Highlights of Annual Report 2018-19

HIGHLIGHTS OF ANNUAL REPORT

i. DSIR is the nodal Department for granting recognition/ registration certificates to the In-house R&D centres established by industry. During the period under report, there were altogether 2052 In-house R&D centres of industry with DSIR recognition.

ii. 234 In-house R&D centres were accorded fresh recognition and renewal of recognition was accorded to 601 R&D centres of industry.

iii. 120 in-house R&D units /centres of industry incurred an annual R&D expenditure of over ₹ 5000.00 lakhs each, 508 companies incurred an annual R&D expenditure in the range of ₹ 500.00 lakhs to ₹ 5000.00 lakhs and 448 companies incurred an annual R&D expenditure in the range of ₹ 200.00 lakhs to ₹ 500.00 lakhs.

iv. During the period under report 52 SIROs were accorded fresh recognition. These include cases in the Natural and Applied Sciences, Medical Sciences and Social Sciences. 227 SIROs were considered for renewal of recognition beyond 31.03.2018. Out of the 227 recognized SIROs, 102 SIROs were issued registration certificates for obtaining customs duty exemptions and concessional GST.

v. DSIR is the nodal Department for registration of Public Funded Research Institutions (PFRI), Universities, IITs, IISc and NITs for availing concessional custom duty exemption on import of equipment, spares, accessories and consumables for research purposes. During the period under report, 12 institutions were newly registered with DSIR and 84 institutions were granted renewal of registration.

vi. Fresh approvals to 112 companies were accorded u/s 35(2AB) of the IT Act, 1961, wherein the companies become eligible to claim Weighted Tax deduction @150%. 766 reports valued at ₹ 18905.23 crores have been forwarded to Chief Commissioner of Income Tax (Exemption) in Form 3CL as required under the IT Act.

vii. Common Research and Technology Development Hubs (CRTDHs) aim to enhance translational research and foster industry - institution interaction targeted towards innovative product development. During 2018-19, the Department in addition to the seven hubs established earlier, approved setting up of five new hubs at CSIR-Central Drug Research Institute (CDRI), Lucknow; Indian Institute of Technology (IIT), Kharagpur; CSIR-Central Scientific Instruments Organisation (CSIO), Chennai; CSIR-Indian Institute of Toxicology Research (IITR), Lucknow and CSIR-Institute of Minerals and Materials Technology (IMMT), Bhubaneswar; the first two are in the sectors of Affordable Healthcare, and the other three in the sectors of Electronics/Renewable Energy, Environmental Interventions, New Materials/ Chemical Process respectively. These hubs are currently engaged in activities like procurement of equipment, and setting up of infrastructure and essential facilities for R&D.

viii. The DSIR through the PACE scheme provides catalytic support to industries and institutions for development and demonstration of innovative product and process technologies, traversing the journey from proof of concept/ laboratory stage to pilot stage to facilitate for commercialization. Under the PACE scheme, 3 new technology development projects of industries were recommended during the year. These projects involve a total project cost of

₹ 1742.50 Lakhs and DSIR recommended support is ₹ 590.00 Lakh. This support is in the form of loan to industry. 8 technology development projects were monitored during the year. 5 technology development projects from institutions (IITs and IISc) in the Manufacturing and Water Resources domains are supported under IMPacting Research INnovation and Technology (IMPRINT) initiative of Ministry of Human Resource Development (MHRD) & DST and are under progress.

ix. 17 study proposals have been recommended for DSIR support under the scheme Access To Knowledge For Technology Development And Dissemination (A2k+) – Studies. The objective of the scheme is to support studies in emerging areas of technology aimed at providing useful information and knowledge base to industry, industry associations, academia, research institutions, consultants and entrepreneurs to ameliorate their research work. Some of the Events/ workshops supported during the period under review have been a seminar on Technology Assistance to Food Processors on Food Preservation & Hygienic Packaging, National Conference on Agri-Smart 2018: Using IoT for driving Smart Agriculture, International Conference on Innovations for the Elimination and Control of Visceral Leishmaniasis, National Conference-cum Exhibition & Awards: Managing Urban Waste (Solid Waste, Plastic Waste, Electronic Waste), Seminar on Smart Manufacturing Cluster Collaboration and Way Forward during IESS VIII.

x. The Department has successfully completed 22 (twenty-two) on-going PRISM projects supported during the period under report. Some of the successfully completed projects are Multiple Output Converter (MOC) for Utility Power Applications, Design and development of affordable personal Oral Irrigator (3-in-1 Dental Jet) for prevention, control and treatment of dental cavities & gum diseases for rural and urban population, Light weight portable folding stool, Banned Ivory – its "replacement", Non-electric manually operated washing machine (NEMOW),Design and development of a Tractor Operated Vegetable Transplanter for plug-type seedling. Further, the financial assistance has been extended to around forty-three (43) new innovation-centric project proposals of individual innovators during the period ending 31st March, 2019.

xi. IT-eG division implements e-Governance in the Department that needs to be in conformance to the National e-Governance Action Plan. The DSIR Website (Bilingual) has been made compliant to the Guidelines for Indian Government of Websites (GIGW). The website has been regularly updated and has been visited more than 1,20,000 times from 6th August, 2018.

xii. 254 R&D projects of Industrial units with a total project cost of ₹ 750.60 crores were supported under the Technology Development and Demonstration Programme (TDDP) which started in 1992. The DSIR support was of ₹ 280.40 crores of the total project cost. The projects were supported in the various industry sectors and the share of the industry sectors in the project supported were: 32% engineering, 27% electronics, 21% Chemical, 7% energy & waste utilization and 13% Health & Pharma. The scheme was discontinued in XIth Five Year Plan and the spillover projects were supported for completion. In the current financial year, progress of last three on-going projects was monitored. 101 technologies developed under the scheme have been commercialized for so far and the Department has received a cumulative royalty of ₹ 72.52 crore during the period 1997-2019.

