. Section 2601 et. seq.

20. ***FIFRA*** 7 U.S.C.A. Section 136 et. seq.

21. ***Clean Air Act***: 42 U.S.C.A. Section 7401 et. seq.

22. ***Clean Water Act***: 33 U.S.C.A. Section 1251 et. seq.

23. ***Regulatory Status:*** Benchmark is the existing regulatory condition for each of the environmental media based on a hierarchy of legal requirement beginning with the greatest liability. Goal refers to the EMS goal established for each media for reducing legal liabilities.

24. ***Discharge Category:***. For each media, the current legal requirements representing the most substantial or potential discharge activity is identified and benchmarked. An EMS goal can be set, in the context of legal environmental requirements, to demonstrably show improvement in performance by moving from a higher (more consequential) category to a lower (less consequential) category.

25. ***Distinquisher:*** Each environmental media has unique criteria for differentiating between the levels of regulatory requirements or types of facilities. This is the unique identifier for the specific media category of legal requirements.

26. ***Pollutant:***A pollutant is any hazardous substance, hazardous waste, solid waste, effluent, runoff, emission or other material that is regulated under environmental statutes or any material containing a hazardous substance that is emitted or discharged to air, surface water, groundwater, or placed on the land..

27. ***Cost of Compliance:*** Expenditures necessary to maintain compliance with legal requirements including, for example, record keeping, reporting, sampling, permit fees or pollutant generation fees are calculated for both the existing state and when the new regulatory status is achieved.

TABLE 1: ENVIRONMENTAL PERFORMANCE INDICATORS

Objective	Media - Air, Water, Land	Significant as Indentified thru Organizational EMS	Non-significant as Identified thru organizational EMS	Subject to Specific Legal Environmental Discharge Limits	Subject to Other Legal Environmental Requirements	NOT Subject to Legal Environmental Requirements	Subject to Other Voluntary Commitments	Performance Relative to Legal Environmental Requirements	Normalized to Production Levels	Source of Data	Quality of Data	Relative Value (1-10)	Comments	Method of Reduction		
ENVIRONMENTAL PERFORMANCE INDICATORS (ISO/CD 14031, SEC 4.1.2, ASPECTS, IMPACTS INVENTORY														Tech #	P2?	
1. Specific pollutant discharges																
2. Aggregated pollutant discharge (Aggregate using scientific appropriate substance or environmental priority categories																
3. Impact weighted discharge - substance specific (based on impact assesment)																
4. Aggregate environmental impacts (Sum of # 3)																
5. Spills, unscheduled discharges																
6. Water use																

TABLE 1: ENVIRONMENTAL PERFORMANCE INDICATORS

Objective	Media - Air, Water, Land	Significant as Indentified thru Organizational EMS	Non-significant as Identified thru organizational EMS	Subject to Specific Legal Envrionmental Discharge Limits	Subject to Other Legal Environmental Requirements	NOT Subject to Legal Environmental Requirements	Subject to Other Voluntary Commitments	Performance Relative to Legal Environmental Requirements	Normalized to Production Levels	Source of Data	Quality of Data-High, Med, Low	Relative Value (1-10)	Comments	Method of Reduction		
														Tech #	P2 ?	
7. Water discharge																
8. Energy use																
9. Energy release																
10. Solid waste-nonhaz																
11. Solid waste- haz																
12. Chemical use																
13. Air emissions																
14. Land effects																
15. Others																

TABLE 2: ENVIRONMENTAL CONDITION INDICATORS

Objective	Media	Significant Associated with Facility	Non-Significant Associated with Facility	Subject to Specific Requirements	Subject to Other Commitments	Production Normalized to Production Levels	Source of Data	Quality of Data	Comments
ENVIRONMENTAL CONDITION INDICATORS (ISO/CD 14031, SEC 4.1.2.3, ANNEX A)									
1. Ambient air quality (near facility): pollutant levels, odor, opacity, noise, temperature									
2. Ambient water quaity (near facility): contaminant levels, grd and surface, D.O. turbidity, temperature									
3. Land quality: ambient contaminant, nutrient, erosion									

