CHAPTER 6

LIBRARIES IN CHEMICAL INDUSTRIES AND ROLE OF LIBRARIANS

6.1 Introduction:

From the literature review it is observed that very few work is published on libraries in chemical industries. The concept of industrial libraries is now growing as industrialization is increasing fast and libraries are established to support the R & D activities. But the collection, librarian’s positions, are poorly developed. But in few industries where R & D is carried out at large multinational level and Patent filing is a major activity, in such cases libraries are established but in some industries libraries are managed by the chemists working in the laboratory along with his normal task. Chemical information specialists are hired in industries for managing libraries. Chemical companies, market research firms, and management consulting firms gather data from different resources and after analyzing, information is reused for making decisions. There is very few literature available on industry and chemical industries library. But there is a demand for libraries in this sector and librarians have wide scope to work for industrial libraries.

6.2 Libraries in Chemical Industries:

Abell (1986) in the communication indicated that the role of the library is changing and developing in any field. The inertia for change must come from the librarian rather than the employer, whose view of change may be rather narrow as employer do not know the library system well. The industrial library's role is generally close to organization’s business activities, and by identifying information needs efforts are taken to meet needs which is the main task of library and librarian. This covers exploitation of external resources to users, acquisition of special collections on demand and play an active role in the development of the “corporate memory” and develop integrated information systems. The role of the library within its own organization is reviewed, and its place within the information network is fixed. Industrial libraries try to integrate “internal” and “external” information resources to fulfill needs of the users.
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Information is the key asset of every organization to be more competitive in this competitive globalized world. Information plays a major role in the growth of any industry or organization. Library of every industry needs to understand its role and it should redesign its sources and services in a way to support the growth of the sector.

Information and lack of competitive intelligence may cause problems in growth of any industry. Right information supports to competitive intelligence in tracking the market developments and planning for market strategy to make industry more competitive. Information plays very important role in business related problems such as market support, research support, administrative and business support.

Libraries associated with chemical and pharmaceutical industries supports to the information and research needs of the R & D Staff, chemists and researchers in their related areas. The chemical industry libraries have limited collection consist of books, journals, reports, thesis etc. covering research base of industries related to pharmacy, pharmacology, toxicology, medicinal chemistry, pharmacognosy, immunology, pharmaceutical sciences and chemicals. Library services mainly include reference and library instructions. The Librarians are graduated from the science stream with information science background. The library helps their users in getting on demand literature using different databases they have and the reference literature available in-house. It is observed that the librarians are more dependent on the commercial information sources more for authentic information gathering and browse Internet sources at the beginning to get the basic concepts. The chemical and pharmaceutical librarians provide more specific information references for research consultations. Libraries have small collection in which reference collection is more which provides fact finding answers. Access to various databases and Internet to provide access to a variety of information either free or commercial. Assistance to electronic information searching is available.

(http://www.acs.org/content/acs/en/careers/whatchemistsdo/careers/chemical-information-specialists.html).
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Technoff and Price (www.ideals.illinois.edu) identified different information sources which are popularly used by chemical industries. All the sources may not be available in the libraries but librarian have to take care of collection development and try to collect or procure documents on demand. Generally chemical industries librarians’ holds secondary and tertiary information sources rather than primary information sources. The following information resources are stacked in chemical industries to support instant information required to chemist.

- Popular scientific/trade/general/Journals
- Trade related newspapers
- Commercial and leaned society publications (books, journals, treatises, monographs, Handbooks, topics, reviews etc.)
- Patents on related works( every country has patent office and publishes patented data) which is useful for generating awareness as well as development innovative process
- Abstracting and indexing journals, e.g. Chemical Abstracts, Analytical Abstracts, Physics Abstracts, PubMed (This includes Databases)
- Thesis and Dissertation
- Technical Reports
- Standards (ASTM, BSI, ISI etc.)
- Internet search engines (Google, Google scholar, cirrus)
- Databases

6.3 Library Professionals in Chemical Industries:

Information requirements vary considerably depending on the area of chemical industries. Librarian’s main task in industries is to act as indexers and document analyst. This is possible due to acquiring subject degree in chemistry, and degrees in information science (B Lib and M Lib) for managing more specialized work in industries. He has to act as chemical librarian or as a chemical information specialists in industries. The ability to search for chemical structures and for bio-sequences is necessary for the librarians in this field and has to acquire skills. Market researchers, consultants, and individuals in sales and management positions generally combine their technical training with a business degree. Chemical information specialists
manage technical information as an occupation. With the exponential increase in the number of scientific journals, papers, and patents published today, the management of technical information is becoming an increasingly complicated task. Research scientists are often unable to keep up with the periodicals and patent literature in their own fields. The primary role of all chemical information specialists is to organize information required by the chemist and make it available to researchers, industry professionals, and others on demand.

