CSIR IN MEDIA

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Compiled by Science Communication and Dissemination Directorate (SCDD), CSIR, Anusandhan Bhawan, New Delhi

‘Ganga water in Kashi laced heavily with metal’

CSIR-IITR 29th December, 2023

Presence of heavy metals in Ganga is putting human health and life in the city to risk, says a joint research by a team of Banaras Hindu University, CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow and the Academy of Scientific and Innovative Research (AcSIR), Ghaziabad. The risk to health is from metals contaminating water and aquatic life.

Fish from Ganga is consumed in a huge quantity in the Varanasi region. The study, titled ‘Ecological and Health Risk Assessment of Heavy Metals Bioaccumulation in Ganga fish near Varanasi’, was published online in the Springer Nature on December 26, said Prof Vijay Nath Mishra of the department of Neurology, Institute of Medical Sciences, BHU.

Heavy metal contamination in Ganga is one of the factors responsible for deterioration in its water quality, giving rise to health risks. “We designed our study to achieve a holistic approach by not only estimating the concentration of heavy metals (lead, manganese, chromium, and cadmium) in the river water at different sites based on human anthropogenic activities but also in aquatic life at the same sites, particularly fish netted for human consumption on daily basis,” said Mishra. “We found that mean concentration in Ganga water was 1.29 mg/L for Pb, 1.325 mg/L for Mn, 0.169 mg/L for Cr, and 0.161 mg/L for Cd, which were above safe limit defined by the Environment Protection Agency (EPA) in drinking water,” he said, adding that fish, including exotic and invasive species, were collected from the wild and were examined for presence of metals in their tissues. The highest accumulation of Pb was observed in liver of Carpio (Cyprinus carpio) (8.86 μg/g) and lowest in muscles of Baikari (Clupisoma garua) (0.07 μg/g). Maximum HI value was recorded in Carpio, which is the most consumed fish by in the region, hence, may put human lives and health to risk.

Fisheries department assistant director, Deepanshu Singh, said, “We will look into the matter and will find out sources from which heavy metals flow into the river in order to take

preventive measures." According to Mishra, presence of heavy metals was observed in the river water, sediment, and edible fishes of the Ganga in Varanasi district. Concentration of studied heavy metals, including Pb, Mn, Cr, and Cd, were found to exceed permissible limits set by international standards (BIS and WHO) for drinking water. The BIS permissible limit for Pb is 0.01 mg/L, Mn: 0.1 mg/L, Cr: O.05 mg/L and Cd: 0.01 mg/L. According to the study, sediment was particularly polluted with cadmium, posing a potential threat to species dwelling at the bottom of the river. Although the levels of heavy metals in the fish muscles were below the hazard quotient, it is evident that prolonged consumption of such contaminated fish could lead to bioaccumulation in the food chain. This, in turn, may result in accumulation of heavy metals in human organs, surpassing the hazard index and causing various health risks to the local population. This study is of great importance because regular assessments aid identifying early signs of contamination, implementing necessary measures and raising awareness about dangers posed by toxic substances in water sources.

Members of research team, comprised Bhargawi Mishra of department of Neurology, BHU, Geeta J Gautam of department of Zoology, Mahila Mahavidyalaya, BHU, Rajnish Chaturvedi and Nasreen Ghazi Ansari, both from CSIR-IITR, Lucknow and AcSIR, Ghaziabad.

Published in:
Times of India

Chandrayaan, Similar Success Stories Trigger Children's Imagination, Aptitude: Dr Jitendra

