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To speed up rejuvenation of water bodies, DJB comes out with SOPs, three-pronged strategy

CSIR –NEERI

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To speed up work on the rejuvenation of water bodies in the national capital, the Delhi Jal Board (DJB) has recently come up with a set of standard operating procedures (SOPs) and a three-pronged strategy. As part of the new rules, a few such projects will be clubbed together before tenders are floated, and each project will be divided into three phases -- garbage removal and excavation of the waterbody; arrangement of water from a nearby sewage treatment plant; and landscaping of surroundings. Delhi Jal Board vice-chairperson Raghav Chadha said, "The 'revival of water bodies' project is one that is close to my heart. Tenders have been floated for 59 water bodies and work has been awarded for 46 water bodies. The work at 10 sites -- Ibrahimpur, Karala, Daulatpur, Neelwal, Hiranki, Sirsapur, Mungeshpur, Bindapur, Nangli Poona and Tikri Kalan -- is likely to be completed soon. Wastewater being discharged into these water bodies shall be treated through sustainable wetlands, enabling a green process of wastewater purification and a step towards enhancement of local microclimate and biodiversity. For transparent execution of the rejuvenation work on the remaining water bodies, SOPs have been finalised, which will ensure uniformity in procedures that are being adopted at present." The DJB has recently completed rejuvenation work at a waterbody in west Delhi's Rajokri. A senior DJB official, on condition of anonymity, said the board has approved the SOPs to speed up the work on pending projects. The protocols (mentioned above) are part of the new SOPs that were finalised on September 13, according to a document seen by HT. The DJB has to rejuvenate more than 200 water bodies in the city – most of them are lakes and ponds – and it has already initiated work on 155 water bodies, said a senior government official, not wishing to be named. The official further said these SOPs will apply to 72 of the 155 projects. For the remaining 83 projects, consultation contracts have been awarded to CSIR-NEERI and the consultants have prepared project reports on 71 projects in hand. Work order has also been issued for 46 projects, the official quoted above said.

These projects include the water bodies in Ibrahimpur, Karala, Daulatpur, Neelwal, Hiranki, Sirsapur, Mungeshpur, Bindapur, Nangli Poona and Tikri Kalan, the official said. These villages are located in the west, south-west north-west peripheries of the capital city. “Water bodies should be clubbed into packages of 30 to 50 (in) each package and bids should be floated in parallel to expedite the process,” said the document. The clubbing of projects is a strategy earlier used by the Aam Aadmi Party (AAP) government for several projects such as the construction of classrooms across schools and the setting up of mohalla clinics (primary health care centres). According to the SOPs, all water bodies should have three phases of development. The first phase includes removal of garbage, fencing of site and excavation of the waterbody up to the desired depth. The second includes the arrangement of water source for rejuvenation from the nearest sewage treatment plant or the setting up of an on-site plant for directly treating wastewater. The third phase includes landscaping of water bodies to create a public space. While environmentalists have welcomed the move, they said treated water from STPs shouldn’t be used to revive water bodies.

Diwan Singh, a Delhi-based environmentalist who has been working for the revival of water bodies, said, “It is good that they have come out with SOPs. But instead of STP water, they should use water from stormwater drains to recharge the water bodies. By using the water from STPs, we are just polluting the groundwater, as the STP water is not 100% clean. Wherever treated water has been used in water bodies, that area has ended up stinking,” Singh said. Experts also stress on the need to have biological communities in the waterbody to ensure it is sustainable. CR Babu, professor emeritus at Delhi University’s School for Environment Studies, said, “The aim should not just to rejuvenate the waterbody, but to ensure that it is self sustainable. For that, the waterbody should have biological communities, which can survive only in fresh water. The biological oxygen demand (BOD) in treated water is very high. If STP water is used, then authorities will have to pump the treated water again and again to maintain the required BOD level.”

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How to dispose of PPE kits? A new study says on-site incineration may be best

CSIR-NEERI

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As India grapples with the coronavirus outbreak, disposal of PPE kits has posed a new challenge to civic bodies across India. To solve this problem, a group of CSIR-NEERI scientists has suggested on-site incineration of PPE kits to reduce infection risk. A study, titled Sustainable Solution for PPE disposal through LCA Approach, looked at three end-of-life disposal methods — centralised incineration, decentralised incineration and landfills. LCA stands for life cycle assessment. The study says that the decentralised method will reduce multiple contact points who handle the infected PPE kits. “We have proposed that decentralised incineration is, in the current

circumstances, the best way to dispose of PPE kits,” said Hemant Bherwani, the lead author of the study. CSIR-NEERI director Rakesh Kumar explained that under the centralised system, discarded PPE kits are transported to far-off incinerators, thereby involving more people in handling the waste and causing more transport pollution. The authors said India lacks a robust decentralised way of disposing bio-medical waste. In a first, the study has quantified CO₂ emissions caused by PPE kits and studied the potential environmental impact — air, water and chemical pollution and climate change — of the protective gear from the “cradle to grave” cycle. “In the present work, the life cycle assessment of PPE kits has been performed... under two disposal scenarios, namely landfill and incineration (both centralised and decentralised) for six environmental impact categories covering overall impacts on both terrestrial and marine ecosystems, which includes global warming potential (GWP), human toxicity potential (HTP), eutrophication potential (EP), acidification potential (AP), freshwater aquatic

ecotoxicity potential (FAETP) and photochemical ozone depletion potential (POCP),” reads the paper. Under the GWP, CO₂ emission is the highest. One tonne of PPE kits if incinerated generated 3,814-3,816 kg of CO₂. Explaining this, Bherwani said, “It will take at least 100 fully grown trees a year to absorb this much of CO₂.”

The study was published in the peer-reviewed journal Environment, Development and Sustainability. Other CSIR-NEERI authors who contributed to the study are Harender Kumar, Amaanuddin Azad, Ankit Gupta, Jitendra Sharma and Nitin Kumar Labhsetwar.

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जागरण विशेष

दृष्टांत छिद्र • दुर्गापुर

पीएचपीटी से चार गुना तक बढ़ी किसानों की आय

हल्दी, अदरक, मिर्च को बर्बाद होने से बचा रही तकनीक, खुशहाल हो रहे पूर्वोत्तर भारत के किसान, पूर्वोत्तर के राज्यों में बढ़ी तकनीक की मांग



सीएम्आईआरआइ द्वारा बनाई गई पोस्ट हार्वेस्ट प्रोसेसिंग टेक्नोलॉजी की मशीन।



—डॉ. डॉ. हरिंत चौधरी, निदेशक, सीएम्आईआरआइ, दुर्गापुर, बिहार



मिजोरम के एक गांव में महिलाएं पोस्टहार्मिनिंग करने से पहले हल्दी पकव करने का कार्य करते कामगार। • खेती : सीएम्आईआरआइ

दुर्गापुर में केंद्रीय औद्योगिक अनुसंधान संस्थान की इकाई सेंट्रल सीएम्आईआरआइ (मैकेनिकल इंजीनियरिंग रिसर्च इंस्टीट्यूट) की तकनीक से पूर्वोत्तर भारत के किसान खुशहाल हो रहे हैं। भारत सरकार के विज्ञान एवं प्रौद्योगिकी मंत्रालय की पहल पर सीएम्आईआरआइ के विज्ञानियों द्वारा तैयार यंत्रों का उपयोग कर किसान अपनी फसल को सुरक्षित रख रहे हैं। पोस्ट हार्वेस्ट प्रोसेसिंग टेक्नोलॉजी (पीएचपीटी) से किसानों की आय में तीन से चार गुना तक की वृद्धि भी हुई है।

