

Environmental Management Systems

A new standard for environmental management is coming.

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Identifying your golf course's environmental attributes and impacts is an important part of the planning process (Itasca Country Club, Itasca, Illinois).

Management of the natural environment by businesses has been dominated for nearly 40 years by legal, regulatory, command-and-control approaches. From the Clean Water Act to chemical use and regulation, business owners and managers, including in golf, have addressed environmental issues in prescribed manners — answering to federal, state, and even local law. While legal requirements are not going away in the near future, more and more agencies and businesses are gravitating toward a new standard for enhancing environmental management and stewardship, one that emphasizes proactivity and systematic detail. This new focus on Environmental Management Systems is something that is sure to infiltrate the management of golf courses in the years to come.

Environmental Management Systems (EMS) are rapidly becoming the accepted standard to identify and manage all environmental issues comprehensively for all enterprises (manu-

facturing plants, restaurants, businesses, waste treatment facilities, agricultural facilities, golf course facilities, etc.).

The EPA's position statement on EMS illustrates this point (USEPA 2007):

- EPA will encourage widespread use of EMSs across a range of organizations and settings, with particular emphasis on adoption of EMSs to achieve improved environmental performance and compliance, pollution prevention through source reduction, and continual improvement
- EPA will promote the voluntary adoption of EMSs. To encourage voluntary adoption of EMSs, EPA will rely on public education and voluntary programs.
- This document is EPA's strategy for addressing the question of whether — and if so, how — it may also be appropriate to consider EMSs in the context of the Federal regulatory structure, either to improve the design of regulatory programs, to encourage the use of EMSs, or both. EPA wishes to make clear that it has no intention

of mandating the use of EMSs in rules and permits. Rather, the aim of this strategy is to determine whether there could be benefits from providing options within the regulatory structure for organizations that choose to adopt an EMS. In addition, this strategy does not signal any intent on the part of the agency to modify its existing policy of promoting the widespread use of EMSs on a voluntary basis.

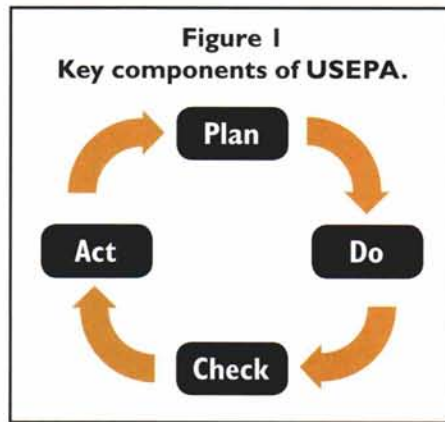
Prior to the EMS concept, management of environmental issues for a facility was issue by issue, but an EMS is: a) a new management approach, b) for the whole system, c) for all environmental issues, and d) for daily environmental management decisions at all management levels within an organization to be the normal practice. As the EMS approach is increasingly adopted by golf courses, it will dramatically impact how management and operations are conducted in all components of a facility. Thus, it is important for course owners, officials, and members to understand it. In a

second paper in this two-part series, we will focus more specifically on what a golf course EMS may entail and the implications, but in the current paper the focus will be on understanding the EMS concept. For additional information, Carrow and Fletcher (2007) recently developed an educational guidebook for golf courses on the EMS concept and implications.

HISTORY OF EMS

With the birth of the environmental movement in the 1960s, businesses of all shapes and sizes found themselves responding to a new set of legal and social demands. Most of the early impacts on businesses were centered on legal and regulatory compliance. However, the past decade has seen a growth in the number of new tools businesses are using to manage their environmental issues. One very simple, yet growingly pervasive trend in business is the implementation of Environmental Management Systems (EMSs).

An EMS is a proactive approach to environmental stewardship that involves establishing an environmental policy and a long-term commitment



to environmental management. The most common EMSs are based upon the framework developed by the International Organization of Standards (ISO), a non-governmental network of national standards institutes from various countries. ISO is the world's largest organization devoted to the development of standards, especially technical standards (ISO 2007) and standards for quality (ISO 9000). In 1996, with revision in 2004, the ISO developed a standard for environmental management entitled "ISO 14001 Environmental Management System." The ISO 14001 standard is defined as "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 the environment." ISO 14001 (1996) consisted of five principal or key components in a cyclic process:

- Commitment and Policy
- Planning
- Implementation
- Measurement and Evaluation
- Review and Improvement

Within agriculture, horticulture, and the golf course industries, the EMS concept is the furthest developed in Australia. The February issue of *Australian Journal of Experimental Agriculture*, Volume 47(3), 2007, was dedicated to EMS in agriculture and horticulture. Environmental Business Solution (EBS, 2007, Australia) developed the e-PAR program in conjunction with the AU EPA and Australian Golf Course Superintendents Association, and it is the most advanced program applying the EMS concept to golf courses in the world. Other voluntary environmental programs, such as the Audubon Cooperative Sanctuary Program for Golf Courses, also rely upon this general approach.

