

ED359064 1993-07-00 Environmental Studies and Environmental Careers. ERIC/CSMEE Digest.

ERIC Development Team

www.eric.ed.gov

Table of Contents

If you're viewing this document online, you can click any of the topics below to link directly to that section.

Environmental Studies and Environmental Careers. ERIC/CSMEE Digest.....	1
TRENDS IN ENVIRONMENTAL EMPLOYMENT.....	2
WHAT ARE THESE JOBS?.....	3
.....	3
.....	4
PREPARATION.....	6
REFERENCES.....	7



ERIC Identifier: ED359064

Publication Date: 1993-07-00

Author: Heimlich, Joe E.

Source: ERIC Clearinghouse for Science Mathematics and Environmental Education
Columbus OH.

Environmental Studies and Environmental Careers. ERIC/CSMEE Digest.

THIS DIGEST WAS CREATED BY ERIC, THE EDUCATIONAL RESOURCES INFORMATION CENTER. FOR MORE INFORMATION ABOUT ERIC, CONTACT

ACCESS ERIC 1-800-LET-ERIC

Environmental careers could be defined as those jobs "involved with the protection and conservation of nature, natural resources and inhabitants of our land" (Hendrix & Cegiel, 1990). Over the past few decades, there has been increasing concern with the environment, reflected in the increasing general awareness of environmental concerns. As concern has increased, opportunities in the environmental job market have also increased (Dalaney & Gaylord, 1991). These positions have been given labels ranging from "tree hugger" and "environmental expert" to "environmentalist." What are these careers and how do students prepare for them?

Harper and Stein (1983) distinguish between environmental experts such as biologists, ecologists, chemists, and engineers, versus environmentalists who work in professions that include a moral position "to protect the rights of persons to an environment that allows them to pursue their goals" (p. 31). Professionals in the environment are those whose work focuses on the human or natural environment. They have mastered a particular body of knowledge and are dedicated to the ethical application of that knowledge in all their work (Ehrhardt, 1990).

This digest will briefly examine trends in environmental employment, present ways in which careers can be identified within the environmental arena, and then discuss the preparation needed for a successful career in the environmental field.

TRENDS IN ENVIRONMENTAL EMPLOYMENT

Wobbe (1992) suggests that the future "will be marked by a growing demand for processes which involve the lowest possible release of eco-impacting materials to the environment" (p.75). He continues to identify the movement as production that is oriented toward new forms of materials, new forms of production, and new products to facilitate repair, recycling, and refurbishment of products. The development of these technologies will require a wide array of professionals in many fields, all of whom are trained in environmental issues and management. In a listing of "hot tracks" for future employment, five of the 20 hot track professions were environmental positions (U.S. News, 1991).

Not all careers in the environment are growing fields. Positions as foresters and conservation scientists, for example, are expected to increase at a lower than average rate, with most of the jobs coming through retirements and vacancies, not new positions (Occupational Outlook Handbook, 1992). Many of the new jobs in the environmental field are the highly specialized professions, such as specialties within biology, geology, civil engineering, and chemistry (Branch & Luciano, 1992). New jobs in the environmental fields are being created primarily from either remedial actions (Superfund clean ups, regulatory action) or from minimization and prevention activities (rethinking manufacturing, pollution prevention), both of which require a strong science focus. Whether it is the basic science, or the technology to apply the science, part of the movement toward environmental occupations is seeking the "solution of common

problems of people, such as global environmental disruption...exhaustion of non-renewable energy and other resources" (Zaitsev, 1992, p.86).

WHAT ARE THESE JOBS?

In examining environment-related employment opportunities, it is possible to explore career options either by "content" or by "position." Content refers to employment opportunities that directly relate to certain areas of study, focus, or preparation, such as water, air, or solid waste. Position relates more specifically to the type of position, such as educator, toxicologist, or geophysicist, and the setting in which the work occurs including public, private, not for profit organization, or regulatory agency.



CONTENT-FOCUS Careers, and the formal preparation for those careers, can be identified by the subject matter focus of the work. One listing of content organized employment opportunities (Environmental Communications, 1990) includes:



* Hazardous Waste Management and Reduction.



* Solid Waste Management and Recycling.



* Land Use and Preservation.



* Housing and Community Development.



* Water-related Issues.



* Air-related Issues.



* Fish and Wildlife Management.



* Fund Raising and Foundation Work.



* Environmental Education.

Another classification [Resource Control (Hendrix & Cegiel, 1990)] separates careers into:



* Pollution Prevention and Control.



* Disease Prevention.



* Environmental Planning.

These approaches suggest that to identify a career interest, one identifies first the particular subject or content which appeals and explore the content. From exploring the content, opportunities for using the content will emerge. Erhardt (1990) recommends that an individual choose a favorite aspect of the natural or human environment, and it will likely have a career aspect related to it.



POSITION-FOCUSThe more traditional approach to career identification is through a position approach. In this approach, types of positions that relate to the subject are identified. We can identify positions for working in the environmental arena as:



--ENVIRONMENTAL SCIENCE



* Research & Development (laboratory technicians; packaging scientists; chemists; biologists; toxicologists)



* Technical (civil engineering; transportation engineers; environmental health)



--ENVIRONMENTAL POLICY



* Regulator (health regulation; environmental regulation; natural resource management regulators)



* Regulated Industry (Risk assessment; environmental compliance officers; environmental health officers OSHA compliance, Environmental Impact Assessor)



* Policy Analysis (environmental economists; consulting firms; lobbyists; environmental groups)



--ENVIRONMENTAL INFORMATION



* Education (elementary, secondary, post-secondary teachers; parks; nature centers; hands-on science museums or centers; outdoor education)



* Communications (newspapers; mass media; communications for environmental concerns for private industry; information officers for public agencies)



* Interpretation (parks; nature centers; hands-on centers; exhibition halls; zoological gardens; tourist centers)



--RELATED PROFESSIONS



* Environmental Law



* Biomedical Engineering



* Environmental Health

Of course, many careers can fit within many different areas. A marine biologist, for example, can be in research, or in the technical application of the science, or be working for the government in a regulatory capacity, or be teaching within a formal or non-formal setting.

