CHAPTER - 8

National Pharmaceutical Information System (NPIS):
A Proposed Model

8.0. Introduction

Having seen the pharmaceutical scenario in the academic and research institutions in Punjab and Chandigarh through this research project it becomes essential to propose a model for the National Pharmaceutical Information System (NPIS) in the country which will not only cater to the needs of Northern India but will also eventually serve as the global information system in the pharmaceutical domain. At present there is no such system in place. With a view to collecting, preserving, processing and disseminating the entire pharmaceutical information at one place and then making it accessible to any one engaged in studies, teaching, research and industry, the NPIS is indispensable and would be a boon to the pharmaceutical populace. The proposed National Pharmaceutical Information System (NPIS) will be set up with the following objectives.
8.1. Objectives

1. To cater to the information needs identified through this project and through subsequent periodic review of needs in the rapid changing Information Technology and Communication (ITC) environment.

2. To identify the academic and research institutions imparting education and conducting research in pharmaceutical sciences in the country and compile their institutional profiles.

3. To provide modern and improvised library and information services to the identified institutions including Current Awareness Service (CAS) and the Selective Dissemination of Information Services (SDI).

4. To provide Micrographic and Reprographic services to who so ever needs them at a nominal cost.

5. To promote and encourage the pharmaceutical institutions to participate in the National Pharmaceutical Information System activities.

6. To identify pharmaceutical industries and encourage them to participate in the National Pharmaceutical Information System.

7. To create the institutional repository of NIPER and disseminate information to whosoever needs it.

8. To act as a document delivery centre and supply material / Information to the students, academia, researchers and the industry personnel at their request via e-mail, postal mail, telephone and fax etc.

9. To provide online searching of the databases pertaining to pharmaceutical sciences (a facility already available at NIPER) to any one engaged in pharmaceutical education, research and industry.

10. To provide a comprehensive CD-ROM / DVD databases search facility through its CD-ROM / DVD based information system already in place in NIPER.

11. To provide Internet based services through Internet cell of the NPIS.

12. To compile a union catalogue of their print as well as electronic resources and make them available in hard copy as well as soft, besides providing in the WebOPAC.
13. To create and develop inhouse databases of print and electronic resources available in National Institute of Pharmaceutical Education and Research (NIPER) and make them available to all concerned as well as on the Internet.

14. To conduct in-house training programmes for the library and information science professionals and the pharmaceutical personnel engaged in education, research and industry to promote and develop their information seeking skills.

15. To organize various seminars / workshops / symposia on various current and emerging technological issues and themes for keeping the pharmaceutical and LIS professionals in the country abreast of the latest in their fields.

8.2. Location

The proposed National Pharmaceutical Information System (NPIS) is justifiably required to be housed in the Library of National Institute of Pharmaceutical Education and Research (NIPER) as it has the adequate infrastructure. At this juncture a little about nipper would be worthwhile.

National Institute of Pharmaceutical Education and Research (NIPER) is the first national level institute in pharmaceutical sciences with a proclaimed objective of becoming a centre of excellence for advanced studies and research in pharmaceutical sciences. The Government of India has declared NIPER as an 'Institute of National Importance'. It is an autonomous body set up under the aegis of Ministry of Chemicals and Fertilizers, Government of India. The Institute is conceived to provide leadership in pharmaceutical sciences and related areas not only within the country, but also to the countries in South East Asia, South Asia and Africa. NIPER is a member of Association of Indian Universities and Association of Commonwealth Universities. The Institute is located about 250 Km north of Delhi at S.A.S. Nagar (Mohali), Punjab on a total area of 130 acres.

The main objectives of the Institute are:
• Toning up the level of pharmaceutical education and research by training the future teachers, research scientists and managers for the industry and profession.

• Continuing education programmes.

• Creation of National Centres to cater to the needs of pharmaceutical industries and other research and teaching institutes.

• Collaboration with Indian industries to meet the global challenges.

• National / International collaborative research.

• Curriculum and media development.

• Study of sociological aspects of drug 'use and abuse', and rural pharmacy, etc.

• Conducting programmes on drug surveillance, community pharmacy and pharmaceutical management.

At present NIPER is functioning with academic departments such as: Pharmaceutics, Natural Products, Pharmacology and Toxicology, Biotechnology, Pharmaceutical Technology: (A). Bulk Drug, (B). Formulations, Pharmacy Practice, Medicine Information Centre, Pharmaceutical Management, Pharmacoinformatics, Training and Continuing Education Programs. The infrastructure available at NIPER includes:

The central instrumentation laboratories are equipped with major instruments like 300 MHz FT-NMR (Brucker), 60 MHz FT-NMR (Zeol), GC-MS and GC with Head Space (Shimadzu), Ion trap LC-MS/MS (Finnigan Mat), MALDI TOF-TOF (Ultraflex, Bruker), FT-IR with ATR (Nicolet), FT-IR with microscope (Perkin Elmer), UV-VIS spectrophotometers, CHNS-Elemental analyzer, Polarimeter, Atomic Absorption Spectrophotometer, Analytical and preparative HPLC systems, DSC/DTA/TGA, Spectrofluorimeter and Capillary Electrophoresis.

