

# An environmental management system implementation model for U.S. colleges and universities

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## Abstract

The Osnabruck model, and another under development by the South Carolina Sustainable Universities Initiative, are the only two EMS models that have been proposed specifically for colleges and universities, although several guides are now available. The Environmental Management System Implementation Model for U.S. Colleges and Universities detailed in this paper, an adaptation of the ISO 14001 standard and USEPA recommendations, has been tailored to U.S. colleges and universities for use in streamlining the implementation process. In using this three-phased implementation model created for the U.S. research and academic setting, it is hoped that these highly specialized institutions will be provided with a clearer and more cost-effective path towards the implementation of an EMS and greater compliance with local, state and federal environmental legislation.

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## 1. Environmental compliance in U.S. colleges and universities

In July 2000, the U.S. Environmental Protection Agency (EPA) issued an Enforcement Alert which explained that the agency was now holding colleges and universities to the “same standards as industry” in order to “create a safe haven for human health and the environment” [1]. In this alert, several enforcement actions were detailed, non-compliance areas were highlighted, useful resources given and suggestions made for how educational institutions could ensure environmental compliance and thus avoid EPA enforcement actions. Areas of non-compliance mentioned in the Alert were focused on the requirements of the Resource Conservation and Recovery Act (RCRA), the Clean Air Act, underground storage tank management, and the Spill Prevention, Control and Countermeasure procedures of the Clean Water Act, which are all

pieces of federal legislation passed or amended since 1970. Common issues found by the EPA highlighted in this report included “improperly handling and disposing of hazardous waste materials”, “boilers and furnaces that do not meet clean air regulations”, “inadequate monitoring of underground storage tanks”, “sewage treatment facilities that are not operating properly”, and “improper abatement of lead-based paint and asbestos” [1]. Extensive documentation exists on the history of EPA inspections and penalties [2]. These EPA inspections have continued. More recently, on November 7, 2002, it was reported that Columbia University, Long Island University, and New Jersey City University were facing “\$1.1 million in penalties for alleged violations of hazardous waste regulations” [3] resulting from EPA inspections. It is clear that colleges and universities are being encouraged to come into greater compliance with federal environmental regulations.

One tactic for coming into greater environmental compliance with EPA regulations has been to propose reinterpretation, exemptions or changes to existing regulations, as illustrated by a draft concept summary proposed by the Campus Safety and Health Environmental Management

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Association (CSHEMA) Government Relations Committee entitled “Fundamental Change to RCRA Regulation in Higher Education” which was distributed at a conference held July 14–17, 2002 in Toronto, Canada [4]. This group was proposing regulatory reform and/or additional EPA guidance, which would aid colleges and universities in their environmental compliance efforts. In another CSHEMA publication entitled “Environmental Excellence in Higher Education,” [5] there was a recommendation that policy dialogue between educational institutions and the EPA focus on developing “performance-based environmental standards,” guidance and compliance assistance tailored to higher education.

EPA Region I, the New England region, has focused its efforts on education. It found through focus group discussions that colleges and universities were not knowledgeable about environmental regulations and could use additional resources to aid them in maintaining compliance [1]. It has held compliance workshops and has developed an informational web page in order to educate colleges and universities on environmental regulations. In addition, Region I has developed tools that may be used to perform environmental self audits and aid in implementation of environmental management systems.

Other efforts have been aimed at rewarding environmental excellence, such as, the EPA’s National Environmental Performance Track Program, which is designed to provide “incentives to motivate further improvements” [6]. The University of Texas M.D. Anderson Cancer Center is the first institution of higher education to be accepted into this program. Meanwhile, 123 colleges and universities are EPA Energy Star Partners and are striving to improve building energy efficiency [5].

EPA’s Project XL (eXcellence and Leadership), started in 1999, is a program designed to study how the EPA may better regulate educational institutions [7]. Another pilot project called EPA Labs21 (Laboratories for the 21st Century) involves a partnership with four universities in order to modify laboratories for improved environmental performance [8]. Some programs have been aimed at rewarding honesty, for example, the EPA’s Audit Policy, which in many cases rewards companies (including educational institutions) for reporting and correcting their own violations of federal environmental regulations.

Environmental management systems show promise as a comprehensive way of addressing environmental compliance issues. EPA Region III, the mid-Atlantic region, has been recommending them as a way to “prevent problems as well as to correct them before they become more serious and costly” [1]. In addition, on May 15, 2002, EPA Administrator, Christine Todd Whitman signed a Position Statement on Environmental Management Systems [9] encouraging implementation, using guidance similar to the ISO 14001 standard. Implementation of environmental management systems “help organizations to achieve market-place recognition through enhanced corporate image, satisfy regulatory and legal requirements, minimize legal and financial risk, reduce operating cost, improve operational efficiency by better utilization of material and resources, and improve staff moral and work environment” [10].

Essential elements of an EMS were identified by studying the ISO 14001 standard and include:

- an environmental policy,
- the identification of environmental activities that may affect the environment,
- the development of environmental programs with objectives and targets,
- the use of a procedure to identify legal requirements applicable to environmental issues,
- assigning responsibilities for environmental matters to specific individuals,
- reporting environmental performance issues to top management on a routine basis,
- training individuals whose actions may have an impact on the environment,
- maintaining documentation regarding internal and external communications about environmental matters,
- creating a system to ensure that personnel are working with the most current versions of environmental procedures,
- having environmental emergency preparedness and response procedures in place,
- monitoring and measuring operations that could have an environmental impact,
- having procedures in place to correct any environmental non-conformances,
- having procedures in place to manage and store environmental records,
- conducting routine internal audits of the environmental program,
- conducting routine third party audits of the environmental program, and
- holding a periodic review of the environmental program by upper institutional management [11].

In implementing these sixteen essential elements, the ISO 14001 [11] requirements of environmental management system documentation and operational control would be established and therefore are not listed separately as essential environmental management system elements for this model.

Environmental management systems, when registered and audited regularly by an accredited third party, may become ISO 14001 certified. This certification or registration is largely unknown in U.S. college and university circles with just a few universities, including The University of Missouri Rolla and The University of Texas M.D. Anderson Cancer Center, having achieved it to date [12,13]. However, ISO 14001 is becoming increasingly popular in U.S. industry, due to the major automobile manufacturers’ insistence that their suppliers become registered by 2003 in order to avoid environmental scandals and fines [14].

The International Organization for Standardization (ISO) is a group of standards institutes from 140 countries headquartered in Geneva, Switzerland [15]. ISO was established in 1946, after it became apparent during World War II that the many “different national standards for the same types of

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