CSIR

29th December , 2023

Chandrayaan and similar science success stories in recent times have triggered children's imagination and aptitude, Union Minister Dr Jitendra Singh said on Friday. Curiosity in young minds will drive the nation's future growth with Science & Technology and Innovation, leading to an Atmanirbhar and Viksit Bharat @ 2047, he said. "Prime Minister Narendra Modi has a scientific temperament and keenly promotes Science & Technology (S&T) based initiatives and projects," he said. Dr Jitendra was speaking after presenting the CSIR Young Scientist Awards & GN Ramachandran Medal for the year 2022. "Since we are now following the world parameters and strategies and living up to world benchmarks, we will also have to be in the same league as they are," he said. Dr Jitendra said women have assumed a leadership role in an increasing number of S&T projects. "Increasingly, we have seen in these award functions, the number of women is increasing. And in many instances the women outnumber the men," he said, citing women in key Space projects. The Minister expressed the hope that in the coming years, Innovation in India will play a vital role in achieving the goal of becoming a USD 5 trillion economy. Dr Jitendra said, these young innovators will play a crucial role in the Amrit Kaal to contribute to make Viksit Bharat@2047 when India will celebrate Hundred years of Independence. "This 3rd Generation of post-Independence Bharat is the most fortunate as they are no longer 'Prisoners of their Aspirations," said Dr Jitendra, adding, "These are one of the best times with India in the forefront, witnessing innovation under the dynamic leadership of PM Modi".

Published in:

Statetimes

Lucknow's NBRI welcomes blooming Tulips in winter, possibly the 1st such case across globe

CSIR-NBRI 28th December, 2023

What scientists are claiming to be the first Tulip bloom across the world this winter comes as a fragrant surprise for Lucknow. While December has been warm for city-ites to bask in the sun enough, the esteemed Council of Scientific and Industrial Research (CSIR)-National Botanical Research Institute (NBRI) is also showcasing a beauty extraordinaire as a winter wonder.

Three scientists from NBRI are being credited for this development, namely institute director Ajit Kumar, scientists SK Tewari and Rakesh Chandra Nainwal. Thanks to the efforts that started back in October, at NBRI Banthra Research Center, near Lucknow, as many as 60 lush, flourishing tulips await visitors in aesthetic hues!

Published in:
Knocksense

Numaligarh Refinery, NEIST ink pact to collaborate in research activities

CSIR-NEIST 28th December, 2023

The Numaligarh Refinery Limited (NRL) and North East Institute of Science and Technology (NEIST), Jorhat, Assam, inked a Memorandum of Agreement (MoA) on Wednesday to promote research and development. NRL inked the pact with NEIST, a constituent unit of the Council of Scientific and Industrial Research (CSIR), in line with the Government of India's emphasis on promoting Research & Development and NRL's 10- year vision plan entailing a move to broader energy plays.

As per the MoA, a Research & Development centre, to be called "NRL-NEIST R&D Centre" or "NRDC" will be set up at the premise of NEIST, Jorhat, for taking up various research activities in emerging energy sectors for a long-term basis, with a collaborative effort of NRL and NEIST. NRL will support the R&D centre with financial contribution to the research projects.

The objectives of the collaboration would be to create state-of-art R&D, analytical and testing platform for the petroleum industry in order to develop sustainable solutions to the complex energy and environmental issues faced by oil and petroleum industry through continuous and collaborative R&D and explore new frontiers in technology for tapping unconventional reserves of energy. It would also develop facilities for specialised testing of hydrocarbon, specialty chemicals, water samples, and so on, as well as specialised testing for civil, mechanical, electrical, instrumentation and metallurgy. The MoA was signed on behalf of NRL, by Nikunja Borthakur, Senior Chief General Manager (Corporate Affairs), and Dr G Narahari Sastry, Director, CSIR-NEIST in the presence of Bhaskar Jyoti Phukan, Managing Director, NRL and other senior officials of NRL & CSIR-NEIST.

Published in:
Eastmojo

Vizag university MoU with NIO for collaborative research

CSIR-NIO

27th December , 2023

GITAM Deemed to be University signed a memorandum of understanding with National Institute of Oceanography here on Wednesday. The MoU is aimed at promoting collaborative research, facilitating exchange of ideas, and enhancing research acumen. GITAM Registrar Prof D Gunasekharan and CSIR-NIO scientist in-charge Prof VVSS Sharma exchanged the MoU documents in the presence of GITAM School of Science dean Prof KS Kirshna, GITAM R&D director Prof Raja Phani Pappu, NIO scientist Dr Damodhar Belle Shenoy, biotechnology head Dr P Kiranmay and Prof M Anitha.

