

II A. INDUSTRIAL R&D PROMOTION PROGRAMME

1. OBJECTIVES

The activity pertaining to Industrial Research & Development Promotion Programme, is an important component scheme of plan scheme "Technology Promotion, Development and Utilisation (TPDU)".

The broad objectives of the scheme are to:

- bring in-house R&D into sharper focus;
- strengthen R&D infrastructure in industry and Scientific and Industrial Research Organisations (SIROs);
- promote R&D initiatives of the industry and SIROs;
- ensure that the contributions made by the in-house R&D centres and SIROs dovetail adequately in the overall context of technological and industrial development.

2. AREAS OF COVERAGE

The specific areas covered under the component scheme are :

- In-house R&D in Industry
- Scientific and Industrial Research Organisations (SIROs)
- Fiscal Incentives for Scientific Research

Activities and achievements in each of above areas are presented below:

3. IN-HOUSE R&D IN INDUSTRY

3.1 Recognition of In-house R&D Units

A strong S&T infrastructure has been created in the country, covering chain of national laboratories, specialised R&D centres, various academic institutions and training centres, which continuously provide expertise, technically trained manpower and technological support to the industry. Various policy measures have been introduced from

time to time, to meet the changing industrial and technological requirements of the industry. The Government has been giving special attention to promotion and support to industrial research. Several tax incentives have also been provided which encourage and make it financially attractive for industrial units to establish their own in-house R&D units.

A scheme for granting recognition to in-house R&D units in industry is operated by the Department of Scientific & Industrial Research. The incentives and support measures presently available to in-house R&D units include:

- Income-tax relief on R&D expenditure as per Income-tax Act;
- Weighted tax deduction u/s 35 (2AA) of IT Act 1961 for sponsored research programs in approved national laboratories, universities and IITs;
- Weighted tax deduction u/s 35(2AB) of IT Act, 1961 on in-house R&D expenditure in chemicals, drugs, pharmaceutical (including clinical drug trials, obtaining approvals from any regulatory authority under any Central, State or Provincial Act and filling an application for a patent under Patent Act, 1970), bio-technology, electronic equipment, automobiles and automobile components; computers, telecommunication equipment and manufacture of aircrafts & helicopters approved by the Prescribed Authority (Secretary, DSIR);
- Accelerated depreciation allowance under Rule 5(2) of IT Rules, on new plant and machinery set up based on indigenous technology;
- Customs duty exemption on goods imported by recognised in-house R&D units for use in Government funded R&D projects, under notification 50/96 - Customs;

- Customs duty exemption on specified goods (comprising of analytical and specialty equipment) and pharmaceutical reference standards imported by recognised in-house R&D units, for use in pharmaceutical and biotechnology sector under notification no. 26/2003 – Customs dated 1st March 2003;
- Excise duty waiver for 3 years on goods designed and developed by a wholly Indian owned company and duly patented in any two countries amongst India, USA, Japan and any one country of the European Union;
- 10 years tax holiday to commercial R&D companies approved by the Prescribed Authority (Secretary, DSIR) after 31 March 2000 but before 1 April 2005 u/s 80-IB(8A) of IT Act;
- Financial support for R&D projects;
- National Awards for outstanding in-house R&D achievements and commercialisation of results of public funded R&D, besides other indirect benefits.

The in-house R&D units qualifying for recognition are expected to be engaged in research and development activities related to the line of business of the firm, such as, development of new technologies, design and engineering, process/ product/ design improvements, developing new methods of analysis and testing; research for increased efficiency in use of resources, such as, capital equipment, materials & energy; pollution control, effluent treatment and recycling of waste products.

The R&D activities are expected to be separate from routine activities of the firm, such as, production and quality control. The in-house R&D units should have staff exclusively engaged in R&D and headed by a full-time R&D person who would have direct access to the chief executive or to the board of directors depending upon the size of the unit. The in-

house R&D units are also expected to maintain separate identity and R&D accounts.

Number of in-house R&D units recognised by DSIR increased steadily from about 100 in 1973 to about 275 by 1975, to over 700 by 1980, around 925 by 1985, over 1100 in 1990 over 1200 in 1995 and thereafter is hovering around 1200; and was 1195 in December 2004. Of these, nearly 1120 are in the private sector and the remaining units are in public/joint sector. A revised and updated 'Directory of Recognised in-house R&D Units' was brought out during October 2004. This Directory lists 1183 recognised in-house R&D units, giving registration number, name and mailing address of the company, location of the in-house R&D unit(s) and validity of DSIR recognition. The data on these R&D units has been computerised and updated.