Each department also has a separate specialized instrument laboratory to fulfill individual departmental needs based on the research programs, which
includes high and normal pressure multiple organic synthesiser, peptide synthesizer, gel permeable chromatography, hydrogenation reactors, photoreactor, microwaves reactor, GC and HPLC systems, protein purification system, HPTLC, MPLC, spraydryer, lyophilizer, polygraph, stimulator, autoanalyser, blood cell counter, tissue processor and embedding set-up, freeze microtome, spheronizer & extruder, Glatt multi-purpose coater, Neocota, inverted and upright microscopes, humidity and thermostatic chambers, automated dissolution apparatus, laser particle size analyzer, incubator shaker, electrophoresis and immunoblot apparatus, gel dryer, imaging densitometer, microelectroeluter, stirred cell microconcentrator, steritext system, scintillation counters, rotapress, fluidized bed dryer, capsule filling machine, strip packing machine, ampoule/vial washing and filling machines, tube filling machine, sparkler filter, multimill and colloid mill.

The Computer Centre caters to the needs of faculty and students for their research and teaching. Computer Centre manages and administers high computing and other services such as DTP. Computer Centre helps the institute community by managing computing resources which are available centrally or in various departments. All the servers, computers and printers in the Centre are connected through a 10/100/1000 Mbps network. The rest of the institute is also connected to the campus wide area network.

Internet and email services are provided to all users through a dedicated 256 Kbps Internet link. Users can use the computing resources of the institute from their residences by dialing through a modem. Computer Centre also supports high speed colour and black & white laser printers, colour plotter and scanners. The centre supports database packages, Compilers (C, C++, VC++, Visual Basic, Visual Java, FORTRAN etc.), MATLAB, PC Nonlin, Scientist, ChemOffice, Pallas, Sigmastat, SigmaPlot, Endnote, Acrobat Suit, Linux operating system, Windows NT environment and most of the popular Microsoft products like Office 97/2000/XP, Back Office etc.
NIPER has subscribed the Scientific and Technical Information Network (STN), a leading and comprehensive scientific online information service giving access to over 200 scientific and technical databases of chemistry, pharmaceutical sciences and biotechnology. A centrally air-conditioned Computer Centre operates sixteen hours a day and has a power back up through a 20 KVA UPS and a generator. The computer centre personnel are qualified to develop customized software for various end applications. Numbers of pharmaceutical software /databases developed in Computer Centre are available.

The library at NIPER is being developed in a manner that it can eventually gain the status of National Library and Information Centre on Pharmaceutical Sciences. A beginning has been made with the subscription of 66 International and 49 national journals. The library has Chemical Abstracts from 1907 till date and Cumulative Indices up to Thirteenth bound volumes. A number of CD-ROM databases such as International Pharmaceutical Abstracts from 1970-1977 and Drug Information Full Text (1977-1997), 2003+ Ekaswa, Syntheline, MFline & DRUGDEX are also available. The library is accessible to all the Pharmacy professionals from the country and abroad and provides information to the academia, researchers and the industry personnel.

The library has obtained institutional membership of DELNET, Chandigarh Libraries Consortium, British Library (Chandigarh), Current Science Association (Bangalore), and Association of Indian Universities (Delhi). At present library possesses 3672 books, 15575 bound volumes of journals, 104 theses and about 173 CD-ROMS. The library subscribes Science Direct and BioMedNet of Elsevier Science from 2003 onwards which provide access to back files of over 1700 journals from 1995 and more than 25 Current Opinion and Trend Journals with over 20,000 reviews. All these resources will be utilized by the National Pharmaceutical Information System at NIPER.
The bioavailability centre of the Institute is capable of conducting bioequivalence studies in healthy volunteers. Already a few industrial projects have been completed and many more are planned. The centre has been accredited by WHO and is one of the two centres in the world for conducting bioequivalence studies of the fixed dose combinations of antitubercular drugs. The centre in close collaboration with hospitals around Chandigarh is also involved in conducting pharmacokinetic studies in patient population.

8.3. Apex Governing Body

For the smooth and efficient monitoring of the National Pharmaceutical Information System there shall be an Executive Committee consisting of representatives from the Ministry of Chemicals and Fertilizers, being the parent Ministry, the academic institutions, research institutions and the pharmaceutical industry. This committee will be responsible for formulating policies, plans, and programmes and directing all activities including coordinating the network of participating institutions and oversee the entire functioning and guide the implementing agency.

Right from its inception, NIPER is governed by a Board of Governors (BOG) (the highest administrative body for NIPER) which consists of a Chairman duly appointed by the Ministry of Chemical and Fertilizers, Government of India with the approval of the Honourable President of India, and about 22 other members nominated from the Government, Universities, Various R & D institutions, regulatory bodies of pharmacy and drugs, pharmaceutical industries etc. (Presently, Dr. R.A. Mashelkar, former Director General, Council of Scientific and Industrial Research is the Chairman.) The same BOG shall function as the as the apex Governing Body or the Executive Committee for the smooth and efficient functioning of National Pharmaceutical Information System (NPIS) too with the Principal Library and Information Officer, NIPER, as its ex-officio Member Secretary. It would be essential to get the Draft proposal of
National Pharmaceutical Information System approved by the Government of India through the BOG of NIPER before implementation of the same as it will require reasonable funding to support the system. The BOG of NIPER meets quarterly and the Executive Committee will have the same frequency for its meetings.

8.3.1. Functions of the Executive Committee

The Executive Committee shall look after the following functions.

1. To formulate the overall programme and the modus operandi for the National Pharmaceutical Information System.

2. To plan and develop the library and information related policy at national level keeping in view the fast changing information requirements viz a viz technological advancement and take a periodical review of the same.

3. To evaluate and approve the requirements suggested by of various units and recommended by their Heads of Divisions for procurement of documents/ subscription to journals and e-journals/ online databases etc. in the National Pharmaceutical Information System.

4. To ensure that the National Pharmaceutical Information System maintains qualitative services.

5. To maintain a good liaison with the pharmaceutical organization/ associations/ Societies/ drug control authorities/ in India and abroad to keep pace with the ongoing R & D activities and incorporate the same in the National Pharmaceutical Information System policies.

