

VIII. PUBLIC ENTERPRISES

VIII(A). NATIONAL RESEARCH DEVELOPMENT CORPORATION

1. INTRODUCTION

National Research Development Corporation (NRDC) is the principal organisation established by the Government to act as a link between scientific laboratories and industrial establishments for transferring technologies. It is a unique organisation in that it is the only public enterprise wholly dedicated to transfer of technologies from R&D laboratories to industry. What is more, its operations cover the entire spectrum of industrial technologies ranging from chemicals to metallurgy, mechanical engineering, electrical engineer, electronics, biotechnology etc.

The overall slow down of the industrial growth in the country, coupled with the intense competitiveness arising out of the several in-house technology transfer organisations/cells of various R&D organisations and liberalised industrial policy have placed the Corporation in a challenging situation during the year. Nevertheless, the overall performance of the Corporation for the year 1997-98 have been quite satisfactory. The Corporation's continued sincere endeavour and sustained marketing efforts have helped in maintaining its tract record of earning profits. The Corporation has earned Lumpsum Premium and Royalty of Rs.139.11 lakhs and Gross Profit of Rs.30.68 lakhs during the year 1997-98.

2. PROFIT

With aggressive marketing efforts with sincere and dedicated hard work of its executives and staff, the Corporation continued to earn a profit. During the year the Corporation has earned a gross profit of Rs.30.68 lakhs against Rs.26.28 lakhs in previous year.

The gross income of the Corporation from all sources, including premia and royalty, but excluding Grants-in-Aid, was Rs.245.23 lakhs as compared to Rs.291.72 lakhs in the previous year.

3. PROCESSES ASSIGNED AND LICENCE AGREEMENTS CONCLUDED

The corporation continued its efforts to widen its technology resource base by tapping new sources of technologies and nurturing the long term relationship with R&D Organisations in India and abroad. In this endeavour the Corporation signed an MOU with the Ministry of Food Processing Industries, New Delhi and Planter Energy

Network, Madurai for the commercialisation of their technologies. During the year 38 new processes were assigned to the Corporation as compared to 24 in the previous year. Some of the commercially important processes assigned to the Corporation during the year were:

- * Biodegradable plastic
- * Powder hair dye (Henna based)
- * Sutures from fish cat-gut
- * Digested organic supplement
- * Phorate formulation
- * Defatting of groundnut without using chemicals & without losing its original shape & size.

Inspite of sluggish industrial environment and intensely competitive scenario, during the year 34 licence agreements were signed as compared to 36 in the previous year.

4. MAJOR TECHNOLOGIES LICENSED

Some of the major technologies licensed by the Corporation during the year are:

- * Biodegradable plastic
- * Liposomal Amphotericine-B
- * Vijetha (Silkworm bed Disinfectant)
- * Silver Impregnated Graphite
- * Rice Husk Particle Board
- * NIM76 – A spermicidal formulation from neem oil
- * Invert Sugar
- * Glycol based hydraulic fluid (PEGCOL –89)
- * Glass electrodes for pH, pK, pNa measuring
- * Dental Varnish

5. TECHNOLOGY DEVELOPMENT PROJECTS

The Corporation has been promoting and financing in collaboration with industry/R&D institutes, technology development projects for setting up pilot/semi commercial/demonstration plants. The progress on major technology development projects is given below:

5.1 COMPLETED PROJECTS

5.1.1. Permanent Marking Ink

The development work related to the project on improvement of permanent marking ink for election purposes at NPL, New Delhi in collaboration with M/s Mysore Paints & Varnish Ltd., Mysore, at a total cost of Rs.6.5 lakhs has already been completed. However, testing/certification by the Election Commission is awaited.