मिजोरम, असमवाचल प्रदेश जैसे पूर्वोत्तर के राज्यों की मुख्य पैदावार हल्दी, अदरक, मिर्च आदि हैं। पहले उचित रखरखाव नहीं होने के कारण बड़ी मात्रा में उत्पाद खराब हो जाते थे। अब इन कृषि उत्पादों को धोने, सुखाने और उसका पाउडर बनाने तथा सुरक्षित रखने के लिए पीएचपीटी तकनीक का प्रयोग किया जा रहा है। प्रोसेसिंग की यह युनिटें आत्मनिर्भर भारत अभियान की गति देने में भी मददगार साबित हो रही हैं। यह है पीएचपीटी : पीएचपीटी एक युनिट है, जिसमें कई मशीनें हैं। कृषि उत्पादों को सफा करने, सुखाने, टुकड़े करने, पाउडर बनाने, पैकेजिंग में ये मशीनें मददगार हैं। मिजोरम ने बड़े पैमाने पर इस्तेमाल की जल को भी। वहां की सरकार ने सीएसआइआर (वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद) को किसानों की परेशानियां बताईं। इसके बाद सीएसआइआर के निर्देश, सीएम्आईआरआइ ने इस पर काम शुरू किया। प्रोसेसिंग की युनिटें बनाकर सीएम्आईआरआइ ने इसका हल निकाल दिया है। अब तक मिजोरम में पीएचपीटी की 14 युनिटें लगाई जा चुकी हैं। इन्हें संचालित करनेवाली संस्थाएं किसानों से अदरक, हल्दी खरीदती हैं। उसके बाद प्रसंस्करण कर बाजारों में बेजा जाता है। इससे किसानों की मेहनत का उचित फल मिलने लगा है। मिजोरम के कृषि मंत्री सी लालरिसंगा ने पिछड़े लोगों के आर्थिक विकास में मददगार सीएम्आईआरआइ की तकनीक की सराहना की है।

असमवाचल में छिन टी सुखाने में उपयोग : पूर्वोत्तर के अन्य राज्यों में भी सीएम्आईआरआइ की तकनीक की मांग है। असमवाचल प्रदेश में भी चार-पांच साल पहले पीएचपीटी युनिटें लगाई गई थीं। किसान-उद्यमों इसके दुपार (सुखाने का चेंबर) में छिन-टी सुखा रहे हैं। मणिपुर, नगालैंड और असमवाचल प्रदेश से पीएचपीटी व सीएम्आईआरआइ के कुछ निस्तरण प्रौद्योगिकी की भी मांग हुई। मांग के अनुसार एक टन या उससे अधिक क्षमता की पीएचपीटी युनिट सीएम्आईआरआइ तैयार करता है।

बलए जा रहे प्रशिक्षण कार्यक्रम : सीएम्आईआरआइ पूर्वोत्तर के राज्यों में लोगों को मशीनों की चलाने के लिए प्रशिक्षण देता है। 2016 से यह प्रशिक्षण कार्यक्रम विभिन्न शहरों में चल रहा है। मिजोरम में महिला प्रशिक्षण पार्क भी बनाया गया है। पिछले तीन साल में इन राज्यों में सीएम्आईआरआइ के प्रयास से 9500 लोग प्रत्यक्ष व त्करीबन 40 हजार परोक्ष रूप से रोजगार से जुड़े हैं।

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संशोधनात उद्योगांची भूमिका कळीची

मराठी माध्यमातून दहावीपर्यंतचे शिक्षण घेतलेले डॉ. अमोल कुलकर्णी यांना देशातील सर्वोच्च वैज्ञानिक सन्मान म्हणजेच 'शांती स्वरूप भटनागर' पुरस्कार घोषित झाला. मराठवाड्यातील उदगीरसारख्या छोट्याशा गावातून सुरू झालेला त्यांचा प्रवास राष्ट्रीय रासायनिक प्रयोगशाळेतील (एनसीएल) वरिष्ठ वैज्ञानिक पदापर्यंत पोहोचलाय. त्यांच्याशी केलेली बातचीत.



डॉ. अमोल कुलकर्णी

सम्राट कदम

प्रश्न : तुमच्या संशोधनाचे स्वरूप नेमके काय आहे? पुरस्कार मिळवल्यानंतरच्या तुमच्या भावना काय आहेत?

डॉ. कुलकर्णी : मुंबईतील रसायन तंत्रज्ञान संस्थेतील संशोधन प्रकल्प पूर्ण झाल्यानंतर २००४ मध्ये मी जर्मनीला गेलो. तिथेतळतावर बसतील एवढे लहान 'मायक्रोरिअॅक्टर' पाहिले. उणे तापमानातील मोठ्या रासायनिक अभिक्रिया ते अत्यंत कमी ऊर्जेत, तेही सामान्य तापमानाला करते. नवीन असलेल्या या क्षेत्रातील संशोधनाला आम्ही 'एनसीएल' मध्ये २००५ नंतर सुरुवात केली. 'एनसीएल'चे तेव्हाचे संचालक डॉ. शिवराम, ज्येष्ठ शास्त्रज्ञ डॉ. विवेक रानडे, डॉ. बी. डी. कुलकर्णी यांच्या मार्गदर्शनाने 'कॅट्युनिअस फ्लो मायक्रोरिअॅक्टर'वर संशोधन गट स्थापन केला. जगातला सर्वात मोठा रासायनिक उद्योगसमूह भारतात आहे. त्याची गरज ओळखून कमी खर्चात आणि ऊर्जेत अभिक्रिया करणारे मायक्रोरिअॅक्टर देशातच विकसित करण्याचे ठरवले. रसायन उद्योग, उत्पादक आणि 'एनसीएल'ने एकत्रितरित्या यावर काम केले. आज सुमारे ७० कंपन्या असे रिअॅक्टर वापरत आहेत. परंतु ही नुसती सुरुवात आहे. यामुळे २०० कोटींहून अधिक परकी चलन वाचले. शांती स्वरूप भटनागर पुरस्कार जाहीर झाल्याने मला सुखद धक्काच बसला.

जबाबदारीदेखील वाढली. या क्षेत्रात अजूनही विविधांगी संशोधन करायचे आहे.

: रसायनशास्त्र आणि अभियांत्रिकी यांच्या मिलाफाचे हे क्षेत्र संशोधनासाठी कसे निवडले?