RELATED ENVIRONMENTAL TERMS OR CONCEPTS

Terms or programs that may be confused with EMS are **Environmental Management Plan (EMP)**, **Environmental Audit (EA)**, and **National Environmental Performance Track (NEPT)** program (NEPT, 2007). An EMP is much narrower than an EMS and is generally considered a plan to mitigate and monitor a single environmental issue. A very similar concept to an EMP is Best Management Plans (BMPs), which are developed to manage a particular environmental issue (Carrow et al., 2005). Thus, EMPs or BMPs are part of an overall EMS, while the EMS refers to the whole system or approach.

An Environmental Audit is a means to determine whether an EMS is effectively implemented or not. As such, an EA is a part of the overall EMS — i.e., one of the components. The ISO 14001 definition of an EA is, "An EMS Audit is a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organization's EMS conforms to the EMS audit criteria set by the organization and for communication of the results of this process to management" (ISO 2007). The Club Manager's Full Facility Environmental Audit (www.cmaa.org/audubon.htm) is one example of a stand-alone facility audit.

The EPA has a National Environmental Performance Track (NEPT 2007) program that is "a voluntary partnership program that

recognizes and rewards private and public facilities that demonstrate strong environmental performance beyond current requirements. Performance Track is designed to augment the existing regulatory system by creating incentives for facilities to achieve environmental results beyond those required by law. To qualify, applicants must have implemented an independently assessed environmental management system (i.e., EMS), have a record of sustained compliance with environmental laws and regulations, commit to achieving measurable environmental results that go beyond compliance, and provide information to the local community on their environmental activities. Members are subject to the same legal requirements as other regulated facilities. In some cases, EPA and states have reduced routine reporting or given some flexibility to program members in how they meet regulatory requirements. This approach is recognized by more than 20 states that have adopted similar performance-based leadership programs." Thus, a facility that has an EMS may wish to participate in the NEPT program as an addition, but it is not a part of the EMS. One of the criteria for the NEPT program is to have a comprehensive independent assessment of the organization's EMS. Thus far, only one golf facility, Colonial Acres Golf Course in New York, has completed the NEPT process — using much of the documentation required for certification in the ACSP for Golf Courses as a baseline EMS.

USEPA EMS MODEL

The ISO 14001 was, therefore, developed to “standardize” a management approach for entities to manage environmental issues in a systematic manner. Since 1996, the ISO 14001 EMS approach has been increasingly adopted in many areas of the world, including the USA, but often with some modification. The USEPA modified the ISO 14001 so that the EPA EMS entails a continual cycle with four key components, summarized in a *plan, do, check, act* format, where these key components are defined as (USEPA 2007a):

- **Plan:** Planning, including identifying environmental aspects and establishing goals.
- **Do:** Implementing, including training and operational controls.
- **Check:** Checking, including monitoring and corrective action.
- **Act:** Reviewing, including progress reviews and acting to make needed changes to the EMS.

The cyclic design of EMS illustrates that management of environmental issues is to be an ongoing process with changes made over time.

ELEMENTS OF THE TRADITIONAL EMS

The principal components (plan, do, check, act) of the USEPA EMS are normally expanded into 17 key elements or steps related to the development and implementation of an EMS for an entity. The 17 key elements as outlined by the EPA are (USEPA 2007b):

1. Environmental principles and policy: Develop a statement of your organization’s commitment to the environment. Use this policy as a framework for planning and action.

2. Legal and other requirements: Identify and ensure access to relevant laws and regulations, as well as other requirements to which your organization adheres.

3. Identify/assess significant environmental aspects and impacts: Identify environmental attributes of

your products, activities, and services. Determine those that could have significant impacts on the environment.

4. Objectives and targets: Establish environmental goals for your organization in line with your policy, environmental impacts, the views of interested parties, and other factors.



Improving environmental performance has numerous benefits, including risk reduction, improved efficiency, enhanced image and reputation, and reduced costs. (Sterling National Country Club, Sterling, Massachusetts).

