

CSIR in Media



A Daily News Bulletin
6th to 12th April 2018



CCMB students reach out to colleges in Hyderabad

CSIR-CCMB

12th April, 2018

To raise awareness about career opportunities, scholarships available for PhD programmes Twelve PhD students of CSIR-Centre for Cellular and Molecular Biology, Hyderabad, have started a new initiative of interacting with undergraduate and post-graduate students belonging to different colleges in the city to raise awareness about career opportunities and several scholarships available for PhD programmes. The first meeting with post-graduate students at Loyola Academy, Alwal, was held on April 7. “The initiative is on a pilot scale right now, involving 12 PhD students. We have already visited two colleges. We will be adding more students and targeting more colleges in the days to come. We intend holding at least one meeting each month,” says Santosh Kumar Kuncha, a PhD student at CCMB. “We also explain the science being done at CCMB.” The students intend to interact with students not only in basic sciences, but also in vocational courses to explain how science is interdisciplinary and requires different perspectives and skills to excel. The students also intend involving CCMB scientists in the outreach programme. There are plans to initiate other outreach programmes with general public to keep them updated of scientific advances and their implications on our understanding of life and universe. “Graduate students of CCMB start a new initiative of regularly visiting local colleges in Hyderabad, interacting with science enthusiasts, discussing the ever expanding frontiers of science and different successful career paths that one can pursue with a rigorous training in science. If you feel your college would like to have a visit from CCMB students as well, leave us a note,” reads a post on CCMB Facebook page. Interested colleges in Hyderabad can also send an email to the following address: students@ccmb.res.in

Published in:
[The Hindu](#)

CSIR-CFTRI to conduct skill devtpt programme on microbial food safety

CSIR-CFTRI

12th April, 2018

In tune with the national mission of transforming India as the skill capital of the world, Mysuru-based CSIR-Central Food Technological Research Institute (CFTRI) is gearing up to conduct a programme on microbial food safety, which commences on May 28, 2018. The objective of the course is to develop the skills of life science graduates and post-graduates to work in food and allied industries. The course will be conducted at the CSIR-CFTRI campus. The course fee has been fixed at Rs 30,000 per person. The last date for submitting applications is April 30, 2018. Food microbiology is a broad area that covers various aspects of the microbial world in association with food. The proposed skill development programme focuses on important areas of food microbiology, such as microbial food safety and fermentation. “The course will be helpful to those who are interested in working on microbial food safety, hygiene, quality assurance in food and allied industries and production of value-added products using microbial fermentation,” according to a communication from the institute. The beneficiaries of the course include students aspiring a career in food safety, quality testing and fermentation technology, budding entrepreneurs in food industry, food inspectors/food handlers, sanitation and hygiene practitioners and self-help groups (SHGs) in the food and catering sector. Upon the successful completion of the programme, they will be equipped with appropriate knowledge to pursue their career as quality control managers, lab technicians/assistants, shift engineers, food safety consultants and entrepreneurs in the field of microbial food safety and testing. The course is also open to candidates with 10+2 and 3-5 years’ experience in food industry to boost their careers. The institute has indicated that prospective candidates can get in touch with the head, microbiology and fermentation technology.

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[FNB NEWS](#)

▶ अच्छी पहल

स्टीविया की शक्कर गन्ने की शक्कर से होती है 300 गुना मीठी, फिर भी होती है जीरो कैलोरी

मीठी तुलसी से बनेगी शक्कर कोंडागांव में लगेगा पहला कारखाना

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पूरी दुनिया में सर्वाधिक मरीज मधुमेह की बीमारी से पीड़ित हैं। मधुमेह के मरीजों के लिए सुगर फ्री एक समय में काफी प्रचलन में था, लेकिन स्वास्थ्य के प्रति जागरूकता और नए शोध के जरिए शक्कर के विकल्प के रूप में स्टीविया सामने आया है। दरअसल, विकसित देश शक्कर या कृत्रिम मिठास के लिए प्रयुक्त किए जाने वाले रसायनों से स्टीविया की ओर उन्मुख हो रहे हैं, लेकिन भारत जैसे विकासशील देशों में अभी स्टीविया के बारे में व्यापक जागरूकता नहीं आई है। हालांकि भारत में भी इसका प्रयोग धीरे-धीरे बढ़ने लगा है। पूर्व के स्टीविया के स्वाद में थोड़ी कड़वाहट थी, लेकिन सीएसआईआर की आईएचबीटी ने एक ऐसी स्टीविया की

हजारों किसानों को मिलेगा लाभ | बस्तर क्षेत्र के विकास को मिलेगी गति | महाराष्ट्र में भी लगेगा स्टीविया शक्कर संयंत्र



मां दंतेश्वरी हर्बल समूह और सीएसआईआर (भारत सरकार) के बीच हुआ करार

प्रजाति विकसित की है जो कड़वाहट रहित है। साथ ही जैविक तरीके से हर्बल खेती और उत्पाद के लिए देश की अग्रणी कंपनी मां दंतेश्वरी हर्बल के साथ एक करार किया है। इस करार के तहत छत्तीसगढ़ में बड़े पैमाने पर

इस उन्नत प्रजाति की स्टीविया की खेती मां दंतेश्वरी हर्बल समूह के नेतृत्व में जाएगी तथा इसकी निष्कर्षण इकाई छत्तीसगढ़ के कोंडागांव में स्थापित की जाएगी। बाद में ऐसी इकाई महाराष्ट्र में भी स्थापित की जाएगी।

बता दें, कि मां दंतेश्वरी हर्बल देश की पहली आर्गेनिक सर्टिफाइड कंपनी (सन् 1996) है और इसके उत्पाद न केवल देश में बल्कि दुनिया के कई देशों में खासे लोकप्रिय हैं। कंपनी के सीईओ डॉ. राजाराम त्रिपाठी ने बताया कि छत्तीसगढ़ के किसानों पर यह करार एक सकारात्मक प्रभाव डालेगा। इससे हजारों एकड़ भूमि पर स्टीविया की खेती की जाएगी और हजारों की संख्या में किसान लाभान्वित होंगे। साथ ही एक्सपोर्टर्सन यूनिट स्थापित होने से भारी संख्या में लोगों को रोजगार मिलेगा। डॉ. त्रिपाठी ने बताया कि कोंडागांव जनजातीय बहुल क्षेत्र है और विकास की दौड़ में पिछड़ा क्षेत्र है, लेकिन इस पहल से इस क्षेत्र के विकास को तो गति मिलेगी ही साथ ही संस्कृति और समाजिक विकास को भी मजबूती मिलेगी।

Scientists explore the science behind the formation of 2D Covalent Organic Framework

CSIR-NCL

11th April, 2018

A team of scientists from Academy of Scientific and Innovative Research (AcSIR), Council of Scientific and Industrial Research-National Chemical Laboratory (CSIR-NCL) and Indian Institute of Science, Education and Research Kolkata (IISER Kolkata) have studied the formation of 2 Dimensional Covalent Organic Frameworks (COF)- organic solids bound together by covalent bonding, to understand the science behind the underlying structure.