Opportunities for the professionals in managing chemical information designated differently as a scientific librarian, a technical information specialist, a market researcher or management consultant, a technical publisher, industrial librarian etc. Many people start their careers as document analysts or indexers and manages literature analysis. Some library professional worked as abstractor and indexers shift to industries and become technical information specialists or consultant. In chemical companies, they supports to the needs of research chemists by providing qualitative, synthesized, repackaged information necessary for developing new experiments. Sometimes individuals start their careers in laboratories as technical staff and later shift to managing technical information. These individuals can be successful, particularly as technical information specialists, because they have experience in handling information used for making decisions in chemical research. One of the fastest growing areas for chemical information specialists is in managing e-resources, databases and internet resources etc. Specialized databases helps to search for new and advanced molecular information for experimentation. (ACS) http://www.acs.org/content/acs/en/careers/whatchemistsdo/careers/chemical-information-specialists.html.

Feng (http://\home.comcast.net\afeng\phd\) has rightly indicated the role of corporate librarian in an environment of web 2.0 and called it as librarian 2.0 which is a new core competency required in ICT era. Author has indicated that role of librarian as an information specialist is undergoing continuous change including corporate librarian. The evolution of information and information sources converge in ICT era. This has also magnified the growth in production of new drugs and chemicals in pharma and chemical industries, .in such environment corporate librarian faces challenges & need
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better equipped libraries and requires advanced knowledge to manage new
technologies and trends. The author has termed the profession as corporate librarian
2.0 as it require new set skills along with classical traditional skills.

The main drivers of charge since last few years are innovations in technologies and
Google effect (internet). These have made impact on information specialist, users
while accessing data, information gathering and research. Use of wikis, Blogs, VOIP,
Social networking etc. changed the role of corporate librarians. The corporate
librarians not only be aware of these technologies but be able to implant in business
and this corporate librarian has to add value in profession.

6.4 Core Competencies for Corporate / Industry Librarians:

According to Feng (http:\home.comcast.net\afeng\phd\) the core role of information
professional is changing from information gatekeeper to information guru, corporate
librarian is supposed to be an expert not as owner or sources of information but as
value to company by using technologies. They have to guide users by disseminating
information and translating information in to knowledge and can be called as
“information enabler” and “knowledge creator”.

An “information enabler”, corporate librarian 2.0 acts to transfer information by
searching information sources to the users. The main role is to provide simple tools to
end users to search information and orient users by teaching how to use best tools for
information gathering from different sources. For these activities librarian have to
gain different core competency in the profession. The librarians not only have
networking knowledge but apply tools and technologies for effective working for user
of special categories. These qualities need knowledge of ICT, Intranet, network
society, server applications, internet skills, web development. Apart from these
information resources in areas need to be known which are useful to patrons. Make
users aware of information resource in the field is also an essential competency.

The core competency needed in the present information explosion era is to be a
“knowledge creator”. Information is data but knowledge is application and integration
of information to get actionable results. The corporate librarians has to provide
customer alerts, information digest and intelligent data. For this librarian have to take
support of technologies and tools like RSS and customer intranet application.
In case chemical, pharma, medical sciences users need information regulations, procedures, and products new avenues in the field. Hence the core competency required by information professional is to create actionable intelligence to provide information. Another core competency required is developing knowledge sharing methods.

Technoff and Price (www.ideals.illionis.edu) discussed role of industrial librarian may be chemical, mechanical, electronic, software, business etc. need programs to improvise quality of its products and services. The industrial librarians must be expert in:

- Online literature searching and ability to develop search query
- Identifying understanding qualitative database
- Conducting reference interview to find out needs of users
- Making awareness of standard reference tools both in print and digital resources in area of interest.
- Information Communication Technology Skills
  - Interpersonal skills like communication, team working, group working, attitude towards customer, information services, adaptation of new tools and techniques etc.
- Aware of management or leadership or marketing skills, decision making skills
- Basic subject background in addition to LIS school education
- Service attitude, library operations
- Work experience

American chemical Society has identified the need of library professionals and elaborated role of information specialist for chemical industry libraries and suggested that librarian’s job is very crucial and they have to acquire different advanced skills in addition to traditional skills. (http://www.acs.org/content/acs/en/careers/whatchemistsdo/careers/chemical-information-specialists.html). The role of librarian in industries is little different than managing the academic libraries and other libraries. The industrial libraries are part of the special libraries and though functions are similar to other libraries but systems and nature of work is different and hence librarians have to work along with chemist and
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serve their needs. In chemical industry librarians have to manage libraries in limited financial resources or even without libraries information need is to be served economically from the vast ocean of information.

