No. DSIR/MS/2020/07
Government of India
Ministry of Science & Technology
Department of Scientific & Industrial Research
MONTHLY SUMMARY FOR THE CABINET
(For the month of **July 2020**)
(Part-I Unclassified)

Major achievements during the month of July 2020:

1. Council of Scientific & Industrial Research (CSIR)

Key contributions, activities and achievements of CSIR

COVID-19 Mitigation Activities:

CSIR's strategy has ranged from diagnostics to surveillance and containing the spread of the virus by providing sanitization and disinfection solutions to equipping the frontline workers and health warriors with protective gear, and from exploring repurposing of existing drugs to discovering new drugs and developing vaccines.

Digital and Molecular Surveillance

- Cov.Base: A consolidated databank of clinical & molecular information of patients of COVID-19 in India has been developed by CSIR-IGIB with academic and industry partners.This will help researchers which can be used to drive medical research and innovation.CSIR-IGIB is also providing validations for industry and academia. Validation is an important aspect of launch of new tools and apps and this would help in detection of COVID-19 based on X-rays

- A ready to deploy tool, harnessing the power of artificial intelligence (AI) to screen chest X-rays for COVID-19 signs has been developed in partnership with industry. This helps in assisting healthcare workers to fight the COVID-19 pandemic. The AI tool has been successfully deployed at a few hospitals and is currently under beta testing.

- On the sequencing of viral genomes from India, CSIR labs CSIR-IGIB, CSIR-CCMB, CSIR-IMTECH and CSIR-CDRI are engaged in the activity and more than 1000 sequences have been determined. This makes it one of the largest contributions for viral sequences from India and helps in the understanding of viral proliferation, ensures primers used for diagnosis are valid & development of correctly targeted vaccines and drugs.

- CSIR has initiated Phenome India - a long-term longitudinal observational cohort study of health outcomes within its employees with an aim to develop risk prediction tools and play an important role towards establishing precision health and medicine for the Indian population. From the results obtained on COVID-19

testing till date it was found that in CSIR-IGIB there was 13.5% seropositivity (11.8% of them were asymptomatic) while in CSIR-CRRI, 11.6% were seropositive (with 10.6% being asymptomatic) and preliminary results obtained from CSIR-IICT, indicates 13.5% to be seropositive. 19 CSIR labs will be conducting these surveys and will provide valuable information on Covid-19 disease

Rapid and Economical Diagnostics

- 12 CSIR labs across Indian are carrying out of COVID-19 sample testing and, the total number of samples tested till the end of July was about 1.65 lacs.

- CSIR labs have developed new methods and new diagnostic tests for rapid detection of SARS-CoV-2. The dry swab RNA free direct PCR test which is simple, cheaper and fast that has been developed by CSIR-CCMB is awaiting ICMR approval. The protocol if implemented can scale up the current testing capacity by three-fold immediately without any additional resources.
- The novel CRISPR/Cas FELUDA diagnostic test licensed to TATA Sons and the RT-LAMP test developed along with Reliance Industries Limited are awaiting ICMR for validations.
- CSIR-CCMB being a validation centre for various COVID-19 kits developed by different institutions in the country has tested 15 kits so far of which 8 have been approved which will boost the indigenous capacity in the country.

New and Repurposed Drugs

- CSIR has actively pursued the strategy of facilitating the launch of repurposed drugs against COVID-19. Towards that, it has employed different strategies ranging from the synthesis of Active Pharmaceutical Ingredients (API) and Key Starting Materials (KSMs) for various potential repurposed drugs including Remedisvir and Favipiravir. Many of these processes have been transferred to industries. It has also taken up clinical trials for some of the key drugs in partnership with industry
- Due to joint efforts of CSIR and M/s Cipla Ltd, Favipiravir will be available at lower cost. The cost-effective process technology of Active Pharmaceutical Ingredient (API) using locally available chemicals developed by CSIR has been used by Cipla for the scale-up and manufacture. This has enabled Cipla to launch the drug at an affordable cost and also increase the supply of the drug in the market.
- Several trials are ongoing which are mainly of Sepsivac with Cadila, Phytopharmaceutical ACQH with Sun Pharma, Ayush Drugs with Ministry of Ayush.

