Finding U.S. Government Technical and Scientific Information on the Web: Hints for the Non-Technical Librarian

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My presentation today is directed towards the librarian in a non-technical library without ready access to fee-based databases. I'll briefly discuss locating U.S. federal government and government-sponsored:

1. technical reports and literature

2. information on technical and scientific topics for a general audience

3. Web pages designed for science study and for classroom use

I'll show examples of finding reports and information by using search engines and other Web resources. Many of the examples make use of *Government Information Infomine* (http://infomine.ucr.edu/govpub), a database of links to government Web resources, to search for and connect to relevant Web resources. Each resource in *Government Information Infomine* has assigned Library of Congress subject headings and free vocabulary keywords. Search *Government Information Infomine* by subject words, keywords, and authors to locate technical report databases, bibliographies, Web sites, and library catalogs.

Finding United States government and government-sponsored technical reports and information and citations to technical reports and articles has become an easier task with improved Web search engines and freely accessible Web bibliographic databases, information services, and library catalogs. Students commonly believe that every publication is posted on the Web, and that

the most relevant and authoritative publications are listed in the first five results from the search engine of their choice. This is still not true, but it is less untrue than it was a year or two ago. When searches are for technical information, search engines do retrieve relevant Web sites. The search engines, however, miss pages that are created dynamically through database searches and often miss publications that are retrieved through database searches.

Finding a known title or report number:

Start with a Web bibliographic database, a library catalog that includes many government publications, or with a Web search engine. I find *Google U.S. Government* (http://www.google.com/unclesam) to be the best search engine for connecting to government information. Now that Google retrieves PDF as well as HTML pages, you have an even better chance of finding a link to a specific report. You would expect search engines to easily retrieve an individual publication when you enter a title. If, however, a link is not retrieved, you should not assume the publication is not available on the Web. It may be stored in a database the search engine does not or cannot search. In addition, a publication recently posted on the Web may not have been captured by the search engine yet.

To connect to bibliographic and fulltext databases to search for a technical report not located through a search engine, do a *Government Information Infomine* search for "technical reports" or "bibliographic databases" or "full-text databases" or "bibliography" and select

appropriate Web bibliographic databases to search. *Infomine* searches can generate links to technical reports and other resources from a specific agency (search for example: NASA "technical reports") or for a specific subject (search for example: Geology "bibliographic databases").

Example of full-text publication found by search engine and by library catalog:

The title is *Benthic Flux of Metals and Nutrients into the Water Column of Lake Coeur D'Alene, Idaho*. Water-Resources Investigations Report 00-4132.

Search of *Google U.S. Government* for the title ("benthic flux of metals" coeur) or the report number (WRIR 00-4132; WRI 00-4132): the top result is USGS Benthic Flux of Metals and Nutrients into the Water Column of Lake Coeur d'Alene…

Search of library catalog: MELVYL has direct link from record
Search *Catalog of U.S. Government Publications*: direct link from record

Example of full-text publication found in search engine by title, but not by report number:

The report number is Water-Resources Investigations Report 00-4095

Search of *Google U.S. Government* and then *Google* for report number
(WRIR 00-4095; WRI 00-4095; Water-Resources Investigations Report 00-4095): does not retrieve the full document, but does retrieve the title, *Characterization of rainfall-runoff response and estimation of the effect of wetland restoration on runoff, Heron Lake Basin, southwestern Minnesota, 1991-97*). Searching the title retrieves the full document.

Search of library catalog retrieves a record, but not a link to the full document.

To find USGS publications on the Web you could also search USGS digital publications listings. Do a *Government Information Infomine* search for: USGS bibliography. This retrieves: *Geologic Division Products*, with links to USGS publications in digital format. Note that only Water-Resources Investigations Report 00-4132 is listed.

Example of full-text publication not found by search engine:

The title is *Potential species for phytoremediation of perchlorate* and the report number is EPA/600/R-99/069.

This title is listed in the MELVYL library catalog. It's a microfiche copy, however. The person using it would prefer a PDF document.

Searching *Google* by title and by report number does not retrieve the document.

Do a *Government Information Infomine* search for: EPA "fulltext databases" or for EPA "bibliographic databases". Connect to *NEPIS, National Environmental Publications Internet Site* where you may successfully search for the full-text document.

Example of a full-text document found by search engine by report number, but not by title.

The title is *Nitrate and perchlorate removal from groundwater by ion exchange* and the report number is UCRL-ID-135639.
Search *Google*: A title search does not retrieve UCRL-ID-135639. UCRL-ID-133361, a poster session with the same title, is listed. A search for report number UCRL-ID-135639 does retrieve a PDF document. If you had not known the report number, you would not have found the report.

Search library catalog: Neither title nor report number search retrieves a record.