COFs are porous and crystalline solid structures made of light, organic solids like Hydrogen, Boron, Nitrogen and Oxygen. Due to their lightweight nature, COFs are employed in engineering lightweight materials and their porous nature makes them useful in applications like gas storage. With wide ranging applications, economical and bulk synthesis of COFs is a challenge for material science. Several process like solvothermal synthesis have given rise to several variations of COFs, enriching the COF library. However, to manufacture on a large scale, scientist have to first, understand the processes that lead to the formation of such a structure.

According to the authors “the fundamental understanding of the integral processes of 2D COF assembly, including their growth from nucleating sites and the origin of periodicity, is an intriguing chemical question that needs to be answered” To answer this question, the scientists, in their study, came up with a “green and easy to perform” approach of COF formation using an acid-diamine (organic compound with two amino groups) mixture. Using the new approach, the scientist were able to explore the role of hydrogen bonding in improving the crystallinity and porosity of the COFs that were formed.

They did this by studying the average distance of the Hydrogen atom in the amines to the Oxygen atom in the acid. Thorough crystallographic analyses of the salt molecules provided accurate measurement of the role of hydrogen bonding.

Further, the scientists used their knowledge of hydrogen bonding distance in the acid-diamine salts and the relationship between product quality and reactant-structure to synthesize highly porous and crystalline COF, which, according to the authors “are unattainable by other synthetic means”.

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[Research Matters](#)

Herbal Repellents

CSIR-CIMAP

10th April, 2018



If you think the air outside is polluted, then stop to consider the chemicals you inhale in your home

Everyone wants a clean, pest-free home. So we buy sprays, coils and gels to get rid of mosquitoes, cockroaches, bed bugs, and termites. However, we don't once think how chemical-laden repellents affect our health. John Thomas, founder of Herbal Strategi, faced a grave illness to realise that chemical repellents, even though its effects may not be visible immediately, take a toll on our health over a period of time. "In 2009, I had suffered from an upper respiratory tract infection. The doctors told me to stop using vaporisers,"

says John. Determined to switch to eco-friendly and safe repellents, John searched online for alternatives but found nothing. John's Masters degree in Aquaculture at the Punjab Agriculture University came in handy. "I asked my colleagues and they referred me to Central Institute for Medicinal and Aromatic Plants (CIMAP) in Lucknow. We went there and they gave us environment-friendly formulations that kept mosquitoes away for 10 to 12 hours to test. Since Kerala has 400 types of mosquitoes, we went there and tried the different formulations for one-and-a-half years. We then went to Kochi, Hyderabad and Bengaluru to find out if people were interested in herbal repellents. Thirty per cent said yes and out of that 30 per cent, 65 per cent were new mothers, with small kids and who wanted safe repellents." Further research revealed that there were players in the market for herbal care, though, John adds: "Most of the herbal companies were present in the personal care segment and

health care segments . There were no herbal players in the home care segment.” John returned to Bengaluru and applied for a license from Ayush. He then started manufacturing his products in July 2011 and then took them to sell in Kerala. He noticed that by December his products stopped working. “Customers were returning them. I realised that we had bought aromatic oils from local traders. Initially the aromatic oils they supplied were good but over time they gave low quality oils. In December 2011, we recalled all the products. We lost a lot of money. But we started working from scratch and purchased raw material from CSIR-IIIM. In 2013, we relaunched Justspray which is a home spray for mosquitoes in Kerala, Tamil Nadu and Karnataka. I gave my mobile number in all the advertisements, and we received feedback from customers on what kind of herbal products they wanted. From a single product launched in 2013, we now have 35 Herbal Home Care products in the Herbal Cleaners, Herbal Fresheners, Herbal Hygiene, Herbal Fogging solutions, Herbal Pet care and Herbal Insect repellent categories.” These were developed from feedback received from customers who wanted these natural and herbal products at their homes. One of their most popular products is the bed bug spray. People spend thousands to eliminate bed bugs, but this spray helps to get rid of them safely. “People don’t like to reveal that they have bed bugs because they will be perceived being dirty. So when we put the bed bug spray on the retail shelves, it was one of the most bought products. The herbal bedbug spray extracts the bedbugs from the crevices and also shrinks the eggs and does not allow the eggs to hatch. These were the two challenges normally faced in bed bug treatment which we were able to overcome. The bedroom can be used the same day while using our Bugspray against non-usage of bedroom for two weeks if chemicals are used.” John adds that it takes one-and-a-half years to two years to bring out a product. “We create a synergy of 12 to 18 oils, mix them for four to five hours and then allow the mixture to mature for three to four days.” There are even herbal sprays for the treatment of ticks, fleas and lice in dogs. “A reputed pet doctor had requested we produce a herbal spray as chemical sprays reduces the life span of dogs by two to three years and they also develop resistance to ticks, fleas and lice in the short term. When we developed a product we had sent it to the Department of Medicine, Veterinary College in Hebbal to carry out efficacy test in various breeds of dogs. A paper.

was written on the findings and the herbal product was found to be extremely effective in repelling ticks, fleas and lice in dogs . So we launched kennel spray and Yespray (body sprays) for dogs.” Asked what is different about his products from other herbal brands, John says: “Ninety per cent of the herbal products seen in the home care segment do not have an ayurveda license. Whereas we have a license from Ayush, we are PETA and ISO 9001 certified.” Herbal Strategi products are available in their showroom located at number 118/1, Narayana Enclave, 10th cross, Coconut Avenue Road, Malleswaram, on www.herbalstrategi.com, and on Amazon, in all organic and Ayurveda stores, and supermarkets

Published in:

[The Hindu](#)

Cleaning city's drains in a natural way

CSIR-NEERI

9th April, 2018

Nagpur: In a first-of-its-kind natural way of drain cleaning treatment, using in-situ process, the CSIR-National Environmental Engineering Research Institute (Neeri) will be demonstrating a unique process of the cleaning treatment with the help of a combination of technologies which will give impetus to all kinds of drain treatment, including big and small nullahs. The institute will put this technology on display, by treating over 200 meters of drain, on its diamond jubilee foundation day celebrations at its headquarters here on Sunday. With this kind of technology, nullahs will get a cleaner look providing hygienic surroundings. “They will no longer be breeding spots for mosquitoes and other insects. Moreover, pathways and cycling tracks can be developed along side nullahs,” Neeri director Rakesh Kumar said. The institute has already signed a memorandum of understanding (MoU) with the Punjab government for providing the technical support of same process in reviving the 2.2-kilometre-long Tung Dhab drain in Amritsar. The drain has been highly polluted for the last several years. As reported by TOI earlier, Neeri is also providing technical support for cleaning Vada and Commercial canals in Alappuzha, Kerala. The institute also plans to revive drains of Mumbai and some other cities. “While there is a scepticism about in-situ treatments, we are trying to demonstrate its effectiveness. Technologies may vary depending on the configuration of nullahs. Big urban nullahs can be diverted and exposed to treatments,” Kumar said. Called it the Reneu (Restoration of Nullah with Ecological Units) integrated technology, it involves five major steps for cleaning. “We are all natural components — phyto-traps, solar diffused aeration, light-weighted building material and wetland plants to clean the nullah. No chemicals are required in this treatment, making it a very cost-effective,” said Centre for Strategic Urban Management principal scientist Ritesh Vijay, who is also a director of technical cell. Senior principal scientist and head of director’s research cell Atya Kapley is handling the bio-mats

