CSIR In Media
A Daily News Bulletin

13th June, 2016, Page: 1

# NEERI begins EIA study for Bainguinim plant

*The National Environmental Engineering and Research Institute (NEERI) has begun the process to conduct the Environment Impact Assessment (EIA) study of the proposed modernized solid waste treatment facility at Bainguinim.*

The National Environmental Engineering and Research Institute (NEERI) has begun the process to conduct the Environment Impact Assessment (EIA) study of the proposed modernized solid waste treatment facility at Bainguinim.

The year-long study will assess the environmental impact of the proposed facility in the area and its natural resources along with possible social and economic impact on the state. "The study will also include the pre-monsoon, monsoon and post monsoon impact of the facility," Sachin Ambe, municipal engineer, Waste Management Cell of the Corporation of the City of Panaji (CCP), said.

The decision to conduct EIA was taken after the Goa State Expert Appraisal Committee (SEAC) sought a detailed analysis from CCP over the possible social, economic and environmental impact on the State due to the proposed facility at Bainguinim. The analysis has been sought considering that the State has already undertaken construction of two such plants in Saligao (North Goa) and Cacora (South Goa).

"The EIA study is important to get environment clearance (EC) from the state environment department," Ambe said.

Government has decided to set up the treatment plant at Bainguinim based on German technology on Design, Build, Operate and Transfer (DBOT) basis, at an estimated cost of around Rs 140 crore.

CCP had applied for consent from the environment department for setting up the facility.

http://www.heraldgoa.in/Goa/NEERI-begins-EIA-study-for-Bainguinim-plant-/102957.html

Team Herald | 13 Jun, 2016

# Why Indians, SE Asian Malays respond differently to some drugs

*"It is important to capture the sub-population data within India to optimise drug dosing, " says Ambili Sivadas.*

A couple of years after successfully mapping the genetic variants associated with differential responses to two widely used drugs — warfarin (an anti-coagulant drug) and clopidogrel (an antiplatelet drug) — in 2,000 people from Delhi, Harayana, Uttar Pradesh, Bihar and Punjab, Dr. Vinod Scaria and Ambily Sivadas studied the pharmacogenetic markers in a cosmopolitan population of Malays (southeast Asian Malays). Dr. Scaria is from the Delhi-based Institute of Genomics and Integrative Biology and Sivadas is a Research Scholar at IGIB.

The results of the study were published recently in The Pharmacogenomics Journal .

The duo used the recently released whole genome sequences of 100 South East Asian Malay individuals from Singapore Sequencing Malay Project for the study. Using this data, they checked if the pharmacogenetic markers in the Malay population were similar or different from those seen in the rest of the world and looked for percentage of people who had these markers. Differences in the markers and how frequently they were seen in a population will result in differences in drug response in the population.

Genetic variation in absorption and metabolism of the drug can affect the concentration of the drug and in turn the effect of the drug. Also, genetic variation in the drug target can change the effect of the drug. For instance, they found potential deleterious effects in the gene VKORC1, which is the enzymatic target of the commonly used anticoagulant, warfarin. The genetic variation in the gene meant that in the SE Asian Malay population the amount of warfarin required for the desired effect is lower than the rest of the world.

"In the case of India, different populations have different frequencies of the marker connected with warfarin metabolism. Therefore, it is important to capture the sub-population data within India to optimise drug dosing," said Sivadas. "In general, the Asian population requires a lower warfarin dose to achieve stable anticoagulation."

Similarly, as a result of predominance of polymorphism in the gene GRIK4, the response to antidepressants was found to be very good. "We can predict higher success in treatment outcomes with antidepressant medications in SE Asian Malays," he said. "But additional validations would be required for this to be considered definitive."

Compared with other East Asian populations, the SE Asian Malays were found to be poor metabolisers of an antihypertensive drug debrisoquine. So the drug dosage should be lower to avoid toxicity.

"The real impact of the study is that this information could lead to a change in dosage of a certain drug for a particular population to achieve the same effect. And in future, the dosages can be modified before undertaking any clinical trial in this population," they noted.