As part of the MoU, both the organisations will focus on development of joint proposals for basic and applied research on topics of national interest. This includes setting up innovation and incubation centres, sharing research facilities, initiation of professional development programmes, exchange of scientists, academics, and research scholars for the purpose of research, training and consultations, etc. While addressing the gathering GITAM School of Science dean and Shanthi Swaroop Bhatnagar awardee Prof KS Krishna mentioned that the central research organisation like NIO is doing extraordinary research in ocean-related subjects. He hoped that GITAM faculty will take the advantage of the MoU to strengthen the knowledge base in oceanography subjects. GITAM biotechnology department Head Dr P Kiranmayi informed that around 30 GITAM faculty are actively working on marine and aquaculture related areas. GITAM senior faculty members, distinguished scientists, and others participated in the MoU ceremony.

Published in:

Times of India

In warm December, Tulips bloom a winter surprise at Lucknow's NBRI

CSIR-NBRI 27th December, 2023

You need not travel to Holland or Kashmir to witness landscapes awash with tulips. For the first time, the vibrant and eye-catching flowers have burst into full hues in the garden of National Botanical Research Institute's (NBRI) Banthra research station in Lucknow.

Tulips usually flower in the spring months of March and April, but the warm December in Lucknow this year advanced their bloom, springing an off-season miracle in unlikely conditions— different soil and climate. Around 60 red tulips have flowered in the garden of the NBRI's research station.

Some botanists claim this could be the first tulip bloom across the globe in winter. Three NBRI scientists are behind this unusual bloom — institute director Ajit Kumar Shasany, garden in-chargecum-chief scientist SK Tewari, and principal scientist Rakesh Chandra Nainwal. The trio toiled since October to nurture tulip bulbs, to ensure their healthy flowering in the challenging weather and soil conditions.

"We began the journey of tulips acclimatization (their growth in different climates, soil and other conditions) in October. We got tulip bulbs and to make the journey more challenging we chose NBRI Banthra research station in place of the institute's main campus on the Rana Pratap Marg. Tulips grow best in well-drained soil but we decided to grow it on the clay soilin Banthra," said SK Tewari, who has been curating NBRI's annual flower show for the past four decades.

Tewari said: "We sowed bulbs of five tulip varieties comprising white, pink, yellow, orange and red. The 'red' variety, considered most difficult to grow, began to bloom. And now the flowers are bursting in full hues in the NBRI garden"

Explaining further, he said temperatures play the mostcrucial part in tulip's growth. "In the initial phase, the flower needs a temperature of 15 to 18 degrees Celsius. In the second phase, which is the growing stage, it needs 2 to 10 degrees Celsius temperature, and for the third and final phase, temperature should be in the range of 15-20 degrees Celsius," he said . NBRI director Ajit Kumar Shasany told TOI: "Tulips bloom marks a new chapter in NBRI's efforts to diversify its floriculturalresearch and introduce new ornamental crops in the region."

He said tulips are widely cultivated since they are vibrant and ornamental flowers. They are typically associated with temperate climate and require specific growing conditions, including cool temperatures and welldraining soil. "The success at Banthra research station is a testament to the dedication and expertise of our scientists, who were able to adapt these delicate flowers to the local climate," the director added.

"The successful cultivation of tulips in Lucknow would prove to be a boon. It could lead to the development of new tulip varieties better suited to the Indian climate. It could also create new economic opportunities for farmers in the region, who could grow and sell them as cut flowers or ornamental plants," said Shasany.

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Times of India

Five-day Training Program On Cultivation Of Medicinal And Aromatic Plants For Maharashtra Farmers Begins At CSIR-CIMAP

CSIR-CIMAP 27th December, 2023

CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow and Agricultural Technology Management Agency (ATMA), in collaboration with Agriculture Commissionerate, Maharashtra, is training farmers on the subject of production, primary processing and marketing of medicinal and aromatic plants. A project is being run to create awareness. Under this project, 6 training programs will be organized in which about 300 farmers of the state will be trained.