technology (see box). Neeri has appointed Alaknanda Technologies Pvt Ltd for implementation of these integrated treated units. Stating that the need of the hour is to revive the natural drains, said research fellow Saisaurabh Asoria, “The drains not only pose threat to human health but also pollute major water bodies after meeting them.” Apart from this, Neeri will be inaugurating a technology park in its headquarters on Sunday. “Till now, all our technologies were restricted to laboratories but now we are scaling it up. It is not easy for industries to adopt ideas from laboratories. Hence, all the CSIR technologies will be demonstrated in the park for getting first-hand experience,” Kumar said. The park will be inaugurated by CSIR director general and Department of Scientific and Industrial Research (DSIR) secretary Girish Sahni. Sahni will also be interacting with young scientists on the occasion.

HOW IT WORKS

Step 1: Screening-cum-silt-trap

Coarse screens used to trap bigger floating solid waste while finer screens used to trap the waste (leaf litter) which managed to pass through the coarse screen

Step 2: Sedimentation

The waste water is allowed to settle down by providing sufficient space. In natural sedimentation, organic matter settles down

Step 3: Biomats and Phyto-trap

Biological mats inoculated with bacteria will be used to treat sewage. Phyto-trap is a unit which treats water by physical filtering and decomposition of organic water. It consists of porous light-weighted building material on which the bacterial growth gets attached. They also trap the suspended organic matter and thus filter sewage water

Published in:
[Times of India](#)

Think for society; work for nation: Dr Sahani

■ Staff Reporter

DR GIRISH Sahani, Director General of Council of Scientific and Industrial Research (CSIR) on Sunday has given a 'wake-up call' to the scientists working in CSIR institutions to think for common man in the country than to think about their own luxuries.

Addressing as the chief guest of Diamond Jubilee function of CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) Dr Sahani who is also a Secretary to Department of Scientific and Industrial Research (DSIR) appealed the scientific community to change their attitudes, shed hyperinflated egos and be humble to respond to a call of society. Introspection, critical thinking, gratitude and compassion for common people would help the scientists to address all challenges, he added.

Dr R N Singh, Visiting Professor, IIT Gandhinagar Former Director, CSIR-NEERI was the Guest of Honour and M. C. Mehta, Supreme Court Lawyer and Environmentalist was the Distinguished Guest. Director, CSIR-NEERI Dr Rakesh Kumar and Dr J S Pandey, Chief Scientist also shared dais.

Dr Sahani said that though NEERI has already become a brand but it needs to address current and future challenges of the



Dr Girish Sahani addressing the Diamond Jubilee function of NEERI on Sunday. Also look on Dr Rakesh Kumar, Dr R N Singh, M C Mehta and Dr J S Pandey. (Pic by Satish Raut)

environment. CSIR is now planning to use its technologies to solve at least 100 problems of the society, including poorest of the poor. CSIR-NEERI should more support to the judiciary for environment protection through its scientific and technological interventions, he added.

Dr Singh said that the scientists should develop a robust knowledge which is relevant and acceptable by others. CSIR-NEERI should deal with the future uncertainties of the environment, as day by day the environment issues are becoming more and more complex.

Mehta expressed a concern over climate change and appealed CSIR-NEERI to work on it. He emphasised on the fundamental rights of a citizen to ensure environment protection.

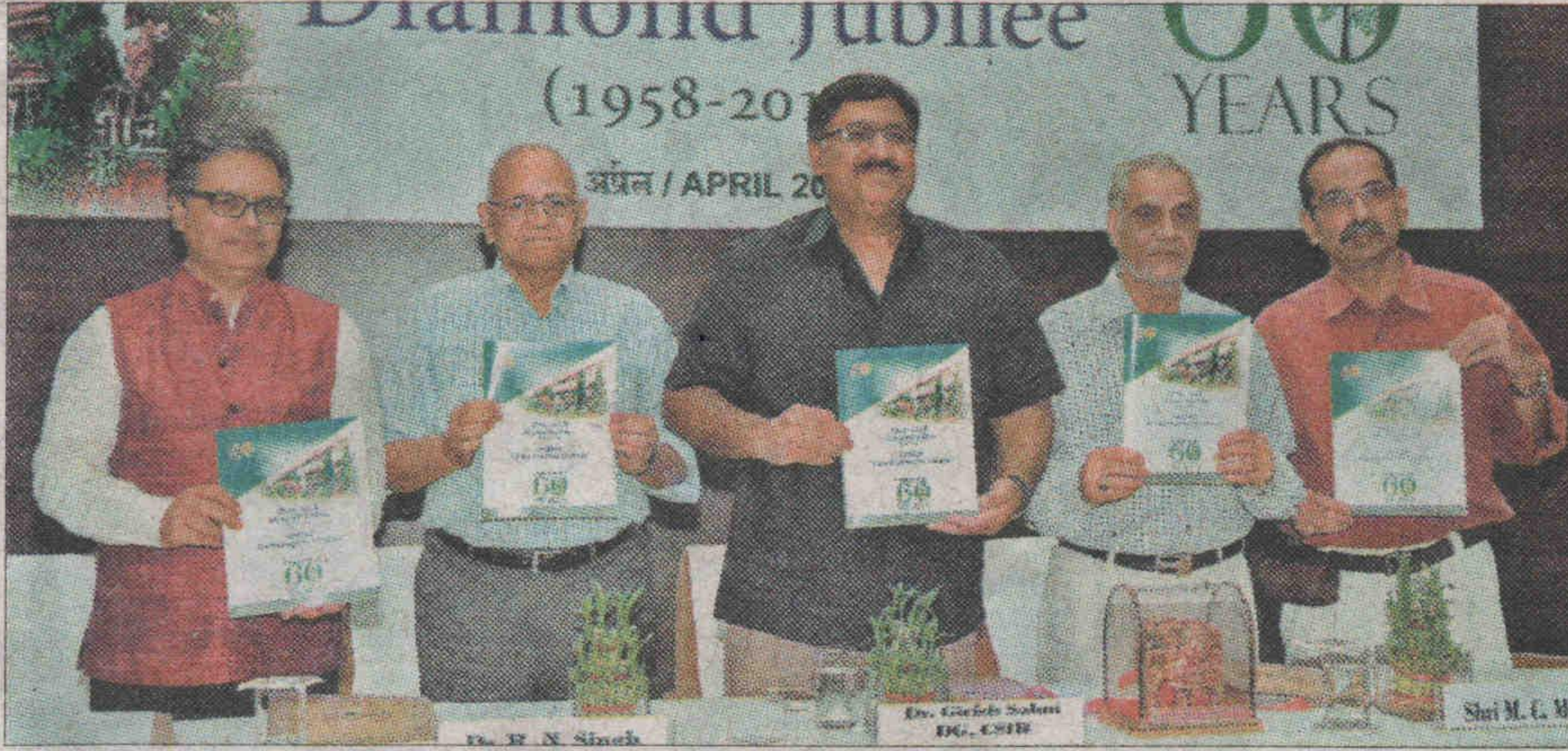
In his welcome address, Dr Rakesh Kumar stated that CSIR-NEERI has always taken inputs from the industry to propel the Institute and it will continue to do so. He informed that CSIR-NEERI has done well in translating its patents to application on field. Rejuvenation of rivers and water bodies, and waste management are still a grand challenge for the country, he added.