This information is particularly useful as dosages of most of the drugs in the market are based on information derived from clinical trials carried out on Caucasians. "Asian subpopulations including Indians and Malays are still not sufficiently represented in comprehensive pharmacogenomic research and drug development and so the efficacy of the drugs in these minority populations is not known," he said. The varied response to drugs both by Indians and SE Asian Malays compared with Caucasians would mean that future trials have to necessarily include a few volunteers from these countries to know the precise dosing.

The earlier study carried out in India revealed significant differences in the percentage of people in the five States who had the markers for the drug warfarin and clopidogrel. "Given the ethno-linguistic diversity represented by India, these studies further emphasize the need to profile more Indian subpopulations in order to build a comprehensive pharmacogenetic map for the entire Indian subcontinent," Dr. Scaria stressed. "We are very keen on creating such comprehensive pharmacogenetic maps for all known drugs in use for the Indian populations which will immensely benefit safe drug dosing in our populations, provided we have adequate funding."

While the Indian studies were limited by the availability of low-resolution genotype microarray datasets which allows one to profile only a set of known common variants, the latest study on Malays used the more powerful whole genome sequencing. Whole genome sequencing helps in identifying the common genetic variants when performed for a population as well as the very rare and personal variants that are found unique to an individual.

The SE Asian Malay study has helped build one of the most comprehensive pharmacogenetic maps including 227 common and 466 rare potentially functional variants in 437 genes in the population.

**Genetic variation in the drug target can change the effect of the drug.**

http://www.thehindu.com/todays-paper/tp-features/tp-educationplus/why-indians-se-asian-malays-respond-differently-to-some-drugs/article8721771.ece

R. Prasad | Jun 13, 2016

# Seaweeds facing a slow death

Seaweeds on the Dona Paula coast are facing a slow death due to marine pollution and warming oceans, former scientists from the National Institute of Oceanography (NIO) have revealed and sought immediate steps for protection and harvesting of these seaweeds.

Being the oldest family of plants on earth, seaweeds or the marine algae, which grow in sea or on rocks below the high-water mark, absorb a high level of nutrients and thus form an important source of food, feed, fertilizer and chemicals.

"Just as trees in forests provide living space for birds and other animals, so do the seaweeds in the oceans. There is a large amount of biodiversity associated with seaweeds but it seems to be washing away and becoming extinct due to marine pollution and many new non-endemic species entering our waters due to shipping activities," said Dr Vinod Dhargalkar, a former NIO scientist.

It has long been recognised that the release of waste into the marine environment not only affects the composition of water and sediments but adversely affects the flora and fauna too.
According to an NIO study carried out in the past by three former scientists, V V Agadi, N B Bhosle and A G Untawale, 17 species of marine algae collected from five localities were found to be positive to metal pollution with considerable variations in their concentration. The scientists had warned against affecting the metabolic rates in the algae.

Asserting the need for harvesting of seaweeds to protect and save them from depletion, Dr Untawale said that they are fast-growing and do not use up scarce water resources during production – a major benefit in drought-plagued India. The seaweeds can be grown cheaply on the edge of India's long coastlines and they do not take land away from other food crops like rice or wheat.

A survey along the Goa coast was conducted by NIO in 1975 and 255 tonnes (fresh weight) of seaweeds were reported from Dona Paula to Chapora region. The study was carried out by Dr Untawale and Dr Dhargalkar. They had reported 75 seaweed species and estimated 2,000 tonnes (fresh weight) of seaweeds available on the entire coast of Goa.

According to a new study conducted by Bombay Natural History Society, 70 more new species of marine algae have been discovered. These add up to the 75 species recorded by NIO in the past. Of the total 145 species, 64 are of red algae, 41 of green algae and 40 species of brown algae, which are commercially important. Seaweeds start growing in the months of September and October and the peak season is during April-May.

The recent study was conducted by Bombay Natural History Society's N Pereira and M R Almeida over a period of three years from 2008 to 2010 at 16 different stations including Chapora, Terekhol, Dona Paula, Vagator, Anjuna, Baga, Reis Magos, Siridao, Mormugao, Bogmalo, Holant, Betul, Cabo de Rama, Palolem, Talpona and Polem. Among the 70 species of seaweeds discovered in this study, 52 were found in the Dona Paula estuarine and these species can be used as a source of food, feed, fertilizers and for industrial use.