5.2 On going Projects

5.2.1. Thrombinase – a blood clot dissolving agent

Thrombinase, a novel blood clot dissolving agent has been isolated, identified and purified for the first time from a Bacillus species at Vector Control Research Centre, Pondicherry. However, the new drug needs to be evaluated through basic toxicological studies followed by clinical trials. The Corporation in collaboration with Malladi Research Centre, Chennai is carrying out joint development work at a cost of Rs.80 lakhs which is to be shared equally between the Corporation and the Company. The work on the project started in June 1996. A sum of Rs.15.75 lakhs has already been released. The work is progressing satisfactorily. The Corporation has filed patent applications for the process in India USA, EPO (Germany, Switzerland, Belgium and UK). The patent in USA has already been accepted. The Corporation has also initiated negotiations with a major Japanese Company for licensing of the Know-how and Patent Rights.

6. PROJECTS SUPPORTED BY DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH (DSIR)

DSIR has been supporting technology development projects under its "Programme Aimed at Technological Self Reliance (PATSER)" involving industry, research institutes and consultants. The Corporation has been identified as the agency to manage all matters connected with the intellectual property rights generated in these projects, as also to collect the royalty revenues accruing from the utilisation of the technology by the collaborating Company and also from third party licensing. A few of the major projects undertaken during the year under PATSER are:

- Development of Metal Halide Lamps including Arc Tube & Electronic Control Gear with M/s AUTOPAL Industries Ltd.
- Development SAARC Pagers with M/s S.M. Elect. Services
- Development of State-of-the-Art Machining Centre with M/s H.M.T., Bangalore
- Development Interactive Voice Response Systems with M/s Innovative Communication systems Pvt. Ltd.

7. MARKET SURVEYS

Market surveys not only make the technology to be licensed more complete and credible, but also help in assessing the realistic price at which the technology can be licensed. With this object in view, the Corporation continued to get market surveys prepared on commercially important technologies by commissioning professional market survey agencies for the purpose. During the year, market survey on the following items were completed:

- Intra Ocular Lenses
- Sericulture
- Biodegradable plastic
- Bio fertiliser
- Mini climbing crane

8. INVENTION PROMOTION PROGRAMME

The Corporation continued to promote and encourage inventive talent amongst scientists, engineers, industrial workers and students by awarding prizes to meritorious inventions and providing financial assistance for fabricating prototypes setting up pilot plants to prove such inventions.

During the year, the Corporation received 57 proposals for prize awards and 20 proposals for providing financial assistance.

The Corporation announced on Independence Day (1997) cash awards amounting to Rs.2.5 lakhs for 6 inventions. On Republic Day (1998) cash awards amounting to Rs.1.45 lakhs for 4 inventions were announced.

World Intellectual Property Organisation (WIPO) Gold Medals have also been awarded to 3 inventions which have potential for wider use in developing countries.

Some of the meritorious inventions recognised through awards during the year were:

- Development of Process/Technology for manufacture of Detergent Grade Zeolite 'A' employing Sodium Aluminate Liquor from Alumina Refinery Plant
- Hydroxyapatite Coated Titanium Implant for Tooth Replacement
- Fluidised Abrasive Polishing Machine
- Acephate Technical

The Corporation also provided financial assistance to two inventors for fabricating prototypes/setting up pilot plants.

8.1 PATENT ASSISTANCE

Keeping in view the globalisation of economy, the significance of Intellectual Property Rights is increasing. With

this end in view the Corporation is putting more emphasis on providing technical, legal and financial assistance to inventors in drawing up patent specifications, processing their patent applications etc. During the year the Corporation received 53 applications from individual inventors for such assistance. Assistance was granted to 30 inventors based on the patentability of the inventions involved and 71 patent applications were also filed on behalf of different R&D organisations.

9. DEVELOPMENT & PROMOTION OF RURAL TECHNOLOGY

The programme aims at the application of S&T for improving the standard of living of our rural people by increasing employment potential through the development and application of appropriate rural technologies utilising local resources. With this end in view, the Corporation continued the programme of Development and Promotion of Rural Technology as detailed below:

9.1 Development Projects

9.1.1 On Going Projects

i) Pilot Plant for the Production-cum-Demonstration of Euphorbia Latex

India has a rich wealth of latex and resin bearing plants. One such wild plant Euphorbiaecea is commonly available in arid and semi-arid zones of our country. The milky latex tapped from these plants can be utilised for industrial application. Paints, adhesives, corrosion and moisture resistant coatings can be produced from the latex. Latex from these plants mainly consists of resins, hydrocarbon and proteins.

