

1-1-1981

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James R. Coleman

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Recommended Citation

James R. Coleman, *THE SEARCH FOR ENERGY AND ENVIRONMENTAL INFORMATION*, 3 W. New Eng. L. Rev. 635 (1981), <http://digitalcommons.law.wne.edu/lawreview/vol3/iss4/1>

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Volume 3
Issue 4
Spring
1981

WESTERN NEW ENGLAND LAW REVIEW

THE SEARCH FOR ENERGY AND ENVIRONMENTAL INFORMATION

JAMES R. COLEMAN*

Streams of unassimilated, and often unmanageable information inundate us even as we thirst for understanding.¹

Since this remark was made at the opening of the environmental decade of the 1970's, the streams have become rivers. The outpouring of environmental information began with the Santa Barbara oil spill, Earth Day 1969, and the signing of the National Environmental Policy Act² in January 1970. The tremendous pool of energy information which is available today began to grow after the 1973 oil embargo. While the organization and presentation of energy and environmental information have improved, the sheer quantity of available information presents difficulties for most researchers.

This article focuses on nonlegal research techniques in the area of energy and environmental information.³ It will help the practitioner to develop an effective and efficient system of researching environmental issues.

* Assistant Librarian, Suffolk University College Library. B.A., University of Iowa, 1960; M.A. University of Iowa, 1963; M.L.S., University of Rhode Island, 1972.

1. G. GROSSMAN, BIBLIOGRAPHIC CONTROL IN LAW AND THE ENVIRONMENT—SURVIVING AN EXPLOSION I (Exchange Bibliography No. 334).

2. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4369 (1976).

3. Legal research techniques for energy and environmental issues are beyond the scope of this article. For an excellent guide to sources of legal information, see Margeton, *A Plethora of Research Tools for Energy Lawyers*, 1:39 LEGAL TIMES OF WASHINGTON 8-11 (Feb. 1979). This source directs the researcher to Department of Energy Publications, Federal Energy Regulatory Commission rulings, public utilities reports, the Utilities Law Reporter, and other services. *Id.*

I. RESEARCH TOOLS

Three major types of literature are located in most nonlegal libraries: Periodicals; books; and reference materials.⁴ Systematic rather than random searches can only be conducted through the use of indices. For example, the periodical collection furnishes current information on most energy and environmental topics, however, choosing a periodical because its title contains a key word, such as "environment," is a haphazard approach. Periodicals generally do not index their own contents, but major commercial indices organize the contents of several hundred magazines and journals according to broad subject headings. Some of these indices, always displayed in the vicinity of the magazine collection, are *Business Periodicals Index*, *Public Affairs Information Service*, *Social Sciences Index*, and *The Education Index*. To learn the precise magazine or journal, issue, and page where information is located, choose the index that corresponds to the subject you are researching.

Abstracting services, such as *Sociological Abstracts* and *United States Political Science Documents*, have distinct advantages over indices. First, they include more periodicals than indices. Second, they present detailed summaries or abstracts of each article indexed. A minor disadvantage, however, is that the index and the summaries usually appear in separate parts of each year's volume. Nevertheless, these services save the researcher from finding and reading useless articles. The summary often is all that is needed.

The second major type of literature, the book collection in the public or academic library, also may provide the practitioner with useful material. The Library of Congress system classifies material by very narrow subject identification. Thus, energy and environmental books may be placed in the H section with the Social Sciences,⁵ in the G section with Geography, in the T section with Technology, or in the RA section with Medicine. Because library book collections are large and lack broad subject identifications, the researcher must use the card catalog. Unlike the magazine and journal indices and abstracting services, the catalog entry does not identify material appearing within a book. Each book will have cards identifying it by author, by title, and by several broad subject headings. Therefore, to find particular books on energy or en-

4. Throughout the article, research tools will be referred to by their titles. These sources are readily accessible by resorting to the title index in the card catalog of a reference library.

5. See, e.g., HD 9502 or HC 79.

vironment, the researcher may have to look under several headings in the card catalog and then go to several different sections of the collection to examine the books. Lack of indexing impedes extensive use of the book collection as a research tool.