A scientific article related to the Bombay Natural History Society's study was published in the journal of geo marine sciences in 2014 and it had a mention of two new migrated species of seaweed – Erythroglossum lusitanicum, a Delesseria member endemic to the Mediterranean Sea, and Cladophora prehendens, which is endemic to Australia – which were found in Goa during the research. These species of seaweed were so far not reported in India.

http://www.navhindtimes.in/seaweeds-facing-a-slow-death/

Abdul Wahab Khan | NT Staff Reporter|June 12, 2016

# The Wrong Incentive

## The National Intellectual Property Rights Policy Must Be Opposed

*The National Intellectual Property Rights Policy seeks to enhance creativity. However, it pays scant regard to experience that shows that the intellectual property rights route has rarely enhanced creativity. The policy should be seen in the context of the Indian government's attempts to address US concerns.*

On 12 May, the cabinet approved the National Intellectual Property Rights Policy. It is a "first of its kind" policy for India and covers all forms of intellectual property (IP) together. It follows a common set of principles which maximise the incentive for IP owners. The policy proposes/promises a legal and legislative framework of strong intellectual property laws. Strong can mean many things: extending the term of protection, expanding the scope of IP protectable subject matter, increased penalties, facilitating enforcement, expediting litigation, or enhancing the quality of IP. The policy has to be seen in the context of the pressure from the United States (US) government under the country's Special 301 law.

It should also be viewed in the context of the Trans-Pacific Partnership (TPP) gaining in favour amongst Ministry of Commerce and Industry officials. The partnership has several TRIPS (Trade-Related Aspects of Intellectual Property Rights)-plus provisions. It is also being argued that it is not possible for India to keep out of mega-regionals. The timing of this policy is extremely significant. The policy will govern the Patents Act, Trade Marks Act, Design Act, Geographical Indications of Goods Act, Copyright Act, Protection of Plant Varieties and Farmers' Rights Act, Semiconductor Integrated Circuits Layout Design Act and Biological Diversity Act. As a result, its impact is expected to be felt in sectors as diverse as pharmaceuticals, software, electronics and communications, seeds, environmental goods, renewable energy, agricultural and health biotechnology, information and communication. The policy adopts an IP maximalist agenda of maximum possible incentive for IP owners to drive the future course of development of industry, publicly-funded research and development organisations, educational institutions and government departments.

**Whither Creativity?**

Indian applicants lead in the matter of trademark applications and not patents. Out of the 1,79, 317 applications in 2010–11, the class consisting of "medicinal, pharmaceuticals, veterinary and sanitary substances" accounted for 31,634—17.64%. An analysis shows that the number of design patents to the Indian assignees, as provided in the US system, was as low as 271. Thirty-three percent of design patents came from the jewellery and ornament sectors. So there is no point in exaggerating the scale of Indian creativity and innovation to make the case for strong IP protection. The author's analysis of the impact of the patents granted on new chemical entities (NCEs) for 262 drugs introduced in India since 1995 indicates that the market power of foreign firms is on the rise due to the adoption of product patent in various therapeutic groups such as anti-cancer, cardiovascular, central nervous system, diabetes, urology and other such non-communicable diseases. The data is also clear that the market power of foreign firms would have been greater if India had opted for early TRIPS implementation like many countries in Latin America.

In fact, far more contrary evidence is directly available from the pre-TRIPS period. The green revolution took place in India without any IP protection for the breeders of new varieties of seeds. The Indian pharmaceutical industry became the pharmacy of the Third World because of the rejection of strong intellectual property rights (IPRs) system in the 1970s. Since the domestic pharmaceutical industry supplies a large number of pharmaceuticals to the regulated markets of US and Europe and is the lifeline for patients particularly in the developing world, it is paradoxical that the policymakers of the government choose to do little more than offer lip service to India's global role in generic pharmaceuticals. There is no mention at all of the use of critical safeguards in India's patent law such as compulsory licences, parallel imports or support for patent oppositions. Therefore, it seems there was some truth in reports that talked about India assuring the US industry that compulsory licences will no longer be issued in the country.

