

Houben-Weyl's "Methoden der organischen Chemie" for organic compounds and methods; Gmelin's "Handbuch der anorganischen Chemie" and Mellor's "Comprehensive Treatise on Inorganic and Theoretical Chemistry" for inorganic compounds; the Kirk-Othmer "Encyclopedia of Chemical Technology", Ullmann's "Enzyklopaedie der technischen Chemie", and the "Applied Science and Technology Index" for technological and trade literature; the "Encyclopedia of Polymer Science and Technology", "World Textile Abstracts", and the "Textile Technology Digest" for polymer and fiber technology. A host of other specialized literature sources and textbooks can also be examined, depending upon the field of search to be covered.

Skillful and creative information specialists are required, to seek out not only all publications everywhere, but sources of prior knowledge, such as technical data sheets, price lists, talks at symposia, and unpublished technology. Too often the patent attorneys find that they themselves must do this work, for lack of understanding and therefore lack of thoroughness on the part of the information scientist.

The same thoroughness is required if it is one's own patent that is involved, a patent that one is seeking to license or to enforce against infringers. There should be no surprises in litigation. The costs are too high, and the stakes are too high.

There are other areas of the chemical business in which the patent attorney depends on the facts adduced by the information specialist. In making marketing decisions, in the United States and for foreign countries, the scope and enforceability of one's own patents are at issue, and the scope and enforceability of adversely held patents. Also, by searching out the extent of a family of foreign equivalents of a competitor's basic patent, useful clues can be gleaned as to his planned marketing strategy in world markets. It is an important consideration in making long-range decisions.

The availability of patent protection in foreign countries, based on references applicable under the foreign practice, is a question frequently asked of the patent attorney by the commercial marketing management. The standards of patentability differ from country to country, and the industrialized countries of the world have fully developed and complex patent laws. But these laws are different from the United States law. Many foreign countries require that an invention be a

"technical advance" to be patentable. This concept does not prevail in United States law. Therefore, the scope of a patentability search is often quite different, and requires experience and teamwork on the part of the information specialist and the patent attorney.

Long-term international commitments may be made, capital expended, and markets developed based on patent positions. The legal advice as to these patent positions is no better than the facts on which the advice is based—again, the patent information, the prior art.

For international companies, even those whose foreign business is only by export from the United States, if one's products are technology-based it is wise to review the patent situation for the countries in which you do business. In many foreign countries, a patent may be infringed by imported goods even if the patented process is practiced outside the country. Prompt review of Derwent or the foreign gazettes is required, because of the short periods for filing oppositions in many countries.

Major international companies often subscribe to the Official Gazettes of several foreign patent offices and review these weekly, both for patent intelligence and for opposition purposes. One can devise an elaborate international information system, but of course it must be in the context of the cost/benefit to the employer who is supporting it.

In patent-dependent businesses, the appearance of an adversely held patent can have an immediate impact on the direction of R&D. Most foreign countries grant patents to the first person to file the patent application—this is a major reason for prompt filing—so there is no way of overcoming a prior filing date in most foreign countries, even if you actually made the invention earlier. In the United States it is the first inventor, not the first to file, who is by law entitled to the patent. Thus the same invention can quite legitimately be patented by different people in different countries. In this country, a foreign patent is a reference as of its publication date, not as of its filing date, while a U.S. patent is a reference as of its filing date. The information specialist becomes expert in these details. The patent attorney and the information scientist must work together, building on each other's knowledge, to safeguard the proprietary fruits of research and innovation.

## The Information Chemist's View of the Patent Information Needs of Research Workers and Patent Attorneys

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Patent information needs are examined from several clients' requirements. The contents, scope, and limitations of various patent databases are discussed. The importance of file choice is stressed in answering sample questions.

The information specialist's job is in many ways similar to that of the traditional matchmaker. A client's request for specific information must be "matched" with appropriate databases. In the area of the patent literature alone, we have a wide variety of clients, including chemists, engineers,

physicists, and patent attorneys and advisors. The chemists and engineers often ask us for information on compounds, substructures of compounds, and polymeric compositions and reactions. Defining the exact scope of the question simplifies our "matching" task.

For instance, a request for a retrospective state-of-the-art search for a specific compound preparation must be examined from several viewpoints:

<sup>†</sup> Presented in the symposium, "Trends in Handling Patent Information", before the Division of Chemical Information, 174th National Meeting of the American Chemical Society, Chicago, Ill., Aug 29, 1977.

(1) How far back must a search be done? Some databases go back to 1950.

(2) What countries should be covered? Some databases cover only the United States patents, whereas others cover world-wide patents.

(3) It is necessary to cite only those references that deal specifically with the compound preparation? A few databases offer the refinement of role specification. A substance may be searched as a reagent or product, for example.