The reference collection is the third type of literature contained in nonlegal libraries. The user often will need the assistance of guidebooks or reference librarians until he becomes familiar with the content and organization of the reference collection. A broad range of reference tools is available, as the following examples indicate.

A. *Newspaper Indices*

The New York Times Index, *The Wall Street Journal Index*, and *The Washington Post Index* all delineate the precise date, page, and column of each article, person, topic, and corporation included in each issue of the newspaper. In addition, these indices summarize each article. They are an excellent place to begin researching most public topics since these are newspapers of record and the summaries reconstruct events and developments.

B. *Congressional Documents and Government Publications*

The *Congressional Information Service* (CIS) and *American Statistics Index* are commercial services indexing and abstracting all congressional documents and government publications that contain statistics. The government's own *Monthly Catalog of United States Government Publications* has indices, but it is inferior to CIS as a research tool. Another publication, the commercial *Index to United States Government Periodicals*, indexes about 170 government magazines and supplies them on microform.

C. *Miscellaneous Guides*

Guide to References Books, *Business Information Sources*, *Guide to Library Research in Public Administration*, *Information Sources of Political Science*, and *Directory of Business and Financial Services* are examples of the types of guides to printed information sources available in a reference collection. Since it usually is not possible to find information sources in the library card catalog, recourse to reference guides is necessary.

D. *Encyclopedias*

McGraw-Hill Encyclopedia of Science and Technology, *CRC Handbook of Environmental Control*, *Dangerous Properties of Industrial Materials*, *Topics and Terms in Environmental Problems*,

and *Encyclopedia of Bioethics* illustrate the range of special encyclopedias and handbooks included in many reference collections. An encyclopedia or handbook article should not be ignored merely because "encyclopedia" is a household word. The encyclopedia is an excellent place to begin research, especially in the technical energy and environmental areas.

II. USING RESEARCH TOOLS EFFICIENTLY

As the above material indicates, a substantial, nonlegal library will provide the legal practitioner with useful material in the energy or environmental area. Lack of information thus is less a problem for the researcher than is the efficient evaluation of this information. In 1977 the Denver Research Institute identified the problems that energy researchers commonly encounter.⁶ The Institute also suggested solutions to research problems.

The first major problem is that most science information systems are producer oriented. That is, they organize information by the scientific discipline or the technical topic rather than by the end use to which the information may be put. The information will not be identified under the social or public policy issue to which it applies, nor will the information contain potential use statements. To avoid being misled, the researcher should not pursue individual items until he has read the items in an abstracted or summary form. Sources such as *Energy Information Abstracts* and *Environmental Abstracts* index and abstract information contained in periodicals.

Even when using books as sources of information, the researcher first should consult the citations to reviews in *Book Reviews Index* or the excerpts from reviews in *Technical Book Reviews*. Reference librarians also may be able to supply advance summaries from book publishers, such as Ballinger or Lexington, who publish extensively in the energy and environmental fields. The use of any form of summary can save the researcher valuable time.

Obstructions to efficiently acquiring and using information is the second major problem cited by the Denver Research Institute.

6. J. FREEMAN, INFORMATION AND DATA FLOWS IN SOCIETAL PROBLEMS: FOCUS-ENERGY (1977). The authors at the Denver Research Institute identified the problems and lessons in a 1977 summation on the status of energy information systems for the National Science Foundation.

As a result of an incomplete search of the technical information, the researcher often misses the conflicting policy information. For example, technical or scientific data is readily available for cases involving oil shale leasing, environmental protection, and energy availability and cost. In fact, the very quantity of technical literature sometimes will cloud the search for policy information and information on alternatives, options, and competing values. Accordingly, many of the energy and environmental services described below are designed specifically either to narrow the scope of information or to cross-index information by placing it under broad policy headings. For example, the Department of Energy (DOE) produces *Energy Research Abstracts*, and NASA publishes *Energy: A Continuing Bibliography*. The latter concentrates primarily on technical literature. In addition, the DOE's monthly publication, *Energy Abstracts for Policy Analysis*, is devoted primarily to nontechnical and quasi-technical literature. The Environmental Information Center, Inc. publications, *Energy Information Abstracts* and *Environmental Information Abstracts*, include geographical, source, and policy and planning indices, as well as technical headings. These publications also supplement their indexing and abstracting services with legislative chronologies and overview material.