CSIR-NEERI Diamond Jubilee Awards were given away on this occasion. M C Mehta was honoured with 'Environment Protection Leadership Award'. Dr P R Pujari and Dr Ritesh Vijay were awarded as 'Best Senior Scientist' and Dr Lal Singh as 'Best Junior Scientist'. Prakash Kelapure earned the award for 'Best Office Personnel' and D Nayak for 'Best Support Personnel'. Shaswati

Saha and Satinder Kaur were awarded as 'Best Young Researcher' and 'Best Project Personnel' respectively. Water Technology and Management Division (WTMD) and Hyderabad Zonal Centre were given away the Best Division Award'. Director's Research Cell and Environmental Impact and Sustainability Division (EISD) were given the award for exceeding the performance target. A H Dhawale and Pramod Deshmukh were rewarded for their contribution in promoting Diamond Jubilee material.

Earlier, Dr Girish Sahni, DG-CSIR inaugurated the 'Technology Park' and 'Nalla Treatment Demonstration Unit'. Atya Kaple conducted the proceedings. Dr J S Pandey, Chief Scientist proposed a vote of thanks.

नीरी के हस्तक्षेप से न्यायपालिका को पर्यावरण संरक्षण के लिए और अधिक सहयोग करना चाहिए



■ सीएसआईआर महानिदेशक व भारत सरकार के सचिव डॉ. गिरीश साहनी ने कही

नगर प्रतिनिधि | नगपुर

आज के समय में नीरी एक ब्रांड बन गया है, लेकिन यह वर्तमान व भविष्य में पर्यावरण की चुनौतियों के लिए आवश्यक है। तकनीक के माध्यम से समाज की 100 से अधिक समस्याओं को सुलझाने के लिए सीएसआईआर योजना

बना रहा है। इसमें छोटी से छोटी समस्याएं शामिल हैं।

नीरी को अपने वैज्ञानिक व तकनीकी हस्तक्षेप से न्यायापालिका को पर्यावरण संरक्षण के लिए और अधिक सहयोग करना चाहिए। यह बात मुख्य अतिथि के रूप में सीएसआईआर महानिदेशक व भारत सरकार के सचिव डॉ. गिरीश साहनी ने कही। वह सीएसआईआर-राष्ट्रीय अभियांत्रिकी पर्यावरण अनुसंधान संस्थान (नीरी) के हीरक जयंती महोत्सव में बोल रहे थे। कार्यक्रम

में विशिष्ट अतिथि सीएसआईआर-नीरी के पूर्व निदेशक डॉ. आर. एन. सिंह, उच्चतम न्यायालय के अधिवक्ता, सीएसआईआर-नीरी निदेशक डॉ. राकेश सिंह उपस्थित थे।

कचरे का निष्पादन देश के लिए चुनौती

डॉ. सिंह ने कहा कि वैज्ञानिकों को खुद को विकसित कर अपनी जानकारी को पक्का करना चाहिए, जो अन्य लोगों के लिए उचित हो और उसे वह अपना सकें।

दिन-प्रतिदिन पर्यावरण के मामले बिगड़ते जा रहे हैं। डॉ. मेहता ने एक स्टोरी के माध्यम से बताया कि कैसे सीएसआईआर-नीरी न्यायपालिका के लिए 20 साल पहले से काम कर रही है। उन्होंने कहा कि बड़े पैमाने पर जलवायु परिवर्तन हुआ है। नीरी को इस पर काम करना चाहिए। उन्होंने जोर देने हुए कहा कि नागरिकों को पर्यावरण के बचाव के लिए मूलभूत अधिकार के बारे में सुनिश्चित करना चाहिए। डॉ. कुमार ने कहा कि आज भी नदियों व जलस्रोतों का कायाकल्प व कचरे का निष्पादन देश के लिए चुनौती बना हुआ है।

इनको दिया गया अवार्ड

इस अवसर पर एम. सी. मेहता को पर्यावरण संरक्षण नेतृत्व अवार्ड, डॉ. पी. आर. पुजारी व डॉ. रितेश विजय को बेस्ट सीनियर साइंटिस्ट, डॉ. लाल सिंह को बेस्ट जूनियर साइंटिस्ट का अवार्ड दिया गया।

इसके साथ ही प्रकाश केलापुरे, डी. नायक, शाश्वति शाह, सतिंदर कौर को भी सम्मानित किया गया। आभार प्रदर्शन डॉ. जे. एस. पांडे ने किया।

96 cities not meeting air pollution norms: Neeri director

CSIR-NEERI

9th April, 2018



celebrations of Neeri. As reported by TOI, the CSIR has adopted a new theme-based approach to collaborate different technologies pan-India. The council, which has 38 labs across the country, has formulated eight themes which include multiple labs and their scientists specializing in different areas. Neeri is the coordinator for theme of Ecology, environment, earth, ocean sciences and water. Stepping into its 61st year, the institute has set four major environmental challenges that needs to be addressed. Neeri director Rakesh Kumar stated that as many as 96 cities in the country are not meeting the norms of the Central Pollution Control Board (CPCB) when it comes to air pollution. “Air pollution, climate change and rejuvenation of rivers and water bodies will be the focus areas,” said Kumar. Pointing out that India needs to spend around Rs8,000 crore for solid waste management (as per data available), Kumar said that untreated municipal solid

NAGPUR: Stating that the environment today is more challenging than it ever was, the director of Council of Scientific and Industrial Research (CSIR), Girish Sahni has stressed on the need for a multi-disciplinary approach to address problems. On vehicular emission of fossil fuels, Sahni said that all expert bodies like the National Environmental Engineering Research Institute (Neeri), energy institutes, pollution control boards, experts of chemistry, polymer science and other concerned disciplines should collaborate to find solutions. Sahni was addressing the scientists on Sunday evening during the diamond jubilee foundation day

waste continues to be a problem in all corners of the country. “As environmental challenges are becoming more complex, we will be using data analytics and information technology,” said Kumar. Highlighting that Neeri’s percentage of transforming patents to fields is 75-80, Kumar said that the institute will now focus more on demand-based technology. “After consulting experts and preparing SOPs, we have de-listed many technologies which were not relevant,” he added. On Sunday, Sahni inaugurated the a technology park at Neeri headquarters. He also inaugurated a nullah treatment demonstration unit which uses a combination of technologies for reviving drains.