6. To offer consultancy services to the other institutions and their libraries if they approach for the same.

7. To administer a nationwide Resource-Sharing programme.

8. To extend all necessary help for R&D work in the academic and research institutions as well as the industry.

The Executive Committee shall meet at least three times a year or at times and places as the Committee may determine. All decisions in the
committee will be taken by a resolution passed by the majority of the members present in the meeting and in the event of a tie of number of votes on any matter the Chairman will exercise his casting vote and the decision will be final. In case of absence of Chairman on grounds of illness or any other reason any one from amongst the present members, decided by the majority will preside over the meeting and his casting vote will be decisive in case of tie.

The Principal Library and Information Officer, NIPER, being the ex-officio Member Secretary of the Executive Committee shall be responsible for recording the proceedings of the meeting of the Committee besides ensuring that the decisions taken by the Executive Committee are implemented to the entire satisfaction of the Committee. The quorum shall consist of minimum of eight members of the Executive Committee and the Committee shall take all decisions if and when the quorum is complete. The minutes of the meeting will be circulated by the Ex-officio Member Secretary within a reasonable time to all members of the Committee present in the meeting.

8.4. NPIS Building

The National Pharmaceutical Information System will be housed in the Library building of NIPER which is a 5-storied building exclusively designed for the library. The library building is conceived to have both sanctity and significance. Its architectural form has a definite formal geometry and deliberated form which stands out in contrast to more subdued and playful forms of the other buildings at NIPER. The overall cuboid form of the library with its juxtapositioning of masses supported by cantilevers gives grandeur to the building. The top of the building has been capped by a fiber glass vault to harmonize with the recurring elements as the architectural expression of the campus- a sort of tying element.

Designed for quietness, the quality of furnishing and fittings, range of spaces for readers are provided to crate a learning environment appropriate to
the institute. The care has been taken to provide the even levels of illumination, temperature, ventilation and acoustics. Emphasis is on good vertical and lateral communication throughout the building to facilitate the movement of readers, staff and the resources. It has a reading hall capacity for about 100 readers at a time.

8.5. Funding

The establishment of National Pharmaceutical Information System will require a reasonably good funding to support its activities. A budget for the purpose will have to be formulated and got approved from the Ministry of Chemicals and Fertilizers, Govt. of India, being the parent Ministry of NIPER. The setting up of the National Pharmaceutical Information System may be initiated in the coming 11th Five Year Plan and its budgeting may be done in phase manner for each financial year.

8.6. Network of Participating Institutions

All academic and research institutions in the country which impart pharmaceutical education and conduct research in pharmaceutical domain will be eligible to join the network of participating institutions. All pharmaceutical industries throughout the country will also be eligible to become member of the same. All States as well as the Central Govt. Departments of Pharmacy and Drugs are also welcome to join the network. A small membership form may be mailed to such institutions and they may be requested to send the same duly filled in along with a token registration fee to be determined by NIPER, if it so desires. Though, the researcher recommends it to be free at this stage.

8.7. Beneficiaries

Besides the participating institutions and the employees working in them,
any individual associated in any capacity with any pharmaceutical organization or company would be eligible to reap the benefits available in National Pharmaceutical Information System. The individuals however will require to complete the procedural formalities for using or accessing the National Pharmaceutical Information System as decided by the EC of National Pharmaceutical Information System. The request for any resource or service may be sent to the Principal Library and Information Officer, NIPER in person or through e-mail, fax or by post.

8.8. Electronic Resources

The National Pharmaceutical Information System will offer plethora of electronic resources such as: e-books including reference books such as pharmacopeias, encyclopedias, journals, e-journals, multimedia documents, bound volumes of journals, theses, CD-Rom/DVD databases, Online databases including those available on IP based operations, Internet resources including specific downloads on pharmaceutical subjects. Besides all relevant material in pharmaceutical sciences in the form of books, journals, pharmacopeias, encyclopedias, microforms including microfilms, microfiches and micro aperture cards, the National Pharmaceutical Information System will ensure availability of online services such as the Science Direct, Biomednet Reviews, CAS, STN, IPA on CD-ROM, Dictionary of Natural Products, MFile, Synthline, Integrity, Ensemble, Ekaswa, CA on CD-Rom/DVD databases, Medline, BIOSIS, Pubmed etc. Each semester a fresh requirement will be invited from member institutions and the same will be processed for procurement/subscription/access after approval from the Executive Committee.

8.9. Activities and Programmes

The activities of the National Pharmaceutical Information System will be divided into the following units. Each Unit will be looked after by a Deputy
Librarian/ Assistant Librarian who will be assisted by one Library and Information Assistant and one Library Attendant at the initial stage. Subsequently, when the work load increases the staff strength will be reviewed afresh and decision for increase in staff will be taken up with the authorities for approval.

8.9.1. Collection Development Unit (Acquisition)

Though there is great paradigm shift in the libraries world over that more emphasis is now being given to 'accessibility' rather than 'possession' of the documents. However, the researcher has already discovered though the current research project that the hard copy is still the first preference of pharmaceutical faculty members and researchers in Punjab and Chandigarh which are the leading places for pharmaceutical education in the country. And therefore, keeping their information needs and the form that they require, it is pertinent to go in for the core books and journals on pharmaceutical sciences in hard copy as well. The following steps will have to be taken with regard to their processing for procurement.