: उदगीरच्या लालबहादूर शास्त्री मराठी शाळेत माझे शिक्षण झाले. आई विज्ञानाची शिक्षक. विज्ञानाचे महत्त्व आणि उपयोगिता मला माहीत होती. बारावीनंतर मुंबईच्या रसायन अभियांत्रिकी महाविद्यालयात (आयसीटी) शिक्षणासाठी गेलो. त्यावेळी प्रा. एम. एम. शर्मा म्हणायचे, की परिश्रमाला पर्याय नाही आणि शिक्षण चालू असताना निश्चित ध्येय तुमच्यासमोर असायला हवे. दुसऱ्या वर्षाला असताना मी उन्हाळ्यातील प्रकल्पासाठी प्रस्ताव सादर केले. ते मंजूर झाले असते तर फेलोशिप मिळाली असती. पण काही कारणाने ती मिळाली नाही. तरीही संबंधित प्राध्यापकांना भेटलो आणि संशोधन करण्याची इच्छा बोलून दाखवली. त्यांनीही प्रयोगशाळेच्या वापराला परवानगी दिली. प्रा. ज्येष्ठराज जोशी आणि प्रा. अनिरुद्ध पंडित यांची ती प्रयोगशाळा होती. मी त्यासंबंधीच्या साहित्याचे प्रचंड वाचन केले. भरपूर प्रयोगही केले. त्यातले निष्कर्ष प्रा. पांगारकर यांना दाखवले. त्यांनी मला स्वतंत्र शोधनिबंध

दृष्टिक्षेपात ठळक मुद्दे

- मायक्रोरिअॅक्टरमुळे अतिउच्च दर्जाचे उत्पादन आणि क्लिष्ट रासायनिक अभिक्रियाही छोट्या जागेत शक्य.
- चीन आणि युरोपच्या तुलनेत आपण अद्याप मागे.
- निर्यातक्षम दर्जाच्या व स्वस्त रसायनांच्या निर्मितीची देशाला गरज.



प्रसिद्ध करायला लावला आणि तो स्वीकारलाही. त्याचवेळी संशोधनाला वेळ द्यायचा हे पक्के ठरवले. इतर मुले पुढच्या शिक्षणासाठी अमेरिकेत जाण्यासाठी प्रयत्नात होती, पण पुढील अभ्यासासाठी परदेशात जाण्याचा मी कधी विचार केला नव्हता. प्रा. जोशींच्याच प्रयोगशाळेत पीएचडी केली. त्यानंतर २००५ मध्ये 'एनसीएल'मध्ये रुजू झालो.

: देशातील मायक्रोरिअॅक्टर संबंधीच्या संशोधनाची स्थिती काय आणि उद्योगांचा सहभाग कसा आहे?

: तसे पाहता 'कॅट्युनिअस फ्लो रिअॅक्टर' हा जुना विषय आहे. अनेक मोठ्या रासायनिक उद्योगांमध्ये याचा वापर होतो. मात्र मायक्रोरिअॅक्टरमुळे अति उच्च दर्जाचे उत्पादन आणि क्लिष्ट रासायनिक अभिक्रियाही छोट्या जागेत प्रभावीपणे करता येतात. आजपर्यंत आम्ही २० वेगवेगळ्या प्रकारच्या अभिक्रिया आणि शंभरवर उत्पादने विकसित केली आहेत. अशा संशोधनासाठी विविध विभागातील शास्त्रज्ञांचा शेवटपर्यंत सहभाग आणि समन्वयाने संशोधन गरजेचे आहे. २०१२-१३नंतर देशभरात संशोधकांचे समूह तयार होत

आहेत. अजूनही चीन आणि युरोपच्या तुलनेत आपण मागे आहोत. यामध्ये नवे काहीतरी करायची दृष्टी पाहिजे.

: संशोधनामध्ये सुरवातीपासून उद्योगांचा सहभाग असावा का? तुमच्या संशोधनासंबंधीचा अनुभव कसा आहे?

: निश्चितच! उपयोजित विज्ञानातील संशोधनासाठी उद्योगांचा सहभाग गरजेचा आहे. आम्ही संशोधनाला सुरवात केली, तेव्हा कंपन्यांनी सावध भूमिका घेतली. मोठी गुंतवणूक करायला धजावल्या नाहीत. आम्हाला त्यांच्यासमोर एखादे चांगले उदाहरण प्रस्तुत करणे गरजेचे होते. संशोधनासाठी क्राउंड फंडिंगची पद्धत वापरली. अनेक कंपन्यांकडून निधी जमवला. मिळालेली स्टार्टअप ग्रँडही त्यासाठी वापरली. 'एनसीएल'च्या तेव्हाच्या संचालकांनीही निधी दिला. तेव्हा कुठे काम सुरू झाले. आर्थिकच नाही तर कुशल मनुष्यबळासाठीही उद्योगांची संशोधनातील भूमिका महत्त्वपूर्ण आहे.

: औषधांच्या आत्मनिर्भरतेमध्ये 'कॅट्युनिअस फ्लो मायक्रोरिअॅक्टर'ची भूमिका काय असेल?

: आपण जरी औषध उत्पादनाच्या बाबतीत अग्रेसर असलो तरीही त्यासाठीचा कच्चा माल आणि रसायने आयात करतो. आवश्यकतेनुसार रसायने आणि खते मंत्रालयाच्या औषधनिर्माण विभागाने ५३ महत्त्वपूर्ण रसायनांची नावे निश्चित केली आहेत. त्यांच्या उत्पादनासाठी देशातच स्वतंत्र प्रक्रिया विकसित करायची आहे. अनेक रसायनांच्या निर्मितीचे काम पूर्णत्वाकडे जात आहे, तर काही अजूनही सुरवातीच्याच टप्प्यात आहेत. आपल्याला केवळ आपल्यासाठी नाही तर जगात निर्यात करता येईल, अशा दर्जाच्या स्वस्त रसायनांच्या निर्मितीची गरज आहे. त्यासाठी कॅट्युनिअस फ्लो रिअॅक्टर महत्त्वाचा आहे. त्यामुळे रसायनांचा अपव्यय टळेलच, त्याचबरोबर उत्पादनखर्चही घटेल. कुशल मनुष्यबळ आणि तंत्रज्ञासाठी शैक्षणिक संस्थांचीही यातील भूमिका महत्त्वपूर्ण ठरणार आहे.

‘NGRI must play leading role in Geosciences research’

CSIR –NGRI

12th October, 2020

Professor K Vijay Raghavan, principal scientific adviser to the Union government, on Sunday said that the city-based CSIR-National Geophysical Research Institute (NGRI) should play a leading role in the future Geosciences research in India. Speaking at the Diamond Jubilee Year Celebrations of CSIR-NGRI that began through a virtual inaugural ceremony on Sunday, he said the NGRI could be a national integrator with scientific leadership of all geological, geophysical and environmental studies in the country in partnership with other academic/research organisations and the related industries.

He exhorted NGRI to become a nodal agency between academia on the one hand and industries on the other as well as nurture talents within NGRI for the advancement of Geosciences. “NGRI should contribute to understanding the effects of climate change and biodiversity and modeling of geological consequences like landslides, inundations, tsunamis in collaboration with leading institutions of other scientific disciplines.

Professor Shekhar C Mande, director general, Council of Scientific and Industrial Research (CSIR) lauded the geochemical atlas of India, produced by NGRI, the extensive aquifer mapping carried out in different parts of the country. He said that the drone-based Geophysical Survey System being developed by the institute is going to be a game changer in the designing of future exploratory programmes in the country.