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A cycle that floats on water and removes debris too

CSIR-NEERI

8th April, 2018



Nagpur: In a breather for city lakes, some of which have been running low on dissolved oxygen level, the CSIR- National Environmental Engineering Research Institute (Neeri) has developed a floating cycle to rejuvenate water bodies. The cycle will be handed over to the Nagpur Municipal Corporation (NMC) for cleaning the city lakes. Conceptualized and fabricated by Neeri, the cycle aims at not only cleaning the lake but also increasing the dissolved oxygen level of the water bodies. The floating cycle is equipped with a propeller which can be directed by the handle. “There is a mesh attached in the front which will collect

floating debris and solid waste from the lake. The paddle wheel at the back will churn the water providing aeration to the water body,” said Atya Kapley, senior principal scientist and head of director’s research cell at Neeri. Neeri has used PVC pipes which provide the required buoyancy. “To ensure safety, riders will have to wear safety jackets. Since the cycle uses manpower, it is eco-friendly and requires no fuel,” said Kapley. Though Neeri has not disclosed how much it would cost to assemble the cycle, Kapley said it will be very “cost effective”. Nagpur: In a breather for city lakes, some of which have been running low on dissolved oxygen level, the CSIR- National Environmental Engineering Research Institute (Neeri) has developed a floating cycle to rejuvenate water bodies. The cycle will be handed over to the Nagpur Municipal Corporation (NMC) for cleaning the city lakes. Conceptualized and fabricated by Neeri, the cycle aims at

not only cleaning the lake but also increasing the dissolved oxygen level of the water bodies. The floating cycle is equipped with a propeller which can be directed by the handle. “There is a mesh attached in the front which will collect floating debris and solid waste from the lake. The paddle wheel at the back will churn the water providing aeration to the water body,” said Atya Kapley, senior principal scientist and head of director’s research cell at Neeri. Neeri has used PVC pipes which provide the required buoyancy. “To ensure safety, riders will have to wear safety jackets. Since the cycle uses manpower, it is eco-friendly and requires no fuel,” said Kapley. Though Neeri has not disclosed how much it would cost to assemble the cycle, Kapley said it will be very “cost effective”. On Thursday, a pilot experiment of the cycle was conducted at Telangkhedi lake during which some technical modifications were suggested by Neeri’s director Rakesh Kumar. As part of the institute’s upcoming diamond jubilee celebrations, Kumar will be handing over the cycle to NMC commissioner on Saturday morning at Telangkhedi lake. Envisaging community participation in the first-of-its-kind project in the city, Neeri has joined hands with NGO Paryavaran Prerna. “The cycle can be modified with a two-seater arrangement so that citizens too can join the initiative. They can enjoy the experience of boating and at the same time clean the lake,” Kapley suggested. Dissolved oxygen, which refers to microscopic bubbles of gaseous oxygen that are mixed in water and available to aquatic organisms for respiration, is the most important indicator of the health of a water body. As reported by TOI earlier, the dissolved oxygen level at Futala dropped to 2.5 milligrams per litre last year after Ganesh immersions. According to experts, the level should ideally be around 6 mg/l. Stating that the baseline monitoring of Futala lake was recently conducted by Neeri scientists, Kapley said that the impact of the cycle will be studied further. “Once it starts running, we can monitor the changes in the level of dissolved oxygen,” she added.

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In a first, CSIR adopts theme-based approach

CSIR

8th April, 2018

NAGPUR: In a first-of-its kind attempt, the Council of Scientific and Industrial Research (CSIR) has adopted a new theme-based approach to collaborate different technologies pan-India. With this, the council aims at providing effective scientific and technological solutions to various problems. CSIR, which has 38 labs across the country, has formulated eight themes which include multiple labs and their scientists specializing in different areas. These include — Aerospace, electronic and instrumentation and strategic sector; Civil infrastructure and engineering; Mining, minerals, metals and materials; Chemicals and petro-chemicals; Energy (conventional and non-conventional) and energy devices; Ecology, environment, earth, ocean sciences and water; Agri, nutrition and Biotechnology and Healthcare.

Neeri director Rakesh Kumar informed that the institute will play role of coordinator for the theme of Ecology, environment, earth, ocean sciences and water. “The idea behind this initiative is to bring together all technologies and benchmark them according to the location and requirement. This will avoid duplication and absence of knowledge as all the laboratories will be aware of each other’s work,” he said. The theme will focus on earth and ocean sciences, water and wastewater, solid waste management, air quality and climate change, natural resources and biodiversity and environmental policy and regulations.

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Healing wounds with leather, meat waste

CSIR-CLRI

7th April, 2018



Protein extracted from discarded animal tissues can now be put to better use — wound healing and human tissue engineering. This waste-to-wealth feat was demonstrated by researchers from the Chennai-based CSIR-Central Leather Research Institute (CSIR-CLRI). In the meat industry, tonnes of animal tissues that are rich in collagen (protein) go waste. The researchers have found that various collagenous tissues available as inedible by-products in abattoirs can be successfully used for the production of collagen-based products for biomedical applications. “Collagen has been reported to play a major role in healing of tissues,

but their low mechanical strength and fast biodegradation has restricted its use. We tried to overcome these limitations by incorporating the collagen with another biopolymer, chitosan, obtained from shells of crustaceans,” says Dr. Chellan Rose, the corresponding author of the paper published in RSC Advances, who has now retired from CLRI. The collagen-chitosan scaffold was cross-linked with an amino-acid L-arginine to impart stability. It also helps avoid side-effects caused by toxic chemical cross linkers. The freshly prepared 3D scaffolds were first tested in vitro on mouse fibroblasts. The cell population increased significantly in 48 hours suggesting that they were able to anchor to the 3D scaffold and proliferate. For in vivo studies, a small cutaneous wound was created on a lab rat and treated with the new scaffold and covered using micropore tape. Complete wound closure was seen at the end of 14 days with no scar formation.

Computer simulation studies further examined the possible interactions of the collagen with arginine and chitosan. Molecular docking revealed that the compounds bind well and the arginine helped the stability of collagen-chitosan interaction. Scanning electron microscopy studies showed that the scaffold had a uniform, interconnected porous structure with pore size of about 50-400 micrometre. The decreased pore size but high porosity of the material helped in water uptake by the scaffold and facilitated cell migration, adherence and proliferation.

“This hybrid scaffold is specifically developed for highly exudating wounds to absorb the fluid and to keep the wound dry for faster healing,” explains Mr. S. Udhayakumar, first author of the paper. “Even the collagen scraps generated during the different operations of leather making can be used as biomaterial in the field of regenerative medicine. The scaffolds will cost less than the existing collagen-based healing products. Human clinical trials are in progress and the results are encouraging,” says Dr. C. Muralidharan at the Leather Processing Division, CLRI and one of the authors of the paper.