The third major problem in researching environmental issues lies in recognizing that energy and environmental information often embodies a mixture of conflicting social values and goals: energy sufficiency considerations frequently conflict with environmental protection considerations. The producers of energy information frequently are partisan, though not always openly. Thus, it is possible to find one segment of the oil and gas industry producing information on the oil and gas "glut," while another segment is producing information on the "shortage." The researcher first should read material in summary form and make a comparative integration of all available information.

III. THE MORE SPECIALIZED TOOLS

Equipped with a general background from the nonlegal library and an awareness of the three obstacles to finding energy and environmental sources, the researcher is ready to address his particular research project. The attorney should consult three sources: Dictionaries and reference volumes; government and commercial indexing services; and computer assistance services.

A. *The Directories*

The *Encyclopedia of Associations* is a complete directory of United States associations. It has geographic and executive indices and a combined alphabetical and keyword index. Approximately fifty associations are listed under the keyword "energy," and more than three times that number are listed under the keyword "environment(al)." The researcher, however, also must consult other specific topics, such as the keywords "atomic," "nuclear," "solar," and "pollution." Each association entry in this directory lists the address and the publications of the association. It is a useful guide to a number of specialized journals and annuals.

A great number of specialized directories, lists, rosters, and guides that are produced for business and industrial use are valuable in the search for energy and environmental information. These are found in *The Directory of Directories*. The Environment Information Center's *Energy Directory Update Service* is superior to the above tools because of the rapid turnover in trade, professional, and nongovernmental organizations and because of the extensive reorganization of government bodies dealing with energy matters.

Although the federal government dominates the field of energy and environmental information, the researcher should not neglect information from professional societies and associations. These professional organizations function as sources of specialized information for consultants. In addition, they publish journals and authoritative reports, or white papers, on energy and environmental topics.

Researchers should be aware of *Books in Print*, an annual publication. *Books in Print* lists books by author, title, and subject. It also gives price and access information. Another annual publication, *Ulrich's International Periodicals Directory*, lists approximately 650 magazines, journals, and newspapers under the "Energy" or "Environment" subject headings.

B. *Abstracting Services*

Scientific and technical literature is found most efficiently through abstracting services. An abstract that guides the researcher to an extensive summary of an article or report and to a citation of the original, full source is an essential professional tool in every field of inquiry. These services permit the researcher to survey a large quantity of literature in summary form and to cut down enormously on unproductive research time. Several such services al-

ready have been mentioned. In addition, there are *Pollution Abstracts*, *Petroleum Abstracts*, and *Oceanic Abstracts*. *Ulrich's International Periodicals Directory* lists more than a dozen such services under "Energy" and "Environmental Studies." Since most of these services are produced by computer-assisted methods, they usually correspond to the bibliographical data bases used with computers.

The Environmental Protection Agency's (EPA) long-established, nationwide system of libraries⁷ is helpful in the search for environmental information. These libraries are a good place to begin difficult or comprehensive research. They carry both governmental and commercial services. Since 1977, the Information Resources Press has abstracted environmental impact statements in *EIS: Key to Environmental Impact Statements*. The EPA itself produces *EPA Publications Bibliography 1971-1979*, which includes information on how to acquire the documents it abstracts, and *EPA Publications Bibliography: Quarterly Abstract Bulletin*. Altogether, the EPA libraries contain over 3,600 unique periodical titles that are indexed and abstracted.

The three-year-old Energy Information Administration (EIA)⁸ has not developed an organized system for storage of its energy data. The EIA, however, has made enough progress toward centralizing its energy data to justify beginning a search with EIA information. While it is tempting to look first into some of the hundreds of partial bibliographies, indices, and directories that were produced prior to 1980, that approach is frequently unnecessary and, therefore, is not recommended.