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एनजीआरआई हीरक जयंती समारोह उद्घाटित

हैदराबाद, 11 अक्टूबर-(मिलाप ब्यूरो) वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएआईआर)-राष्ट्रीय भूभौतिकीय अनुसंधान संस्थान (एनजीआरआई) के वर्चुअल रूप से आयोजित हीरक जयंती समारोह का आज उद्घाटन हुआ। कार्यक्रम में मुख्य अतिथि के रूप में भारत सरकार के प्रधान वैज्ञानिक सलाहकार प्रो. के. विजय राघवन, विशिष्ट अतिथि के रूप में वैज्ञानिक एवं औद्योगिक अनुसंधान विभाग (डीएसआईआर), भारत सरकार के सचिव तथा सीएसआईआर के महानिदेशक प्रो. शेखर सी. मांडे उपस्थित थे।

प्राप्त जानकारी के अनुसार, प्रो. के. विजय राघवन ने देश में भूविज्ञान से जुड़े अनुसंधान की दिशा में रोड मैप को रखते हुए कहा कि इसमें एनजीआरआई को प्रमुख भूमिका का निर्वाह करना है। उन्होंने कहा कि एनजीआरआई को जलवायु परिवर्तन और जैव विविधता के प्रभावों तथा भूगर्भीय परिणामों को समझने के इस



क्षेत्र के अग्रणी वैज्ञानिक संस्थानों के सहयोग से अपना योगदान देना चाहिए। उन्होंने देश के सभी अकादमिक, अनुसंधान संगठनों तथा संबंधित उद्योगों के साथ भूवैज्ञानिक, भूभौतिकीय, पर्यावरण अध्ययन आदि के क्षेत्र में एनजीआरआई के वैज्ञानिक नेतृत्व के साथ राष्ट्रीय एकीकरण की बात कही।

एनजीआरआई की भूमिका औद्योगिक अनुसंधान के लिए निजी और सार्वजनिक उद्योगों और अन्य हितधारकों के लिए बहुआयामी जानकारी के संकलन तथा उसे समझने की दिशा में बहुत प्रासंगिक है। अवसर पर एनजीआरआई द्वारा किए गए तथा किए जा रहे कार्यों से जुड़े पहलुओं

पर चर्चा करते हुए प्रो. के. विजयराघवन ने एनजीआरआई को शिक्षाविदों के बीच नोडल एजेंसी बनने के लिए भी प्रोत्साहन दिया।

प्रो. शेखर सी. मांडे ने संस्थान की हीरक जयंती के लिए शुभकामनाएँ प्रेषित करते हुए देश में एनजीआईआई द्वारा दिए जा रहे वैज्ञानिक योगदान की सराहना की। उन्होंने कहा कि इसके कार्यों तथा उपलब्धियों पर गर्व किया जा सकता है। प्रो. मांडे ने कहा कि एनजीआरआई द्वारा निर्मित भारत का जियोकेमिकल एटलस बहुत सराहनीय है। संस्थान द्वारा विकसित किया जा

रही ड्रोन आधारित भूभौतिकीय सर्वेक्षण प्रणाली देश में भविष्य के खोजपूर्ण कार्यक्रमों के डिजाइन में गेमचेंजर साबित होगी।

सीएआईआर-एनजीआरआई के निदेशक डॉ. वीरेंद्र एम. तिवारी ने संस्थान की गत 60 वर्ष की गतिविधियों पर प्रकाश डालते हुए कहा कि संस्थान राष्ट्रीय प्राथमिकताओं को लक्षित करते हुए आगे बढ़ रहा है। इसका लक्ष्य विश्व स्तर पर भूविज्ञान के क्षेत्र में लगातार विकास करना है। बीते साठ सालों में संस्थान ने कई सफलताएँ तथा उपलब्धियाँ हासिल की हैं। संस्थान आने वाले समय में भी भूविज्ञान के क्षेत्र में अधिक से अधिक जानकारी एवं तकनीकी के विकास में सतत रूप से प्रतिबद्ध है।

अवसर पर संस्थान में 25 वर्ष की सेवा पूरी करने वाले कर्मचारियों को सम्मानित किया गया। हीरक जयंती समारोह के उद्घाटन कार्यक्रम में स्वागत वक्तव्य सीएआईआर-एनजीआरआई के मुख्य वैज्ञानिक तथा हीरक जयंती वर्ष समारोह समिति के अध्यक्ष डॉ. एन. पूर्णचंद्र राव दिया। उन्होंने कहा कि उनके लिए यह गौरव का विषय है कि संस्थान अपने हीरक जयंती चरण में है। कार्यक्रम का समापन एनजीआरआई की मुख्य वैज्ञानिक डॉ. कीर्ति श्रीवास्तव के धन्यवाद ज्ञापन से हुआ।

मृत ग्रंथ प्रकाशन समिति गठित

से संबंधित 3डी एनिमेशन वीडियो के सालों की मेहनत के पश्चात ध्यानमृत गया। शांतिलाल गुगगिया ने बताया कि

ఆవిష్కరణల్లో ఎన్జీఆర్ఐ కొత్త పుంతలు

ఉప్పల్: జాతీయ భూ భౌతిక పరిశోధన సంస్థ (సీఎస్ఐఆర్-ఎన్జీఆర్ఐ)లో ఆదివారం డైమండ్ జూబ్లీ ఉత్సవాలు వర్చువల్ ఇమేజ్ ద్వారా నిర్వహించారు. కోవిడ్-19 నిబంధనలను పాటిస్తూనే అధికారులు వర్చువల్ ద్వారా సమావేశాన్ని నిర్వహించారు. ఎన్జీఆర్ఐ సంస్థలోని ఎస్బీహాల్ లో నిర్వహించిన ఈ కార్యక్రమానికి ముఖ్య అతిథిగా భారత ప్రభుత్వ ప్రిన్సిపల్ సైంటిఫిక్ అడ్వయిజర్ ప్రొ.కె. విజయ రాఘవన్, గౌరవ అతిథిగా ప్రొ.శేఖర్ సి. మండేలు వెబ్ పోర్టల్ వర్చువల్ ద్వారా హాజరయ్యారు. ఈ సందర్భంగా వారు మాట్లాడుతూ ఇటీవలి కాలంలో ఎన్జీఆర్ఐ ఆవిష్కరణల్లో కొత్త పుంతలు తొక్కుతూ ముందుకు సాగుతుందన్నారు. ఎన్జీఆర్ఐ డైరెక్టర్ డా. విరేంద్ర ఎం. తివారి మాట్లాడుతూ 1961లో స్థాపించిన ఎన్జీఆర్ఐ సంస్థ ఎన్నో అద్భుతాలను సాధించిందని, సైంటిస్టుల కృషి, పరిశోధన ఫలితాలు, గతలో పని చేసిన డైరెక్టర్ల కృషి వల్ల నేడు ఎన్నో ఆవిష్కరణలను చేసి చూపిందన్నారు. అనంతరం 25 సంవ



ఉప్పల్ ఎన్జీఆర్ఐలో డైమండ్ జూబ్లీ లోగోను ఆవిష్కరిస్తున్న డైరెక్టర్ తివారి, శ్రీనగేష్, పూర్ణచందర్

త్సరాలు పూర్తి చేసుకున్న ఉద్యోగులను ఘనంగా సత్కరించారు. అంతకు ముందు ఎన్జీఆర్ఐ డైమండ్ జూబ్లీ లోగోను డైరెక్టర్, ఉత్సవాల చైర్మన్ డా. ఎన్ పూర్ణచందర్ రావు, చీఫ్ సైంటిస్టు డా. శ్రీనగేష్ ఆవిష్కరించారు.

14 హైదరాబాద్

ఈనాడు

డ్రోన్లతో నీటి జాడలు

● స్వదేశీ సాంకేతికతతో అభివృద్ధి ● 'ఈనాడు'తో ఎన్జీఆర్ఐ డైరెక్టర్ వి.ఎం.తివారీ ● 60వ వసంతంలో జాతీయ పరిశోధన సంస్థ



హైదరాబాద్ శివారు యాచారంలో భౌగోళిక అన్వేషణలో డ్రోన్

డైరెక్టర్ డాక్టర్ వి.ఎం.తివారీ వివరించారు. ఎన్జీఆర్ఐ ఈ నెల 11వ తేదీన వజ్రోత్సవంలోకి అడుగు పెడుతున్న నేపథ్యంలో ఆయనతో 'ఈనాడు' ముఖాముఖి నిర్వహించింది.

