Opportunities for Environmental Education Provided by Environmental Management Systems

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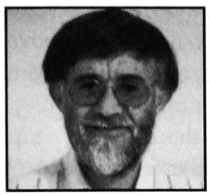
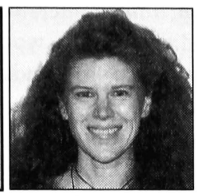




A B S T R A C T

The development and implementation of a training program is a requirement of Environmental Management Systems (EMSs) certified under international standards. To date, information about these programs has been scarce. The paper reports the results of a survey of 20 Australian organisations with certified EMSs, designed to provide a start in understanding the role and contribution of training in meeting EMS objectives. Information was sought on the status, direction and focus of the training programs, along with the training providers, topics covered, and the range of training mechanisms. Broadly the findings illustrate differences in the training provided to staff generally, selected staff and to managers. Of importance for environmental educators is the extent to which education in the environment and education about the environment are already part of these training programs. Education for the environment is apparent in some training programs, indicating the scope that EMSs provide for the coverage of all three aspects of environmental education for the general community.

'growing interest from corporations'

Before the introduction of environmental protection legislation most private organisations and government agencies did not recognise that the environment existed. With the advent of this legislation most were required, at a minimum, to make sure that their discharges of pollutants were within their agreements with the relevant environmental protection agency. Even at this stage it was generally government and community groups who were showing the most interest in the environment. However, over the past decade there has been growing interest from corporations.

For example, Callenbach et al (1993) set out a clear rationale for corporations to take seriously the need for responsible environmental management. In addition, Schmidheiny (1994) suggested that successful businesses would be those which made the greatest progress in improving their 'eco-efficiency' To assist in its environmental management, and possibly to avoid the introduction of specific environmental legislation, the corporate world has developed the concept, and practice, of Environmental Management Systems (EMSs).

EMSs, formalised sets of procedures which enable organisations to control their impacts on the environment, are increasingly being adopted by organisations both private and public. A key element of the implementation of an EMS is staff training, a kind of training which builds on programs developed for specific organisations such as Sydney Water's CARE program described by Walker (1996). As such EMS training complements the promotion of environmental understanding delivered through the formal education sector and through broad ranging community environmental education programs such as Coastcare.

Whether this training takes place within formal educational institutions or in the work place it is an example of some aspects of environmental education taking place within the broader community. Informed appreciation of this training assists in an understanding of the extent of environmental education occurring outside the formal education sector—in schools and university courses—and how the experience of environmental educators may contribute to the training.

This paper looks at the directions that EMS training is taking in Australia with a view to identifying its breadth, in terms of contributing to environmental understanding, and its focus on aspects of the environment. After a brief introduction to EMSs and the role of training, we describe a survey of Australian organisations with EMSs. The results of the survey are presented and discussed in the context of the opportunities for seeing EMSs as a potentially powerful mechanism for developing environmental understanding in the workforce.

The background to EMSs

Since the early 1990s EMSs have evolved from Total Quality Management, Total Quality Environmental Management Systems, and the International Standard ISO 9 000 which has guided much of quality management. These systems represented the first attempts to include environmental considerations in the planning and management of businesses. The early mechanisms for formalising EMSs were the British Standard BS7750 Environmental Management Systems, and the European Union's Eco-Management and Audit Scheme. Details of the history and operation of EMSs can be found in the rapidly expanding literature (see, for example, Sayre 1996, Sheldon 1997, Tibor 1996).

In Australia, rather than developing a separate standard to guide EMSs, the international standard series ISO 14 000

has been adopted, and released by Standards Australia as AS14 001 Environmental Management System Specification and AS14 004 Environmental Management System General Principles. This standard was released in 1996 and is designed to enable an organisation to "formulate a policy and objectives taking into account legislative requirements and information about significant environmental impacts". (Standards Australia and Standards New Zealand 1995a)

This standard is based on the intention that organisations work to:

- prevent pollution
- comply with environmental laws
- undertake continual improvement in environmental performance up to the limit set by the best available technology.

Organisations applying to be certified that they have achieved ISO 14 000 are required to demonstrate that they have developed systems for their environmental management, including an environmental policy, implementation programs, and review procedures.

Certification is provided by one of the groups accredited by Standards Australia. While organisations can develop their EMS outside the framework of the standard, gaining certification under a standard provides the organisation's EMS with credibility.