Keeping in view the commercial potential of euphorbia plants (which is treated as waste at present), a pilot plant, at a cost of Rs.15 lakhs, having 30 litre per day latex processing capacity is being set up at Dehradun in association with ASHRAYA, A VOLUNTARY ORGANISATION working in Garhwal region where Royleana-euphorbiae is wildly grown. A sum of Rs.0.5 lakh has been released during the year. This will motivate people to set up cottage and small-scale industries in the rural belt of Himalayan region and will prove a boom to the unemployed youths.

ii) Design & Development of Direction Finder to Locate Radio Distress Signals from Fishermen at Sea.

The Rural Electronics Group of the Electronic Research & Development Centre (ER&DC), Thiruvananthapuram of Department of Electronics

has developed a sea-water proof, floatable, Radio Beacon for use of fishermen who go to sea in open boats without any form of safety equipment or means of communication. Keeping in view the usefulness of the device, the Corporation has provided a financial grant of Rs.2.3 lakhs to ER&DC for the design and development of a Direction Finder to work with the Beacon, ER&DC has already made one prototype of the device. The Monitoring Committee has suggested some modifications, which are being carried out to get the desired accuracy in locating the distress signal and to withstand shock and sea spray, etc.

iii) Industrial Resource Survey of Nagaland

A study on Industrial Resources of Nagaland was carried out in collaboration with M/s Nagaland Sugar Mills Co. Ltd., Dimapur, at a total cost of Rs.5 lakhs, with an objective to identify the potential technologies and prepare the feasibility studies based on which industries can be set up in Nagaland. The survey report has already been submitted. An amount of Rs.1.25 lakhs has been released.

9.2 Rural Technology Demonstration-cum-Training Centres (RTDT)

The methodology adopted by the Corporation is to demonstrate the utility of appropriate rural technologies and ensure their faster dissemination by setting up RTDT Centres in collaboration with voluntary agencies in various regions of the country. Pursuant to following this approach, some of the existing RTDT centres as detailed below have also been strengthened:

Installation of Solar Timber Seasoning Unit – A solar based timber seasoning unit has been set up at RTDT Centre, Kalika-Ranikhet (UP) with an objective to promote wood craft industry in UP hills. An expenditure amounting to Rs.1 lakhs was incurred for the same. The demonstration facility will be utilised by local artisans in seasoning the local timber.

RTDT Centres located at Mendhar-Poonch (J&K), Udaipur (Rajasthan), Tirupathi (AP) and Kumily (Kerala) were strengthened with additional machineries and training programme arranged in their premises for the operation and maintenance of these machines.

10. PROMOTION OF EXPORT OF TECHNOLOGY

The Corporation continued its efforts to export Indian technologies and services to entrepreneurs both in the developed as well as the developing countries like USA, Germany, and countries in South East Asia, Africa and Latin America.

The Corporation has also been able to generate interest in parties from Germany, Indonesia, Malaysia, China and Japan in some of the corporation's technologies particularly for Rice Husk Particle Board, Disposable Blood Bags, Zeolite-A detergent grade and Thrombinase-a blood clot dissolving agent. The Corporation has signed a licence agreement with M/s P.T. Garama Dhananjaya, Jakarta, Indonesia for setting up three Rice Husk Particle Board Plants and received US\$15,000 as part payment of the know how fees out of total contracted value US\$90,000 for the first plant.

11. FOREIGN EXCHANGE EARNINGS

The foreign exchange earnings of the Corporation amounted to Rs.20.45 lakhs in 1997-98 as compared to Rs.1.21 lakhs during the previous year.