For the purpose of recognition, the R&D units have to apply to DSIR as per the prescribed proforma. The proforma and other details about the scheme are provided to the interested companies on request. The proforma and details of the scheme are also available at DSIR website (<http://www.dsir.nic.in>). The applications, after initial scrutiny in the DSIR, are circulated for comments to various other departments/agencies such as concerned administrative ministries, DCSSI, CSIR, ICAR, ICMR, ICAS, DBT, DCPC, DoT, DRDO, DIT and NRDC. The units seeking recognition are visited, if need be, by expert teams comprising of representatives of DSIR, as well as outside agencies, like, administrative ministries, CSIR, NRDC, DBT, ICAR, ICMR, DRDO, DIT, DoT, IITs and local educational & Research Institutions before they are taken up for consideration. In order to obtain first hand information on R&D activities of the applicant firms, discussion with the chiefs of the R&D unit and executives of the firm are also held in DSIR in many cases. During the discussion outside experts

are invited and their comments are sought. The applications along with comments from outside agencies, visit reports, and the Department's own evaluation are considered by an Inter-Departmental Screening Committee constituted by Secretary, DSIR. The Committee meets every month to consider the applications and makes recommendations to the Secretary, DSIR based on its evaluation of R&D infrastructure and R&D activities of the applicant firms.

During the year 2004, the Screening Committee met 12 times and considered 123 applications for recognition; 86 R&D units were granted fresh recognition and 31 applications were rejected.

The pendency at the end of December 2004 was 45 including 23 applications received during the month of December 2004. A statement, giving month-wise receipt, disposal and pendency of applications for recognition of in-house R&D units is given at Annexure 1.

During the year 2004, over 350 discussions/meetings were held with heads of in-house R&D units. Also, a number of in-house R&D units, were visited by expert teams.

3.2 Renewal of Recognition

Recognition to R&D units is granted for a period ranging from 1 to 3 years. The R&D units are advised to apply for renewal of recognition well in advance (3 months prior to the date of expiry of the recognition). Applications received for renewal of recognition are circulated to CSIR, NRDC and/or the concerned administrative department of Government of India for comments. The applications are examined in DSIR taking into account the inputs received from other agencies for taking suitable decision on their renewal. During the year 2004, 469 in-house R&D units were due for

renewal of recognition beyond 31 March 2004; of which 421 applications were received. Based on the evaluation of the performance of the R&D units, renewal of recognition was granted to 409 R&D units. Recognition granted to 12 companies could not be renewed because their R&D performance was not up to the mark. A statement showing month-wise receipt, disposal and pendency of the cases of renewal of recognition of the R&D units is given at Annexure 2.

3.3 Zonal Distribution of In-house R&D Units

The in-house R&D units are distributed throughout the country. There are around 185 units in the Northern Zone (Delhi, Haryana, Punjab, Uttar Pradesh, Jammu & Kashmir), around 110 units in Western Zone (Rajasthan and Gujarat), around 450 units in the Central Zone (Maharashtra, Madhya Pradesh and Orissa), around 365 units in the Southern Zone (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu) and around 85 units in the Eastern Zone covering Bihar, West Bengal, Assam and other north eastern states.

3.4 R&D Expenditure

The expenditure incurred by in-house R&D units in industry has steadily increased. During 1980-81 it was of the order of Rs. 300 crores. In 1985-86, it was of the order of Rs. 500 crores. It is estimated that the present R&D expenditure of the 1195 recognised R&D units is of the order of Rs. 4000 crores. The share of public and joint sector is about 20% and that of private sectors about 80%. 121 in-house R&D units spend over Rs. 5 crore each on R&D, 240 in-house R&D units spent between Rs. 1 crore to Rs. 5 crore each per annum on R&D. The lists of these R&D units are given in Annexures 3 and 4 respectively.

3.5 R&D Infrastructure

The in-house R&D centres have created impressive infrastructural facilities for R&D including sophisticated testing facilities, laboratory equipment and pilot plant facilities. Analytical facilities such as HPLCs, IR spectrophotometers, UV-Vis spectrophotometers, NMR spectrometers, electron microscope, particle size analyzer, portable particle counting system, ultra filtration equipment, sonicator, spectro fluorimeter, protein purification set up, digital viscometer, high temperature test and evaluation facilities, CAD-CAM facilities, rapid prototype building machines, greenhouse and tissue culture laboratory facilities are available with many in-house R&D units.

3.6 R&D Manpower

There has been a steady increase in R&D manpower employed by the in-house R&D units. By 1975-76, about 12,000 R&D personnel were employed by recognised in-house units, and by 1981-82, the figure was over 30,000. The present estimated manpower for the 1200 in-house R&D units is around 50,000, out of which around 17,500 R&D personnel are employed in public sector in-house R&D units and around 32,500 R&D personnel are employed in the private sector in-house R&D units. Of the total 50,000 R&D personnel, around 2700 are PhD's, 16,500 Post Graduates, 14,000 graduates and the rest are technicians and support staff.