Our major source of computerized patent information comprises the following databases:

- *Chemical Condensates*, also Chemical Abstracts Subject Index Alert and ChemName produced by Chemical Abstracts Service
- CLAIMS™/CHEM, GEM and the Comprehensive Database produced by IFI/Plenum Data Co
- World Patent Index produced by Derwent Publications
- American Petroleum Institute Patent File produced by the American Petroleum Institute

The majority of these files are described in the August 1977 issue of the *Journal of Chemical Information and Computer Sciences*. With the exception of the IFI Comprehensive Database all of them are available on-line. Tapes of the Comprehensive Database are also available for purchase and can be mounted in-house for searching in a batch mode.

Each database offers some unique characteristics or scope for searching, and the information specialist must be familiar with them. Comparative evaluation typically include the following questions:

Is there any indexing? If there is, what are the indexing policies?

What types of patents are included?

What are the searchable characteristics? Can one search title words, descriptors, personal inventors, assignees, or patent classifications?

How far back does the database extend?

Are equivalents or patent families given?

Are priority dates included?

Certain characteristics will have greater importance to some clients than to others. Priority dates or equivalents may be of great interest to the patent staff. On the other hand, preparation of a complex organic compound may be very difficult to find if only the title words are searchable. Because patent titles frequently are not descriptive, many database suppliers have augmented the titles to make them more informative.

Discussing limitations of a particular database with a client can be an informative experience. The user may not be aware of certain refinements or lack of them in searching specific questions. Therefore, in choosing which databases to search, some benefits may be overlooked in order to get better or more specific indexing. Usually, however, several files should be searched. For example, a request for one or two patent references for the preparation of a specific compound or polymer can be done on-line in several databases.

One of the most frequently asked requests by researchers is: "I would like a listing of patents for (and state an inventor)." It is an example of the limited access that the information specialist sometimes has in looking for certain types of patent information. The only two on-line databases that include personal author or inventor information at the present time are *Chemical Condensates* and the American Petroleum Institute Patent File. Both files are selective and limited in scope in the types of patents included. One way to search such an inquiry completely for U.S. patents is to scan manually the annual Collective of the Official Gazette. Derwent Publications will add inventor information beginning in 1978 and such data will be included in the search and print

files on-line. The IFI/Plenum Company also has plans to include inventor information in 1978 with retrospective capabilities to 1971.

Another frequent request by the patent staff and researchers is for a listing of a particular company's patents. This information is needed for licensing agreements, research exchanges, or technical surveillance and assessment. Company or assignee information can be accessed in all the databases but with greater ease in some files than others. In the World Patent Index (Derwent on-line) an assignee (company or individual inventor) can be searched only by using a three- or four-letter code. For larger (or standard) companies, that code can be found easily in a manual, but for smaller (or nonstandard) companies or inventors, that code must be deduced following certain guidelines. Unfortunately, that procedure often becomes a trial-and-error exercise. As a result, the question sometimes persists after a search was done: Are there no patents issued to a particular company or wasn't the correct company code searched?

Questions from the patent staff sometimes come in form of United States or International Patent Classification Codes, which can be used as very effective search tools in many of the databases. Intersection of the United States codes with title or key words is the preferred route to searching the CLAIMS™/CHEM, GEM (GEM stands for general, electrical, and mechanical patents) and the Comprehensive Database. The International Codes can be searched and intersected with other search parameters in the World Patent Index file. It is also possible to print out all the prior art referenced to a certain code or subclassification. This listing will include original and cross-classification. If the patent staff or a searcher is not familiar with the U.S. patent classification system for chemical patents, the CLAIMS™/Class database can be used as a search tool to find the appropriate class. In many cases, searching available patent files does not preclude a Washington search by the patent staff. But, preparation by searching patent databases has several advantages. It may eliminate the need to search certain year-intervals that are already covered by existing databases. It can be used to identify certain subclasses for searching that were not originally listed. The results of searching the patent databases may already suggest a decision concerning certain disclosures without a Washington search.

The majority of the available databases are chemical in nature or are chemically related. This discrimination has been one of the limiting factors in searching the patent literature. Until 1975, with the advent of the CLAIMS™/GEM file and the inclusion of general patents in the World Patent Index (about 1974), there were no means to machine search non-chemical patents. Work is now in progress to add patents dating back to 1971 to the CLAIMS™/GEM database. This addition is welcomed by the patent searchers. It should be pointed out, however, that inventor information is not yet available and, as previously stated, the file contains no indexing.

Establishing equivalencies among patents that have issues in various countries has always been difficult. For the most part, this type of searching once involved manually looking through *Chemical Abstracts'* printed Patent Concordances. Now, many of the computerized databases include some equivalency information as part of the printed record. IFI/Plenum Company's files include equivalents, when available from *Chemical Abstracts*, as part of the printed output. *Chemical Abstracts* has an on-line Patent Concordance which dates back to 1972, and Derwent's World Patent Index has an entire search field devoted to patent families.