12. PUBLICATIONS

An important activity of the Corporation is to disseminate information on new processes to industry, entrepreneurs and the general public for the promotion and commercialisation of technologies. One of the means of doing so is through publications of various types. During the year, the Corporation continued to bring out the following regular publications:

- Awishkar - (Monthly in Hindi)
- Invention Intelligence - (Monthly in English)

The following special publications were also brought out by the Corporation during the year:

- NRDC at your Service
- NRDC technologies
- Corporate Brochure - from Minds to Global Markets

13. SALE OF DSIR PUBLICATIONS

The Department of Scientific & Industrial Research has entrusted NRDC with the marketing and sale of their publications on Technology Status Studies/Tech. Evaluation Studies/Project Profiles/Consultancy and other Studies and Handbook of Foreign Collaboration Approvals (1981-90). During the year, the Corporation sold 259 reports valued at Rs.1.01 lakhs.

14. EXHIBITIONS AND PUBLICITY

Participation in exhibitions, seminars, workshops entrepreneurship development programmes etc. are of vital importance for the creation of awareness about the role of the Corporation in technology transfer. With this end in view,

the Corporation participated in exhibitions; seminars and get-togethers organised by various agencies as detailed below:

- i) ACHEME '97 International Exhibition -Frankfurt & A Preparatory Seminar at Rotterdam (5-14th June, 1997)
- ii) Delhi Book Fair, New Delhi (9-17th August, 1997)
- iii) IENA '97, Nuremberg, Germany (29th Oct.-2nd Nov.,1997)
- iv) Made in India Exhibition, Amsterdam, Netherlands (1-6th November, 1997)
- v) Technopolis Foundation, Japan (9-16th November, 1997)
- vi) IITF '97, New Delhi (14-27th November, 1997)
- vii) NCSTCS Science since Independence, New Delhi (14-30th Nov., 1997)
- viii) Techmart Africa '97, Mauritius (24-26th Nov.1997)
- ix) Techmart '97, Bangalore (3-8th Dec, 1997)
- x) Swarozgar Mela '97, Jabalpur (20-23rd December, 1997)
- xi) WISITEX '97, New Delhi (5-9th Feb., 1998)
- xii) Indian Trade Exhibition, Mexico City (3-9th March, 1998)

15. IMPLEMENTATION OF OFFICIAL LANGUAGE

The Corporation continued making efforts to implement the provisions of the Official language Act and Rules framed there under to ensure the continued use of Rajbhasha in its day to day working. Significant progress has been made in the field of correspondence, noting and drafting in Hindi. The Annual Report of the Corporation is being published in diglot form in both Hindi & English since 1986-87. The Corporation also publishes a popular science and technology monthly in Hindi, entitled Awishkar. To popularise the use of Hindi, the Corporation celebrated the "HINDI PAKHWARA" from Sept. 14-29, 1997. During the Pakhwara different types of competitions like Hindi Essay writing, Hindi drafting & noting, Hindi Typing, Short Speech and Hindi Poetry were organised. Certificate and cash awards were given to winners. To promote Rajbhasha "The Comprehensive Glossary of Administrative Terms (Eng-Hindi) was distributed among all officers. Under the Hindi Incentive Scheme, Certificates and cash awards were also given to selected staff members for their use of Hindi in official work. One typist was sent for training in Hindi typing.



VIII.A.1 Zeolite-A Powder (detergent grade) along with model structure - an awarded invention.



VIII.A.2 Tapping Latex from Euphorbia Plant at Sahashradhara, Dehradun (U.P.)



VIII.A.3 Jute Spinning machine made by a rural youth is in operation at RTDT centre



VIII.A.4 NRDC officials at ACHEMA '97 International Exhibition, Frankfurt (Germany)



VIII.B.1. Mr. A. Nkole, Hon'ble Minister of Zambia being explained about the SPV Water Pumping System at the CEL's Demo Area.



VIII.B.2 Mr. G. Ssendaala, Hon'ble Minister, Govt. of Uganda being presented a memento



VIII.B.3 C&MD, CEL receiving the DOE's Silver Trophy from Secretary, DOE awarded to CEL for excellence in Development of Electronic Components



VIII.B.4 CEL's Solar PV powered Traffic signal lighting system - installed in New Delhi