TABLE 2: ENVIRONMENTAL CONDITION INDICATORS

Objective	Media	Significant Associated with Facility	Non-Significant Associated with Facility	Subject to Specific Requirements		Production Normalized to Production Levels	Source of Data	Quality of Data	Comments
4. Flora: contaminant, vegetation quality, population, diversity									
5. Fauna: contaminant levels, population, diversity									
6. Human health, welfare									
7. Global measures									
8. Other									

TABLE 3: ENVIRONMENTAL COMPLIANCE INDICATORS AND REGULATORY STATUS

Objective	Media, if applicable	Significant Environmental Aspect as Identified thru Organizational EMS	Non-significant Environmental Aspect as Identified thru Organizational EMS	Subject to Specific Legal Environmental Discharge Limits	Subject to Other Legal Environmental Requriements	NOT Subject to Legal Environmental Requirements	Subject to Other Voluntary Commitments	Duration of Violation Before Discovery (unit of time frame elapsed from time of discovery of violation if known)	Duration of Violation Before Correction/Remediation, if known	Actions Taken to Prevent Recurrence of Violation, if any		
1. Major or Significant Violations (as defined by EPA penalty policies, major, significant, minor or state policies if state violations												
2. All other Violations (as defined by EPA penalty policies, major, significant, minor or state policies if state violations												

TABLE 3: ENVIRONMENTAL COMPLIANCE INDICATORS AND REGULATORY STATUS

3. INFORMATION IF NO VIOLATION HAS BEEN IDENTIFIED RELATING TO COMPLIANCE AND VOLUNTARY OBJECTIVES

	# of Consective Months in Compliance wth Numeric	Source of Data
3a. Performance against legal environmental discharge limits relating to water		
3b. Performance against numeric limits that are EMS objectives realting to water		
3c. Performance against legal environmental discharge limits relating to air		
3d. Performance against numeric limits that are EMS objectives relating to air		

TABLE 3: ENVIRONMENTAL COMPLIANCE INDICATORS AND REGULATORY STATUS

4. PERFORMANCE AGAINST OTHER LEGAL REQUIREMENTS

	# of Consective Months in Compliance wth Numeric	Source of Data
4a. RCRA or related state law		
4b. FIFRA or related state law		
4c. TSCA or related state law		
4d. Clean Air Act or related state law		
4e. Clean Water Act or related state law		

5. INFORMATION RELATING TO REGULATORY STATUS

	Regulatory Status	Media	Discharge Category	Distiguisher	Pollutant	Source of Data	EMS Priority	Method of Reduction		P2 in Place		
Benchmark												
Goal												

EXHIBIT 1: COSTS AND BENEFITS OF EMS DEVELOPMENT AND IMPLEMENTATION

QUESTIONS FOR FACILITY

1. What have been the direct or indirect costs and benefits (either real or projected) for developing, implementing and maintaining your EMS and what units of measurement were used? If possible, please break out both costs and benefits by category (e.g. development, implementation and maintenance) and type (e.g. materials, equipment, labor, fees, consultants, other).

2. At what point did you begin measuring costs and/or what baseline(s) was chosen by the facility to track progress? Did you calculate the cost of compliance systems?

3. Were you able to use your existing methodologies for tracking costs and benefits or did a new methodology need to be developed? Describe the methodology used.

4. Were there any particular barriers or problems you encountered when tracking costs and benefits? If so, briefly describe them.

5. What costs have been incurred and benefits realized specifically from pollution prevention initiatives, training programs and interested party involvement activities that may have been undertaken as a part of your EMS? Please cite direct and indirect costs and benefits including those relative to overhead costs such as legal, public relations, and administrative.

6. What have been the changes in costs for activities such as obtaining permits, maintaining records, and compliance monitoring? Were these cost changes associated with going from a "higher" to a "lower" permit? (see Compliance Section)

7. Is your firm tracking other potential benefits of implementing an EMS such as change in the firm's market share, access to new markets, insurance rates, bond ratings, stock prices, and costs of capital? Please share specifics if possible.