8.9.1.1. Computerized Acquisition (Library Automation)

As soon as the suggestions are received from various faculty members duly recommended by their Heads of Divisions, they should be carefully scrutinized and checked to avoid duplication. These should be checked with the Online Public Access Catalogue (OPAC), card catalogue, if the library automation is not complete, pending supply orders and the books under process, again if they were not ordered through computerized acquisition, following a single entry system. The single entry in the ongoing 'books' database is very crucial. This single entry at the time of duplication checking is not only helpful in acquisition but also does the needful in all subsequent operations/ transactions in the library. The computerized list so obtained from the initial entry of the same using a library software such as 'LibSys' (presently in use in NIPER) only will be

257
submitted to the competent authority for approval. And after approval, the system generated computerized order will go to the suppliers.

8.9.1.2. Accessioning

After the books are received they will be checked against the orders to ensure that only ordered books with their right editions/versions have been supplied. At this juncture only, the books will be physically examined to ensure that all pages are intact and the general condition is satisfactory. This needs to be done before the books are accessioned in the accession register and stamped. After this the books will be accessioned in the Accession Register besides their computerized accessioning in the 'Books' database where the initial entry was made for which the provision already exists in the Library software.

8.9.2. Technical Processing

Technical Processing Unit will look after classification and cataloguing, OPAC, Web OPAC, CAS, SDI services as detailed below.

8.9.2.1. Classification and Cataloguing

After the books are accessioned and stamped at pre-identified places including confidential page, they will be sent to the Processing Unit where they will be classified and catalogued. The classification will be done in the Universal Decimal Classification Scheme which is capable of assigning the call numbers even to an article more efficiently in science. The cataloging will be done as per Anglo American Cataloguing Code (AACR-2). Though the use of card catalogue has reduced drastically, its preparation and use is continuing in many important universities and research institutions due to several apprehensions in minds of Library professionals as well as the authorities. However, in view of frequent power failure, insufficient provision for uninterrupted power supply, and
inadequate number of terminals for OPAC the card catalogue will continue to prevail for some more time in India.

8.9.2.2. Online Public Access Catalogue (OPAC)

Just after the books are classified and catalogued their call numbers (the Class No, Book No and the Collection No) will be added to the same record created initially at the time of duplication checking and simultaneously the records of those books will go to the Online Public Access Catalogue (OPAC) of the library software. Thus the OPAC is the online equivalent of the card catalogue. A user is able to search any book available in the library through any field such as author, title, publisher, place, ISBN, ISSN, and keywords etc. OPAC is one of the important features of any library software. Besides maintaining it in the server and library staff's terminals, a few terminals attached to the server will be designated as the OPAC Terminals and kept outside easily approachable to the users of the National Pharmaceutical Information System. Efforts will be made to keep these terminals on through the UPS of substantial capacity. This OPAC will also be kept in the intranet of NIPER to facilitate the faculty members and staff of NIPER at their desk. Under these OPAC, users will have "read only' access to the records. This will be done to ensure that no user is able to alter or delete the records or damage it in any way.

8.9.2.3. Web OPAC

The availability of an institutional OPAC on the Web by uploading the same (OPAC) on to the internet through its website using the Web OPAC feature of the library software is called Web OPAC. Once the web OPAC is lunched, any one from world over will be able to browse and search our databases of 'books' and 'other resources' and will be able to make use of them. Since the library software is already in use in the library at NIPER, National Pharmaceutical Information System will utilize its fullest potential to let the world know of the
plethora of resources and services. The technical Processing unit assigned the job of maintaining the OPAC will be accomplishing this task also.

8.9.2.4. Current Awareness Service

The Acquisition Unit will also be responsible to provide Current Awareness Service about the recent arrivals of documents immediately after sending them to display. These will include dissemination of catalogues, brochures and leaflets, announcements, e-mail alerts to the concerned faculty members and HODs besides displaying them in the library. A 'List of Additions' to the library will be prepared from the database and mailed to all faculty members at their e-mail addresses at NIPER and to the participating institutions. Besides, it will be displayed in the library Notice Board and other prominent notice boards in NIPER. It will also be made available on request even to individuals.

8.9.2.5. Selective Dissemination of Information (SDI)

All the faculty members researchers of NIPER and other participating institutions will be asked to submit their research profile through a small one page questionnaire regarding their areas of interest and the specific projects they are working on. Having run the profile based searches from the local in house database as well as from other CD-Rom/DVD databases subscribed in the library, the search results will be mailed to them at their e-mail addresses every month. The SDI using online services, however, will be provided on request. Later on the frequency will be reviewed based on the feed back from the recipients. Search history of profiles along with detailed search formulations will be maintained properly to repeat searches quickly to save time. The recipients will be able to give their revised profiles any time they need it based on their new/changed areas of interests. This will be a joint effort from the Acquisition and CD-Rom/DVD databases Units.
8.9.3. Periodical Unit

The periodical unit will be responsible for the subscription to the new journals and the renewal of subscription to the existing periodicals. The library already subscribes to the print version of 66 foreign and 49 Indian journals related to pharmaceutical and related disciplines. Suggestions for subscription to new journals will be invited and after approval from the competent authority they will be subscribed. Every year, suggestions will also be invited for additions and discontinuation, if any. The foreign periodicals will be subscribed directly from the publishers remitting the drafts in foreign currency. Indian journals will also be subscribed directly from the Publishers. On receipt, the record of these journals will be maintained in the Serial module of the library software in addition to the entries made in the standard Periodical Record Registers for Indian and foreign journals separately. Every week the software generated reminders will be sent to the publishers for non receipt of issues. On completion, the volumes will be got bound and treated as books after their accessing in the Bound Volume Register and the ‘Bound Volumes’ database using the same library software.