? భూభౌతిక పరిశోధన రంగంలో సాంకేతికతను ఏ మేరకు వాడుతున్నారు

భూగర్భంలో నీటి జాడలను కనుగొనడం నుంచి ఖనిజాలు, హైడ్రో కార్బన్లు, భూకంప కేంద్రాలను గుర్తించడం వరకు సాంకేతికతను అందిస్తున్నట్లు తెలుస్తోంది. భౌగోళిక అన్వేషణకు అయస్కాంత సర్వేలు నిర్వహిస్తుంటాయి. ఖనిజ నిక్షేపాల గుర్తింపు, నీటి జాడలు తెలుసుకునేందుకు ఆ ప్రాంతాలకు మొదట్లో మనుషులు వెళ్లేవారు. కొద్ది సంతృప్తి కలిగినా మిగిలినవి వెనుక అయస్కాంత వ్యవస్థ ఏర్పాటుచేసి అన్వేషణ చేపట్టారు. ఇది ఖర్చుతో కూడుకున్నది. ఇలాంటి పరిస్థితుల్లో తక్కువ వ్యయంతో డ్రోన్-మానవ రహిత వైమానిక వాహనం(యూఎవీ)ను ఎన్జీఆర్ఐ అభివృద్ధి చేసింది. స్వదేశీ సాంకేతికతతో ఈ తరహా పద్ధతిని రూపొందించడం ఇదే మొట్టమొదటిది. హైదరాబాద్ శివారు యాచారంలో డ్రోన్ ఆధారంగా సూక్ష్మ అయస్కాంత సెన్సార్ల ద్వారా సర్వే చేసే కచ్చితమైన సమాచారం తెలుసుకోగలిగాం. త్వరలోనే ఈ ప్లాట్ఫామ్ను అందుబాటులోకి తీసుకొస్తాం. వీటి ద్వారా కొండ ప్రాంతాలు, తీరప్రాంతాల్లోనూ సులభంగా భౌగోళిక మార్పులను తెలుసుకోవచ్చు.

? భూకంపాల పరిశోధనలో ఆరు దశాబ్దాల్లో సాధించిన పురోగతి

భూకంపాలపై ఇప్పటికీ మనకు తెలిసింది తక్కువే. ఏ ప్రాంతంలో రావచ్చు, ఎంత తీవ్రతతో రావచ్చు అనేది మాత్రమే చెప్పగలం. ఏ రోజు వస్తుందని చెప్పే సాంకేతికత ఇంకా రాలేదు. జిపీఎస్, కృత్రిమ మేద, మిషన్ లెర్నింగ్ ప్రవేశంతో మరింత లోతుగా అర్థం చేసుకునే ప్రయత్నం చేస్తున్నాం.

? దేశంలో నీటి వనరులు తగ్గిపోతున్నాయి కదా. మీ అన్వేషణలో గుర్తించిన అంశాలు, చేపట్టాల్సిన చర్యలు

తగ్గుతున్న జలాలను కృత్రిమంగా రీచార్జ్ చేయడం ఒక్కటే మనముందున్న అవకాశం. నీటిని కృత్రిమంగా ఎలా రీచార్జ్ చేయాలో చౌటుప్పల్లో ఎన్జీఆర్ఐ చేసి చూపించింది. నీరు ఎక్కడ ఇంకొక్కడో ఎక్కడ రాళ్లు, రాళ్ల మధ్య పగుళ్లు ఉన్నాయి? ఎంతవరకు ఇంకించవచ్చు? ఈ విషయాలు తెలిస్తే వాన నీటిని ఇంకించడంతో ప్రయోజనం ఉంటుంది. వర్షం పడినప్పుడు ఎంతనీరు భూగర్భంలోకి ఇంకొక్కడో తెలిస్తే దాన్ని బట్టి అక్కడ ఏ పంటలు వేయవచ్చనేది శాస్త్రీయంగా నిర్ణయించవచ్చు.

? తెలుగు రాష్ట్రాల్లో ఎన్జీఆర్ఐ చేస్తున్న పరిశోధనలు

అణు విద్యుచ్ఛక్తి అవసరం ఉండటంతో సంబంధిత మంత్రిత్వ శాఖతో కలిసి.. ఆ ప్రాజెక్టులను ఎక్కడ

ఏర్పాటుచేయాలి అనే పరిశోధనలో పాల్గొంటున్నాం. ఆంధ్రప్రదేశ్లో కొవ్వొత్త వర్ష పనిచేస్తున్నాయి. తెలంగాణలో ఎలాంటి ప్రాజెక్టులూ లేవు. ఆంధ్రప్రదేశ్లో యురేనియం అన్వేషణ పనులు మొదలుపెట్టడం లేదు. మధ్య ప్రదేశ్, ఉత్తరప్రదేశ్, ఝార్ఖండ్, ఒడిశాలో చేస్తున్నాం.

? భవిష్యత్తు లక్ష్యాలు ఏంటి

ఆత్మనిర్భర్ భారత్లో భాగంగా దేశంలోని వనరుల అన్వేషణకు అవసరమైన పరికరాలు, సాంకేతికత అభివృద్ధిపై దృష్టిపెట్టాం.

భూభౌతిక రంగంలో యువతకు ఎలాంటి అవకాశాలున్నాయి?

చౌలా అవకాశాలే ఉన్నాయి. కొన్నేళ్ల కిందటే.. ఐఐఐఐఐ ఖరగ్‌పూర్ ప్రాంగణ నియామకాల్లో ఇంటిగ్రేటెడ్ జియోఫిజిక్స్ ఇంజనీరింగ్ చేసిన విద్యార్థికి అత్యధిక స్కాలర్‌షిప్ ఇచ్చారు. దేశంలోనే కాకుండా విదేశాల్లోనూ మంచి అవకాశాలున్నాయి. బొగ్గు, గ్యాస్, ఇంధన రంగాల్లో కూడా చాలా అవకాశాలున్నాయి. ఈ రంగంలో అంకుర సంస్థలు వస్తున్నాయి.