3.7 Sectorwise Break-Up of In-house R&D Units

A broad sector-wise break-up of the recognised in-house R&D units is as below:

Chemical and Allied industries	495
Electrical and Electronic industries	280
Mechanical Engineering industries	180
Processing industries (Metallurgical, Refractories, Paper, Cement, Ceramics, Leather and others)	150
Agro and food processing industries and others	90

3.8 Achievements of In-house R&D Units

Some of the R&D achievements reported by the recognised in-house R&D units are listed below:

Chemical and Allied Industries

- Development of technology for converting petroleum residue and other heavy hydrocarbons into LPG and high octane gasoline (RON above 98%) using a proprietary Zeolite based "INDMAX" catalyst in a fluidized bed reactor and catalyst regeneration system.
- Development of processes for the production of pyridine and pyridine derivatives such as lutidines, collidines, piperidines and amino pyridines.
- Development and commercialisation of a lab-scale technology for black glossy acrylic cathodic electro deposition paint.
- Development of products such as interleukin, interferon alpha, anticancer products, dermatology products and products for orthopaedic application.
- Development and commercialisation of recombinant human interferon alpha-2b for therapeutic use, from genetically engineered methylotropic yeast pichia pastories, giving yield of 0.2 g/l.
- Development of prototype hepatitis-B vaccine from high titre plasma; inactivated polio vaccine from sabin strains, hyper

sensitivity devoid anti snake venom serum, assay system from endotoxin detection.

- Development of levo carnitine injections USP, L-Ornithine L-asparatate infusion concentrate and ethamsylate injection.
- Development and commercialisation of pregabalin, fluvastatin, ezetimibe, D-lactam and sertraline hydrochloride.
- Development of technology for the manufacture of 1M-10 (Herbal non toxic immunomodulatory drug for cancer support therapy), HP-11 capsules (herbal liver protective capsule), corshe-S (herbal cough suppressant); and Artrex capsules (herbal drug for osteo and rheumatoid arthritis)
- Development of vaccines for control of poultry diseases such as Bronchi-F, Bronchi-L, infectious Coryza, Bursa B2k and fowl cholera.
- Development of technical pesticides such as imidacloprid, tricyclazol, hexaconazol and mono-crotophos with cost effective new route.
- Development of ink for reverse printing on PET film and PVC shrinkable film, inks for surface printing on CPP film for bread packing, oil resistance ink for ghee packing inks for latest printing machines.

Electrical and Electronic Industries

- Indigenous design and development of microprocessor based technology for “Konkurs Launcher Test Equipment (KLTE)”.
- Development of all weather low level air defence weapon control system (flycatcher upgrade radar) and police communication network (Polnet).
- Development and commercialisation of several optoelectronic items including optical power meter and optical test system; and 980 nm pump laser/high power laser module and stabilised light source. Development & commercialisation

of digital audio recorder system (DAR) for defence applications; and tractical communication system for electronic warfare. Design & development of microprocessor based control and fault diagnostic system for electric locomotives wheel flange lubricator for diesel and electric locomotives.

- Indigenous development of data communication exchanges for communication of information using standard communication protocols; microprocessor based homeopathic treatment system; and microprocessor based data logger with train charting system for Indian Railway.
- Development of single phase neutral missing static energymeter for theft control, 3 phase static energy meter with neutral missing feature with magnetic tamper detection as per CBIP requirements.
- Development of self service coin operated platform ticket machine; touch screen information kiosk, duplicate file printing and on-line payment system for BSNL and MTNL.
- Development of double beam UV-Vis spectrophotometer.
- Development of 32 channel, multi-speciality ultrasound B/W scanner compatible with a range of convex and linear transducers.
- Development and commercialisation of “Point of Sale” (POS) terminal for electronic fund transfer payments.
- Development of technology for manufacture of 3KV/6KV 10KA indoor arresters and 9KV 5KA polymer arrester
- Development of silver oxide zinc secondary battery for use in Russian heavy weight exercise torpedoes and 50 kw silver chloride magnesium seawater activated battery.

- Development of 300 KVA, UPS; 75 KVA 400 Hz frequency converter and 26V 500A DC power supply for defence application.
- Design and development of DSP sine wave inverter serves (800VA-20KVA); and digital inverter with LED/LCD display.
- Development & commercialisation of energy efficient Eco Motor for use in juicer mixer grinder; fan blower motor for use in frost free refrigerators; and low power submersible pump.
- Design and development of new comber machine.
- Indigenous development of air control engine, water cooled engine, engine with integral gearbox for three wheeler automobiles.
- Design and development of cost effective crawler harvester for wet land paddy harvesting.
- Development and commercialisation of blood oxygenator, cardiotomy reservoir and concentric needle electrodes for neurology, membrane oxygenator for cardiac surgery.

