

CHEMICAL INFORMATION RETRIEVAL

(Prepared with the assistance of the ACS Division of Chemical Information)

A student who intends to become a practicing chemist, or who will use chemistry in allied fields of science and medicine, should know how to use the chemical literature effectively and efficiently. Guidelines for instruction in chemical information retrieval for chemistry majors are given in this appendix, including an outline of course content, the level of ability desired, and suggestions as to ways in which library skills may be imparted.

Topics and Skills

A student graduating with an ACS-certified degree in chemistry should have a demonstrable understanding of the general content and organization of:

- *Chemical Abstracts*
- Other principal secondary sources, e.g., *Beilstein*, *Current Contents*, *Index Chemicus*, *Science Citation Index*, etc.
- Standard reference works, e.g., *Handbook of Chemistry and Physics*, *Gmelin*, *Mellor*, *Landolt-Börnstein*, etc.
- Primary literature sources
- Computerized chemical databases, e.g., Chemical Abstracts Service CA file and Registry file

In order to use the primary and secondary literature effectively, the student should be familiar with:

- The organization of the chemistry library
- Techniques of manual literature searching
- Techniques of on-line, interactive literature searching

Students should be able to:

- Efficiently locate chemical and physical properties of substances, including their spectra.
- Efficiently locate references for the synthesis or reactions of desired compounds or classes of compounds.
- Efficiently locate references to a desired type of chemical transformation.
- Identify the CAS Registry Number® of compounds.
- Complete a comprehensive subject search. Utilize CA subject indexes and *Index Guide*.
- Compile a complete bibliography of an author's publications.
- Locate recent review articles on a subject.
- Utilize a variety of methods to stay up-to-date on a subject.
- Know the importance of patents and be able to search for patents on a subject.
- Know about the availability and contents of relevant computerized databases (bibliographic and non bibliographic) and understand the basic techniques of on-line searching. (It is not anticipated that proficiency at on-line searching will be achieved, but the ability to interact productively with an information specialist is expected.)

Proficiency in chemical information retrieval should be acquired through formal instruction. In particular, *Chemical Abstracts* has become sufficiently complex that its use can no longer be easily self-taught. Instruction can be achieved in the following ways:

Through a course dedicated to the subject of chemical information retrieval. A dedicated course of this kind can be greatly enhanced through library assignments from other courses.

Through integration into other chemistry courses, such as:

- laboratory courses, from sophomore through senior year, as assignments require library work
- upper division courses
- seminars
- independent study
- research
- combination with a course in technical writing

Through coordination and monitoring of each student's satisfactory achievement, preferably by one faculty member or librarian.

Implementation of Library Instruction

Faculty and librarians who are interested in developing instruction in chemical information retrieval but who lack the time or teaching aids to design such a course may contact the ACS Chemical Information Division, Education Committee, for suggestions and help. Course outlines, lists of texts on information retrieval and literature searching, lists of audio courses, library exercises, lists of on-line services and manuals, and other helpful guidelines may be obtained, if required, from the Chemical Information Education Committee.

Colleges that are unable to subscribe to *Chemical Abstracts*, including the volume indexes, because of cost are encouraged to take advantage of the Academic Program offered by Chemical Abstracts. Reliance on neighboring institutions for access to *Chemical Abstracts* does not provide the environment in which students learn to use the literature as an integral part of their curriculum. Primary journals, abstract journals, standard reference works, data compilations, and monographs are crucial components of a library collection in chemistry.

On-line literature searching is a powerful tool which is rapidly becoming indispensable to the chemist. Successful literature searching requires a solid understanding of the databases being searched. Educational files that permit demonstration of computerized databases are available online at relatively low cost. It is most desirable that more of these databases be made available to educational institutions in the near future. In this regard, Chemical Abstracts Services now offers their complete CA file and Registry file at reduced rates to colleges and universities on a yearly subscription basis. Hands-on experience at online interactive searching is made possible through these files, which can be accessed readily through a variety of terminals or personal computers.