8.9.3.1. E-journals

Besides the print, a number of e-journals related to pharmaceutical and related disciplines will be subscribed. The attempt will be made to subscribe them through the existing National consortia such as the UGC-INFONET and the INDEST to avail of the drastically reduced consortial prices of the same. The UGC –INFONET is already offering over 4500 e-journals’ access to over 150 Universities in the country. Many more are in the ofing. INDEST, at present is catering to the needs of IIT’s, NITs and other engineering institutions along with a few other institutions like IISc and ISM, Dhanbad etc. However it is welcoming any other organization by becoming a member after paying the requisite fee.
If the existing consortia are able to provide the e-journals required for the National Pharmaceutical Information System, the NPIS will go through the same or else it will form a separate consortium of its own namely the 'Consortium of Indian Pharmaceutical Institutions (CIPI)' depending upon the need and cooperation from the participating member institutions.

8.9.3.2. Union Catalogues of Print, Non-print Materials and E-resources

A project will be taken up to compile the National Union Catalogues of all Pharmaceutical Resources of print, non-print and e-resources available in all pharmaceutical institutions of the country. Under the print category, the National Union Catalogue of Periodicals will be compiled and uploaded in the NPIS website. The non-print items will include the microforms, audio cassettes and video cassettes and various documentaries and films made on science disciplines and nature. The e-resources' union catalogue will cover e-books, e-journals etc available in the pharmaceutical institutions. The name of contact person along with his/ her e-mail address will also be provided so that users can have a direct correspondence for any item required by them. Attempts will be made to print the Union catalogues and make them available to anyone willing to have the same. Besides, a soft copy of the same will be uploaded in the Website of National Pharmaceutical Information System so that the world at large could make use of it.

8.9.4. Circulation

The National Pharmaceutical Information System will follow completely automated circulation of documents. All the documents will be barcoded and thus charging and discharging (issue-return of books/documents) will be fully automated through the library software in use. The users will be allowed to borrow certain number of books depending upon their pre-decided borrowing privileges. Through the automated circulation only, the reminders for over due
books will be generated and mailed to the borrowers. Under the automated circulation no more books can be allowed to a borrower than his / her entitlement and the system denies the same. The reference books and loose issues of journals, and CD-Rom/DVD databases subscribed in single user environment will not be issued. The members of the participating institutions will also be allowed certain entitlements with regard to borrowing subject to their depositing the caution money fixed for the purpose by the Executive Committee.

8.9.5. Maintenance Unit

The Maintenance unit will be responsible for keeping the entire collection well organized, correctly shelved and spick and span. This is of utmost importance in any library to organize and shelve books at their right places as per their call numbers. The Library and Information Assistant concerned of the unit will be responsible to ensure shelf rectification daily so that the users get the desired book instantly in the library. Returned books will go to their exact places immediately to ensure their recycled use again.

The maintenance unit will also look after the proper functioning of the tube lights for proper lighting, fans, air-conditioners, proper closing of doors and windows and the sanitation aspect of the National Pharmaceutical Information System. The maintenance staff will contact the concerned officials to get the needful done whenever needed.

8.9.6. CD-ROM / DVD Based Information Unit

Based on the research findings on the requirements, utility, relevance and preferences of faculty members and researchers a selection of core databases will be done and after approval from the competent authority the same will be subscribed for the NPIS. Attempts will be made to negotiate the subscription prices applicable in multi-user environment so that the same could be mounted
on the intranet of the institution to facilitate its access at their desks. A number of CD-ROM databases such as International Pharmaceutical Abstracts from 1970-1977 and Drug Information Full Text (1977-1997), 2003+ Ekaswa, Synthline, MFline & DRUGDEX and Micromedex are already available in the library at NIPER. Ensemble, Integrity and CA on CD, BIOSIS etc. will be added to the existing ones besides renewing the existing ones.

8.9.7. Online Searching Unit

Right now NIPER is already subscribing to the Science Direct and BioMedNet Reviwes and the STN for its users. These services are extensively used. However depending upon the needs of other participating institutions as well, if more on line services are required, they will be arranged though the Publishers directly and made available to all members.

8.9.8. Internet-based Services Unit

To begin with at least 25 terminals will be provided in the National Pharmaceutical Information System as Internet Terminals for its users. The staffs deployed in the Internet cell will on a fixed frequency access the relevant websites and download the relevant portions and maintain them in separate folders for subsequent use of the National Pharmaceutical Information System members and make it available on Intranet. Certain websites relevant to the health and pharmaceutical sciences identified by the researcher will be frequently visited and relevant information will be extracted for use by the members of NPIS. The websites are given in Table-95.

8.9.9. Training Cell

The Training Cell will periodically and at regular intervals organize the orientation programmes for the students, faculty members and other staff separately to make them aware of the existing facilities and how to use the same.
Such orientation programmes will also be arranged for the members of the participating institutions at fixed intervals or at the requests of the participating

