

II - A. INDUSTRIAL R&D PROMOTION PROGRAMME

1. OBJECTIVES

The broad objectives of the Industrial Research & Development Promotion Programme 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 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. This covers a 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 in industry. 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 Programme for granting recognition to in-house R&D units in industry is being operated by the DSIR. A number of incentives and support measures are made available to in-house R&D units.

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 and 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 manager 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 1205 in December

2005. Of these, nearly 1120 are in the private sector and the remaining units in public/joint sector. A revised and updated 'Directory of Recognised in-house R&D Units' was brought out during October 2005. This Directory lists 1193 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 a prescribed proforma. The proforma and other details are provided to interested companies on request, and are also available at the DSIR website (<http://www.dsir.gov.in>). The applications received are scrutinised for their completeness and are then 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 from DSIR as well as the above departments and agencies, IITs and local educational and research institutions before they are taken up for consideration. In order to obtain first hand information on R&D activities of the applicant firms, discussions with the chiefs of the R&D unit and executives of the firm are also held in many cases. During these discussions outside experts are invited and their comments are sought. The applications along with comments from outside agencies, visit reports are considered in the Inter-Departmental Screening Committee constituted by the 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 2005, the Screening Committee met 12 times and considered 119 applications for recognition; 66 R&D units

were granted fresh recognition and 53 applications were rejected.

The pendency at the end of December 2005 was 40, including 10 applications received during the month of December, 2005. 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 2005, over 325 discussions / meetings were held with heads of in-house R&D units. Also, expert teams visited a number of in-house R&D units.

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 2005, 312 in-house R&D units were due for renewal of recognition beyond 31 March 2005; of which 271 applications were received. Based on the evaluation of the performance of the R&D units, renewal of recognition was granted to 261 R&D units. Recognition granted to 10 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 455 units in the Central Zone (Maharashtra, Madhya Pradesh and Orissa), around 370 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 1205 recognised R&D units is of the order of Rs. 5200 crores. The share of public and joint sector is about 20% and that of private sectors about 80%. 128 in-house R&D units spend over Rs. 5 crore each on R&D, 271 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 **Annexure 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, electron microscopes, particle size analyzers, portable particle counting systems; vibration test equipment, calorimeter and wind tunnel for complete evaluation of automobile air-conditioning system, ultra filtration equipment, smoking machine, 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 1205 in-house R&D units is around 60,000, out of which around 18,000 R&D personnel are employed in public sector in-house R&D units and around 42,000 R&D personnel are employed in the private sector in-house R&D units. Of the total 60,000 R&D personnel, around 3000 are PhD's, 20,000 Post Graduates, 20,000 graduates and the rest are technicians and support staff.

3.7 Sector-wise 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	500
Electrical and Electronics industries	280
Mechanical Engineering industries	185
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 production of essential fatty acid Decosa Hexanoic Acid (DHA) used for baby brain development and reduction of cholesterol through formulation of heterotrophic strain.

- Development of Recombinant Platelet derived growth factor – BB.
- Development of high tech biological products such as DNA extraction kits and RNA detection kits.
- Development and commercialisation of white enzyme and tacrolimus and process changes for the production of lovastatin.
- Development and commercialisation of bulk drugs such as clomipramine, citalopram, carvidl, clopidogel, pentoxyfine, metoprolol, tramadol HCl, metformin HCl, losartan potassium, oxcabozogapine, fluticabone, propionate glimepiride.
- Development of vaccines for a number of epidemic/endemic diseases, sabin-inactivated polio vaccine.
- Development of cost effective processes for the manufacture of dicloxacillin sodium, flucloxacillin sodium and cefixime trihydrate and oxacillin sodium.
- Development of technology for the production of citalopram, moxifloxacin hydrochloride, lamivudine, sertraline hydrochloride, gabapentin, nelfinavin and valsartan.
- Development of platform technology for soft gelatin capsules.
- Development of pankare tablets, sorexil in gel preparation and artin oil, herbal formulations for bed sores, burns, wounds and diabetic ulcers.
- Development and commercialisation of losartan K and simva ammonia salt.
- Development and commercialisation of bromazepam, clonazepam, clobazam, flupentixol, oxazepam, zaleplan.
- Development and commercialisation of technologies for tablets in capsules e.g. Pantop - D (pantoprazole + domperi- done) and Pantop DSR; a tablet in tablet e.g. clarithromycin + metronidazole + pantoprazole tablets; and bilayer tablets such as Telvas - H Telmisartan and Hydrochlorthiazide.
- Development and commercialisation of malaria card, malaria stick and TB dot.
- Development of odourless glycerine, castor oil, bypass fats and partially hardened soyabean oil.
- Development of a process for the manufacture of 3, 5 Dichloro Aniline used for dye-stuff and also intermediate for fungicide, starting from Para Nitro Chlorobenzene through Deamination, as against the Patented process starting from Meta Dichloro Benzene.
- Development and commercialisation of turmeric cream, liquid hair dye solution, kids talc, raaga cool hair oil, spinz deo fairever mantra, winter fairness cream, double conditioner shampoo, nyle active herbal shampoo, meera herbal, spinz sandal talc, nyle RHA and freshwala and chinni's pickles.
- Development of metal cleaning fluid, engine oil for environment friendly CNG engines, long life high performance diesel engine oil, synthetic long life gear oils and engine oil for various engines.