5. Develop environmental management programs: For each environmental issue, an action plan is formulated. Plan actions necessary to achieve your objectives and targets.

6. Structure and responsibility: Establish roles and responsibilities for environmental management and provide appropriate resources.

7. Training, awareness, and competence: Ensure that your employees are trained and capable of carrying out their environmental responsibilities.

8. Communication and outreach: Establish processes for internal and external communications on environmental management issues.

9. EMS documentation: Maintain information on your EMS and

related documents. This would include BMPs for each environmental impact issue.

10. Document control: Ensure effective management of procedures and other system documents.

11. Operational control: Identify, plan, and manage your operations and

activities in line with your policy, objectives, and targets.

12. Emergency preparedness and response: Identify potential emergencies and develop procedures for preventing and responding to them.

13. Monitoring and measurement: Monitor key activities and track performance. Conduct periodic assessments of compliance with legal requirements.

14. Nonconformance and corrective and preventive action: Identify and correct problems and prevent their recurrence.

15. Environmental records: Maintain and manage records of EMS performance.

16. EMS audit: Periodically verify that your EMS is operating as intended.

17. Management review:

Periodically review your EMS with an eye to continual improvement.

A review of the 17 steps reveals several important points. First, when a facility embarks on development and implementation of an EMS, management, policy issues, training, and communications are significant activities in terms of time and commitment. When reading USEPA or other governmental agency materials related to EMSs, most of the material will be related to the areas of management structure, management activities, development of effective communication lines within a facility, and educational needs at various levels. Much of the discussion also relates to facilities larger than most golf courses, where management structure and activities, communications, and educational aspects can be integrated into existing management structures with fewer challenges than facilities with more complex management hierarchies. However, when reading these materials, one can easily get “bogged down” in the management emphasis and suggested changes.

Second, in contrast to the extensive materials on management, communications, and education, limited information will be noted relative to *the real “core” of an EMS plan*, which includes: a) Element 3 — Identify/assess significant environmental aspects and impacts, and b) Element 5 — Develop environmental management programs for each significant environmental issue. Since the foundational ISO 14001 EMS is really a standardized approach to managing environmental issues for all types of entities, their materials emphasize the common areas of management, communications, and education challenges. However, the actual environmental issues that may be present at a facility vary substantially, depending on the nature of the entity — e.g., the environmental issues of a golf course would differ from those of a manufacturing plant — and therefore are not discussed.

Third, a central purpose of the EMS concept is to incorporate environmental management into daily management decision-making at all management levels of a facility. Attention to environmental issues at all management levels is added to current parameters that may influence daily management decisions. In this way, an EMS-type system can help to foster an environmental culture at a facility — making environmental stewardship “the way we do things around here.”

EMS BENEFITS AND COSTS

Since the EMS approach to management of environmental issues is voluntary and integrated into daily management of a facility, the aspects of benefits and costs related to an EMS are important components in the development and implementation of a facility EMS. Potential benefits and costs of EMS in terms of both business and environmental aspects are (USEPA 2007a):

BENEFITS TO A BUSINESS

- Improve overall environmental performance.
- Prevent pollution.
- Save money on landscape maintenance, energy, materials, etc.
- Enhance existing compliance efforts related to environmental aspects.
- Reduce or mitigate risks and liabilities.
- Exhibit environmental due diligence.
- Increase efficiency.
- Reduce costs.
- Enhance employee morale and possibly enhance recruitment of new employees.
- Achieve/improve employee awareness of environmental issues, responsibilities, and initiatives.
- Promote a positive, proactive corporate image related to environmental issues and club achievements with regulators, lenders, investors, and the public.
- Qualify for recognition/incentive programs such as the EPA Performance Track Program (NETP 2007) and

other state-based voluntary environmental performance recognition programs.

As noted, development and implementation of an EMS by a golf club demonstrates to the public and regulators a proactive attitude toward environmental stewardship that does enhance the corporate image. An EMS program and associated documentation can be valuable tools for planned community outreach and educational efforts by a golf course. A good outreach and educational program involving club officials can result in significant benefits at the community level.

COSTS TO A BUSINESS

- An investment of internal resources, including staff/employee time.
- Costs for training of personnel.
- Costs associated with hiring consulting assistance, if needed.
- Costs for technical resources to analyze environmental impacts and improvement options, if needed.

Like any investment of resources, these potential costs must be balanced against the anticipated return on investment (benefits).