This second program was inaugurated on Tuesday,Tuesday at CSIR-Central Institute of Medicinal and Aromatic Plants to train farmers on production, primary processing and marketing of medicinal and aromatic plants.

Around 43 farmers from eight districts of Maharashtra participated in the program under Agricultural Technology Management Agency (ATMA) Agriculture Commissionerate, Maharashtra.

The five-day training program was inaugurated by Dr. Saudan Singh, Chief Scientist, CSIR-CIMAP. Dr. Saudan Singh welcomed the participants and in his address said that CSIR-CMAP has been encouraging farmers in the cultivation of medicinal and aromatic plants for the last 60 years, and is providing new agricultural technologies, plant materials and improved varieties to the farmers.

Atul Sirsagar, Agriculture Officer, Agricultural Technology Management Agency (ATMA), Maharashtra, gave detailed information about the projects and activities being run by the department. Dr. Sanjay Kumar and Dr. Ramesh Kumar Srivastava guided the participants in the inaugural session. In the technical session of the training program, Dr. Ram Suresh Sharma shared advanced agricultural techniques of Tulsi production with the participants.

Thereafter, Dr. Rishikesh shared the advanced agricultural practices of Kalmegh production with the participants. Dr. Ramesh Kumar Srivastava gave information about advanced agricultural practices of rose.

Published in:
Thenewsagency

NRL and CSIR-NEIST executes Agreement to Collaborate in Research Activities

CSIR-NEIST

27th December , 2023

In line with the Government of India's emphasis on promoting Research & Development and NRL's 10 year vision plan entailing a move to broader energy plays, Numaligarh Refinery Limited (NRL) inked a Memorandum of Agreement (MoA) on December 27, 2023, with North East Institute of Science and Technology, (NEIST) Jorhat, Assam, which is a constituent unit of the Council of Scientific and Industrial Research (CSIR).

As per the MoA, a Research & Development centre, to be called "NRL-NEIST R&D Centre" or "NRDC" will be set up at the premise of NEIST, Jorhat for taking up various research activities in emerging energy sectors for a long-term basis, with a collaborative effort of NRL and NEIST. NRL will support the R&D centre with financial contribution to the research projects.

The objectives of the collaboration would be to create state-of-art R&D, analytical and testing platform for the petroleum industry in order to develop sustainable solutions to the complex energy and environmental issues faced by oil and petroleum industry through continuous and collaborative R&D and explore new frontiers in technology for tapping unconventional reserves of energy. It would also develop facilities for specialized testing of hydrocarbon, speciality chemicals, water samples etc as well as specialized testing for civil, mechanical, electrical, instrumentation and metallurgy.

The MoA was signed, on behalf of NRL, by Mr. Nikunja Borthakur, Senior Chief General

Manager (Corporate Affairs), and Dr G. Narahari Sastry, Director, CSIR-NEIST in the presence of Mr. Bhaskar Jyoti Phukan, Managing Director, NRL and other senior officials of NRL & CSIR-NEIST.

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Psuconnect

CDRI, PGI sign MoU to speed up med research

CSIR-NBRI 27th December, 2023

In a move to accelerate medical research and development in India, the CSIR-Central Drug Research Institute (CDRI) and Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGI) on Tuesday signed a Memorandum of Understanding (MoU).

The five-year agreement was signed in the presence of science and technology minister Jitendra Singh. The MoU lays the foundation for extensive collaboration between the two institutions in research, training and resource sharing. Specific fields of interest will be identified for joint research programmes, focusing on areas that benefit both institutions and contribute to advancements in healthcare.

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Times of India

Dr. Jitendra Singh addresses Lucknow academia, emphasises early Industry linkage for "sustainable" StartUps

CSIR-CDRI

27th December , 2023

While addressing the Lucknow academia, researchers and leaders from CSIR, DRDO, Medical and Technical Institutes of Uttar Pradesh, Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Space and Atomic Energy, Dr Jitendra Singh emphasised the importance of early Industry linkage for "sustainable" StartUps.

India needs Indian solutions for Indian problems and Indian remedies for Indian disease, said the Minister, while referring to some critical drug research projects going on at Indian institutes and CSIR laboratories.