xiii. DSIR has received 237 Applications during 01/12/2017 to 31/03/2019 and all the Applications were registered and disposed off on RTI Request & Appeal Management Information System at https://rtinonline.gov.in/RTIMIS. During 01/12/2017 to 31/03/2019, 20 applications were registered as first appeal and 02 applications were registered as second appeal.

xiv. DSIR plays an active role in APCTT's functioning, particularly relating to its policies

and programmes. India being the host country has been providing institutional support to APCTT since its inception in 1977. APCTT assists member countries to strengthen their capabilities in developing and managing national innovation systems, adapting and applying technology, providing platform for improving the terms of transfer of technology and identify, promote the development and transfer of technologies relevant to the region. The Centre's activities directly support the Sustainable Development Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), and 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development), among other goals. In 2018, APCTT delivered and actively contributed to 13 demand-driven capacity building activities organized in 7 member countries (China, India, Indonesia, Kazakhstan, Malaysia, the Philippines, and Thailand) in close collaboration with 17 partner institutions. Also, during the period under review, APCTT extended its capacity-building activities on technology transfer and commercialization to Central Asian countries such as Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

xv. Council of Scientific & Industrial Research (CSIR), under the administrative control of DSIR, Ministry of Science & Technology, GoI, has been playing a stellar role in building up the scientific and technological prowess of the country since its inception in 1942. CSIR today is strengthening its patent portfolio to carve out global niches for the country in select technology domains.

(a) **CSIR- National Aerospace Laboratory (NAL), Bangalore** developed a new upgraded version of SARAS PT1N , which is a 14-seater passenger aircraft and completed its successful maiden flight on 24thJanuary 2018. CSIR-NAL hopes to pitch SARAS as a feeder aircraft, light cargo aircraft and as an air ambulance.

(b) **CSIR- Indian Institute of Petroleum (IIP), Dehradun**, indigenously developed a bio-aviation fuel from jatropha oil based on the patented technology from the institute. The biofuel was used to power the India's first historic maiden flight of Spice Jet plane of latest generation Q400 aircraft on 27th August 2018 from Dehradun airport to Delhi airport, which lasted for almost 45 minutes. The organizations SpiceJet (for the demonstration flight) and Chhattisgarh Biofuel Development Authority that supplied the jatropha oil, sourced from more than 500 farmers contributed for making the maiden flight a success. Besides reducing the greenhouse gas emission by nearly 15% and Sulphur oxide emissions by over 99%, the use of Bio-aviation fuel is expected to provide security of indigenous jet fuel supply.

(c) **CSIR- Indian Institute of Integrative Medicine (IIIM), Jammu** reported the discovery of new chemical entity for the treatment of Triple negative breast cancer (TNBCs). Extensive medicinal chemistry and screening efforts helped in the discovery of a lead compound "IIIM368", which has good physic-chemical properties (Solubility, stability, ligand efficiency), Pharmacokinetics, plasma exposure) and promising activity in biochemical and cellular assays at nanomolar potency against CDKs. The lead compound (IIIM368) has also shown significant tumor growth inhibition (90% at 15mg/kg) in mice model of TNBCs without any mortality. IIIM368 has also shown excellent therapeutic index (selectivity, safety, activity) compared to natural product scaffolds.

(d) **CSIR- Central Electrochemical Research Institute (CECRI), Karaikudi** has developed a portable device to monitor weak structures and send alerts whenever a crack is observed. The smart device alerts structural engineers about cracks on large structures and bridges well in time. The device called the Tribo-luminescence (TL) camera uses a light emitting compound and a smart camera that allow detection of cracks – invisible to the naked eye – on structures made of concrete, metal and fibre-reinforced plastic.

(e) **CSIR- National Chemical Laboratory (NCL), Pune** has identified a natural material that can force water drops to stick to the surface of plant leaves. This natural material when mixed with a pesticide can address major environmental problems occurring due to contamination by pesticide wastage. A natural lipid compound was extracted from the sunflower oil which is edible, biocompatible and is also used as a food emulsifier. This can improve the efficiency of delivering pesticides to the targeted area on plants. In an experimental study, 10 gm of material per litre was found enough for effective pesticide spray; that may vary after the field trials.

xvi. National Research Development Corporation acts as an effective Interface for translating R&D results into marketable products. During the financial year, 135 new processes/ technologies were assigned to the Corporation for licensing and as a result of value addition, the Corporation managed to sign 35 license agreements. During the period under review, NRDC has earned lumpsumpremia and royalty income of ₹ 893.27 lakhs.

xvii. Central Electronics Limited, a Public Sector Enterprise under the Department of Scientific and Industrial Research (DSIR), is a profit making entity and has achieved turnover of ₹ 221.27 crores. The Microwave Electronics Division (MED) - achieved sales of ₹ 86.16 crore during the FY 2017-18. The Company has sold 60287 Nos. of Phase Control Module (PCM's) to Bharat Electronics Ltd. (BEL) Ghaziabad during the financial year 2017-18. The Company has taken up R&D projects in key areas such as development of a range of solar applications including smart trees, flexible solar panels, BIPV solutions, portable power plants etc., development of high efficiency solar cells, up-gradation of the existing products for Railway Signaling systems and development of a range of components & sub-systems for defense requirements.The Company became the first consumer in UP to install net-metering at 33 KV supply voltage. The net metering system for the 1.2 MWp solar photovoltaic power plants installed in CEL exports its surplus electricity generated through the solar power plants to UPPCL grid.