Rollout of the faster, cheaper Feluda Covid-19 test expected in few weeks, says Vardhan

CSIR-IGIB

11th October, 2020



Union Health Minister Dr Harsh Vardhan

Union Health Minister Dr Harsh Vardhan on Sunday said the rollout of the Feluda Covid-19 test will happen in the near future. Vardhan made the announcement while responding to a volley of questions fielded by his social media interactors on the fifth episode of Sunday Samvaad. "Based on tests in over 2,000 patients during the trials at the Institute of Genomics and Integrative Biology (IGIB) and on testing in private labs, the test showed 96% sensitivity and 98% specificity. This compares favourably to ICMR's current acceptance criteria of RT-PCR Kit of at least 95% sensitivity and at least 99% specificity," Vardhan said. Sensitivity is defined as the ability of a test to correctly

identify individuals with the disease, while specificity is the ability of the assay to accurately identify those without the disease. He added that the Feluda paper strip test for SRS-CoV-2 diagnosis has been developed by CSIR-IGIB and has been approved by the Drug Controller General of India for a commercial launch. The kit has already been validated by the Department of Atomic Energy's National Centre for Biological Sciences, Bangalore. "While I cannot put an exact date on the availability, we should expect this test within the next few weeks," he said. Named after Satyajit Ray's famed detective, the Feluda test, which is priced at ₹500 and can deliver a result in 45 minutes, is able to differentiate SARS-CoV-2 from other coronaviruses even if genetic variations between them are minute. The Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) Feluda test has been developed by the New Delhi-based CSIR-Institute of Genomics and Integrative Biology (IGIB) and the TATA Group. Similar to a pregnancy strip test, Feluda changes colour if the virus is detected and doesn't need

expensive machines for detection. Virologist Upasana Ray told PTI that the CRISPR- based COVID-19 detection system is a cheaper option to RT-PCR tests, which cost over ₹1,600. RAT and Feluda are in the same price bracket. FELUDA, an acronym for the FNCAS9 Editor-Limited Uniform Detection Assay, uses an indigenously developed, cutting-edge CRISPR technology for detection of the genomic sequence of SARS-CoV-2 virus, the scientists said. CRISPR is a gene editing technology and is used in correcting genetic defects and treating and preventing the spread of diseases.

The technology can detect specific sequences of DNA within a gene, and uses an enzyme functioning as molecular scissors to snip it. India's COVID-19 tally of cases raced past 70 lakh, 13 days after it had crossed the 60-lakh mark, while the national recovery rate stood at 86.17 per cent, according to the Union Health Ministry data updated on Sunday.

According to the ICMR, a cumulative total of 8,68,77,242 samples have been tested up to October 10 with 10,78,544 samples being tested on Saturday.

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Better bananas to cheaper Covid test, how desi scientists are using CRISPR

Research labs across India are working with the gene-editing tool that won two scientists the Nobel to find ways of fortifying crops and treating rare diseases

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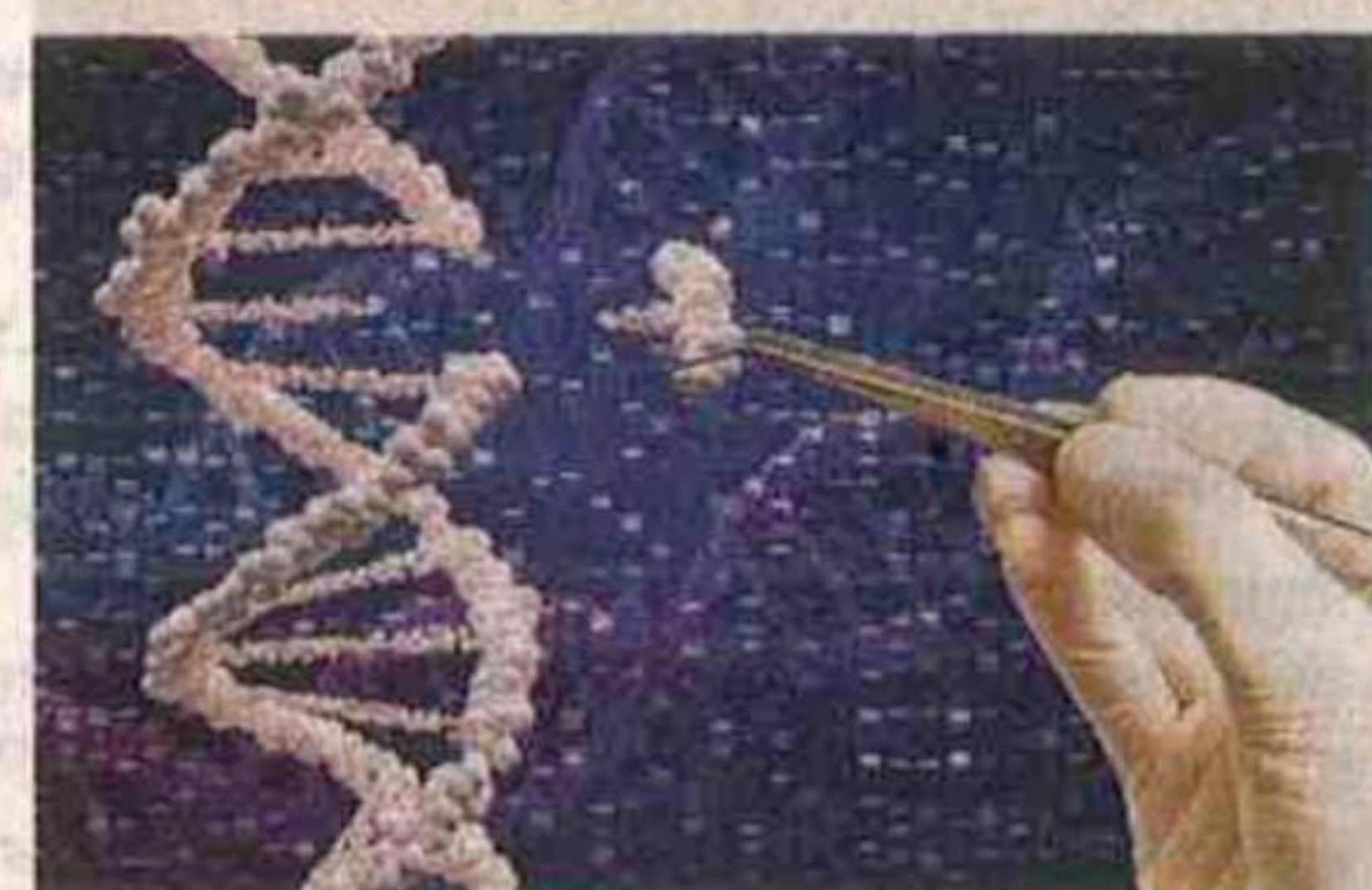
This week scientists Emmanuelle Charpentier and Jennifer Doudna were awarded the 2020 Nobel Prize in Chemistry for their work on CRISPR-Cas9 genetic scissors, a tool that can be used to change the DNA of animals, plants and microbes with extremely high precision. Doudna herself has likened it to using a word-processing programme to fix a typo in a document.

Even before the Nobel brought CRISPR to the headlines, Indian scientists were exploring the enormous power of this genetic tool. A research team at the Council of Scientific and Industrial Research's IGIB (Institute of Genomics and Integrative Biology) along with the Tata Group announced that it had used CRISPR to indigenously develop a Covid-19 test that is accurate, cheap and fast. Dr Debojyoti Chakraborty, Dr Souvik Maiti and the team were actually hard at work on another disease. "We were working on developing diagnostics for sickle cell anaemia (a fatal genetically-inherited disease) when the pandemic began," says Dr



FELUDA 2.0: A team from Institute of Genomics and Integrative Biology led by Debojyoti Chakraborty (centre) and Dr Souvik Maiti (third from left) developed the new Covid paper test using CRISPR

CRISPR TECH AND ITS MANY POSSIBILITIES



- Treatment for blood disorders like sickle-cell anaemia and thalassemia
- Driving malaria-carrying mosquitoes to extinction
- Mushrooms that don't brown
- Resurrecting the woolly mammoth
- Cats with no allergies
- Less-pungent mustard oil

Chakraborty. The research sleuths harnessed that knowledge to come up with the Covid test which they named Feluda after Satyajit Ray's fictional detective.