The Union Minister said Artificial Intelligence, coupled with young minds, will transform the scenario with stronger foundation for the blueprint ahead. He said India is emerging as a cost effective start-up destination, we need to ask stakeholders and startups what they are looking for and act accordingly.

Commenting on CDRI's pipeline of drugs, he said that India has a wide spectrum of unmet clinical needs with a heterogeneous distribution. These unmet needs must be addressed by our scientists so that solutions can emerge. He added that the ecosystem and the research milieu was well set for Indian scientists to develop drugs for India.

The Minister appreciated CDRI's collaborative approach and said that institutions must work together. This includes public-public and public-private collaboration. Commenting on CDRI's agreement for research and development with Dr Reddy's Laboratories, he emphasised that it is important to understand what industry wants and jointly develop products from the start.

In terms of basic research, he encouraged integration of research across disciplines at the PhD level by creating opportunities for students to have co-guides. The Union S&T Minister said drug discovery and development are fraught with risk and require consistent, long term and sustained investment. Dr. Jitendra Singh said the private pharmaceutical industry's appetite for risk is limited. Organizations like CDRI become effective partners for industry and expand the scope of innovation for the country. Research that is cutting edge can be pursued in academia. Once proof-of-concept is established, the innovation can be taken forward by industry. Thus, a seamless movement of knowledge and data from academia to partners helps to move the IP from lab to market.

Dr. Jitendra Singh said 'One Week One Lab' (OWOL) programme, during which laboratories spread across the country unveil their remarkable research outcomes and accomplishments, will prove to be a milestone. He said the idea is not only to showcase ourselves but also to make stakeholders realize what we have to offer them so they can avail it and we can integrate. He said CDRI should incorporate more and more young brains to bring in innovation and novelty in technology. The Union Minister said that when we opened the Space sector for start-up we had a good response. He said there is no dearth of funds. India is not just financially rich but also is rich in ideas and novelty. Dr. Jitendra Singh said, India has seen two successful stories, - vaccine story and Aroma Mission & Floriculture Mission. He said the first one provided people good health and the other one promoted the cultivation of aromatic crops for essential oils that are in great demand by the aroma industry. He said attempts are on to enable Indian farmers and the aroma industry to become global leaders in the production.

An MoU was also signed between SGPGIMS and CDRI in presence of Union Minister and Dr. Kalaiselvi, Director General, CSIR. MoU will help to create greater connect between clinicians and researchers and ultimately lead to more impactful research and development. Dr Radha Rangarajan, Director, CSIR-CDRI and Dr Prabodh K. Trivedi, Director CIMAP briefed the Union Minister with a presentation.

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Pib

Dr Jitendra Singh meets students from J&K, calls them architects of 2047

CSIR-IIIM

26th December , 2023

Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh today met a delegation of about 250 school children belonging to all districts of Jammu & Kashmir, who are currently on a visit to New Delhi. These students are visiting Jaipur, Ajmer and New Delhi under 'Watan Ko Jano - Youth Exchange Programme 2023' of Government of India. In the spirit of Ek Bharat Shreshtha Bharat, the visit is aimed at showcasing the cultural and social diversity of the country to the youth of Jammu and Kashmir. Dr Jitendra Singh told the young students that they are destined to be the architects of 2047 and that this is one of the best times happening for India as also a new beginning for Jammu & Kashmir.

Under the leadership of Prime Minister Shri Narendra Modi, Dr Jitendra Singh said, the picturesque region of Jammu & Kashmir has undergone a remarkable transformation. Stone pelting incidents are a thing of the past. Today, Jammu & Kashmir makes headlines more for stories of sporting achievements, he said. "Cricketers from J&K like Abdul Samad, Umran Malik, Parvaiz Rasool and Manzoor Pandav play in the IPL. Wushu players Surya Bhanu Partap Singh and Abhishek Jamwal brought laurels to the country in the recent Moscow Championships. In 2022, a Kashmiri skier, Arif Khan, carried India's National Flag at the opening ceremony of the Winter Olympics in Beijing," he said, adding, "Girls in Kashmir also participate in sports at par with boys. Earlier this year 16-year-old Sheetal Devi, hailing from Loidhar village in Kishtwar, is the 'first female archer without arms to compete internationally'. At the Asian Para Games, she claimed not one but three medals, including a

gold, in different categories." Dr Jitendra Singh said, this shift can be attributed to various factors, including increased administrative support, improved infrastructure, and a growing priority to youth.