PREPARATION

Delaney and Gaylord (1991) observed that "Environmental careers are diverse and dynamic...opportunities range from media driven research work...to site specific challenges. One site project may require the professional services of a cadre of professionals such as engineers, hydrologists, toxicologists, heavy equipment operators and administrative support. Moreover, these opportunities will exist in all employment sectors--corporate, consultant, government and nonprofit" (p.87).

What does it take to have a career in these fields? Whether it is a position as an environmental lawyer, a park ranger, or a marine scientist, "saving the environment most likely requires a degree in chemistry...or engineering...or communications. Anyway you go about it, science--and math--are eventually required" (Martin, 1992, p.26).

Environmental science is an interdisciplinary arena, and working toward an environmental career requires an understanding of biology, chemistry, and the physics of the environment (Posnick, 1989).

A career in the environment also calls for reasoning and problem-solving, involving math, geometry, and simple algebra skills. Yet, less than half of twelfth graders currently have these skills. Furthermore, only 5% of high school seniors operate with knowledge of beginning statistics and probability (Kutscher, 1992). Day, Astin and Korn (1991) note that less than 35 percent of high school students are meeting the recommended two years of biological sciences and less than 50% are receiving the recommended two years of physical sciences. A well-grounded preparation in mathematics as well as

science is needed for many if not most careers in the environment. Whatever the career choice, basic mathematics and science preparation along with skills for applying these concepts is important for success.

Preparation for a career in an environmental field includes focusing on a specific area of interest, while developing highly transferable skills. Martin (1992) called this a balance between well-rounded generalism and marketable specialization. The person who achieves this will have a successful and highly rewarding career in the growing environmental field.

As we continue to discover the relationship of the environment in all aspects of our society, the need for well-prepared professionals and technicians in the many environmental science, education, and policy careers also grows. Whether public or private, regulator or regulated, policy maker or policy analyst, the expanding opportunities in environmentally related occupations are ever changing, ever challenging, and ever increasing.

REFERENCES

- Branch, S., & Luciano, L. (1992, February). Money's best jobs in America. *Money*, 21, 66-72.
- Day, E. L., Astin, A. W., & Korn, W. S. (1991). *The American freshman: Twenty-five year trends, 1966-1990*. Los Angeles, CA: University of California, Graduate School of Education. ED 340 325
- DeAngelis, L. P. (Ed.). (1986). *Becoming an environmental professional--strategies for career planning*. Proceedings from the Environmental Careers Conference, Cleveland, Ohio. Ann Arbor, MI: The University of Michigan School of Natural Resources. ED 288 730
- Dalaney, M., Erhardt, R. F., & Gaylord, C. (1990). *The environment is the future: Career opportunities in the 1990's*. Cleveland, OH. ED 326 384
- Dunn, S. (1986). *Resource guide for employment in environmental communications*. SE 046 881
- Harper, T. L., & Stein, S. M. (1983). The environmental professions: Moral and professional responsibilities. *The Journal of Environmental Education*. 14(3), 27-32. ED 297 917
- Hendrix, M., & Cegiela, L. (1990). *Career opportunities instructional guide*. East Texas State University. ED 337 687
- Kutscher, R. (1992). *Outlook 1990-2005: Major trends and issues*. Occupational

Outlook Quarterly, 36(1), 2-5.

Martin, A. (1992). Environmental careers: A Garbage primer for ecoeds. *Garbage*. IV(1), 24-31.

Posnick, L. (1989). Join the earth team. *The Science Teacher*, 56(3), 41-44. ED 322 357

U.S. Department of Labor. (1992, May). *Occupational Outlook Handbook: 1992-93 Edition*. Washington DC: Author.

U.S. News and World Report. (1991, November).

Wobbe, W. (1992). Anthropocentric production systems in the context of European integration. In Y. Masuda, (Ed.), *Human-centered systems in the global economy*. London: Springer-Verlog London Limited.

Zaitsev, V. K. (1992). The beginning of the third industrial revolution and changes in industrial society: Towards a better environment for man. In Y. Masuda, (Ed.), *Human-centered systems in the global economy*. London: Springer-Verlog, London Limited.

Joe E. Heimlich is an Assistant Professor of environmental education in the School of Natural Resources at The Ohio State University. He is also an Environmental Education Associate for ERIC/CSMEE.

This digest was funded by the Office of Educational Research and Improvement, U.S. Department of Education under contract no. RI88062006. Opinions expressed in this digest do not necessarily reflect the positions or policies of OERI or the Department of Education.

This digest is in the public domain and may be freely reproduced.

Title: Environmental Studies and Environmental Careers. ERIC/CSMEE Digest.

Document Type: Information Analyses---ERIC Information Analysis Products (IAPs) (071); Information Analyses---ERIC Digests (Selected) in Full Text (073);

Available From: ERIC Clearinghouse for Science, Mathematics, and Environmental Education, 1929 Kenny Road, Columbus, OH 43210-1080 (first copy free; \$0.25 each additional copy).

Descriptors: Career Awareness, Careers, Employment Opportunities, Environmental Education, Job Training, Professional Education

Identifiers: Environmental Occupations, Environmental Professionals, Environmental Trends, ERIC Digests

###

—



[\[Return to ERIC Digest Search Page\]](#)