- In addition, plasma therapy and also a new combination therapy of Antivirals (viral-entry and replication inhibitors) and Host-directed therapies (HDTs) of a four-arm trial of Favipiravir + Colchicine; Umifenovir + Colchicine; Nafamostat + 5-ALA has been planned by CSIR and application submitted to DCGI for regulatory approval of Phase III trials at MedantaMedicity. This combination therapy aims to combine the anti-viral drugs and host-directed drugs to provide better efficacy in Covid-19 and expand the therapeutic options for the patients.

Hospital Assistive Devices and PPES

- BiPAP Ventilator: The non-invasive ventilator developed by CSIR-NAL is undergoing clinical trials at Manipal Hospital and hascompleted clinical trials successfully at Jubilee Hospital, Hyderabad.
- CSIR-CMERI unveiled the COVID Protection System (COPS) for the Workplace. The COPS for Workplace includes contactless Solar Based Intelligent Mask Automated Dispensing Unit cum Thermal Scanner (IntelliMAST), Touchless Faucet (TouF) and 360° Car Flusher are now available for Technology Transfers and Product Orders.
- CSIR-CSIO: ICMR has empanelled CSIR-CSIO for the testing of UV based Systems/ Products. The testing procedure is used to verify the UV radiation intensity at various points inside the product/system to allow protection against microorganisms present on the surfaces by disinfecting and decontaminating daily essentials, and office items

Supply Chain

- ArogyaPath, the health care portal and supply chain management system has seen 1000 registrations.
- The KisanSabha App connecting farmers with transporters and mandis has reached a landmark of 60,000 downloads.

Outreach

- CSIR prepared a compendium of CSIR's COVID-19 Technologies. The compendium gives insights on nearly 100 technologies that CSIR has developed in the aftermath of the pandemic. The compendium of technologies developed by CSIR for Covid-19 mitigation was released by Hon'ble Minister for S&T, ES and MoHFW. The samecan be accessed at https://www.csir.res.in/sites/default/files/CSIR%20Technologies%20for%20COVID-19%20Mitigation_1.pdf.
- CSIR-IICTdistributed protective masks and face shields under to Sub-Inspector of police, Main PCR / Command Control Centre, Hyderabad. So far the team has provided more than 2000 face shields and 1000 masks.

- CSIR-IITR team provided 50 Litres of Hand sanitizer to the Divisional Commissioner Office, Lucknow on July 21, 2020 for distribution to essential service personnel.
- CSIR-IMMT: In the aspirational district of Nabarangpur, Odisha, 400 improved smokeless Chullahs were distributed to Aanganwadi schools. Mr Raghunandan Das, Minister of Water Resources, Information and Public Relations presided over the distribution function. This will help the tribal-dominated district in combating health hazard due to smoke inhalation especially in remote areas where the gas connection is still poor.

CSIR-HARIT Contributions: Key activities of the pan-CSIR programme that aims at making a difference to the lives and livelihoods of the rural population:

- For livelihood generation through women SHGs in Tumkur, CSIR-CFTRI imparted training on Spirulina cultivation and Nutrachikki production for distribution to malnourished children in association with District Administration and Spirulina Foundation.
- CSIR-IHBT covered 75 ha additional area under aromatic crops Wild marigold, Tulsi and Lemongrass at farmers' fields
- CSIR-IIP developed improved Biomass Stove "Chullha" was submitted to HESCO (Himalayan Environmental Studies And Conservation Organisation) for field trialsin the villages of Uttarakhand.

Visit of high-level dignitaries

- CSIR-IHBT: Shri BandaruDattatreya, Hon'ble Governor of Himachal Pradesh; and Shri Jai Ram Thakur, Hon'ble Chief Minister of Himachal Pradesh

Collaborations/Agreements/MoUs Signed (International)

- CSIR-CSMCRI signed a Collaborative Research Agreement with the University of Sheffield, United Kingdom
- CSIR-IHBT: A confidentiality agreement was signed between CSIR-IHBT and Volt Research LLC Ohio USA to work upon production of red pigment of cell and tissue culture of *Arnebiaeuchroma*
- CSIR-IIP: Infineum Singapore LLP, Singapore
- CSIR-NAL: DAR Corporation USA for SARAS MK2

Major S&T services

- CSIR-CRRI: Developed Comprehensive Mobility Plan for Ahmedabad City and Induction of Steel slag aggregate in MoRTH circular for utlization in road construction, Purchase of high order equipment for characterization of steel slag.