Another scientist at IGIB, Dr Sivaprakash Ramalingam, has been researching the possibility of using CRISPR for beta-thalassemia. "Sickle cell anaemia and beta-thalassemia are caused by the mutation in the same gene but in the latter you have an array of mutations," he

says. "As a result, developing a gene-based therapy for beta-thalassemia is more cumbersome." Ramalingam describes the process as targeted genome engineering in which he uses these molecular scissors to make a double standard break in the genome of blood forming cells, and reactivate foetal haemoglobin (HbF). "Reactivating fetal haemoglobin is a one-stop solution for the treatment of both sickle cell anaemia and beta-thalassemia," he adds.

It isn't a coincidence that these projects focus on blood disorders. In a TED talk in 2017, Doudna said that the first applications of the CRISPR technology are going to happen in the blood, where it's relatively easier to deliver this tool into cells, compared to solid tissues. "The reason blood disorders have an advantage is the delivery — you can take out patient cells and transfuse them back after gene editing easily," says Ramalingam. There is ongoing research on in vivo genome editing for other genetic disorders as well.

Dr Sonam Mehrotra, scientist at the Tata Memorial Centre, Advanced Centre Treatment Research & Education in Cancer applies gene editing to mammalian cell cultures and the fruit fly model systems to study genes that are altered in various types of cancer and understand how a particular mutation signature will respond to a particular therapy such as radiation. She points out that CRISPR has many applications. "It can significantly advance gene therapy for inherited diseases and immunotherapy for cancer," she says. "You can edit the properties of plants to manipulate yield or parasite resistance, use it in animal breeding, or to control parasites like mosquitoes."

At Mohali-based National Agri-food Biotechnology Institute (NABI), research-

ers are using the gene editing technology to improve the nutritional quality and yield of crops such as bananas, rice, wheat and soybean. For instance, Dr Sidharth Tiwari is working on enhancing the beta-carotene content (which is converted to vitamin A in the human body) in the fruit pulp of bananas. "Vitamin A deficiency is a major problem in India, especially among children," says Tiwari. "So we figured we could work on biofortification of bananas, which are cheap and widely available."

Besides the advantage of being precise, Tiwari says it also has less regulations as compared to transgenics (which involves introducing genetic material from another living organism). "So the probability of reaching the commercial stage is very high," he adds. "In the coming years, CRISPR can be used to target staple crops for improving several traits including biotic and abiotic stresses such as heat and drought, disease resistance and adaptation for different conditions in the context of climate change."

Similarly, in Delhi, Dr Naveen C Bisht, scientist, National Institute of Plant Genome Research, is deploying CRISPR to improve the nutritional quality of the Indian oilseed mustard or rai. Bisht says his aim is to reduce the level of glucosinolates, compounds which give the oil its pungent smell and are not liked by many people. "Using genome editing technology, we can precisely edit a specific target gene without disturbing the whole genome of the plant, as happens in conventional breeding and transgenic technologies," says Bisht. "The method is simple and can facilitate rapid and precise crop development."

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Technology Transfer of High Flow Rate Fluoride and Iron Removal Technology

Kolkata: The CSIR-CMERI developed High Flow Rate Fluoride and Iron Removal technology was transferred to Capricans Aqua Private Limited, Howrah, West Bengal, on October 8th, 2020. The Technology Transfer took place over a Virtual Platform in the presence of Dr. Harish Hirani, Director, CSIR-CMERI, Durgapur.

Prof. Harish Hirani, during the event stated, "This Community Level Water Purification System has a Flow-Rate capacity of 10,000 Ltr/hr and uses commonly available raw materials such as sand, gravel and adsorbent materials. It comprises a three-stage purification process which purifies water within permissible limits (1.5 ppm and 0.3 ppm for Fluoride and Iron respectively). The technology uses a combination of Oxidation, Gravitational Settling and

Chemisorption process in an Affordable Package. The integrated backwashing profile of the technology will help in improving the shelf-life of the



filtration media in a resource rationalised manner"

Dr.Hirani stated that, "As per available statistics the number of Fluoride affected individuals are continuously increasing in a contaminated habitat in the last 50 years. This has been happening in consonance with the dispre-

portional depletion of Water Table, which has led to multiplication of the level of concentration of Fluoride in the particular region. Owing to

inaccessibility to Affordable Fluoride Removal Solutions for the drastically affected sections of the Country, the Fluorosis affected statistics has also witnessed an upward trajectory. Besides, the technology is also a major thrust towards the AtmaNirbhar Bharat campaign. Prolifera-

tion of this technology will also help in catalysing Employment Generation opportunities for the Youth of the Nation. The strategic deployment of this Community Level system at affected places can help to turn the tide against the menace of Iron and Fluorosis across the Nation."

Sanjay Datta, Director, Capricans Aqua Private Limited, on the occasion stated, "CSIR-CMERI Water Technologies have provided an Affordable and Cost-Effective solution for serving the most vulnerable sections of the Nation. The results generated after deployment of the CSIR-CMERI Water Technologies will be immense. Capricans now intends to deploy the CMERI Water technologies in the Fluoride and Iron affected regions of the states of Jharkhand, Uttar Pradesh and Assam."

সিএসআইআর-সিএমইআরআই'এ উন্নত উচ্চ ফ্লোরেট ফ্লোরাইড এবং আয়রন অপসারণ প্রযুক্তি



সীতা সিএসআইআর-সিএমইআরআই উন্নত উচ্চ ফ্লোরেট ফ্লোরাইড এবং আয়রন অপসারণ প্রযুক্তি নিয়ে একটি কার্যক্রমের আয়োজন প্রকৌশলী নিমিত্ত, পশ্চিমবঙ্গের হাওড়া, ২০২০-এ স্থানান্তরিত হয়েছিল।

বিশেষজ্ঞ: অধ্যাপকের উপস্থিতিতে প্রযুক্তি স্থানান্তরী অধ্যাপক ডায়ালগের মাধ্যমে হয়েছিল। ডায়ালগে হিরাণী, পরিচালক, সিএসআইআর-সিএমইআরআই, দুর্গাপুর অধ্যাপক ডায়ালগে হিরাণী, অধ্যাপকের সম্মুখে বলে, "এই কর্মসূচিটি লেভেল ওয়ান নিউক্লিয়ার প্রকল্পের ১০,

০০০,০০০ মণী সমতা রয়েছে এবং এটি সাধারণত বালি, মুক্তি এবং আয়রন-কোবাল্ট সমন্বিত হিসাবে উপলব্ধ কার্যক্রম চালানোর করে। এটি একটি তিন-পর্যায়ের পরিবেশন প্রক্রিয়া সমন্বিত যা অনুভবশীলতার মধ্যে জল পরিবেশিত করে (যেখানে ফ্লোরাইড এবং আয়রনের জন্য ১.৫ লিপিএম এবং ০.৫ লিপিএম)। প্রযুক্তিটি একটি সার্বভৌম মূল্যের পাশ্চাত্যে জাল, ম্যানুয়াল সেটেলি এবং কেমিস্ট্রালস প্রক্রিয়াটির সমন্বিত চালানোর করে। প্রযুক্তি একটি দূরত্ব ব্যাক ওয়াশিং প্রোগ্রাম সম্পর্কে বৈজ্ঞানিক উপায়