The 1979 Annual Report to Congress by the EIA describes the new state of its information systems. EIA innovations include: The National Energy Information Center; the various clearinghouses for information; FEDEX, a computerized data base of energy information; and the various annual, monthly, and single EIA publications. In addition to the Annual Report, the agency also publishes the *EIA Publications Directory*, which is indexed by subject. Together, the Annual Report and the Publications Directory describe sixty data-gathering systems and their corresponding publications: Sev-

7. To contact an Environmental Protection Agency [hereinafter referred to as EPA] library call the local Federal Information Center or *see* the United States Environmental Protection Agency, *Guide to EPA Libraries* (1977).

8. The Energy Information Administration is a product of the integration of several energy departments within the federal government.

enteen periodicals, monthlies and quarterlies; and a large number of annual and one-time reports.

Statistical information and special energy data can be found through *The American Statistics Index* and *Statistical Reference Index*. They index and abstract the material they cover and help the researcher to locate pertinent publications.

C. *Computer-Assisted Searches*

The number of libraries that provide computer-assisted bibliographical searches is increasing steadily. The scope of the information made available through this tool is found in the *Directory of Online Databases* and *Directory of Online Information Sources*. To illustrate, the DOE has a service called RECON that covers over twenty bibliographical data bases. RECON soon will be available commercially. The researcher should consult the librarian or the operator to determine the scope and applicability of the available data bases. A disadvantage to these searches is that they are expensive: an unsubsidized search will cost from twenty dollars to several hundred dollars. Accordingly, computer-assisted searches should not be pursued when the same information may be found in the printed abstracting services.

The advantage of computer-assisted searches over the printed services is the breadth of the computer's capacity. As with printed indices, the computer will scan or cover single subject headings. In addition, the computer has the capacity to scan multiple headings simultaneously and to scan all words occurring in the abstract. For example, the computer search *Enviroonline* can quickly draw from its *Environment Information Abstracts* data base all citations and abstracts in which the words "snail darter" occur. In the printed index to the same data base, however, the researcher must consult the headings "Endangered species—Animal," "Dams," and "United States Tennessee Valley Authority" and then read a number of abstracts to gather the same information. Computer-assisted searches allow the researcher to examine more data bases with greater speed and precision than he could through the traditional method of researching the annual volumes of the indexing and abstracting services.

The following online bibliographical services may be quite useful in an energy or environmental information search. A frank and detailed consultation with the librarian or operator who will actually perform the search on the terminal is indispensable to a successful search.

1. Energyline and Environline

These services correspond to the Environment Information Center's printed services covering several thousand fully and partially abstracted journals, reports, and newspapers. Energyline and Environline cover all energy and environmental areas. These services are strong in the areas of public policy and planning and current affairs, as well as in scientific and technical literature. Coverage is from 1971 to the present.

2. *Pollution Abstracts*

Produced by Data Courier, Inc. and corresponding to the printed *Pollution Abstracts*, this service includes 70,000 citations and abstracts for air, water, noise, solid waste, and other types of pollution. Coverage is from 1970 to the present.

3. TULSA

The University of Tulsa's Information Services Division (TULSA) corresponds to *Petroleum Abstracts* and covers world literature and patents relating to all aspects of oil and natural gas. Coverage is from 1965 to the present, with approximately 18,000 records added per year.

4. NTIS

The United States Department of Commerce's National Technical Information Service (NTIS) covers only government-sponsored research and development reports. Coverage is from 1964 to the present.

5. *Legal Resources Index*

This service, which indexes approximately 660 law journals, recently has appeared online. The index, however, does not include all journals devoted to environmental topics, nor does it include abstracts. It employs the Library of Congress subject headings to organize the information.

IV. CONCLUSION

Improvements in the organization and presentation of energy and environmental information have combined to assist the researcher in his search for such information. With an understanding of the range of available information, the attorney no longer needs

to confine his energy or environmental research to the sources found in a legal library. While statutes, cases, regulations, and other legal sources cannot be discounted, the energy and environmental areas pose unique technical and policy problems that mandate broad research.