Citing the stupendous success of Aroma Mission and Purple Revolution in J&K, Dr Jitendra Singh encouraged the school children to also look for opportunities outside government job. Lavender is an avenue of Agri StartUps, employment generation and research, opening many paradigms of development, he said.

"Bhaderwah has emerged as the Lavender capital of India and Agri StartUp destination. Following the success of Aroma Mission and Purple Revolution in Bhaderwah and Gulmarg regions, over 3,000 Startups are now engaged in Lavender cultivation alone," he said.

Dr Jitendra Singh recalled that PM Modi, in the 99th Edition of Mann ki Baat, appreciated the efforts of the Council of Scientific & Industrial Research- Indian Institute of Integrative Medicine (CSIR-IIIM) in supporting farmers in the cultivation of Lavender in Bhaderwah of Doda district under CSIR-Aroma Mission.

The S&T Minister informed that the CSIR had introduced high-value essential oil bearing lavender crop through its Jammu based laboratory, Indian Institute of Integrative Medicines (IIIM) for cultivation in districts Doda, Kishtwar, Rajouri and later also in the other districts including Ramban, Pulwama, etc. In a brief span of time, aroma/lavender cultivation has become a popular option in farming for agricultural Start-up, he said.

The net annual income of farmers who switched from maize to Lavender cultivation has increased many folds from around Rs. 40,000/- to Rs. 60,000/- per hectare to Rs. 3,50,000/- to Rs. 6,00,000/- per hectare. Farmers of the Bhaderwah, Doda district, produced 300, 500, 800, and 1500 Litres of Lavender oil in 2019, 2020, 2021, and 2022, respectively. They earned > Rs. 5.0 Crore between 2018-2022 by selling dry flowers, Lavender plants and Lavender oil. Dr Jitendra Singh, who represents Udhampur Constituency of J&K in the Lok Sabha, said the

discovery of Lithium in Reasi district may well turn out to be "India's next big story", giving a multifold boost to the country's economy. "Analysis suggests that the value of Lithium deposits in Reasi may be higher than China," he said, stating that Lithium is a key component in rechargeable batteries and there is huge demand for Lithium as the world turns to renewable energy. Stating that an increasing number of items from J&K have been geo-tagged, Dr Jitendra Singh said it will help promote sales of GI-tagged products from the UT to boost the local economy.

"Government under the leadership of Prime Minister Modi has made efforts to bring development in J&K. Various infrastructure projects will change the face of J&K, projects such as Ujh Multipurpose project, Shahpur Kandi dam project, construction of world's highest railway bridge on Chenab river in Reasi, setting up of AIIMS and IIMs, etc. In Kathua district, the Engineering College has started functioning and Medical College will also be opened soon. North India's first Biotech park will be set up in Kathua in J&K," he said, adding that a record number of tourists visited Jammu and Kashmir this year. Dr Jitendra Singh appealed to the students to be catalysts of PM Modi's reforms and help their effective implementation in J&K. The Union Territory of Jammu & Kashmir and the unexplored North-Eastern Region (NER) have huge natural resources that would drive India's future growth story during the Amrit Kaal towards attaining a ViksitBharat @ 2047, he said.

During the interaction, the students brought out particular instances of lack of development in their regions in the state and how things are now beginning to change for the better. They thanked the Minister for Government's support to students from Jammu & Kashmir, due to which they have got the opportunity to study in premier universities and colleges under the PM Special Scholarship Scheme. They cited development works being undertaken on ground level in the last few years like opening of new medical colleges, national highways, bank branches, schools etc. that were distant dreams earlier.

Published in:
Pib

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