নিউক্লিয়ার শেফ-লীফ উন্নত করতে সহায়তা করে তা হিরাণী বলেছিলেন যে, "প্রকল্প পরিচালনা অনুসারে গত ৫০ বছরে দূষিত আয়রন ফ্লোরাইড আয়রন ব্যক্তিদের মধ্যে ব্যাপকভাবে বৃদ্ধি পাচ্ছে। এটি জলের সার্বভৌম অপ্রয়োজনীয় হ্রাসের সাথে একত্রে হয়ে পড়ে, যা জলে বিক্রি অক্ষয় ফ্লোরাইডের ফলস্বরূপ মাত্রা কমান হয়ে গেছে। দেশের মারাত্মকভাবে অতিরিক্ত আশ্রয়িতার জন্য সার্বভৌম মূল্যের ফ্লোরাইড অপসারণ সমন্বিতভাবে দুর্নিতির কারণে, ফ্লোরোসিস আক্রান্ত পরিবেশগতজনিত একটি

ফ্লোরোসিস সর্বাঙ্গী রয়েছে। এ ছাড়া প্রযুক্তিটি আশ্রয়িতার জন্য প্রয়োজনীয় নিবেদন একটি ব্যক্তি করে। এই প্রযুক্তির বিস্তার জটিল মূল্যের জন্য কর্মসূচির জেবেলসের সুযোগকে বিস্তৃত করতে সহায়তা করে। অতিরিক্ত ফ্লোরোসিস এই কর্মসূচিটি লেভেল ওয়ান ফ্লোরোসিস সর্বাঙ্গী আয়রন এবং ফ্লোরোসিসের বৃদ্ধির বিরুদ্ধে জেবেল ফ্লোরোসিস আয়রন সহায়তা করতে পারে। এ উপলক্ষে কার্যক্রমের আয়োজন প্রকৌশলী নিমিত্তের পরিচালক ডায়ালগের মাধ্যমে হয়েছিল। "সিএসআইআর-সিএমইআরআই ওয়ান টেকনোলজিসগুলি জটিল সমস্যাতে দুর্নিত অধ্যাপকের জন্য একটি সার্বভৌম মূল্যের এবং সার্বভৌম কার্যক্রম সমন্বিত সাহায্য করেছে। সিএসআইআর-সিএমইআরআই ওয়ান টেকনোলজিস নেতৃত্বের পরে উন্নত ফ্লোরোসিস হয়ে প্রকল্প। কার্যক্রমের এখন কার্যক্রম, উন্নত ফ্লোরোসিস এবং আয়রন প্রকৌশলী অক্ষয় সিএমইআরআই জলের প্রযুক্তি স্থানান্তরিত করে তার।

हाई फ्लो रेट फ्लोराइड और आयरन रिमूवल तकनीक का हुआ हस्तांतरण

सीएसआईआर-सीएमईआरआई द्वारा विकसित है यह नयी तकनीक

दुर्गापुर. सीएसआईआर-सीएमईआरआई द्वारा विकसित हाई फ्लो रेट फ्लोराइड और आयरन रिमूवल तकनीक को राज्य के हावड़ा जिले के केपरिकन्स एक्वा प्राइवेट लिमिटेड को स्थानांतरित किया. प्रोफेसर हरीश हिरानी, सीएसआईआर-सीएमईआरआई, दुर्गापुर के निदेशक की उपस्थिति में प्रौद्योगिकी हस्तांतरण एक आभासी मंच पर हुआ. इस कार्यक्रम के दौरान प्रो. हरीश हिरानी ने कहा कि इस सामुदायिक स्तर की जल शोधन प्रणाली में 10,000 एलटीआर / घंटा की फ्लो-रेट क्षमता है और आमतौर पर उपलब्ध कच्चे माल जैसे कि रेत, बजरी और सोख लेने वाली सामग्री का उपयोग किया गया है. इसमें एक तीन-चरण शुद्धि प्रक्रिया शामिल है, जो अनुमेय सीमा (क्रमशः फ्लोराइड और आयरन के लिए 1.5 पीपीएम और 0.3 पीपीएम) के भीतर पानी को शुद्ध करता है. प्रौद्योगिकी एक किफायती पैकेज में ऑक्सीकरण, गुरुत्वाकर्षण निपटान और



रसायन विज्ञान प्रक्रिया के संयोजन का उपयोग करती है. प्रौद्योगिकी के एकीकृत बैकवाशिंग प्रोफाइल संसाधन युक्त तरीके से निस्पंदन मीडिया के शेल्फ-जीवन को बेहतर बनाने में मदद करेंगे. डॉ. हिरानी ने कहा कि उपलब्ध आंकड़ों के अनुसार पिछले 50 वर्षों में फ्लोराइड प्रभावित व्यक्तियों की संख्या एक दूषित निवास स्थान में लगातार बढ़ रही है. यह जल तालिका के अनुपातहीन गिरावट के अनुरूप है. जिसके कारण विशेष क्षेत्र में फ्लोराइड की सांद्रता के स्तर का गुणन हुआ है. देश के बड़े पैमाने पर प्रभावित

वर्गों के लिए सस्ती फ्लोराइड रिमूवल सॉल्यूशंस की दुर्गमता के कारण फ्लोरोसिस प्रभावित आंकड़ों में भी तेजी देखी गई. यह प्रौद्योगिकी आत्मनिर्भर भारत अभियान के लिए एक प्रमुख पहल है. इस तकनीक का प्रसार राष्ट्र के युवाओं के लिए रोजगार सृजन के अवसरों को उत्प्रेरित करने में भी मदद करेगा. प्रभावित स्थानों पर इस सामुदायिक स्तर प्रणाली की रणनीतिक तैनाती राष्ट्र से आयरन और फ्लोरोसिस के खतरे से निपटने में मदद मिल सकती है. इस मौके पर

केपरिकन्स एक्वा प्राइवेट लिमिटेड के निदेशक संजय दत्ता ने कहा कि सीएसआईआर-सीएमईआरआई वाटर टेक्नोलॉजी ने राष्ट्र के सबसे कमजोर वर्गों की सेवा के लिए एक किफायती और लागत प्रभावी समाधान प्रदान किया है. सीएसआईआर-सीएमईआरआई जल प्रौद्योगिकी की तैनाती के बाद उत्पन्न परिणाम अपार होंगे. अब झारखंड, उत्तर प्रदेश और असम के फ्लोराइड और लौह प्रभावित क्षेत्रों में सीएमईआरआई जल प्रौद्योगिकियों को तैनात किया जाएगा.

CSIR backs PM, says its unit has signed pact on turbine tech

New Delhi: After Rahul Gandhi took a dig at PM Modi over his wind turbine remark on Friday, India's premier R&D body, Council of Scientific and Industrial Research (CSIR), defended Modi's suggestions and said atmospheric water generator method was well established and worked on the principle of condensation of water from air to provide drinking water, reports **Vishwa Mohan**. A Hyderabad-based company, working with the technology, invited Rahul to visit its facility and witness the science of generating water from air.

The CSIR said its Hyderabad-based Indian Institute of Chemical Technology (IICT) had signed an MoU with a private company, Maithri Aquatech, to use this patented technology to get drinking water.

The company claimed that using the technology provides solutions for water through its 'Meghdoot Water from Air Systems' which is capable of generating 25 litres to one million litres of drinking water per day.

Danish wind turbine maker Vestas Wind Systems tweeted a video on October 6, saying Modi's ideas could push the envelope in energy transition. After Rahul tweeted the same video mocking Modi, the CSIR flagged the 'Meghdoot' system while tweeting on patents in India on this technology.

Full report on www.toi.in

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