The role of industry libraries is crucial and librarian have to provide literature and services on demand. The role of the librarian is discussed in brief as under:

a) To Manage Technical Information:

Chemical information specialists manage technical information as an occupation. With the exponential increase in scientific journals, papers, patents published, the management of technical information is becoming an increasingly complicated job. Research scientists are often unable to keep pace with the published literature in different forms and formats in their own specialized areas. The primary role of all chemical information specialists is to organize this information and make it available and easily accessible to researchers, students, industry professionals, and others for different uses. To manage the information flow industry users need assistance and hence librarians’ role is important in collecting information. The library professionals are called as scientific librarian, information scientist, technical information specialist / manager, market researcher or management consultant, technical publisher, etc. Many people start their careers as document analysts or indexers of literature in this field to support research. Sometimes in industries it is noticed that individuals start their careers in lab work and later moves into technical information tasks. These individuals can be successful, particularly as technical information specialists.

b) Use of ICT and Research Techniques:

One of the fastest growing areas for chemical information specialists is computers, software’s and maintain data systematically to use at any place any time as per the need. Databases helps to search for periodical abstracts and molecular information for research purpose and predicting the future avenues. Chemical information specialists used computers to search information on line in Indian context and used international databases searching. Advanced use of ICT is now possible to get the information over the Internet also. Any-one with appropriate access skills can search and retrieve technical data. Information specialists serves users in industries as an intermediaries
who are subject experts, information specialist, aware of resources in the area, and aware of IRS tools and techniques. There is a real need felt in industries for such information experts with expertise skills in the use of data-bases and searching chemical information for research purpose.

c) Work With Industrial Professionals:

A job of chemical information specialist is not only to manage technical and scientific information but work along with research professionals and isolate needs of information requirement and support to develop new activities in profession. Some chemical information specialists indicated that they enjoy working and interacting with industry staff. Whether they may work as consultants, librarians, information specialists etc. but need to combine their technical skills with good communication skills and increase the ability to work in a service-oriented position. It is also observed that in many industrial research organization, technical information specialists asked to participate in all aspects company activities so that information specialist can manage information and document for the ongoing projects. Because of their skills and experience in disseminating information, they may manage proprietary information resources, develop Intranets, Internet or work on document management efficiently.

d) Perform Jobs outside the Lab:

Opportunities outside the laboratory, such as managing chemical information, is open to a chemistry graduates because they have the knowledge to communicate with both scientists and lay users. Chemists need to know where their interest in chemistry fits into the overall picture. People who have made their careers in chemical information often find that they like the theory of chemistry more than the practice of it. They love the discipline of chemistry, but choose to apply it to careers outside the lab. A career in the field of chemical information enables them to keep this interest central to their work.

e) Work Description:
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Chemical information specialists manage technical information in a variety of ways, depending on their positions and need of users. Most jobs require a good deal of reading and analyzing technical data. Chemistry background is vital to understanding the material. The presentation and organization of information is also a component of technical job. Chemical information specialists generally work in a business or industrial environment. Because it is a service industry, there is a high level of contact with other people.

f) Personal and other Skills:

A greater interest in scientific literature than in scientific method is a good sign and well suited to a career in chemical information. Most chemical information specialists stress the importance of being able to work with people and communicate well, both verbally and in writing.

6.5 Library and Information Services in Chemical Industries:

The Information Center plays major role in industries to enhance their business prospects. Every industry considers information as an important asset to meet the information needs of the organization. A library and information center is set up in the organization to manage the information published in different sources. The libraries provides various value added service to the organization depending upon their area of interests. Following different services are provided by the libraries in chemical industries:

- **Information Bulletins / Newsletters:**
  Librarians / Information professionals identify the areas of interest of the industry and collect necessary information from different resources like books, journals, standards, patents and other useful resources and compile or repackage information and disseminate through the newsletter for internal use.

- **News Paper Clipping Service:**
  The news appeared in different newspapers related to marketing of chemicals, prizes, policies, strategies, news about new developments, progress of related industries etc.
librarians must collect these clippings for the reference and circulate in industries. These news clippings are helpful to users for future reference.

• **Current Awareness Service (CAS):**
  Librarian understands the needs of the various kinds of users and provides current information published in journals, magazines, newsletter etc. through a bulletin or newsletter to make every one updated and efficient in their area. Efforts have to be monitored by librarians by providing TOC, displaying information in libraries, circulating bulletins etc.

• **Selective Dissemination of Information (SDI):**
  Librarians identifies the important areas of interest (Subject profile) of key persons and workers in industry by developing a user profile. Librarians have to collect information from different sources and circulate or send an email.

• **Competitive Intelligence Service:**
  In this service the competitive industries activities are consolidated and disseminated among the users. This is also called as monitor watch services. Industry can plan for new products and marketing based on this data. Librarians have to develop skills for data collection from different market sources, newsletter and circulate to the respective group.