One of the components of the EMS which is seen to be essential for its implementation is the training of staff. Training is identified explicitly in the Standard itself:

> *The organisation shall identify training needs. It shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training.* (Standards Australia and Standards New Zealand 1995a)

EMS training directions

According to Crognale (1997) the result of training will be that better informed individuals can help maintain a more effective EMS. Specifically, he states that proper training is the "heart of maintaining an effective EMS". Although training is given this prominence little information is provided about the contents of training programs, and information is scarce regarding the training programs that have been enacted.

Some information related to EMS training is available for activity outside Australia. For example: The Body Shop (1995) has reported briefly on their EMS training program which covers energy, waste, green consumerism, water, transport and sustainability; Gelber et al (1997) have commented on the specifics of training developed under an Eco-Management and Audit Scheme; and the role of environmental education in Ontario Hydro has been discussed by Stoesser (1997).

The focus of training raises questions about the role and direction of training programs attached to the EMSs of Australian organisations. However, the dearth of information on this subject indicated that primary research was required. Consequently a survey of Australian organisations was developed, its purpose being to provide a start in understanding the extent to which environmental matters were covered, and whether more than awareness was sought.

The limited literature on the topic guided our survey In addition to the work discussed above, Wells (1997) has outlined four kinds of training—general environmental awareness; procedural; specialist; and assessment training—indicating the differing emphases for particular employee groups. Likewise, Cascio (1996) discussed the division of training into: competency-based training for employees whose work was able to cause significant environmental impacts; and awareness training on the importance of the following matters—EMSs themselves, employees' personal performance, and compliance with operational and regulatory requirements. At a more detailed level Netherwood (1996) has made the point that training should include provision for 'senior managers', who make key decisions about the resources for environmental management, 'middle managers', who are affected daily by environmental issues, and 'other staff' whose tasks influence processes that affect the environment.

The following sections briefly describe development and distribution of the survey, the results which were obtained, and the trends indicated by the data.

The survey

The works referred to above provided direction for survey questions relating to the scope and methodology of training, as well as to the range of mechanisms for training delivery. Similarly, the Standard itself outlines elements of training that provided direction for most questions (Standards Australia and Standards New Zealand 1995b).

Because the survey was to be the 'first bite' at assembling information about EMS training, and was essentially exploratory in nature, a broad-based questionnaire format was chosen, and designed as a postal survey. The decision to develop a mixed-response questionnaire arose partly from the exploratory nature of the research emphasising qualitative data, and particularly the recognition that, because of work commitments, respondents would have limited time to complete the questionnaire. While space was provided at the end of each section for 'further comments' most questions were answered by 'ticking the box', and responses have been grouped around seven broad themes under which the results are reported.

With the assistance of the Australian EMS certifying organisations a group of 40 businesses/organisations having certified ISO 14 001 EMSs were identified and sent the questionnaire. Before sending the questionnaire we

telephoned the organisations to verify the contact details, and to introduce the project. The questionnaires were posted in late 1997.

Responses to the survey

Twenty questionnaires were returned. Since responses to postal surveys are typically low this 50% response rate was relatively representative and suggested that these initial efforts to establish contact with EMS aware personnel had met with interest on their part. The limited amount of data associated with this level of response was acceptable since it was our intention to provide an introductory picture of EMS training rather than statistically reliable data.

Organisations surveyed spanned a range of industry sectors including small (< 100 employees); medium (100–500 employees); and relatively large (500 or more employees). The EMSs of all of them had recently been certified.

Components of EMS training

Fifteen respondents stated that to produce their EMS training program they had extended existing programs to incorporate EMS; 5 respondents indicated that these had included environmental impact and environmental awareness. A wide range of objectives for training was noted; these have been classified into five groupings. Specific objectives are listed in Figure 1, and summarised in Figure 2 to enable a broad comparison to be made between the five categories.

Figure 1: Categorisation of the specific objectives identified for the EMS training programs

Awareness

Statutory/legal requirements (5 responses)
Concerns of general community (1)
Environment awareness training (5)
Company expectations/ISO requirements (5)
Awareness of company impact on environment (5)
Employee responsibilities/competencies (5)
Understanding EMS related procedures (1)

Reduction

Reduce/control environmental impacts (2)

Maintenance

Specific training needs/significant issues (4)
Discuss and advise environmental issues (1)
Emergency response (2)