Table - 95
List of International Organisations and their websites

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Organisation</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Action Programme on Essential Drugs</td>
<td><a href="http://www.who.int/dap/DAP">www.who.int/dap/DAP</a></td>
</tr>
<tr>
<td>2</td>
<td>Allergy and Asthma disease Management Centre</td>
<td><a href="http://www.aadmc.org">www.aadmc.org</a></td>
</tr>
<tr>
<td>3</td>
<td>Allergy Society of South Africa</td>
<td><a href="http://allergy.org">http://allergy.org</a></td>
</tr>
<tr>
<td>4</td>
<td>American Association of Colleges of Pharmacy</td>
<td><a href="http://www.aacp.org">www.aacp.org</a></td>
</tr>
<tr>
<td>5</td>
<td>American Association of Pharmaceutical Scientists</td>
<td><a href="http://www.aaps.org">www.aaps.org</a></td>
</tr>
<tr>
<td>6</td>
<td>American College of Clinical Pharmacy</td>
<td><a href="http://www.aacp.com">www.aacp.com</a></td>
</tr>
<tr>
<td>7</td>
<td>American Diabetes Association</td>
<td><a href="http://www.diabetes.org/default.asp">www.diabetes.org/default.asp</a></td>
</tr>
<tr>
<td>8</td>
<td>American Society of Health System Pharmacists</td>
<td><a href="http://www.ashp.org">www.ashp.org</a></td>
</tr>
<tr>
<td>9</td>
<td>Amputation Prevention Global Resource Centre</td>
<td><a href="http://www.diabetesresource.com">www.diabetesresource.com</a></td>
</tr>
<tr>
<td>10</td>
<td>Australasian Society of Clinical Immunology and Allergy</td>
<td><a href="http://www.allergy.org.au">www.allergy.org.au</a></td>
</tr>
<tr>
<td>11</td>
<td>Board of Pharmaceutical Specialists</td>
<td><a href="http://www.bpsweb.org">www.bpsweb.org</a></td>
</tr>
<tr>
<td>12</td>
<td>British Diabetic Association</td>
<td><a href="http://www.diabetes.org.uk/bda.htm">www.diabetes.org.uk/bda.htm</a></td>
</tr>
<tr>
<td>13</td>
<td>Canadian Pharmaceutical Association</td>
<td><a href="http://www.cdnpharm.ca">www.cdnpharm.ca</a></td>
</tr>
<tr>
<td>14</td>
<td>Canadian Society for Pharmaceutical Sciences</td>
<td><a href="http://www.ualberta.ca/~cspsp">www.ualberta.ca/~cspsp</a></td>
</tr>
<tr>
<td>15</td>
<td>Commonwealth Department of Health and Aged Care</td>
<td><a href="http://immunize.health.gov.au">http://immunize.health.gov.au</a></td>
</tr>
<tr>
<td>16</td>
<td>Controlled Release Society</td>
<td><a href="http://www.crsadmhadq.org">www.crsadmhadq.org</a></td>
</tr>
<tr>
<td>Sr. No.</td>
<td>Organisation</td>
<td>Website</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>18</td>
<td>Epilepsy Information Centre</td>
<td><a href="http://www.neuroland.com/dir_epilepsy.htm">www.neuroland.com/dir_epilepsy.htm</a></td>
</tr>
<tr>
<td>19</td>
<td>European Society of Clinical Pharmacy</td>
<td><a href="http://www.escp.nl">www.escp.nl</a></td>
</tr>
<tr>
<td>20</td>
<td>Food Allergy Network</td>
<td><a href="http://www.foodallergy.org">www.foodallergy.org</a></td>
</tr>
<tr>
<td>21</td>
<td>Food and Drug Administration</td>
<td><a href="http://www.fda.gov">www.fda.gov</a></td>
</tr>
<tr>
<td>22</td>
<td>Guild of Hospital Pharmacists</td>
<td><a href="http://www.netlink.co.uk">www.netlink.co.uk</a></td>
</tr>
<tr>
<td>23</td>
<td>Healthy lives</td>
<td><a href="http://www.healthylives.com">www.healthylives.com</a></td>
</tr>
<tr>
<td>24</td>
<td>Institute for Safe Medical Practices</td>
<td><a href="http://www.ismp.org">www.ismp.org</a></td>
</tr>
<tr>
<td>25</td>
<td>International Academy of Compounding Pharmacists</td>
<td><a href="http://www.compassnet.com">www.compassnet.com</a></td>
</tr>
<tr>
<td>26</td>
<td>International Osteoporosis Foundation</td>
<td><a href="http://www.effo.org">www.effo.org</a></td>
</tr>
<tr>
<td>27</td>
<td>Internet Mental Health</td>
<td><a href="http://www.mentalhealth.com">www.mentalhealth.com</a></td>
</tr>
<tr>
<td>29</td>
<td>National Jewish Medical and Research Centre</td>
<td><a href="http://www.njc.org">www.njc.org</a></td>
</tr>
<tr>
<td>31</td>
<td>National Pharmaceutical Association</td>
<td><a href="http://www.npa.co.uk">www.npa.co.uk</a></td>
</tr>
<tr>
<td>32</td>
<td>National Women Health Resource Centre</td>
<td><a href="http://www.healthywomen.org">www.healthywomen.org</a></td>
</tr>
<tr>
<td>33</td>
<td>North American Menopause Society</td>
<td><a href="http://www.menopause.org">www.menopause.org</a></td>
</tr>
<tr>
<td>34</td>
<td>Pharmaceutical Society of Australia</td>
<td><a href="http://www.psa.org.au">www.psa.org.au</a></td>
</tr>
<tr>
<td>35</td>
<td>Royal Australian College of General Practitioners</td>
<td><a href="http://www.racgp.org.au">www.racgp.org.au</a></td>
</tr>
<tr>
<td>36</td>
<td>Royal Pharmaceutical Society of Great Britain</td>
<td><a href="http://www.rpsgb.org.uk">www.rpsgb.org.uk</a></td>
</tr>
<tr>
<td>37</td>
<td>Society of Hospital Pharmacists of Australia</td>
<td><a href="http://www.spha.org.au">www.spha.org.au</a></td>
</tr>
<tr>
<td>38</td>
<td>The Mayo Clinic</td>
<td><a href="http://www.mayohealth.org">www.mayohealth.org</a></td>
</tr>
<tr>
<td>39</td>
<td>UK Drug Information Pharmacists Group</td>
<td><a href="http://www.ukdipg.org.k">www.ukdipg.org.k</a></td>
</tr>
</tbody>
</table>
members. The training Cell will also be entrusted with the task of organizing the specific database training programme (as also suggested by the most faculty members and researchers in the current research project) in collaboration with the database producers and their representatives in India.