8. Do you currently have a quality management system in place? How did this impact the costs/benefits of developing, implementing and maintaining your EMS? Please share details as available.

9. Generally, were the costs incurred and benefits realized generally higher or lower than originally expected? Explain.

QUESTIONS FOR STATE AGENCY

1. What were the changes in costs, if any, associated with time spent for permitting, inspecting and monitoring the facility? How does this compare with facilities without an EMS?

2. What other costs and benefits did the agency realize by undertaking the pilot project?

EXHIBIT 2: POLLUTION PREVENTION

	Information Location	Interested Party Input		
OBJECTIVE		Employees	Public Interest	Government
To what degree was emphasis in policy statement on pollution prevention	Policy statement			
Pollution prevention plan developed. If yes, required by state law?				
Appropriate pollution prevention training given to all employees	Training records			
Pollution prevention teams formed	Company information / team reports			
Pollution prevention involves suppliers	Mgmt Framework			
Pollution prevention involves customers	Marketing Plan			
Pollution prevention in all business plans	Mgmt Framework			
Pollution prevention behavior rewarded	Personnel Plan			
Design for Environment practices followed	Mgmt Framework			
What pollution prevention objectives and targets were set?	Company information			

EXHIBIT 3: INTERESTED PARTY INVOLVEMENT

NOTE: ISO 14001 defines "interested party" as an "individual or group concerned with or affected by the environmental performance of an organization.

It should be self-evident that any regulatory response to the implementation of an EMS will require a high degree of public credibility of the process that generated and manages the EMS. Obviously, one can seek to assess that credibility either qualitatively or quantitatively, and discussion of that choice occupied considerable time in the development of this document. Ultimately, as the following questions indicate, the decision of the group was to focus on the qualitative.

That is not meant to discourage pilots from seeking to assess the before-and-after public perception of a facility's performance in some quantitative manner. As some would argue, only what gets measured gets managed, and there may well be important data to be gathered quantitatively. Generally, we are concerned about the cost of developing such data and about its reliability. Still, we do not discourage attempts to develop pre-and post EMS measures of public satisfaction with a facility's operation in some numerical, or other research validated, way -- whether via surveys, focus groups, or similar methods. Some systems for measuring satisfaction may already be in place at a facility, such as internal employee surveys, and these may be adaptable to provide information about individuals' assessment of the EMS. It is obvious that there are many possible ways to compile responses to the qualitative questions raised in this section of the document. For example, they might simply be answered by a company manager, the regulatory agency might do its own independent assessment; or each person involved in the interested party process may be asked to provide his or her individual answers to the questions. Whatever the process, the method should be documented so that relative comparisons can be made between pilots.

Questions:

1. Were interested parties involved in the development and implementation of the organization's EMS ?

2. If. so, what was the composition of the interested party group and how were its members chosen?

3. How and at what point(s) were interested parties involved or consulted in the planning of the EMS, in such areas as: identification of environmental aspects and impacts and selection of objectives and targets

4. How and at what point(s) were they involved in the implementation and oversight of the EMS?

5. Did the environmental aspects identified and the objectives and targets chosen for the EMS address those issues that were important to the interested parties?

6. Does the EMS address other socioeconomic needs of the interested parties such as jobs and economic and environmental sustainability?

7. What changes would you recommend in the way the interested party process was undertaken?

8. What processes did you develop for receiving, documenting, and responding to relevant communication from external interested parties?

9. What processes for external communication on significant environmental aspects did you consider?

10. How were decisions reached within the interested party group? (consensus, vote, etc.) What weight was given to the group's decisions? Was any technical or financial support provided to the group?