• **Training and Education:**
  Librarians have to conduct orientation or training sessions / induction/awareness programs for their users to educate them about the library and different information sources used by them to enhance the efficiency of users in searching and using information. Scientific staff needs to become information and technology literate.

• **Inter Library Loan:**
  ILL is an important activities in industry libraries. Since collection is limited and areas of research are not fixed it is difficult to develop collection in such libraries and hence ILL from the similar industry can be developed.
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- **Institutional Membership:**
  Industry libraries are not full of collection and hence they have to obtain membership of other libraries like IIT, Universities, CSIR, where collection of their area related collection is available.

- **Table of Contents (TOC):**
  TOC services are managed using internet resources as well as collecting from the subject libraries literature. TOC is a good resource awareness service used.

- **Online Access to Databases:**
  The research companies have to subscribe to specialized subject related databases on use or task basis also. The information on the topic can be searched and circulated among users and followed by full text supply activity on demand.

- **Discussion Groups and Forums:**
  Librarians have to create a forum for developing resource sharing projects to help users economically by providing cumulative services.

- **Use of Social Networking Sites:**
  Librarians form industries have to initiate use of web tools and social media which are the transforming power of 21st century Librarianship. Librarians have to develop libraries and services more innovatively and intellectually way to satisfy users need. Services through social network allow librarians to share ideas, activities, events, resources of user’s interests. RSS feeds can be used for the data collection. RSS provides a platform to share news and information among users instantly. Librarians has to isolate useful links to useful and recommended Internet resource sites as well as search engines like Google Scholar, Cirrus etc. to provide alert services like SDI and CAS and also have to communicate Book reviews, information about new books published. They have to build the special interest groups in various aspects of work to share and discuss their views, to share the AV material related to various aspects of
work and administration of SSIs, to assess the needs of the users through social
networks, to educate the users about new and innovative services in the library. These
are few services by the library which will help in the growth of small scale industries
apart from these there are many opportunities to initiate new services according to
needs of the SSIs. Librarians with self-motivation and interest must take the initiatives
to reflect the role of Libraries in the growth of SSIs. These services are sufficient and
after these initiatives librarians can think of many advanced services like using social
networking, knowledge management and many more.

**Digital Information Services:**

With the explosion of information which has resulted in increase in the publication of
books and other materials in soft or e-version. The effective and efficient use of new
technology helps us to improve the library services. One of the basic functions of
library is to make its resources readily available to its users. In this information age,
Information communication & technology (ICT) plays important role for
disseminating information to the users. Internet, WWW, digital library, electronic
journals, and online databases are all such developments, which are changing the way
libraries function today. They shall adopt with new technologies and provide different
services using these technologies to their users. Users expect the 24X7 services from
the library. Today users expect to have access to these sources directly from their
desktops and this is possible only if ICT and e-resources / digital resources are used.
Digital Information Services in the libraries includes all electronic information
resources such as e-books, e-journals, CDs, DVDs and databases, etc., and
computerized and networked online resources accessed through libraries. Digital
information services provides variety of services to the users of the library with
organizing collection of material or making them more widely available.

Information service is mixture of different components and based on target users,
needs of the users, expectations of the users etc. To provide information services
policies to be defined for information material collection, organizing sources suitably
and information delivery systems as well as repackaging of information system to suit
the needs of users.
6.6. Skill Sets for Chemical Industry Librarians:

Scammell (1997) defined core skills a competencies of information professionals required in present era as well as future libraries to manage needs of chemical industry users. The core information skills and competencies are summarized below –

- Business, Marketing and Negotiation skills.
- Capacity building.
- Collaboration and partnership skills.
- Communication skills.
- Consultancy skills.
- Cost effective skills.
- Evaluation skills.
- Identifying, anticipating and analyzing user needs as per industrial libraries.
- Information literacy skills.
- Information retrieval, storage, and online searching skills.
- Knowledge management skills.
- Leadership skills.
- Lifelong learning skills.
- Managerial skills.
- Publication skills.
- Research and teaching skills.
- Subject expertise.
- Technological and Networking skills.
- Value addition skills.
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These skills are required in addition to traditional skills like technical, information processing, indexer, bibliographer etc. The most important skills are technological and management skills. Management skills are very important in industrial libraries as they perform different activities confidently. Management skills covers understanding needs of organizational or industrial culture, strategic planner, financial management, Human resource management, change management, vision and creativity etc.

Summary:

Chemical industry libraries are treated as special libraries as well as industrial libraries and hold very limited but precise collection maintained for reference purpose and on demand the documents are procured either from market or ILL. This chapter highlights the structure of libraries, the content of collection and role of Librarian in managing chemical industry libraries. The jobs of chemical information specialists is very strong in future where R & D is strong. The use of computers in chemical information continues to be a real growth area; a high demand exists for people who can show both technical understanding and computer expertise with subject expertise.

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