Patents to CSIR's Detriment The policy focuses on improving the output of national research laboratories, universities, technology institutions and researchers by encouraging and facilitating researchers to work for the acquisition of IPRs. It proposes to link research funding and career progression with the creation of IPR and includes this as a key performance metric for public-funded Research and Development (R&D) institutions as well as technology institutions. The policy suggests that the harnessing of intellectual property by public institutions will be undertaken in a big way (through, for example, the patenting or licensing of research results). It also suggests that public institutions partner with the private sector.

But it chooses not to ask the obvious question: what has been the outcome of pursuing such policies in the laboratories of the Council of Scientific and Industrial Research (CSIR) and the Indian Council of Agricultural Research (ICAR)? Since the mid-1990s, CSIR researchers were directed to file patents but the patents could not earn CSIR revenue. A vast majority of patents obtained by CSIR (2001–10) have not been able to generate licensing revenue to the extent of covering even 4%–5% of the cost incurred on the filing of patents by the CSIR. The policy on patenting has cost the CSIR not just money to maintain these patents in India and abroad, it also moved the institution away from more important directions. In order to generate IP that can be commercialised, the laboratories were required to plan patent portfolios without which enforceable IP will not get generated. But Indian patents are the outcome of non-collaborative individual organisation-based efforts both for industry and research institutions. Analysis indicates that 90% are single entity patents; this was as high as 96% in 2010 for India's US patents. Only 7% of the total patents are outcomes of collaborative R&D.

Even in the case of patents filed with the Indian Patent Office (IPO), a majority (75%) were filed and obtained by individual assignees. Both R&D institutions and industry have been acting separately in their pursuits of technology development related investments. Even the same can be said of the collaboration among the academic institutions–universities and research institutions that have been granted patents, the trend is to "go-alone." The Indian scenario on the international collaboration is no different. The analysis indicates that industry collaboration with universities and R&D laboratories is negligible. There have been no more than 10 patents in any given year.

The analysis of the patent assignment database of the US Patent and Trademark Office indicates that only 173 out of the total 2,420 patents obtained during the period resulted in licensing to other entities. Further examination reveals 32 of the 173 were instances of internal trading. Just 7.15% of India's patents were licensed on the whole; this is 5.83% of the total, if we leave out the cases where the transfer was to one's own subsidiary. Clearly, Indian industry and R&D organisations are not at the stage of development wherein the patent strategy is going to yield much returns

No Technology Transfer The policy proposes to establish and strengthen IP facilitation centres as nodal points in industrial and innovation university clusters. Evidence on the performance of Science and Technology (S&T) parks is not very encouraging with regard to IP-based entrepreneurship from India. There is a significant gap between scientists and industry with regard to important factors in the process of technology transfer from publicly-funded R&D sector to private sector industry. Lack of motivation and demand from industry for investment in indigenous technology development is considered by the scientists to be a key barrier to sustainable collaboration. IP-based entrepreneurship and technology transfer from National Research and Development Corporation (NRDC), National Innovation Foundation (NIF) and Technology and Information Forecasting and Assessment Council (TIFAC), Small Business Innovation Research Initiative (SBIRI) and Biotechnology Industry Research Assistance Council (BIRAC) of Department of Biotechnology has hardly taken off. Take the case of NRDC which manages the IP generated from the programme aimed at technological self-reliance (PATSER) of the Department of Scientific and Industrial Research (DSIR). In royalty paying projects, it was paid regularly in only one case. The amount of royalty paid varied widely, from as low as ₹954 to ₹86 lakh. Most common reasons mentioned for non-commercialisation were that the technologies developed were obsolete or there was no market demand for them.