Mechanical Engineering Industries

- Development of technology for introducing vent air purification system and low temperature miscella separation in solvent extraction plants for extraction of hexane consumption from existing levels of 11.11 ltrs per ton to 0.5 ltrs. per ton besides improving the quality of oil to edible grades instead of non-edible grade.
- Design and development of Light Combat Aircraft (LCA), Intermediate Jet Trainer 36 (IJT-36) and Jaguar Aircraft with upgraded Navwass.
- Design and development of “Surface Miner” for eliminating the need for blasting in open cast coal mines.
- Indigenous design and development of a new 100 tonnes rear dump truck (for coal mines application; pipe layer for heavy duty versatile equipment; side discharges loader conforming to International standards; and excavator and ponton bridge set (PMS) for transporting military vehicle equipment and personnel across water obstacles and marshy grounds.
- Design and development of CNC precision flat and profile grinding machine; CNC 5-axis die and mould machining centre (DMC 650); and vertical machining centre (VMC 400M) meant for high speed machining of ferrous and non-ferrous components.

Processing Industries

- Development of process for recovery of oil from tank bottom sludge using a novel biomechanical combination process.
- Development of process for the manufacture of new radial tyres (195/70R14) 10.00-20 super dumper tyres for application on rough terrains, motorcycle tyre 3.00-18 with directional trendy pattern for high performance.
- Development of technology for the production of direct bounded Mag-Chrome refractories for RH degasser.
- Development of process for replacement of polyvinyl chloride film by acrylonitrile butadiene styrene film for achieving two tone finish for vacuum formed ABS luggage shells; and low cost high impact polystyrene blend for vacuum formed luggage to replace acrylonitrile butadiene styrene.
- Development of process for the manufacture of auto exhaust muffler; stainless steel for nuclear and razor blade application.

Agro and Food Processing Industries

- Development of process for production of fungal and bacterial biopesticides

formulations using trichoderma, pseudomonas and beauveria.

- Development of indbro silver colour and white colour broilers with better FCR, male lines for broiler bird capable of reaching 2 Kg weight in 42 days under Indian climatic conditions.
- Development of repitest kit for detection of white spot disease virus in prawns.
- Development of technology for in-vitro propagation of banana in the lab under aseptic conditions.
- Development of downy mildew resistant hybrids of pearl millet for summer season; sorghum hybrid suitable for rain fed rabi cultivation, early maturity hybrid of maize for North India, cotton hybrid with high fibre quality index.
- Development of technology for solving problems in banana plantations, such as, high mortality during establishment stage, low multiplication rate, virus infestation, poor quality fruit, low yields, excessive water requirement, non-uniform growth of plant etc.
- Development of hybrids for pickling cucumber, tomato, hot pepper, baby corn, sweet corn, okra, water melon, egg plant etc; and hybrids of watermelon, sweet pepper, okra, onion etc., for export.

3.9 Imports made by In-house R&D Units

The recognised in-house R&D units have imported a variety of equipment, raw materials and samples for their R&D activities. These include: NMR, GLC, IR Spectro Photometer, HPTLC, high speed centrifugal counter current and droplet counter current chromatographs; GC-FTIR system, FT-NMR spectrometer, inverted phase contrast fluorescence microscope, microsheen digital opacity reflectometer, colour image analysis system, laser based particle size analyzer, digital distortion analyser, dielectric loss analyser, X-

ray spectrophotometer, portable particle counting system, ultra filtration equipment, smoking machine, sonicator, spectro fluorimeter, protein purification set up digital viscometer, ASIC development system, CAD system; stereo zoom microscope, Auto Titrator, UV-Vis dual beam spectrophotometer, trinocular phase contrast microscope, cryptometer, computer for colour matching, CO sensor and filter, total organic carbon analyser, rapid prototyping machine, EDM, microprocessor double ended inertia dynamometer, logic analyser, fibre optics evaluation kit, intelligent universal programmer, reference standards for chemical raw material testing purpose, microwave accelerated acid digestion system, pump for ultra filtration system and auto hardness tester.

3.10 Other Benefits Availed by the Recognised R&D Units

The Department provides assistance to recognised in-house R&D units in a number of ways, such as cases of industrial R&D units requiring allotment of special controlled materials for R&D, permission to export of specialised products reserved for small scale industries by medium scale industries for test marketing in other countries and disposal of imported R&D equipment/instruments and pilot plant produce are examined for making suitable recommendations to concerned agencies.