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CSMCRI uses seaweed to remove lead, chromium and dyes from wastewater

CSIR-CSMCRI

6th April, 2018



which becomes sulphide when it binds to iron. “The graphene nanocomposite functionalised with iron sulphide facilitates the absorption of heavy metals and dyes,” says Dr. Ramavatar Meena from CSMCRI and one of the corresponding authors of a paper published in the *Journal of Hazardous Materials*. The nanocomposite was found to have very high absorption capacity for lead (645 mg/g) at neutral pH. “The amount of lead adsorbed is the highest ever reported for any biomass derived carbon material. Lead adsorption was irreversible even at low pH as the interaction of lead with the composite is very strong,” he says. The nanocomposite with adsorbed lead was found suitable for removing chromium (100 mg/g) too. However, the ability to adsorb chromium was dependent on the presence of adsorbed lead. “Lead has high affinity for chromate and dichromate leading to the formation of lead chromate or lead dichromate,” Dr. Meena says.

Removing toxic metals such as lead and chromium and certain dyes from industrial wastewater much more effectively has become possible thanks to the work by Indian researchers. Researchers at CSIR-Central Salt & Marine Chemicals Research Institute, Bhavanagar, Gujarat have synthesised graphene-iron sulphide nanocomposite to remove these toxic materials from wastewater. The nanocomposite was prepared by mixing dried green seaweed *Ulva fasciata* with iron chloride and heated to 150 degree C for 30 minutes to remove all moisture and then heated at 800 degree C for three hours in inert condition. The seaweed is rich in sulphur,

Unlike lead which cannot be recovered from the nanocomposite, it was possible to completely recover the adsorbed chromium by dispersing the material in basic solution (pH around 12) for a few seconds. Thus it was possible to reuse the nanocomposite twice to remove chromium without any drop in efficiency. The nanocomposite showed very good ability to adsorb different dyes used in textile industry — methylene blue, methyl orange, crystal violet and congo red. Highest absorption capacity of 970 mg/g was seen in the case of congo red followed by crystal violet (909 mg/g), methyl orange (664 mg/g), and methylene blue (402 mg/g). The absorption capacity was tested for each dye individually and also in a mixed solution. “The material was highly efficient to fully remove all the dyes present in water,” he says.

“The absorption capacity remained more or less the same whether the solution contained single dye or a mixture. The absorption capacity did not vary much even in the presence of high concentration of salts,” Dr. Meena says. Most importantly, the nanocomposite could be reused up to eight times to remove the dyes. The researchers tested the ability of the material to remove the toxic reactive black-5 dye in a continuous flow condition by coating a filter paper with a thin layer of the composite. “All the dye was removed and the water became colourless within five minutes of treatment. The surface area of the material was high as it was coated on the filter paper and so it was able to remove the dye quickly. When the composite is used as such it will take about three hours to completely remove the dye,” he says. The preliminary results using filter paper coated with the material highlights the potential of the composite to be used in combination with other membrane-based processes such as reverse osmosis and nanofiltration for complete and effective treatment of dye and textile industry wastewater.

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CSIR-IITR

4th April, 2018

Team from IITR Lucknow visits gas-hit colonies to check ground water contamination

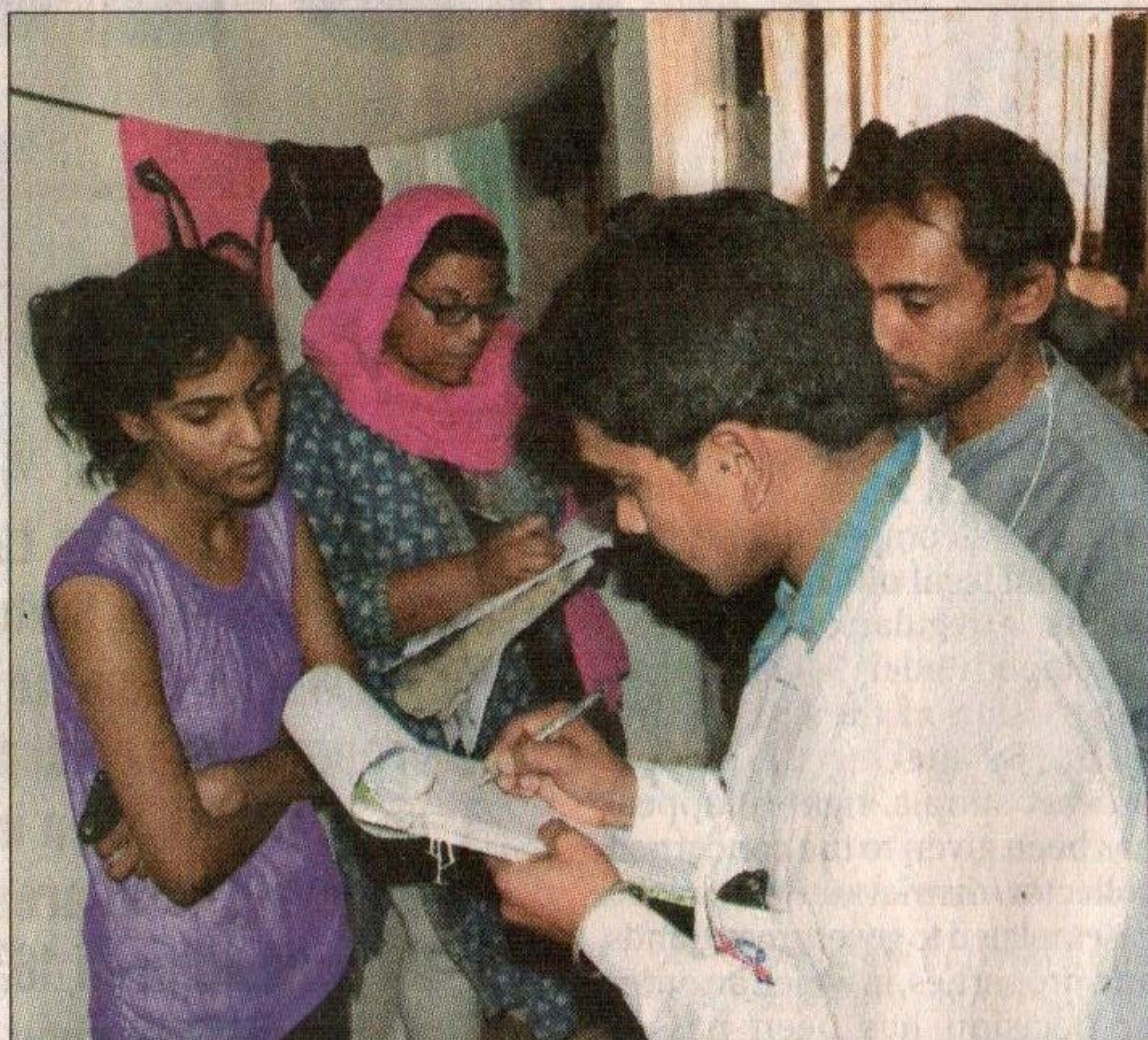
■ Staff Reporter

TEAM from IITR Lucknow (Indian Institute of Toxicology Research) visited Bhopal gas affected colonies in city. The team comprising of three officials from IITR will be visiting 20 new colonies and will be collecting samples from different gas affected areas to check ground water contamination.