Electrical and Electronic Industries

- Development and commercialisation of 'Fully automatic random access biochemistry analyzer – XL series' comprises of intelligent photometer & sophisticated robotics and CPU unit capable of 50 samples at a time.
- Development of 'wide range optical power meter' for fiber optic communication (range –80 dBm to +10 dBm).
- Development of technology for GSM/GPRS (General Pocket Radio Service) modem (900/1800 MHE).

- Development and commercialisation of vehicle security system using GPS/GSM platform, electrically driven fuel pump and instrument cluster with stepper motor
- Development and commercialisation of Direct Internet Access System (DIAS) based on DSL technology which provides Internet and telephone service over the same copper cable.
- Development and commercialisation of antenna control unit, antenna control system for mobile antenna and antenna control unit for ship borne antenna.
- Development and commercialisation of set top box (BEST box) - DTH set top box.
- Development of patient monitoring equipment, such as, digital holter, multi-parameter monitor, windows based stress test.
- Design and development of fog lamp for Ford Ikon, rear combination lamp and high mount stop lamp for Maruti, Ford and Toyota cars.
- Indigenous design, development and validation of integral starter – generator (ISG) for passenger cars, Ignition switch-cum-steering lock for two wheelers/LCV, intelligent CDI for two wheelers, 12 V remote keyless entry for Rover car.
- Design & development of studio monitors, metro ethernet switch.
- Development of special software for piston pin bore strength analysis, piston profile design optimisation, and piston rings outer profile.
- Development of rational drug design tool to find out the candidate drug molecule for various diseases; a comprehensive database including medicinal plant, bioactive compounds mapped with the disease.

Mechanical Engineering Industries

- Design and development of economical and eco-friendly pollution free cotton delinting plant.
- Design and development of unique innovative product, viz. multi-level car parking system for light motor vehicles.
- Development and commercialisation of several new products such as low carbon extra deep drawing (EDD) hot and cold rolled coils for auto and engineering segments (BSL); LPG hot rolled coils with superior formability for industrial and domestic cylinder manufacture (BSL); SAE 1070 and SAIL boron billets for tractor discs (DSP); SAIL-HITEN 690 AR grade plates (BSP).
- Indigenous design and development of special valves for nuclear critical application for Indian Nuclear power plants and Indian Navy.
- Design and prototype development of noise barrier made of steel-glass fibre composite.
- Development of magnetic resonators for improving fuel efficiency of hydrocarbon fuel such as natural gas, naphtha, heavy fuel oil and gasoline.
- Design and development of tail rotor vibration warning system for ALH Dhruv.
- Design and development of ELEXTRONE power units (GPUs) for starting helicopters.
- Design, development and commercialisation of products, such as, laser planning and marking system for rough diamond, 5-Axis robotic diamond blocking and polishing system, laser system for jewellery hallmarking and high power fiber laser cutting system.
- Design and development of technology for high wear resistance piston rings, new

shape of piston for heavy commercial vehicle (Euro III version) with new alloyed cast iron material (SPR-02)

- Design and development of infant and adult bubbletrap for open heart cardiac surgery, auto transfuser for blood loss management.
- Design and development of window regulator mechanism, seat slider and seat recliner and seat latch mechanism
- Indigenous design and development of constant mesh transmission for 35 hp range of tractors, 4 wheel drive tractors and new/improved turbo charged diesel engine conforming TREM III emission norms.
- Development of an auxiliary braking (electromagnetic retarder) system in addition to the friction brakes.
- Indigenous design, development and commercialization of collimators for C-Arm X-Ray Machines.
- Development of automatic billing machine for petrol pump and multiple station-ticketing machine for Railways.
- Development of six litre stoichiometric CNG engine meeting BS III emissions regulations, for automotive applications, gas engine with shielded ignition system for powergen application; and alternative fuel engines with producer gas.
- Development of medium carbon, high chromium martensitic stainless steel tackles for refiners used in paper industry; high carbon, high chromium wear resistant stainless steel for refiner plates and segments used in pulp refining.