The Training Cell will also be responsible for organizing the seminars/workshops/Symposia on various new and emerging technological issues and trends to keep the members of the participating institutions abreast of the latest technologies and their use in information retrieval and dissemination. The Training Cell will also have a quarterly meeting of its members to get feedback and suggestions from them and incorporate the feasible ones in the programme to provide improvised services. The Cell will also maintain a good liaison with industries to invite their whole hearted support and participation to make these programmes a success.

8.10. Digital Library

The National Pharmaceutical Information System will take up a small digital library project. To begin with, it will create the institutional repository of all intellectual output of NIPER. NIPER has a number of Staff Publications to its credit. Two copies each of the publications brought out by any faculty member or staff are deposited in the library to obtain the NIPER Communication No which is issued by the library after the publication is approved by Director NIPER. The author(s) concerned intimate the publisher and the approved papers are published along with the NIPER Communication No in the journal, conference proceedings etc. Besides the NIPER communications, other resources not falling under the purview of copyright restrictions will also be taken up for digitization in phase manner. The Dspace – an open source software developed by Massachusetts Institute of Technology and The Hewlett Packard for the digital library will be utilized for the purpose.
8.11. Document Delivery Centre

Any one from anywhere will be welcomed to request for journal articles and other information pertaining to pharmaceutical information. The most immediate attention will be provided to the request and the documents will be sent to the person / institution seeking it. The request could be made in writing, through e-mail, fax or in person. The books on interlibrary loan however, will be issued only to the Librarians of the colleges and institutions against their official letter for the purpose undertaking that they will return the same by Registered Post Parcel within the stipulated time.

The DDC will also function as the reference and referral centre depending upon the nature of query made. For items/information that he DDC will not be able to send itself, it will inform where the item /information can be had from. This centre will also be equipped with the photocopying machines, comb binding machine and thermal binding machines and will provide these services against nominal charges approved by the authorities.

8.12. Staffing and Human Resource Development

A well equipped professional staff will be required to run the National Pharmaceutical Information System smoothly and efficiently. Since NIPER has already adopted IITs' pay structure for its faculty members and other staff, the staff of National Pharmaceutical Information System will also be developed in the same pattern. The pay structure of the staff will be as under.
Table - 96
Proposed Staff for the National Pharmaceutical Information System

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Designation</th>
<th>Pay scale (Rs.)</th>
<th>No of Posts required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Principal Library and Information Officer</td>
<td>16,400-20900-500-22,400</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Deputy Librarian</td>
<td>12,000-420-18000</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Assistant Librarian</td>
<td>8000-275-13500</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Library and Information Assistants</td>
<td>5500-9000</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Jr. Library and Information Assistants</td>
<td>4000-7000</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Library Attendants</td>
<td>3050-5000</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>34</strong></td>
<td></td>
</tr>
</tbody>
</table>

First of all one Principal Library and Information Officer shall be recruited through an all India notification / competition and interview by a properly constituted Selection Committee as per the provisions in the Statutes of NIPER. Thereafter, for the first phase only two Deputy Librarians, four Assistant Librarians, eight Library and Information Assistants, four Junior Library and Information Assistants and four Library Attendants will be required to be recruited through properly constituted Selection Committees with Principal Library and Information Officer as one of the members. They will be deployed to man various units as given in Figure 64.

Phase wise deployment of the proposed staff during the XI\textsuperscript{th} Plan

First Phase

- 2007-08
- 2008-09
- 2009-10
Second Phase
2010-11
2011-12

Staff position required to be filled in the First Phase in 2007-08
Principal Library and Information Officer - 1
Deputy Librarians - 2
Assistant Librarians - 4
Library and Information Assistants - 8
Jr. Library and Information Assistants - 4
Library Attendants - 4

Staff position required to be filled in the Second Phase in 2010-11
Deputy Librarians - 1
Assistant Librarians - 2
Library and Information Assistants - 4
Jr. Library and Information Assistants - 2
Library Attendants - 2

The staff working in the National Pharmaceutical Information System will have good exposure on the latest technologies and their use in libraries and information centres on account of their rotational duties in various units and thereby develop their potential to earn career advancement as well as to derive job satisfaction. Care will be taken to have a well conceived and planned human resource development in the National Pharmaceutical Information System. Due to increase in work in subsequent years more staff will be needed and the same will be requisitioned with a proper justification to the authorities. In the mean time, the individuals working in the feeder categories will become eligible and will have opportunity of earning promotions to those positions. NIPER does not have IVth grade employees in its regular strength of employees. It has borrowed the concept from some of the advanced Govt. of India undertakings with a view to
increasing the efficiency in the employees. At present they are outsourced to perform various works and operations of fourth grade employees. And that is why the number in these grades has been kept less. The first phase will span from 2007-08 to 2009-10 and the second phase will be for the rest of the plan period. The organizational structure at the National Pharmaceutical Information System in the first phase has been shown in Figure 64.

---

**Figure 64**

**Staff Structure at National Pharmaceutical Information System**

```
Acq = Acquisition Unit,
Cir = Circulation Unit,
Per = Periodical Unit,
Int = Internet-based Services Unit.
```

The detailed activities and staff of the units mentioned in the Figure - 64 are described as under.
The Acquisition Unit shall have one AL who will look after the Acquisition, library automation, technical processing, OPAC, Web OPAC CAS, SDI etc. and he will be assisted by one LIA, one JLIA and one LA and he will report to the Deputy Librarian concerned.

