

Environmental Management Systems: Developing Holistic Approaches to Environmental Management

Argonne's Environmental Science Division (EVS) develops and applies innovative approaches and analytical tools that help an organization reduce its impact on the environment. These approaches provide cost-effective means to integrate environmental compliance and environmental performance into an organization's structure consistent with environmental management systems (EMS) requirements.

PROBLEM/OPPORTUNITY

ISO 14000, "Environmental Management Standards," formally introduced the concept of environmental management to both the public and private sectors. ISO 14000 is a series of voluntary, generic standards providing organizations with a structure for managing and, over time, minimizing its environmental impacts. ISO 14000 establishes specifications for the development of environmental management systems (ISO 14001) intended to incorporate concern for environmental performance throughout an organization. In a similar way, Executive Order (EO) 13148, *Greening the Government through Leadership in Environmental Management*, requires federal agencies to integrate environmental accountability into their daily decision making and long-term planning. One specific requirements of EO 13148 is that agencies implement environmental management systems at all appropriate facilities by December 31, 2005.

Many private- and public-sector organizations are unsure how to meet ISO 14001 goals and EO 13148 requirements. It is at this point that EVS's approaches and analytical tools can help in developing an integrated system. While many organizations have policies and procedures that could be considered components of an environmental management system, the challenge for them is to identify both what pieces are in place and what still is needed to develop an EMS. It is at this point that EVS's approaches and analytical tools can help in developing an integrated system. EVS has the environmental expertise necessary to identify both weaknesses and strengths in an organization's environmental program with a view towards meeting the objectives of a comprehensive environmental management system.



APPROACH

Working within the United States and internationally, EVS has developed a variety of environmental management and assessment tools, including information management systems, environmental compliance and pollution prevention auditing programs, hazardous and nonhazardous waste management programs, and new approaches to environmental impact assessment. These tools can support improved productivity, increased waste reduction and recycling, reduced liability associated with noncompliance, increased effectiveness of program management efforts, the promotion of environmental protection and resource conservation, and increased flexibility in meeting regulatory requirements.

EVS's experience with federal organizations and facilities, ranging from conducting large integrated environmental assessments to performing targeted environmental audits and managing cleanup projects, provides a knowledge base for developing new tools and approaches for achieving environmental management standards.

RESULTS

The following are examples of types of EVS tools and approaches that can facilitate an organization's development and implementation of environmental management systems:

- **Environmental Information Management Systems.** EVS has developed several Web-based systems that provide access to critical environmental compliance requirements, including regulations, agreement documents (e.g., Records of Decision), management plans, and monitoring reports. These systems provide cost-effective methods for ensuring that staff throughout an organization can readily obtain current information to support decision making. Other systems developed by EVS have integrated environmental data (often in geographic information systems) across several areas to improve decision making regarding cleanup, land management, or planning. In all cases, EVS has integrated its system with existing data management tools.
- **Environmental Compliance Tracking Systems.** EVS has designed Web-based systems for use in tracking compliance deficiencies from point of discovery through resolution. This type of system can be used to identify, evaluate, and correct patterns of noncompliance and help to continually enhance environmental protection. In addition, EVS has designed a system to track and help ensure timely compliance with both fixed and *ad hoc* environmental reporting requirements.

- **Environmental Management Audit Programs.** EVS has developed and implemented environmental compliance audit programs for a variety of federal agencies, including the Department of Energy, U.S. Air Force, U.S. Army, and the Social Security Administration. Such programs help organizations monitor the effectiveness of existing environmental management efforts and can lead to continual improvement in environmental performance.
- **Environmental Data Dictionaries.** EVS has developed an electronic platform to host environmental data, including maps and aerial photos, generated by environmental impact assessments. Easy access to such data facilitates efforts to monitor and minimize environmental impacts, and to develop environmental plans.

Individual fact sheets describe in greater detail the EVS tools and approaches applicable to developing effective environmental management systems.

FUTURE

EVS continues to produce new approaches and tools that can be integral components of an environmental management system. No single approach will work for organizations. EVS has the expertise to work with individual organizations to discern when existing tools can be implemented and when new approaches may be more appropriate. When new approaches are needed, EVS staff can work closely with the organization to develop them. The ultimate objective of this collaboration is to develop a cost-effective environmental management system tailored to the specific organization's needs.