A number of cases regarding locational clearance with respect to expansion of R&D have been dealt with. A number of applications regarding disposal of R&D equipment and also, pilot plant produce; and permission for allotment for controlled materials required for R&D were examined and the decisions of the Department conveyed.

3.11 Conference, Awards and Publications

18th National Conference on in-house R&D in Industry

Department of Scientific & Industrial Research (DSIR) organised the 18th National Conference on in-house R&D in Industry, in association with the Federation of Indian Chambers of Commerce and Industry (FICCI) during 16 - 17, November 2004 in New Delhi. The theme of the Conference was “Changes in Indian IPR Regime – Challenges and Opportunities”. The Conference had three technical sessions viz. “IPR Scenario Post – January 2005 : Legal and Procedural Implications” ; “Preparedness of Industry for New IPR Regime” ; “Implications of new IPR Regime for Research and Academic Institutions”. Attended by over 400 delegates from industry, national laboratories, IITs and universities, Scientific and Industrial Research Organisations (SIROs), consultancy organisations, Government departments, the Conference was inaugurated by Shri Kapil Sibal, Minister of State (Independent Charge) for S&T and DoD on 16th November 2004 in FICCI Golden Jubilee Auditorium. The Minister presented the DSIR National Awards for Outstanding in-house R&D Achievements (2004) to five industrial units. Shri Ashok Jha, Secretary, Department of Industrial Policy and Promotion, Ministry of Commerce & Industry delivered the valedictory address on 17 November 2004.

National Awards for Outstanding In-house R&D Achievements

In order to provide recognition to the efforts of industry towards innovative research and technological development, the National Awards for R&D Efforts in Industry were instituted in 1987 by the Department of Scientific & Industrial Research. These awards

are in the form of silver shields and are presented along with citations at the inaugural session of the annual National Conference on in-house R&D in Industry. So far, 144 companies have won the DSIR National R&D Awards for Outstanding in-house R&D Achievements. The list of the award winners in the year 2004 is as follows:

Chemical and Allied Industries

- Indian Oil Corporation Ltd., Faridabad
- Jubilant Organosys Ltd., Gajraula (U.P)

Electrical Industries

- High Energy Batteries (India) Ltd., Mathur (T.N.)

Electronic/ Opto Electronic Industries

- Rajasthan Electronics & Instruments Ltd., Jaipur

Technology Absorption

- Goodlass Nerolac Paints Ltd., Mumbai

Outstanding in-house R&D Achievements - 2004

The DSIR publication “Outstanding in-house R&D Achievements (2004),” covering the award winning achievements of 5 companies, was released during the inaugural session of the 18th National Conference on in-house R&D in Industry on 16th November 2004.

In-house R&D in Industry – An Information Update

As the number of in-house R&D Centres has increased while the activities of DSIR have also diversified significantly with respect to in-house R&D units, it was felt appropriate to devise a quick communication system between

DSIR and in-house R&D units. Accordingly, the DSIR started bringing out a quarterly Information Update on in-house R&D in industry on a regular basis since April 1998. The information Update intended to provide a fast communication link between DSIR, in-house R&D units and SIROs and serve to disseminate useful and important information relevant to R&D in Industry. During 2004 -05, four issues of in-house R&D in Industry were brought out in April, July, October 2004 and January 2005. These have been widely disseminated to industry, SIROs Government Departments, missions abroad and others and are well received.

Research and Development in Industry : An Overview

A publication entitled “*Research and Development in Industry : An Overview*” was brought out on the occasion of the 18th National Conference on in-house R&D in Industry (November 2004). The publication gives details of resources devoted to scientific and technological activities, international comparison of S&T indicators, fiscal incentives and support measures available for research in India, promotional schemes for R&D operated by DSIR and other Government Departments and important achievements of the in-house R&D units.

4. SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATIONS

4.1 Recognition of Scientific and Industrial Research Organisations (SIROs)

The DSIR had launched a scheme of granting recognition to Scientific and Industrial Research Organisations (SIROs) in 1988. SIROs recognised by DSIR are eligible for Customs Duty Exemption and Excise Duty Waiver in terms of notification Nos. 51/96-

Customs dated 23.7.1996 and 10/97-Central Excise dated 1.3.1997 respectively.

The DSIR has brought out Guidelines for Recognition of Scientific and Industrial Research Organisations (SIROs), which give procedural details and application proforma for seeking recognition under the SIRO Scheme. Functional SIROs having broad based governing council, research advisory committee, research personnel, infrastructural facilities for research, well defined, time bound research programmes and clearly stated objectives of undertaking scientific research, are considered eligible for recognition by DSIR. The investments of surplus funds not needed for immediate research should be in accordance with the Income-tax Act, 1961.