Talking to The Hitvada, Rachna Dhingra from Bhopal Group for Information & Action said that the team members have collected water samples from six different colonies on Tuesday. Rest samples from other 14 colonies will be collected on Wednesday. Further these samples will be taken to IIT Chennai for further cross verification.

Water samples were collected from Ganesh mandir, Risaldar colony, Green park colony, Sant kanwar colony, Ram Nagar colony, Chauksey colony etc. BMC city engineer AK Pawar was also present along with survey team. Reportedly in Ganesh Mandir desirable quantity of water sample was unable to get collected and again the samples will be collected on Wednesday.

It has to be noted that the leaders of survivors organizations of the 1984 Union Carbide disaster in Bhopal condemned the cen-

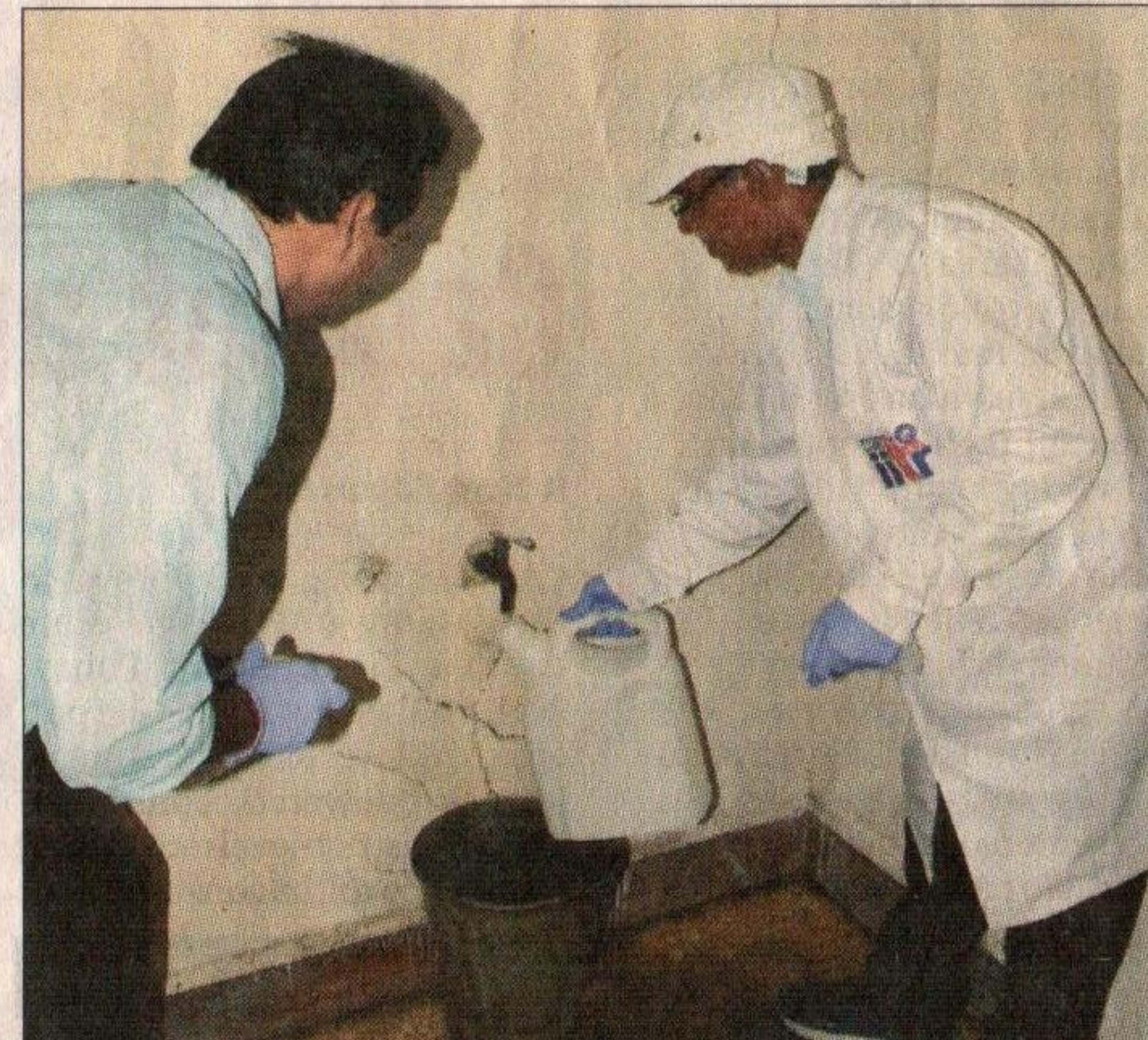


IITR officials taking down details about water quality from locals at gas affected colonies.

tral and state governments' negligence towards the ever growing problem of poisoning of groundwater in Bhopal. They pointed out that the Supreme Court has recently acknowledged the spread of contamination of ground water to 20 communities in addition to the 22 that are known to be contaminated.

Rashida Bee, president of the

Bhopal Gas Peedit Mahila Stationery Karmchari Sangh said "Are the governments waiting for the poisons to spread all over the city before they begin to act? the number of poisoned communities has trebled in the last 14 years. Yet the authorities have not taken measures to stop the spread of chemicals that damage the brain, lungs, kidneys and liver and cause cancers and birth



Water samples collected from tap water at Chola region.
(Pic by Bhupendra Singh)

defects."

"The surest way to stop the spread of poisons would be to excavate and contain the poisonous factory waste that remains buried underground and that is the source of the ongoing contamination. Instead of digging the soil and taking out the poisonous waste, the government is actively contemplating covering the buried waste by building a

memorial to the gas disaster over them." said Nawab Khan of the Bhopal Gas Peedit Mahila Purush Sangharsh Morcha.

The visit is being organized as directed from Supreme Court. Team from the Indian Institute of Toxicology Research, Lucknow who has arrived will be collecting samples of groundwater from 20 additional communities in two days time.