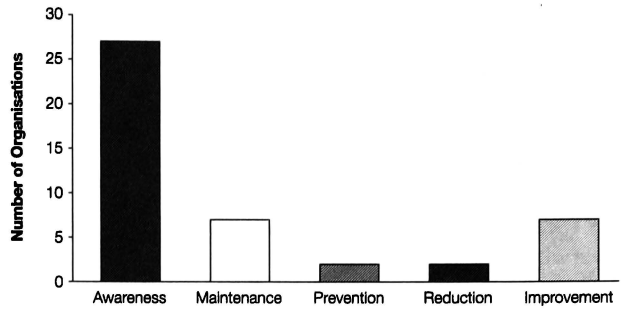
Improvement

Improve monitoring/performance/impact assessment procedures (2)
Improve environmental management (4)
Develop staff for future benefit of company and individual (1)

Prevention

Pollution Prevention (1)
Hazardous substance and precautions (1)

Figure 2: Objectives of EMS training programs*



* see Figure 1 for elaboration of terms

To assist identification of specific environmental training needs organisations used: information related to EMS or ISO 14 000 series; surveys or discussions with employees; and advice from in-house staff (12, 10, 12 respectively). Several organisations also used advice from the industry sector, government agencies and consultants.

Staff groups targeted for training

Data presented in this and the next two sub-sections have been categorised using the employee groups defined in the questionnaire—all staff, select staff, and managers. Because of a lack of prescription in the questionnaire, there might be overlap in some responses between 'all staff' and 'select staff' or 'managers', that is some respondents might have included the latter two groups with 'all staff'

The overwhelming majority of organisations indicated that all their employees were intended for inclusion in their EMS training program (19 organisations). Seven organisations targeted select employees and/or contractors in high impact roles, while 8 organisation specifically targeted 'managers' and/or divisional leaders. Further, over half of the organisations included contractors in their EMS training program (12 organisations). An average length of time 'all staff' spent in training each year was up to 4 hours. 'Select staff' training ranged from 1–2 hours to month-long programs, depending on need, while for 'managers' the range was smaller, that is between a half day and a week.

Providers of training programs

'Outside consultants were infrequently used'

Experienced in-house staff were frequently involved in training programs. 'All staff' met these trainers mainly on the job and in seminars, while 'managers' were infrequently trained by in-house staff; the frequency for 'select staff' was in between that of the other two staff groupings.

Outside consultants were infrequently used. Rarely were consultants engaged for the training of 'all staff', but were more involved in training 'select staff' and 'managers' through seminars and workshops. Only 'select staff' and 'managers' were sent, occasionally, to educational

institutions to participate in short and long courses, seminars and degree programs. Industry associations also played an occasional role for 'select staff' training, and less frequently for 'managers'

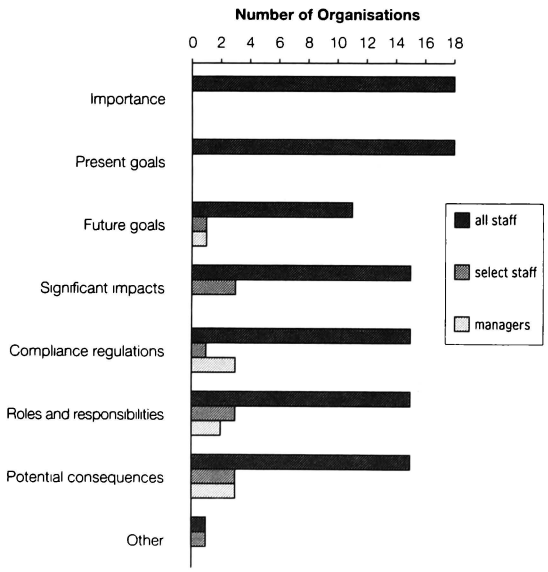
Topics covered

Administrative requirements

As shown in Figure 3, respondent organisations overwhelmingly indicated they included 'all staff' in awareness training related to the importance of the organisation's EMS and their present environmental policy goals. Half of the organisations included training related to their environmental policy goals, while nearly two thirds provided training for:

- significant environmental impacts, actual or potential, of the employees' work activities
- the importance of compliance with operational and regulatory requirements
- the roles and responsibilities in achieving conformance with environmental policy and EMS
- the potential consequences of departure from specified operating procedures.