KEY IMPLICATIONS

Not all in the golf industry or other industries will be pleased with another environmental program, concept, or acronym. More limited environmental management programs have evolved in the past out of concern over particular environmental issues, and these have substantially impacted how golf courses operate. For example, starting about 30 years ago, the U.S. Environmental Protection Agency (EPA) Clean Water Act, targeted to protection of surface and subsurface water quality from pesticides, nutrients, and sediments, resulted in the “Best Management Practices” (BMPs) concept as well as the “Integrated Pest Management” (IPM) concept (Rawson 1995, EPA 2005).

Over time, however, EMS will have a much more profound impact on the golf industry than any previous environmental initiative, but it will be relatively easy to understand and implement since it is built on encompassing current BMPs, IPM programs, and even traditional business management approaches (i.e., Total Quality Management). It is good to remember that the alternative to this voluntary program is likely to be more rigid regulations.

With acceptance at international and multiple industry levels, EMS should best be viewed as an opportunity rather than an obstacle. It is wise for the golf industry to understand and accept this concept. For golf course owners and managers, the following points are especially pertinent:

- The EMS concept is promoted by regulatory agencies on an international basis as the best means to mitigate or manage environmental issues for all businesses or entities that have potential environmental impact.
- EMSs are for all facilities of an industry — i.e., all golf courses will very likely need to develop their own site-specific EMS plan.
- The EMS concept binds together all environmental issues at the whole facility — i.e., clubhouse, maintenance facility, general grounds, pool, golf course, and any other part of the facility.
- All environmental issues are to be assessed and management plans developed and implemented for all environmental issues at a facility. An EMS allows combining together into one system the various BMPs for each particular environmental issue.
- The term Environmental Management Systems (EMS) truly reflects the

nature of EMS as: a) a new management approach, b) for the whole system, c) for all environmental issues, and d) for daily environmental management decisions at all management levels within an organization to be the normal practice.

- Since EMS is for the whole facility, upper management and organization-



An Environmental Management System (EMS) offers an integrated environmental strategy for the entire golf maintenance program, from best management practices, to emergency preparedness, to employee training.

wide commitment are necessary. This entails organization-wide training.

While this first article has provided a summary of the EMS concept, the application to golf course facilities still relies on wrestling with the “devil” in the details. The second article of this series will focus more specifically on golf courses and challenges that may arise, especially in assessing environmental issues, developing BMPs for each issue, and auditing. It is important to remember that no one “owns” an EMS for golf — it is a concept and approach available to anyone willing to think and act systematically toward the environment. However, the elements that golf owners and managers should pay attention to are both the details of the process of an EMS as well as the content of identified environmental issues and related BMPs. An EMS alone will not solve all the environmental problems of golf course

management, but it can be an effective part of the solution.

REFERENCES

1. Carrow, R. N., and K. A. Fletcher. 2007. Environmental Management Systems (EMS) for Golf Courses. An educational guidebook developed by the University of Georgia and Audubon International. Posted on <http://www.auduboninternational.org/e-Source/> and <http://www.georgiaturf.com>.
2. EBS. 2007. Environmental Business Solutions e-Par program for golf courses. Web site. <http://www.epar.com.au/brochure/Default.aspx>.
3. ISO. 2007. International Standards Organization (ISO) Web site. <http://www.iso.org/iso/en/ISOOnline.frontpage>.
4. NEPT. 2007. National Environmental Performance Track Web site. <http://www.epa.gov/performance-track/>.
5. Rawson, J. M. 1995. Congressional Research Service Report to Congress: Sustainable agriculture. CRC Report for Congress, 95-1062 ENRD. Congressional Research Service, Committee for the National Institute for the Environment, Washington, D.C. www.ncseonline.org/NLE/CRSreports/Agriculture/ag-14.cfm?&CFID=962773&CFTOKEN=76886153.
6. Stapleton, P. J., M. A. Glover, and S. P. Davis. 2001. Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations. 2nd Edition. NSF International, Ann Arbor, Mich. Online at <http://www.epa.gov/OW-OWM.html/iso14001/wm046200.htm>.
7. USEPA. 2005. National Management Measures to Control Nonpoint Source Pollution from Urban Areas. EPA-841-B-05-004. U.S. EPA, Office of Water, Washington, D.C.
8. USEPA. 2007. USEPS Web site on EMS position statement. <http://www.epa.gov/ems/position/position.htm>.
9. USEPA. 2007a. USEPA Web site on Environmental Management Systems. <http://www.epa.gov/ems/index.html>.
10. USEPA. 2007b. Key elements of an EMS. <http://www.epa.gov/ems/info/elements.htm>.

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