Processing Industries

- Development and scale up of process technology for commercialization of liposomal amphotericin B, fungisome™.

- Development of process for plasma moly coating on piston rings, and low friction anti scuff coating on piston;
- Commercialisation of process for the manufacture of Hexamine (Raw material for production of thermo setting resin, molding compound and a rubber blowing agent) utilizing waste ammonia from hydrazodicarbonamide (HDC).
- Process development of solventless profenophos and chlorpyrifos incorporating specially designed Quats Catalyst (Tech) - eliminating the use of Mono chlorobenzene (MCB).
- Process development of synthesis of citronica, using an acid catalyst resin, and improvement of odor profile for synthesis of alpha damascene using acetone as solvent.
- Development and commercialization of process for the manufacture of Calcium Chloride from the waste stream of phosphoric acid plant.
- Development of process for stainless steel powder recovery from polymer waste by hydrothermal process for polymer removal system and powder cleaning system.
- Development and establishment of technology for Plasma Ion Nitriding (PIN) for nitriding different grades of tool steel.
- Development of Iron ore beneficiation process for high alumina iron ore fines ($Al_2O_3 - 3\%$) of Bellary-Hospet region.
- Process development of anti-static ceramic glazed floor tiles.

Agro and Food Processing Industries

- Development of Nirmal Bio-Force, a bioorganic plant vitaliser; and Nirmal, Bio-power, a bio-soil enricher.

- Development of high yielding cotton hybrids AHH-90-2, AHH-90-1 (Ajeet-11); Bt cotton hybrids, ACH-33-1 and kharif sorghum hybrid (Ajeet-997) and yellow vein mosaic resistant okra hybrid Ajeet-333.
- Development of high yielding elite variety onion; exports worthy banana variety; and value added products from waste biomass (processed food waste).
- Development of various hybrid varieties of vegetables, such as radish, cauliflower, bhindi, carrot, bitter melon, bottle gourd, tinda, brinjal, tomato, cauliflower, chilies and watermelon and musk melon.
- Development and commercialization of rice research hybrids viz. hybrid 6201, hybrid 6444 and hybrid 6129
- Development of new protocol and delivery systems based on PGPR's (Plant Growth Promoting Rhizo) bacteria a novel class of microorganisms for control of diseases and pests in agriculture.
- Development of high yielding broiler strain for high breast meat yield product named as Vencobb-400.
- Development of processes such as solid state fermentation using different carrier materials with a range of entomopathogenic fungi, granular formation of seaweed extract on 2-bentonite granules with suitable stabilizers and preservatives.

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 Spectrophotometer, HPTLC, 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 spectro-photometer, trinocular phase contrast microscope, crytometer, 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. Cases requiring allotment of special controlled materials for R&D, permission to export 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

19th National Conference on in-house R&D in Industry

DSIR organised the 19th National Conference on in-house R&D in Industry, in association with the Federation of Indian Chambers of Commerce and Industry (FICCI) during 21 - 22, November 2005 in New Delhi. The theme of the Conference was “Managing Technology for Competitive Advantage Emerging Indian Challenge”. The Conference had three technical sessions viz. “Technology road map through strategic alliances and partnerships”; “Developing Strategic competencies for innovation led growth” ; “Integrating technology and business strategies”. Attended by over 500 delegates from industry, National laboratories, IITs and Universities, SIROs, Consultancy Organisations, Government Departments, the Conference was inaugurated by Dr. R.A. Mashelkar, Secretary, DSIR on 21 November 2005 in FICCI Golden Jubilee Auditorium. Secretary, DSIR and President, FICCI presented the DSIR National Awards for Outstanding in-house R&D Achievements (2005) to eleven industrial units. Shri R.R. Shah, Member – Secretary, Planning Commission delivered the valedictory address on 22 November 2005.

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, 155 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 2005 is as follows:

Chemical and Allied Industries

- Gujsynth, Vapi
- Indian Petrochemicals Corporation Ltd., Vadodara

Drugs and Pharmaceutical Industries

- Matrix Laboratories Ltd., Secunderabad

Biotech Industries

- Sri Biotech, Hyderabad

Electronic / Opto Electronic Industries

- Transasia Bio-Medicals Ltd., Mumbai

Agro and Food Processing Industries

- Maharashtra State Seeds Corpn., Ltd., Akola

New Materials

- Steel Authority of India Ltd., Ranchi

Technology Exports

- Praj Industries Ltd., Pune

Technology Absorption

- Reliance Industries Ltd., Surat

Successful Commercialisation of Technologies Acquired from Others

- Bharat Electronics Ltd., Bangalore
- Rasi Seeds (P) Ltd., Attur (T.N.)