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The Hitvada

20 नई बस्तियों में जहरीले कचरे से पानी दूषित होने का खतरा, लिए नमूने

भोपाल। नवदुनिया प्रतिनिधि

यूनियन कार्बाइड के जहरीले कचरे से राजधानी की 20 नई रहवासी बस्तियों में भूमिगत पेयजल के दूषित होने की आशंका है। मंगलवार को भारतीय विष विज्ञान अनुसंधान संस्थान (आईआईटीआर) लखनऊ की तीन सदस्यीय टीम ने पानी की जांच के लिए नमूने लेना शुरू कर दिए। जांच रिपोर्ट 2 महीने बाद आएगी। सुप्रीम कोर्ट के निर्देश पर ये नमूने लिए जा रहे हैं। पूर्व में भी 20 बस्तियों के पानी की जांच की थी, यहां का पानी प्रभावित मिला था, इसके बाद यहां साफ पेयजल की व्यवस्था की थी।

आईआईटीआर की टीम डॉ. सत्यराम के नेतृत्व में भोपाल आई है। टीम के सदस्यों ने ग्रीन पार्क कॉलोनी से पहला नमूना लिया। इसके बाद संत

आईआईटीआर लखनऊ की तीन सदस्यीय टीम ने किया दौरा



नमूने लेते आईआईटीआर के सदस्य।

कनवरराम नगर, चौकसे नगर, रंभानगर, रिसालदार कॉलोनी और राजगढ़ कॉलोनी में पहुंचकर नमूने एकत्रित किए। बाकी की 15 बस्ती में द्वारका नगर, कृष्णा नगर,

एकता नगर, फूटा मकबरा, धुलीचंद का बाघ, न्यू कबाड़खाना, सुंदर नगर, शाहिन नगर, प्रताप नगर, लक्ष्मी नगर, चंदननगर, छोला मंदिर, निशातपुरा व एक अन्य बस्ती शामिल है। टीम इन बस्तियों से बुधवार को नमूने एकत्रित करेगी।

गैस पीड़ित संगठनों ने बताया, कोर्ट को प्रभावित बस्तियों के नाम

जिन बस्तियों से नमूने लिए जा रहे हैं उनके नाम भोपाल ग्रुप फॉर इंफार्मेशन एंड एक्शन के पदाधिकारियों ने सुप्रीम कोर्ट को बताया है। पहलै कभी भी इन बस्तियों के पानी की जांच लखनऊ की टीम ने नहीं की है। ग्रुप की संयोजिका रचना ढींगरा का कहना है कि नगर निगम व गैस राहत विभाग ने पानी की जांच नहीं की तो गैस पीड़ित संगठनों को सुप्रीम कोर्ट की शरण लेनी पड़ी।

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Nav Duniya, Page no. 5

CSIR-CSMCRI

આસપાસની દુનિયાનું નિરીક્ષણ કરીને પ્રક્રિયા જાણવી તે વિજ્ઞાન

ભાવનગર, બુધવાર | સેન્ટ્રલ સોલ્ટ એન્ડ મરીન કેમિકલ્સ રીસર્ચ ઈન્સ્ટીટ્યૂટના સ્થાપના દિનની ઉજવણી પ્રસંગે યોજાયેલ કાર્યશાળામાં શહેરની વિવિધ શાળાઓના વિદ્યાર્થીઓએ ભાગ લીધો હતો. વિદ્યાર્થીઓમાં વૈજ્ઞાનિક દ્રષ્ટિકોણ વિકસે તે હેતુથી આયોજિત આ વર્કશોપમાં પ્રયોગ અને પાવર પોઈન્ટ પ્રેઝન્ટેશન દ્વારા સમજણ અપાઈ હતી.

સેન્ટ્રલ સોલ્ટના સ્થાપના દિન પ્રસંગે યોજાયેલ વર્કશોપમાં શહેરની વિવિધ શાળાઓના વિદ્યાર્થીઓએ લીધેલો ભાગ

‘ઈગ્નાઈટિંગ સાયન્ટીફિક ક્યુરિયોસિટી’ શિર્ષક હેઠળ યોજાયેલ આ વર્કશોપમાં સેન્ટ્રલ સોલ્ટ ઈન્સ્ટીટ્યૂટના વૈજ્ઞાનિક ડો. અંકુર ગોએલે વિદ્યાર્થીઓએ સંવાદનો સેતુ સાધતા જણાવ્યું હતું કે, આપણી આસપાસની દુનિયાનું નિરીક્ષણ કરીને તેની પ્રક્રિયા જાણવી તે વિજ્ઞાન. લોકોને પીવાનું શુદ્ધ પાણી ઉપલબ્ધ થાય, લોકોને વાહન વ્યવહારની ઝડપી સુવિધા પ્રાપ્ત થાય, તીવ્ર ગરમીમાંથી રાહત મળે અને ઠંડક થાય, પ્રદૂષણના પ્રશ્નનો ઉકેલ આવે... આ તમામ બાબત માટે વિજ્ઞાન કાર્યરત છે. દરેકની અંદર વૈજ્ઞાનિક છે. એવી અનુભૂતિ થાય ત્યારે વિજ્ઞાન સરળ થઈ જાય છે. સર્જનાત્મકતાને કોઈ સીમા નથી. તેમણે મનુ પ્રકાશ નામના યુવાનનું

ઉદાહરણ આપીને સમજાવ્યું હતું કે, માઈકોસ્કોપ મોંઘુ છે અને હેરફેર મુશ્કેલ છે તેવો તેને ખ્યાલ આવ્યો તો ફોલ્ડ કરીને આસાનીથી લઈ જઈ શકાય તેવું ૮ ગ્રામથી ઓછા વજનનું ફોલ્ડોસ્કોપ મનુ પ્રકાશે વિકસાવ્યું છે. સમાજ સામે અનેક પ્રશ્નો આવે છે અને સમાજ તેનો ઉકેલ જંખે છે. વિજ્ઞાન ત્યાં મદદે આવે છે. જિજ્ઞાસા વધારવાથી વિજ્ઞાનને સમજવામાં સરળતા પ્રાપ્ત થાય છે.

યંગ સાયન્ટીસ્ટ હિરેનભાઈ રાવલે વિદ્યાર્થીઓ સાથે ગોષ્ઠિ કરતા જણાવ્યું હતું કે, પંચ મહાભૂતમાં પાણીનો સમાવેશ થાય છે. જ્યારે પરચ્છ પર જીવન વિશે શોધ કરવાની વાત આવે ત્યારે સૌથી પહેલો પ્રશ્ન હોય છે કે, ત્યાં પાણી છે? પાણી હોય

તો જીવન હોવાની શક્યતા હોય. પાણી વગર જીવન શક્ય નથી. પૃથ્વી પર ૭૦ ટકા પાણી છે. પરંતુ સમુદ્રોનું ખારું પાણી છે. આથી પાણી અને ઉર્જા એ સૌથી મોટો પડકાર ગણાય છે. પ્રદૂષિત પાણી પીવાથી અનેક રોગ થાય છે. આથી પીવાનું શુદ્ધ પાણી એ સૌથી મોટી આવશ્યકતા છે. તેમણે જણાવ્યું હતું કે, દરિયાના પાણીને પીવાલાયક બનાવવા માટે સૌથી વધુ ઉર્જાની જરૂર પડે છે. તેમણે પાણીના શુદ્ધિકરણ માટેની ટેકનોલોજી વિશે વિગતે વાત કરી હતી.

યંગ સાયન્ટીસ્ટ ડો. જ્યોતી મિત્રાએ રંગોના સર્જન અને વૈવિધ્ય પર વિશદ્ ચર્ચા કરી હતી અને વિદ્યાર્થીઓના પ્રશ્નના ઉત્તર આપ્યા હતા.

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