The Circulation Unit shall have one AL who will be responsible for the Circulation and Maintenance Units embracing the woks pertaining to circulation, shelving, shelf rectification, maintenance, Document Delivery Centre, Inter library loans, reprography, and binding including comb and thermal binding etc. and will be assisted by one LIA, one JLIA and one LA and he will report to the Deputy Librarian concerned.

The Periodical Unit shall have one AL who will look after the Periodical unit embracing the woks pertaining to subscription and renewal of subscription to journals in print, e-journals, Union catalogues, CD-ROM / DVD based information retrieval, online searching etc. and he will be assisted by one LIA, one JLIA and one LA and he will report to the Deputy Librarian concerned.

The Internet Unit shall also have one AL to look after the Internet - based Services Unit embracing the woks pertaining to providing regular Internet based services, conducting various training programmes, seminars, symposia and workshops, and building digital library etc. and he will be assisted by one LIA, one JLIA and one LA and he will report to the Deputy Librarian concerned. Based on the increased work in the subsequent years the remaining positions will be filled and the reallocation of duties will be done. The Principal Library and Information Officer will be the Chief Executive officer of the system and will be responsible for the entire upkeep and maintenance of the same to the entire satisfaction of the Executive Committee. All Deputy Librarians will report directly to Principal Library and Information Officer.
8.13. Gazette Notification and Wider Publicity

Notification and dissemination of information about the launching of the System will be of paramount importance. The researcher has discovered through this research project that a number of respondents have expressed the reason of their non-use of a certain facility as 'lack of awareness about the existence of the facility'. Keeping this in mind all possible attempts will be made to publicize the launching of the National Pharmaceutical Information System. To mention a few:

1. The notification will be published in the Govt. of India Gazette and all national Newspapers in the country.

2. It will be kept in the website of NIPER and the home page of National Pharmaceutical Information System.

3. It will be published in the ‘University News’ and ‘Yojana.’

4. It will be published in all Library and Information Science Associations’ Newsletters and Bulletins in the country.

5. It will be notified to all Pharmaceutical Associations and Societies in the Country.

6. Letters will be sent to all the Vice-Chancellors/Directors and the Librarians of Universities/ deemed to be universities/ Institutes of national importance with the request to give widest publicity.

7. Letters will also be sent to the Directors/Principals/Librarians of all Pharmaceutical colleges and institutions in the country with the request to give widest publicity.

8. Letters will also be sent to the Directors/Librarians of all Institutes under the DRDO, ISRO, DAE CSIR, ICMR, ICAR, CSSIR, ICPHR, ICCR in the country with the request to give widest publicity.

9. Circular letters to Director, Dean, HODs, all faculty members, staff in NIPER individually with the request to give widest publicity amongst the students working in their departments.

10. Notification will be sent to all ‘listservs’ and ‘bulletin boards’ in LIS and Pharmaceutical Sciences.
11. Circulars to be displayed on all Notice Boards of NIPER.


The implementation of any project/plan/model is the most important and crucial aspect of it. However, if the planning is done well and the minutest details of each and every aspect are worked out, the implementation becomes easier. As a matter of fact, the more time is devoted to planning, the more is saved in its implementation. And the implementation is the process through which the project comes to fruition and the benefits reach the masses. Therefore, utmost sincere and concerted efforts will be needed by all concerned to ensure that the seamless access to information published in pharmaceutical domain in the world reaches the information seekers rapidly and efficiently in the manner they need it. To achieve this target however, the following would be central and essential.

- Encouragement, commitment and sustenance and support from the Government.
- Firm commitment and support from the Executive Committee and the host institution, NIPER.
- Active and whole hearted cooperation from the participating institutions in all ventures of the National Pharmaceutical Information System.

The entire implementation will be in phases. In the first phase the following would be required to be attended to:

1. The constitution of the Executive Committee at NIPER, Mohali. The executive committee will act as the Apex body which will be responsible for formulating policy, and programmes to be carried out.

2. Seeking budgetary approval from the Ministry of Chemical and Fertilizers, Govt. of India through the recommendation of the Executive Committee.

3. Appointment of Principal Library and Information Officer at NIPER, Mohali who will act as the ex-officio Member Secretary of National Pharmaceutical Information System. He will be responsible for organising
the meetings, recording minutes of the meetings, and ensuring the implementation of the minutes to the entire satisfaction of the Executive Committee.

4. Identifying the participating institutions and ensuring their networking and wholehearted cooperation in the venture.

5. Preparing a brochure on National Pharmaceutical Information System detailing its objectives, programmes, resources, and services to the members in the first phase, and ensuring its widest publicity as suggested above.

6. Compiling Union Catalogues of all resources and ensuring its uploading on the internet besides releasing in hard copy.

7. To administer a nationwide Resource-Sharing programme.

8. To extend all necessary help for R&D work in the academic and research institutions as well as in the pharmaceutical industry.

The rest of the activities and programmes building Digital Library, Institutional Repository, establishment of Micrographic Unit etc. will be taken up in the second phase.

8.15. Feedback for Improvement

Simultaneous with the implementation of the National Pharmaceutical Information System a mechanism of obtaining the feedback will be provided to the users who will be requested to offer their candid opinions and the feedback on various programmes and services being offered by the National Pharmaceutical Information System. To ensure it an e-mail based feedback system will be provided in the website itself. Although the users will be welcome to send through any other means they prefer. All feedbacks will be taken in good spirit and incorporated in the agenda of the programmes to provide the improvised services to the users. The users' satisfaction shall be the prime motto of the National Pharmaceutical Information System.

************