Outstanding in-house R&D Achievements - 2005

The DSIR publication “Outstanding in-house R&D Achievements (2005),” covering the award winning achievements of 11 companies, was released during the inaugural session of the 19th National Conference on in-house R&D in Industry on 21st November 2005.

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 1988. 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 2005-06, four issues of in-house R&D in Industry were brought out. These have been widely disseminated to industry, SIROs, Government Departments, missions abroad, 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 19th National Conference on in-house R&D in Industry (November 2005). 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 programmes 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 has a programme for 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 SIROs, which gives procedural details and application forms for seeking recognition under this Programme. 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 Programme are considered in DSIR by an Inter-Departmental Screening Committee. 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 2005 to December 2005, the Screening Committee met 3 times and recommended 29 cases for recognition as SIROs. These include cases in the 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 562 SIROs duly recognised by DSIR; of these, 196 are in the area of natural and applied sciences, 169 are in the area of medical sciences, 36 are in the area of agricultural sciences, 98 are in the area of social sciences and 19 are universities/colleges. Of these 562 SIROs, the renewal of recognition beyond 31.3.2005 of 44 SIROs is under consideration for want of further information/ clarification. DSIR has brought out a directory of recognised SIROs in November 2005.

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.

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 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 its components; computers, telecommunication equipment and manufacture of aircrafts and helicopters as approved by the Prescribed Authority (Secretary, DSIR);

- 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 of the countries out of India, European Union (any one country), USA and Japan;
- 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, DSIR, 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 2005, three certificates involving Rs. 3058.05 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 is 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 2005, request of one company has been under consideration.

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 2007.

So far, 28 R&D companies have been approved including 5 approved during the year 2005; and the requests of 11 more companies are under consideration.

5.5 Customs Duty Exemption to Recognised SIROs

All SIROs 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 Industrial R&D Promotion Programme, for approval.

During the year 2005, around 540 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 about Rs. 37 crores.

5.6 Central Excise Duty Exemption to Recognised SIROs

All SIROs recognised by DSIR are eligible for Central 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 meets periodically and essentiality certificates are issued with the approval of Head of Industrial R&D Promotion Programme.

During the year 2005, 99 essentiality certificates for a total amount of about Rs. 283 lakhs were issued for claiming Central Excise Duty Exemptions.

5.7 Registration of Public Funded Research Institutions, Universities, etc.

Public funded research institutions, universities, IITs, IISc., Bangalore, NITs / RECs and public funded research institutions (other than hospital) are eligible for availing customs duty exemption on import of equipment, spares and accessories and consumables for research purposes through a simple registration with DSIR. 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 above Public Funded Research Institutions 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 and 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 institutes) have been included in the list of institutions eligible for DSIR registration 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 once during the year and considered 9 applications from various public funded research institutions.

During the year 2005, 9 registration certificates were issued to such public funded research institutions etc. for availing customs duty exemption on import of scientific equipment, spares and accessories, consumable items and Central Excise Duty exemption on indigenous purchases for research purposes.

The registration to public funded research and other institutions mentioned in the notification is granted for a maximum period of five years. The registered institutions are advised to apply for renewal of registration well in advance of the date of expiry of the registration.

During the year 2005, 180 institutions were due for renewal of registration. The department received around 160 renewal applications. These were processed on individual files and approval of Secretary was obtained and about 150 renewal letters were issued. Registration to 3 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. The remaining applications are under process.

5.8 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 or building). The weighted tax deduction was further raised to 150% by the Finance Act, 2000. The in-house R&D 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 provision was further extended upto 31.03.2007 by the Finance Act 2005. The sub-section was 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 2004, CBDT has notified automobile including automobile

components as eligible for weighted deduction under the section 35(2AB) of IT Act.

During the year 2005, 66 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 52 companies and renewed 32

cases, which were approved earlier. These approvals were communicated in Form 3CM, after 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 47 reports have been sent to DGIT(E) in Form 3CL as required under the IT Act.



Dr. R.A. Mashelkar, Secretary, DSIR inaugurating the 19th National R&D Conference



DSIR National R&D Award Winners (2005)



Dr. R.A. Mashelkar, Secretary, DSIR and Shri Onkar K. Singh, President, FICCI releasing the DSIR special publication



Shri R.R. Shah, Member Secretary, Planning Commission giving the valedictory address



Pollution Free Cotton Seed Delinting Plant



2500 MTA PDR Plant at RII Hazira



View of 3,5 Dichloro Aniline production plant.



*Moxifloxacin manufacturing facility -
capacity 6 MT*