The policy considers IP rights as private rights, as marketable financial assets and economic tools. IP is a regulatory tool. Its objectives and instruments need to be guided by a social contract to be arrived at between state and society. As a regulatory tool the state has to ask how and what benefits will corporates deliver and the kind of costs it entails to the Indian people. A social bargain should allow innovators to be rewarded or receive incentives for innovation but not without asking what kind of innovation and access to innovation is being offered by this particular system of reward. The real action in IP takes place out of public gaze. The public sees only the tip of the iceberg. Decision-making in patent offices and courts will go by the principles enshrined in this policy to implement IP laws. Large multinational companies are well aware of how policy on IPRs will help them argue their case in courts and patent offices. Words such as counterfeiting, piracy, strong IP, etc, are going to work for the establishment of monopolies and against competition and public interest

Neglecting Open Source Although the policy speaks of encouraging open source drug discovery (OSDD), it is well known that the OSDD programme is no longer being pursued by CSIR. While the policy speaks of promoting free and open source software, it could have given a genuine boost to the idea of open source in the areas of software, seeds and creative publishing had the government announced a public procurement policy in order to encourage open source in software and seeds. The policy could have encouraged special licences for non-exclusive dissemination of IP. Twenty-five countries, including Australia, Belgium, Croatia, Czech Republic, France, Germany, Greece, Hungary and Italy, provide legislative support to open source. The policy also refers to open innovation as part of the promotion of corporate social responsibility (CSR). Open innovation is practised by the large companies as a programme of collaborative R&D strategy, and it is not a CSR activity for them. Apart from the NIF which has tried collaborating with Big Bazaar to market the "outcomes of grass-roots innovations," there are not too many CSR examples. CSIR has many rural technologies to offer from its own shelf, but we have not seen the large companies being willing to transfer these technologies to the grass-roots.

The policy provides for the enhancement of the capacity of IP enforcement agencies at various levels, including strengthening of IPR cells in state police forces. It proposes to adjudicate IP disputes through commercial courts. The policy marks a major departure from the understanding that drew on Bakshi Tekchand and Justice Iyengar Committee reports. These committees created the Patent Act, 1970. The model patent act provided for licences of rights for the use of new processes for the benefit of pharmaceuticals and food industry and laid the basis for creative imitation or reverse engineering approach which led the Indian R&D institutions to create over 50 new chemical reactions processes for more than 100 essential drugs.

The policy states in writing that the government will engage constructively in the negotiation of international treaties and agreements. It also states that it will examine accession to some multilateral treaties which are in India's interest. Is this a signal that India could be party to TPP where the TRIPS-plus agenda is already in place? The policy proposes to open up the Traditional Knowledge Digital Library to the corporates. What is of concern perhaps is the targeting of the judiciary through "awareness" and "training" on an IP maximalist agenda that is likely to threaten the fine balance between public interest and IP that the courts have struggled to maintain. This is going to be a big change. The policy says India will remain committed to the Doha Declaration on TRIPS Agreement and Public Health with no real provisions of the policy dedicated to the actual use of public health safeguards in India's patent law. But it cannot be ignored that the Government of India agreed to give in to the US government's 21st century issues of trade and investment at WTO's Nairobi ministerial.

http://www.epw.in/journal/2016/24/commentary/wrong-incentive.html?0=ip_login_no_cache%3D19f0db6f5e2a7984ba0c13eb69fb43ea

Dinesh Abrol| Vol. 51, Issue No. 24, 11 Jun, 2016

13th June, 2016, Page: 13

# Multi-lab effort to study properties of Ganga's waters

*It is observed that water samples closer to Gangotri do not putrefy, says the CSIR.— File Photo: K. R. Deepak*

A multi-lab effort by the National Environmental Engineering Research Institute, the Central Institute of Medicinal and Aromatic Plants, Lucknow, and the Institute of Microbial Technology (IMTech, Chandigarh) is studying the possible medicinal properties of the waters of the Ganga.

Director-General of the Council for Scientific and Industrial Research — the apex body for all the labs — Dr. Girish Sahni said: "What is observed is that water samples closer to the source (Gangotri) do not putrefy." He added that a part of the study is to understand why, and investigate the ecosystem of microbes and bacterial life in the river.

**Bacteriophages**

One hypothesis is that the waters of the river contain bacteriophages — viruses that replicate within bacteria and are toxic to them. The IMTech would study these phages for their antimicrobial properties and look at whether these could be translated into effective drugs in future.

At a press briefing last week, Union Minister for Water Resources and Ganga Rejuvenation, Uma Bharti, said traditional knowledge and certain scientific studies have established certain 'unique' properties of the river.

"This is not just *puranic* wisdom. *Brahmadravya* (divine liquid) is a property attached to the river from texts such as *Akbarnama* and contemporary scientists too," said Ms Bharti.