- CSIR-CMERI: Installation and Commissioning of Integrated Rural Solid Waste Disposal System (iRSWDS)" at Senapti, Bisnupur, Imphal East and Imphal West districts of Manipur
- CSIR-NIO: Geo-morphological and impact assessment studies for the sand mining clusters of Chapora River in Goa carried out for Goa State Biodiversity Board (GSBB), Goa
- CSIR-CIMFR: Identified by Ministry of Coal, as Lead Organization for two years for the Constitution of resource Group of academic and research institutions for research activities related to Coal Gasification, underground mining and dealing with Jharia fire.
- CSIR-CRRI: NHAI approved project sponsorship to Flexible pavements division, CSIR-CRRI (Rs 162 lakhs) to do field and lab evaluation of RAP technology and revise IRC 120 guidelines.
- CSIR-CRRI is contributing in specific themes (a) Solid Waste Management and (b) Sustainable mobility in 'Delhi cluster-Delhi Research Implementation and Innovation (DRIIV), a joint collaborative project of nearly 30 organizations with involvement of R&D Institutes and Industry,

Industrial Sector

Patents Update

Patents Filed		Patents Granted		Patent Prosecutions	
India	Abroad*	India	Abroad*	India	Abroad
16	08	29	07	48	111

* Data reported to IPU during the said period and may increase later during national phase entries

Technologies developed and transferred:

- The CSIR-CLRI technology for co-digestion of tannery solid wastes for biogas generation has been evaluated and validated for TRL 7 and is ready for commercialization.
- CSIR-CLRI: A Consultancy Agreement has been signed with M/s. Intexso Bio chem Private Limited, Maharashtra for "Technical Evaluation of antiviral/antibacterial product for the Leather Application".
- A Consultancy Agreement has been signed between CSIR-CLRI & M/s. ZsiviraChemieMerk Private Limited, Chennai on 21-07-2020 for evaluating the indigenously developed antiviral product SUR-VIRAL® C19 in finishing operation of Leather Application.
- CSIR-IICT signed MoU for development of antiviral-coatings on fabrics using nanomaterials for producing medical masks (Tata Chemicals Limited, Mumbai)

- Development of process for Meta amine Gallamide (Bharat Biotech Intl Ltd, Hyderabad)
- CSIR-IICT also signed a MoU for Preclinical testing of Methisoprinol in a suitable model & understanding the mechanism of action of test compound for treating lung inflammation. (Themis Medicare Ltd., Gujarat)
- CSIR-IMMT singed a MoU with M/s Prateek Consultancy for multi waste processing
- CSIR-NBRI signed a MTA with ICAR-Central Institute for Cotton Research, Nagpur for transferring TMA12 Cotton technology in the form of GM seeds (Event 403) for the evaluation and variety development.

Technologies transferred during the month of July 2020

Sl. No.	Lab	Technology	Transfer partner
1.	CSIR-CEERI	2.6 MW S-Band Tunable Pulse Magnetron	M/s Panacea Medical Technologies Pvt Ltd, Bangalore
2.	CSIR-CIMFR	Improved Soft Coke Making Technology	Shardapunj Fuel Coke Pvt. Ltd.
3.	CSIR-CIMFR	Contactless Auto UV Disinfect Unit or Chamber for Touch Screens, Thumb or Finger Scanners and Keypads of Biometric Identification Devices and Other Devices or Systems (COVID-19 Technology)	M/s. Astha Tech Automation Private Limited
4.	CSIR-CMERI	Pneumatically operated mobile Indoor Disinfection (POMID) Unit technology	M/s Kamal Enterprises, Lake Road
5.	CSIR-CMERI	High flow rate iron removal filter technology	M/s Yamunotri Drinking Water, PS Jakkanpur, Bigrahpur, Patna, Bihar M/s N.S. Enterprises, Vill. Aulenda, FathepurSikri, Dist. Agra, UP
6.	CSIR-CMERI	High flow rate Arsenic removal filter technology transferred	M/s Aquagrant Water Purifier Pvt. Ltd.
7.	CSIR-CRRI	Terasurfacing for Utilization of Industrial Waste Materials in Road Construction.	M/s Verma Industries