Figure 3: Topics covered: awareness of adminstrative requirements and procedures

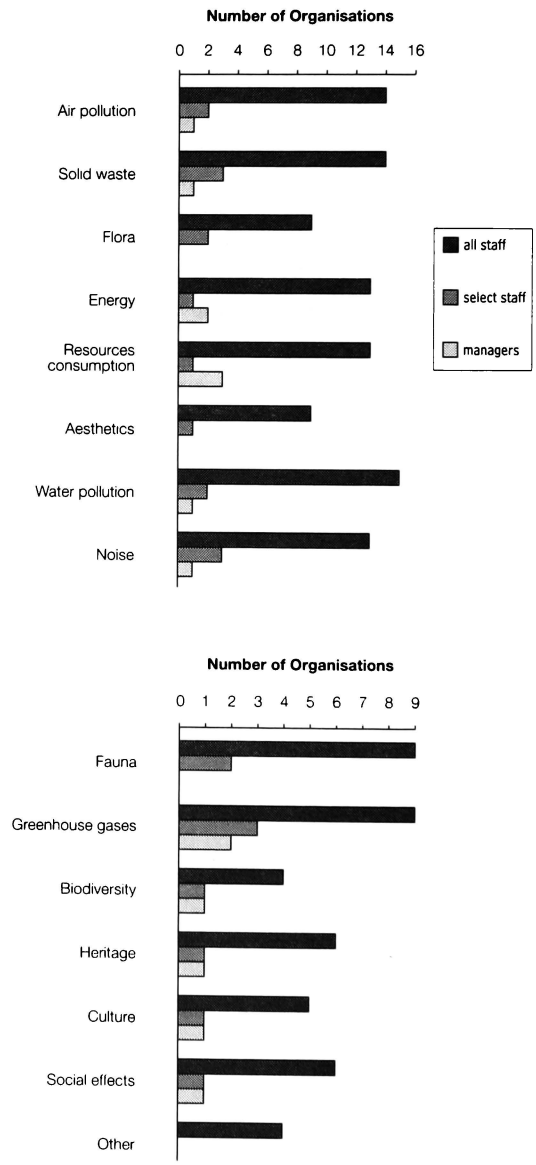


Only a small number of organisations indicated that they targeted their 'select staff' and/or 'managers' for specific training in these areas. We can only speculate about why 'select staff' and 'managers' were not trained in the 'importance of the organisation's EMS' and ' the goals of the environmental policy' Perhaps, as a result of the possibility of confusion over the wording of the staff groupings, respondents have included 'select staff' and 'managers' in the 'all staff' category. Or 'select staff' and 'managers' might have been involved in the development of the EMS and the environmental policy and therefore did not need to be trained.

Environmental aspects

As could be expected, and is illustrated in Figure 4, respondents indicated that they trained all their staff in awareness of environmental aspects, that is elements of the organisation's activities which could interact with the environment. Nearly two thirds of the respondent organisations indicated that priority was given to the areas of air pollution, solid waste and water pollution, while over half indicated an emphasis on energy, resources consumption and noise. Around half of the respondents indicated an emphasis on flora, fauna and aesthetics Areas of heritage, culture, social effects and bio-diversity rated lower while occasionally specific topics were recorded, for example hazardous waste and radiation.

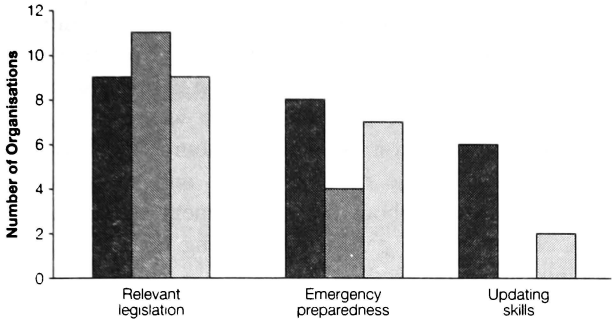
Figure 4: Topics covered: awareness of environmental aspects



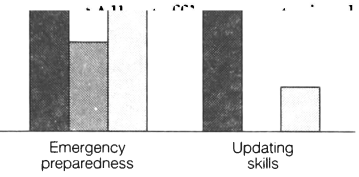
Administrative training

Data presented in Figure 5 show that training in relevant legislation was reasonably important for staff generally. The area of emergency preparedness was slightly less important, while updating skills for administrative and operational matters did not include 'select staff' and was mainly for 'all staff'

Figure 5: Topics covered: administrative and operational matters



Training for future planning



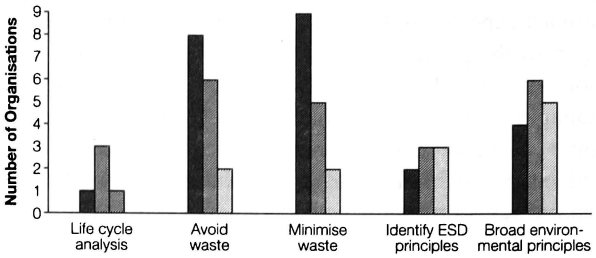
documentation of the organisation's relevant policies (18, 20 & 19 responses respectively). Also reasonably frequently cited methods of delivering training were discussions, videos and hands-on demonstrations, newsletters, and posters/bulletins (13, 12, 11 & 8 respectively). Other mechanism were seldom used.