Applications for seeking recognition under the SIRO scheme are considered in DSIR by an Inter-Departmental Screening Committee with members from Council of Scientific and Industrial Research (CSIR), Indian Council of Medical Research (ICMR), Indian Council of Agricultural Research (ICAR), Indian Council of Social Sciences Research (ICSSR) and University Grants Commission. The recommendations of the Screening Committee are put up for approval of Secretary, DSIR. The recognition is effective from the date of approval of Secretary. Retrospective approval is not granted.

During the period January 2004 to December 2004, the Screening Committee met 3 times and recommended 23 cases for recognition as Scientific and Industrial Research Organisations under 1988 Scheme of DSIR. These include natural and applied sciences, agricultural, medical sciences and social sciences. List of these SIROs is furnished at Annexure 5.

Recognition granted to SIROs is for duration ranging from 1 to 3 years. The SIROs are

advised to apply for renewal of recognition well in advance (3 months prior to the date of expiry of recognition). Such applications received for renewal of recognition are examined by Research Review Groups by involving representatives from ICAR, ICMR, CSIR and ICSSR depending on the area. Based on the evaluation made by the Research Review Groups, renewal of recognition is granted to SIROs.

At present there are 556 SIROs duly recognised by DSIR; of these, 202 are in the area of natural and applied sciences, 180 are in the area of medical sciences, 40 are in the area of agricultural sciences, 116 are in the area of social sciences and 18 are universities/colleges. Of these 556 SIROs, the renewal of recognition beyond 31.3.2004 of 17 SIROs is under consideration for want of further information/ clarification. DSIR has brought out a Directory of Recognised Scientific & Industrial Research Organisations in November 2004.

The SIROs have employed qualified scientists and researchers and have also established good infrastructural facilities for research. They have developed new processes, procedures, techniques and technologies and also filed several patents. They have also organised seminars/ symposiums/ workshops and published research papers/ reports/ books.

5 FISCAL INCENTIVES FOR SCIENTIFIC RESEARCH

5.1 Introduction

Government has evolved, from time to time, fiscal incentives and support measures to encourage R&D in industry and increased utilisation of locally available R&D options for industrial development. New incentives to encourage investments in R&D by industry are announced in the Union Budget.

Fiscal incentives and support measures presently available include:

- Income-tax relief on R&D expenditure;
- weighted tax deduction for sponsored research;
- weighted tax deduction on in-house R&D expenditure;
- customs duty exemption on capital equipment, spares, accessories and consumables imported for R&D by approved institutions/SIROs;
- customs duty exemption on specified goods (comprising of analytical and specialty equipment) for use in pharmaceutical and biotechnology sector;
- excise duty waiver on indigenous items purchased by approved institutions/ SIROs for R&D;
- ten year tax holiday for commercial R&D companies;
- excise duty waiver for 3 years on goods produced based on indigenously developed technologies and duly patented in any two countries amongst India, USA, Japan and any one country of the European Union;
- accelerated depreciation allowance on plant and machinery set-up based on indigenous technology;
- customs duty exemption on imports for R&D projects supported by Government.

5.2 Depreciation Allowance on Plant and Machinery Setup Based on Indigenous Technology

Secretary, Department of Scientific & Industrial Research, Ministry of Science and Technology, is the Prescribed Authority to certify expenditures where higher rate of depreciation is to be allowed for the plant and machinery using indigenous know-how as per provisions of rule 5(2) of IT Rules. Guidelines have been issued for making applications for obtaining the aforesaid certificate. All such

applications received are examined in the department, and discussions and visits by experts to verify the claim are made to the plants by expert teams. Based on a detailed examination, certificates in deserving cases are issued for eligible expenditure.

During the year 2004, 6 certificates involving Rs. 5256.63 lakhs on cost of plant and machinery were issued by DSIR. Details are given at Annexure 6.

5.3 Reference Under Section 35(3) of Income-Tax Act, 1961 Regarding Scientific Research

In the implementation of various incentive schemes for the promotion of research and development, the Income-tax Act, inter-alia, provides that expenditure made on capital equipment and related to research activities are allowed to be written off 100% in the year in which the expenditure are incurred. The Government has provided that if a question arises under section 35 of Income-tax Act, 1961 as to whether and, if so, to what extent any activity constitutes or constituted or any asset is or was being used for scientific research the Central Board of Direct Taxes would refer the question to the Prescribed Authority. Director General Income-tax (Exemptions) in concurrence with Secretary, DSIR is the Prescribed Authority for deciding such cases. However, w.e.f assessment year starting 1-4-2000, the Prescribed Authority for such reference pertaining to sub-sections 35(1)(ii) and 35(1)(iii) is Central Government. On receipt of the reference in DSIR, the department collects information/background regarding the description of the activity claimed as scientific research, date of commencement of the relevant projects, date of completion of research work as also the results obtained from the specific project. After obtaining all these details, the matter is examined in DSIR. In case where it is

considered necessary, a team of technical experts is constituted for on the spot appreciation of the research work done at the premises of the company. After receiving the technical assessment report from the visiting team, a discussion is also normally held so that the point of view of the Company is taken into account before arriving at a decision. After completing the processing of the case in the above fashion, the case file is placed before the Secretary, DSIR for giving a decision. The Secretary, DSIR gives his decision by setting out a reasoned order duly signed by him, which is communicated, to Director General (Income-tax Exemptions).