Attorneys, advisors, and researchers are interested in finding and establishing equivalents for various reasons. For the bench

chemist or engineer it may be a matter of convenience to find an English language equivalent for a foreign patent. It eliminates sending the patent for translation if the language is unfamiliar to the researcher. Overall, this procedure saves time and unnecessary expenditure. For the patent staff, it is important to cite all relevant art, and this would also apply to referencing equivalencies. The convenience of finding an English language equivalent plays an important role for all users.

For questions that require searching several databases, finding equivalents takes on a special significance. For example, a relevant citation retrieved from *Chemical Abstracts* files may be a Belgian patent. If a CLAIMS<sup>TM</sup> database was also searched, a similar U.S. patent (by the same assignee) may also have been retrieved. If the patents are equivalent, the U.S. patent would not have been retrieved from the *Chemical Abstracts* search since their policy is to abstract the first patent issue and then to state in the Concordance that a U.S. equivalent patent exists. For comprehensive, multifile searches which generated much output, establishing equivalents

for each hit may be laborious. However, consider the confusion of a researcher who may be unfamiliar with patent conventions. Presenting the end user with patent families not only lessens the voluminous output but also gives an organized overview of the world patent situation for a specific inquiry. This facilitates decision making on a legal or technical level.

Certain types of patent searches are difficult to formulate and carry out in any of the databases. Searches that look for specific flow diagrams, reactor designs, or specialized fabricating techniques are examples. In such cases, "a picture is truly worth a thousand words," and it is probably better to do the searching in the public search room in Washington where flow diagrams and pictures can be examined at a glance.

All these examples and comments lead to one conclusion: there is no "one-stop" shopping for patent searches. Each database offers some unique parameters, and the success rate of searching is directly related to how well the searcher understands the scope and policies of each. Only a combination of databases and searching techniques will give clients the best possible match in patents.

## ACS Committee on Nomenclature Annual Report for 1977

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Nomenclature committees, both national and international, were very active in 1977, resulting in substantial progress in many different fields. A summary of the more important meetings and accomplishments follows.

1. The ACS Committee on Nomenclature held its annual meeting at CAS in November. Progress of the work of the divisional committees and international commissions was reviewed. In addition, ways of working more closely with ACS divisions, journal editors, and authors as well as general means of promoting good nomenclature were explored. The feasibility of compiling an authoritative chemical dictionary will be studied. "Notes on Nomenclature", a nomenclature column by Fernelius, Loening, and Adams started at the instigation of this committee, continues to appear in *J. Chem. Educ.* (four publications this year; see Appendix II) and to be very well received.

2. The IUPAC Interdivisional Committee on Nomenclature and Symbols (IDCNS), reorganized in 1976, functioned effectively this year. It held its annual meeting in Warsaw in August. In addition to the IUPAC publications listed in Appendix I, specific documents approved at the meeting which are in the process of being published and are therefore not recorded in Appendix I deal with the following topics: publication of papers on precipitation methods of gravimetric analysis, nomenclature for scales of working in analysis, usage of the terms "equivalent" and "normal", trivial names, trade names, and synonyms for substances used in analytical chemistry, expression of results in quantum chemistry, presentation of infrared absorption spectra in data collections, naming of elements of atomic numbers greater than 100, and quantities and units in clinical chemistry. IDCNS has improved its procedure of reviewing documents by correspondence, and it continues to study other administrative matters, such as cooperation with other international bodies and better dissemination of IUPAC recommendations.

3. The IUPAC Inorganic Nomenclature Commission met in August in Jablonna, Poland. Topics under discussion in-

cluded names for elements beyond 105, ions and radicals, boron compounds, inorganic hydrides, cluster compounds, ligand locants, heteropoly acids and anions, coordination names for nonmetal compounds, chains and rings, inorganic polymers, and stereochemical designations for coordination compounds.

4. The IUPAC Organic Nomenclature Commission also met in August in Jablonna, Poland. It continued to concentrate its efforts on Section G, a structure-based systematic substitutive nomenclature (formerly revision of Sections A, B, C, and D). This is the project for which Joy Merritt has completed the fundamental work under the supervision of Drs. Grunewald, Cross, Lozac'h, Powell, and Loening and which was funded by the American, British, German, and French Chemical Societies. As a result of this project, a number of documents dealing with the Hantzsch-Widman system of naming rings, the lambda convention, and the naming of ions and radicals will be issued in 1978. While further work on Section G is in progress, corrected versions of Sections A-F and H will be published in 1978 as a compendium of present IUPAC organic nomenclature rules. A publication on nodal nomenclature by Lozac'h, Powell, and Goodson will be forthcoming in *Angew. Chem.* to acquaint the chemical public with this new general nomenclature system. This continuing work is being supported by CAS.

5. The IUPAC Macromolecular Nomenclature Commission met in August in Warsaw. Work was completed on the recommendations for stereochemical definitions and notations for macromolecules; publication is scheduled for early 1978. The Commission is continuing its work on (a) nomenclature and symbolism of copolymers, (b) subsidiary definitions of terms relating to polymers, (c) definitions for physical properties of polymers, (d) definition and nomenclature of ladder polymers, (e) nomenclature of inorganic