Do a *Government Information Infomine* search for "technical reports." If you realize that UCRL-ID-135639 is for an Energy department technical report, you'd know to search *DOE Information Bridge*. Otherwise choose *GrayLIT* or *EnergyPortal (* a component of *EnergyFiles)* which allow searches across a number of databases. Either will retrieve *Nitrate and perchlorate removal from groundwater by ion exchange.*

Note that all the Google searches were completed by October 11, 2001. Searches conducted later may retrieve different results.

Finding reports and information by topic

Perchlorate contamination of groundwater is the topic I will use to demonstrate finding technical information and less-technical information for the concerned citizen.

Perchlorate from post-World War II Lockheed production plants and from jet fuel spills at Norton and March Air Force bases has contaminated municipal drinking water supplies in the San Bernardino-Riverside area. At the UC Riverside Government Publications reference desk, researchers have asked for technical reports on removal of perchlorate from groundwater; the general public have asked for information about contamination of specific wells; others have wanted information on health risks.

Do a *Government Information Infomine* search of "technical reports." Select *GrayLIT* and *EnergyPortal* to do distributed searches across many databases. As examples try:

1. a search of perchlorate AND remediation AND groundwater in *EnergyPortal*

2. a search of perchlorate AND removal in *GrayLIT*

You may move directly to the retrieved citations or to retrieved documents from the search results.

Another strategy is to use the results to see what databases you could search individually. Individual databases may allow more specific searching (restricting searches to title words, for example). Look at the titles retrieved for synonyms and related words to use for additional searches. In this case jet fuel and rocket propellants might be useful search terms.

Move to individual databases from the *GrayLIT* or *EnergyPortal* pages. Alternately, retrieve these individual databases through *Infomine*.

1. Search *PubScience* for citations to journal literature.

    Try searches of: perchlorate AND drinking water; perchlorate AND remediation AND groundwater.

2. Search DTIC for Department of Defense technical reports. The range of subjects included here is surprising to many.

Try searches of: Jet AND fuel AND ground water; perchlorate AND groundwater; propellant AND perchlorate. Note that one of the citations retrieved is a document about bioattenuation of jet fuel spills on March Air Force Base.

GrayLit and *EnergyPortal* retrieve citations to or full-text of technical reports related to physical sciences, nuclear medicine, and other topics of interest to Department of Energy researchers. Search *Infomine* for links to databases for other scientific and technical topics, such as medicine, forestry, geology, astronmy, or agriculture. Search by topic or subject, by agency, and/or by type of resource ("bibliographic databases," bibliography, "technical reports," "library catalogs," preprints, articles, etc.). *SciTechResources* is a new page from NTIS; it lists many federal government scientific and technical information resources.

You won't usually find older technical reports on the Web. For the most part you'll need to rely on paper indexes or fee-based database searches to locate citations to technical reports and on ILL or purchase to obtain full-text publications. Online library catalogs can be used to find citations to

reports and articles. Useful catalogs are listed in *Government Information Infomine*. Try these sample searches: EPA "library catalogs;" NOAA "library catlogs;" USGS "library catalogs."

Locate descriptions of current and ongoing research by searching *Government Information Infomine* for "research summaries." You'll find research summaries of research on perchlorate remediation and health effects of perchlorate exposure in the research summaries listed.

Use *Google* and *Infomine* to find information specific to particular geographic areas and information for the non-scientist.

1. A *Google U.S. Government* search of perchlorate directs the user to a good EPA overview of perchlorate and to an extensive Federal Remediation Roundtable Web site useful to the public and the researcher. This is a case where a search engine does retrieve relevant, authoritative sites in its initial listings.

2. A *Google U.S. Government* search of perchlorate groundwater Redlands retrieves Web sites of great interest to local residents.

3. Among useful *Infomine* searches are: perchlorate; groundwater contaminants; groundwater contamination remediation; drinking water zip codes.

Infomine does not include keywords for each groundwater contaminant. "Contaminants" retrieves sites that have information on many contaminants; look within a site for information on a particular contaminant.

Infomine does not include keywords for each zip code; searches for zip codes (or counties or some other geography) retrieves databases, reports, and statistical tables with information for all or many zip codes, counties, states, etc.

Use of these category keywords enables retrieval of data stored in databases and retrieved as dynamically-created Web pages.

Finding science study Web sites, classroom use Web sites, and lesson plans:

At UC Riverside we have a steady clientele of student teachers needing classroom resources and lesson plans. *Google U.S. Government* search gets them to individual lesson plans, but not to collections of lesson plans and not to the best of the Web sites. *Infomine* searches lead to the best of these collections.

Government Information Infomine sample searches:

1. Science study
The best of the listed sites is *Federal Resources for Educational Excellence (FREE)*. FREE lists many educational sites. Look at the long listing of science education Web sites.

2. Science "grade levels"
The best of the listed sites is *Gateway to Educational Materials*. Search for classroom resources and lesson plans by topic and by grade level.

3. Lesson plans
Lesson plans astronomy

4. Kids pages science
Kids pages environment
Note in particular *Ben's Guide* to government Web pages designed for kids.