During the year 2004, recommendations of Secretary were sent to DGIT(E) in one case namely Pentafour Software & Exports Ltd., Chennai.

5.4 Approval of Commercial R&D Companies

In order to promote research and development activities in the commercial research and development companies, the Finance Act, 2000 provided for a ten-year tax exemption from income-tax under section 80-IB(8A) of the Income-tax Act, 1961, to approved companies, whose main objective is scientific and industrial research. Secretary, Department of Scientific & Industrial Research is the Prescribed Authority vide Gazette notification no. S.O.85 (E) dated 31 January, 2001, issued by Department of Revenue, Ministry of Finance for granting approval under section 80IB(8A) of the IT Act.

The approval to commercial R&D companies is given initially for a period of 3 years, which can be extended up to 10 years based on evaluation of its performance.

The tax exemption is available to a company, which is accorded approval by the Prescribed

Authority at any time after the 31st day of March 2000, but before the 1st day of April 2005.

So far, 23 R&D companies have been approved, including 16 approved during the last year; and the requests of 14 more companies are under consideration.

5.5 Excise Duty Waiver for Patented Products

The notification no. 13/99 dated 28 February, 1999, introduced the provision of exemption of all goods falling under the Schedule to the Central Excise Tariff 1985 (5 of 1986) from the whole of the duty of excise leviable thereon provided such goods are manufactured by a wholly Indian owned company, such goods are designed and developed by such Indian company, national laboratories, public funded research institutions and universities, the goods so designed and developed are patented by such Indian company in any two countries amongst India, USA, Japan and any one country of the European Union, for a period of 3 years from the date of issuance of certificate to the effect by DSIR.

During the year 2004, one such certificate has been issued and one request received from an industrial R&D unit, is under consideration.

5.6 Customs Duty Exemption to Recognised SIROs

All Scientific and Industrial Research Organisations other than hospitals recognised by DSIR are eligible for Customs Duty Exemption on the import of scientific equipment, instruments, spares, accessories as well as consumables for research and development activities and programmes.

The procedure for issuing the essentiality certificates to SIROs for obtaining the customs duty exemptions has been formalised. A Committee has been set up in DSIR to examine the applications received from SIROs. The committee meets periodically to examine the requests. The recommendations of the Committee are put up to the Head of the RDI Scheme, for approval.

During the year 2004, 686 essentiality certificates were issued for claiming customs duty exemption on import of scientific equipment, accessories and components, including consumable items. The value of imports covered by the certificates was nearly Rs. 44 crores.

5.7 Excise Duty Exemption to Recognised SIROs

All Scientific and Industrial Research Organisations (SIROs) other than hospitals recognised by DSIR are eligible for Excise Duty Exemption on purchase of scientific and technical instruments, apparatus, equipment (including computers); accessories and spare parts thereof and consumables; computer software, Compact Disc - Read Only Memory (CD-ROM), recorded magnetic tapes, micro films, microfiches; and prototypes for research and development activities and programmes.

This provision was introduced by Ministry of Finance (Department of Revenue) vide notification No. 10/97-Central Excise dated 1 March 1997. A Committee has been set up in DSIR to examine the applications received. The Committee normally meets periodically and essentiality certificates are issued with the approval of Head of RDI Scheme.

During the year 2004, 85 essentiality certificates for a total amount of about Rs. 340 lakhs were issued for claiming Excise Duty Exemptions.