III. ADDITIONAL INFORMATION

Method of Reduction

Needs

Contact Information

III. ADDITIONAL INFORMATION

Method of Reduction

If the data presented in the column *Normalized Production Levels* in Table 1: Environmental Performance Indicators indicates a reduction in pollution discharges, this list may identify the method of reduction implemented. Table A presents a list of pollution prevention options, but is in no way exhaustive. The use of this list will help to determine if pollution prevention was the primary means of reduction. Indicate the appropriate number from Table A, in the *Method of Reduction* column in Table 1. Pollution Prevention is defined as both reduction at the source and recycling.

Table A

POLLUTION PREVENTION OPTIONS
OPERATING PRACTICES
1. Segregate hazardous waste to make more amenable to recycling
2. Segregate hazardous waste from non-hazardous waste
3. Improved maintenance scheduling, recordkeeping, or procedures
4. Changed production schedule to minimize equipment and feedstock changeovers
5. Other changes in operating practices (Specify)
INVENTORY CONTROL:
6. Instituted procedures to ensure that materials do not stay in inventory beyond shelf-life
7. Began to test outdated material -- continue to use if still effective
8. Eliminated shelf life requirements for stable materials
9. Instituted better labeling procedures
10. Instituted clearinghouse to exchange materials that would otherwise be discarded
11. Other (specify)
SPILL AND LEAK PREVENTION
12. Improved storage or stacking procedures
13. Improved transfer for loading, unloading, and transfer operations
14. Installed overflow alarms or automatic shutoff valves
15. Installed secondary containment
16. Installed vapor recovery
17. Implemented inspection or monitoring program of potential spill or leak sources
18. Other (specify)
RAW MATERIAL MODIFICATIONS
19. Increased purity of raw materials
20. Substituted raw materials
21. Other (Specify)
PROCESS MODIFICATIONS
22. Instituted closed-loop recycling
23. Modified equipment, layout, or piping
24. Instituted better controls on operating conditions (flow rate, temperature, pressure, residence time)
25. Other (specify)
PRODUCT MODIFICATIONS
26. Changed product specifications
27. Modified design or composition
28. Modified packaging
29. Other (specify)
OTHER POLLUTION PREVENTION ACTIVITY
30. Specify
TECHNOLOGY
31. Specify
RECYCLING
32. Specify

NEEDS

In October, 1996, representatives of business, government regulators and public interest groups met in Madison, Wisconsin as part of an ISO 14001 Roundtable process sponsored by the states of Wisconsin, Pennsylvania and the University of Pennsylvania's Wharton School of Business and University of Wisconsin-Madison's La Follette Institute of Public Affairs. The interested parties were asked to identify their "needs" from ISO 14001 pilot projects planned in both states. It was stated that all the goals may not be met but that the pilots should be selected and designed to meet as many goals and needs as possible. This is their unedited list that is offered to prompt thinking:

Government Regulators

Enhanced environmental performance, objectively demonstrated; reduced transaction costs for government; increased community involvement; transferability to other groups; high level of credibility and acceptability of the pilot process and its results; identification of areas of regulatory flexibility needed to achieve beyond compliance; market driven.

Public Interests

Meaningful public involvement to include not only the neighbors but customers (process and outcome); test the quality, accuracy and nature of the information disseminated; test the quality of the discussion that occurs based on the input and the information; development of a set of environmental indicators that are measurable and can be tested as a part of the pilot; credibility; clear articulation of the limits of the pilot results; defining very clearly the parameters and the boundaries of the pilot; to learn from the experience and to act on what we have learned, e.g. take enforcement action if major violations are found that meet EPA criteria for enforcement under the audit policy; a mechanism to aid in conflict resolution.

Business

Credibility, mechanism to resolve conflict clearly defined set or parameters when go into the pilot; complementary to existing regulatory system, one does not supplant the other; allows of self declaration of certification; positive environmental outcomes; positive economic outcomes; reduce transaction costs for business; creation of a forum composed of all interest groups to discuss issues of regulatory flexibility within the pilot study; sound credible scientific information; company EMS information system that is accept by the regulators -- one set of books and data; look at the low cost third party certification; no certification; provide a test of the benefits of ISO to businesses of all sizes.

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