8.	CSIR-CSIO	Microorganism Decontamination Box(Suraksha)	M/s Amesys India, Ambala
9.	CSIR-CSIO	Contactless Hand Sanitizer	M/s Sukriti Lifesciences Pvt. Ltd.
10.	CSIR-CSIO	UV Based Disinfection Systems	M/s DICCI Sahayog Enterprises Pvt. Ltd
11.	CSIR-CSMCRI	Process for preparation of Liquid Seaweed Plant Bio-stimulant (LSPB) from brown algae – Sargassum	M/s KrishikaAgritech
12.	CSIR-IIIM	Lab-scale synthesis of Favipiravir drug molecule	M/s Anphar Laboratories
13.	CSIR-IMMT	3-D Printed Face Mask	M/s Professional Solutions, Baleshwar
14.	CSIR-IMMT	Gel sanitizer and liquid hand wash	M/s SS Associates Innovation Lab Pvt. Ltd
15.	CSIR-NAL	Epoxy Resin for manufacture of carbon fibre pre preg	M/s Bhor Chemicals, Mumbai
16.	CSIR-NAL	BiPAP non-invasive ventilator	M/s Analogic Controls India Ltd
17.	CSIR-NBRI	Alcohol based hand sanitizer gel and Herbal floor mop	M/s Maa Durga Marketing
18.	CSIR-NIIST	Air sanitizer	MrMohanan, Malappuram, Entrepreneur
19.	CSIR-NIIST	UV-Clean disinfecting unit	M/s Panchtatva Technologists and Services

DEPARTMENTAL ACTIVITIES

DSIR's mandate is to promote Industrial Research and Development besides technology promotion, development and utilization. In order to promote and nurture Research and Development in the country, Industrial R&D Promotion Programme of the department gives recognition and registration to in-house R&D units of industries, not for profit Scientific and Industrial Research Organizations (SIROs), Public Funded Research Institutions (PFRIs) and periodically renews these recognition / registration under the respective Government Notifications (as amended from time to time), by virtue of which these organizations are able to obtain Customs duty exemptions, Goods & Service Tax (GST) concessions and Weighted tax deductions on R&D by Industry (under section 35(2AB) of IT Act).This scheme helps in encouraging industrial R&D in the country**.**

Industrial R&D Promotion Programme
Recognition/ Registration and renewal of In-house R&D in Industry

- 41 in-house R&D units of industries were granted renewal of recognition as well as renewal of registration certificates.

Public Funded Research Institution (PFRIs)
Registration and Renewal of PFRIs

- 02 PFRIs were granted renewal of registration certificates.

Fiscal Incentives for R&D by Industry

- 59 reports in form 3CL submitted to CCIT under Section 35(2AB) of IT Act for weighted tax deduction on industrial R&D involving a total amount of Rs. 127835.00 lakhs.

Promoting Innovations in Individuals, Start-ups and MSMEs(PRISM)

Four projects were completed successfully during July, 2020 - (i) Self-propelled three row potato seeding device for restricted holdings (ii) Development of Peripheral Blood Smear Instrument (iii) Distillation unit and (iv) Novel 3D Printed Splints & Arm.

PUBLIC SECTOR ENTERPRISES

Central Electronics Limited (CEL)

CEL is an enterprise under DSIR having an objective to commercially exploit the indigenous technologies developed by National Labs and R&D institutions in the country. CEL has developed a number of products for the first time in the country through its own R&D efforts and it continues to emphasize its leading role in the area of solar photovoltaic systems, electronic gadgets for Railway and other strategic electronic equipment/components among others.

- The company manufactured electronic components/systems/SPV products worth Rs. 3431.42 Lakhs during July, 2020.
- Sale of items worth Rs.4197.20 Lakhs was realized during July, 2020.

National Research Development Corporation (NRDC)

NRDC continues to lay emphasis on broadening and strengthening the technology resource base by nurturing long term relationships with R&D institutions as well as universities, technical organizations, industries and also individual inventors.

- NRDC has been assigned 02 technologies by S.N. Bose National Centre for Basic Sciences, Kolkata ; 01 technology by Centre for Indian Bamboo Resource and Technology, New Delhi and 01 technology by Central Sericultural Research and Training Institute, Mysuru.
- NRDC has collected premia of Rs.12.50 Lakh from licensing of two technologies during July, 2020.