Evaluation of training programs

Audits, both internal and external, feedback from staff

methods of evaluation. Changes in work practices were somewhat less used, while other approaches noted included the use of a questionnaire at completion of a training program and an employee competency-based assessment.

Figure 7: Topics covered: increasing involvement in environmental management



Range of training mechanisms

The most frequently used training mechanisms were lectures/talks, procedures manuals and written documentation of the organisation's relevant policies (18, 20 & 19 responses respectively). Also reasonably frequently cited methods of delivering training were discussions, videos and hands-on demonstrations, newsletters, and posters/bulletins (13, 12, 11 & 8 respectively). Other mechanism were seldom used.

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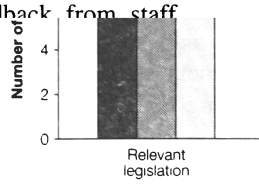

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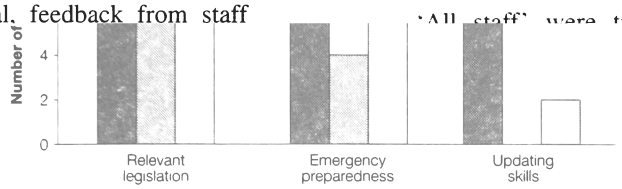

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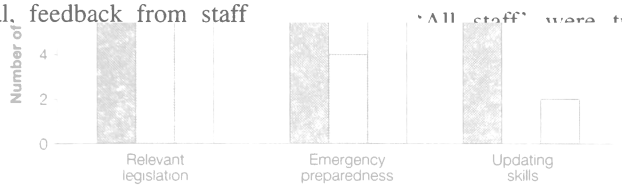
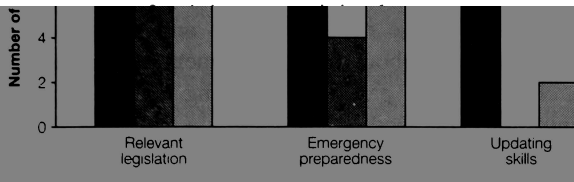


Training for future planning

identification of ways to avoid or minimise environmental impacts. Training for contr environmental audits was emphasised for 'select played a significant role in their participat planning and implementation of environmenta programs. The participation of 'managers' in a



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Evaluation of training programs

Audits, both internal and external, feedback from staff

Training for future planning

Sutton, P. 1997, 'Targeting sustainability: the positive application of ISO 14001', in Sheldon, C. (ed) *ISO 14 001 and Beyond: Environmental Management Systems in the Real World*, Greenleaf Publishing, Broom Hall.

The Body Shop 1995, 'Training' in the report *Measuring Up* linked to *The Values Report 1995*, http://www.think-act-change.com/environment/act/act19.html). This site is no longer available. *Values Report 1997* has been published and can be viewed at www.the-body-shop.com/.

Tibor, T. 1996, *ISO 14 000: A Guide to the New Environmental Management Standards*, Irwin, Chicago.

Walker, L. 1996, 'Environmental awareness in the workplace: an evaluation study', *Australian Journal of Environmental Education*, vol. 12, pp. 71–76

Wells, A. 1997, 'Training and Environmental Management Systems', in Sheldon, C. (ed) *ISO 14 001 and Beyond: Environmental Management Systems in the Real World*, Greenleaf Publishing, Broom Hall.

This article has focused on opportunities for environmental education presented by the EMS process. Full details of the survey of EMS training programs and the detailed results referred to in the article can be found in:

Olsson, M. & Thomas, I. 1998, 'The training components of Environmental Management Systems: a survey of Australian certified EMSs', *Australian Journal of Environmental Management*, vol. 5, no. 4 , pp. 234–246.

Mary Olsson has recently been working as a tutor at RMIT University in the Landscape Environment and Planning department while concurrently completing a Graduate Diploma in Vocational Education and Training. She is presently editor of Permaculture Melbourne's bi-monthly newsletter, and a co-director at Borderlands Cooperative, a centre for alternative learning.

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