Shri Kapil Sibal, Union Minister for State (Independent Charge) for Science & Technology, inaugurating the 18th National R&D Conference



DSIR National R&D Award Winners (2004)



Shri Kapil Sibal, Union Minister for State (Independent Charge) for S&T, releasing the DSIR special publication



Shri Ashok Jha, Secretary, Department of Industrial Policy & Promotion giving the valedictory address



High Power Silver Chloride Magnesium Sea Water Actuated Battery



INDMAX Unit at Guwahati Refinery



Vent Air Purification System



Low Temperature Miscella Separation System

5.8 Registration of Public Funded Research Institutions, Universities, Etc.

Public funded research institutions, universities, IITs, IISc., Bangalore; Regional Engineering Colleges, (other than a hospital) are eligible for availing customs duty exemption on import of equipment, spares and accessories and consumables for research purposes. The pass book scheme which was hitherto operated by the Department of Science and Technology and the Ministry of Human Resources Development is superseded by a simple registration with the Department of Scientific and Industrial Research. The ceiling on the value of goods imported for R&D is also removed and the head of the public funded research institutions/organisations duly registered with DSIR can certify the R&D goods for duty free import as per the notification No. 51/96-Customs dated 23 July 1996. As per the Government notification No. 10/97-Central Excise dated 1.3.1997, the Public Funded Research Institutions, universities, IITs, IISc, Bangalore, Regional Engineering Colleges, registered with DSIR are also eligible for Central Excise Duty Waiver on purchase of indigenously manufactured items for scientific research purposes.

Coinciding with the presentation of Union Budget for the year 2004, Ministry of Finance amended the notification No. 51/96-customs vide notification No. 28/2003-Customs dt. 1.3.2003. As per the amendment, departments & laboratories of central government and state governments (other than a hospital) are not required to register with DSIR for availing the customs duty exemption. They can clear the consignments by producing a certificate from the Head of the institution certifying that the said goods are required for research purposes only. Another significant change in the notification is that regional cancer centres

(cancer institute) have been included in the list of institutions eligible for registration DSIR for importing goods for research purposes at a concessional rate of customs duty of 5%.

The registration of above institutions is recommended by an inter-departmental Screening Committee constituted by the department for considering the requests from various institutions. The Committee met 2 times during the year and considered 15 applications from various public funded research institutions.

During the year 2004, 8 registration certificates were issued to such public funded research institutions universities, IITs, IISc, Bangalore, Regional Engineering Colleges for availing customs duty exemption on import of scientific equipment, spares and accessories, consumable items and Central Excise Duty exemption on indigenous purchases for Scientific Research Purposes.

The registration to public funded research and other institutions mentioned in the notification is granted for maximum period of 5 years. The institutions are advised to apply for renewal of registration well in advance of the date of expiry of the registration. During the year 2004, 68 institutions were due for renewal of registration. The department received 61 renewal applications. These were processed on individual files and approval of Secretary was obtained and 52 renewal letters were issued. Registration to 9 institutions could not be renewed as it was found that some of the institutions were not fulfilling the criteria as per the notifications or their research performance was not satisfactory.

5.9 Approval of In-house R&D Centres u/s 35(2AB) of I.T. Act 1961

Finance Act 1997 introduced a sub-section (2AB) in Section 35 of the IT Act 1961. This

sub-section was introduced in order to encourage research & development in drugs, pharmaceuticals, electronic equipment, computers, telecommunication equipment, and chemicals. The sub-section provided for weighted tax deduction of a sum equal to one and one-fourth times of any expenditure incurred on scientific research (not being expenditure in the nature of cost of any land building). The weighted tax deduction was further raised to 150% by the Finance Act, 2000. The in-house Research and Development facilities of the companies engaged in the business of manufacture or production of the above said items should be approved by the 'Prescribed Authority' i.e. Secretary, DSIR. Also, the company should enter into an agreement with the Prescribed Authority for co-operation in such research and development facility and for audit of the accounts maintained for that facility. Through a separate notification, manufacture of aircrafts and helicopters was included in the list eligible under this section.

The provision was introduced for expenditure on R&D incurred up to 31st March 2000. The Ministry of Finance, Department of Revenue, Central Board of Direct Taxes, notified the provision vide Notification No. S.O.259 (E)

dated 27 March 1998. Finance Bill 1999 introduced in Lok Sabha on 27 February 1999 extended this provision till 31 March 2005. The sub-section was further amended by the Finance Bill 2001, to include expenditure on in-house R&D by units engaged in the business of biotechnology, as well as cover expenditure on clinical trials, filing of patents under Indian Patent Act (1970) and obtaining regulatory approvals, for weighted tax deduction @ 150% under section 35(2AB) of Income-tax Act. During the year, CBDT has notified automobile including automobile components as an article or thing eligible for the weighted deduction under the section 35(2AB) of IT Act.

During the year 2004, 30 applications were received from eligible companies. Secretary, DSIR who is designated as the Prescribed Authority under section 35(2AB) of Income-tax Act, 1961, approved in-house R&D centres of 22 companies and approval was communicated in Form 3CM, Agreements of cooperation for research & development were signed with these companies on behalf of the Secretary, DSIR. Further, the detailed R&D expenditures of the approved companies have also been examined by DSIR and 42 reports have been sent to DGIT(E) in Form 3CL as required under the IT Act.