"So it's actually a fairly involved project and with potentially practical applications," said Dr. Sahni.

http://www.thehindu.com/todays-paper/tp-national/multilab-effort-to-study-properties-of-gangas-waters/article8719422.ece

Jacob Koshy | June 12, 2016

# TESTING THE WATERS

## LABS STUDY HEALING POWERS OF GANGA

**Preliminary report of the CSIR will be published in October**

Do the waters of the Ganga have special anti-microbial properties? Can knowledge about this 'self-healing' ability be used for medicinal purposes?

A preliminary report that addresses these and related questions will be made public in October, on the basis of a study conducted by three labs of the National Environmental Engineering Research Institute (NEERI), which comes under the Council for Scientific and Industrial Research (CSIR). Ahead of the publication, the general impression shared by scientists involved in the project is that the waters of the Ganga do have "special properties" and were "unlike other rivers".

**Prima facie evidence**

Rakesh Kumar, the Director of NEERI, said: "There is prima facie evidence of the uniqueness of the Ganga," adding that to put the findings on a firmer footing, the research team is comparing sediments from various stretches of the river with those from the Narmada.

"This is a study with potential and not just folklore," declares Girish Sahni, Director-General of CSIR.

The research on the Ganga's self-healing properties, about one-and-a-half-years old now, is part of a larger study commissioned by the Union Water Resources Ministry to study the ecology, health and biodiversity of key tributaries of the Ganga.

**Long stretch**

NEERI has been working with two other CSIR labs — the Central Institute of Medicinal and Aromatic Plants, Lucknow and the Institute of Microbial Technology (IMTech, Chandigarh) — on testing various hypotheses associated with the project, which covers the stretch of the river from Gangotri to a little downstream of Allahabad.

At a press briefing last week, Union Minister for Water Resources and Ganga Rejuvenation, Uma Bharti, said traditional knowledge and certain scientific studies have established certain 'unique' properties of the river.

"This is not just puranic wisdom. Brahmadravya (divine liquid) is a property attached to the river from texts such as Akbarnama and contemporary scientists too," said Ms Bharti.

**'Bacteriophages may explain Ganga's healing abilities'**

A multi-lab effort by the National Environmental Engineering Research Institute, the Central Institute of Medicinal and Aromatic Plants, Lucknow and the Institute of Microbial Technology (IMTech, Chandigarh) is studying the possible medicinal properties of the waters of the Ganga. Director-General of the Council for Scientific and Industrial Research — the apex body for all the labs — Dr. Girish Sahni said: "What is observed is that water samples closer to the source (Gangotri) do not putrefy." He added that a part of the study is to understand why, and investigate the ecosystem of microbes and bacterial life in the river.

One hypothesis is that the waters of the river contain bacteriophages — viruses that replicate within bacteria and are toxic to them. The IMTech would study these phages for their antimicrobial properties and look at whether these could be translated into effective drugs in future.

**Practical applications**

"So it's actually a fairly involved project and with potentially practical applications," said Dr. Sahni.

The scientists require data spanning two monsoon seasons and are also tasked with examining if effluent discharges and other contamination may have a role in diminishing the river's healing properties. "Before the river reaches Allahabad, we have seen that even drains and rivulets retain some of these properties but they degrade later on. Why?" queried Union Water Resources and Ganga Rejuvenation Minister Uma Bharti.

http://www.indian24news.com/india/testing-the-waters-labs-study-healing-powers-of-ganga/116543-news

June 12, 2016

# Entrepreneur cum beneficiaries meet organised

An entrepreneur meet cum CSIR-NEIST technology awareness programme was organised at the CSIR-North East Institute of Science & Technology Branch Itanagar at the institute premise on Sunday.

Director CSIR-NEIST Jorhat called on all the beneficiaries/entrepreneur coming from different part of Arunachal Pradesh to come forward and utilize the CSIR-NEIST technology for the benefit and socioeconomic development of the society.

Dr Jagat C Borah, Scientist in charge, NEIST Br. Itanagar assured to provide all technical support and help whenever necessary for implementing the CSIR-NEIST technology as per requirement.

About 40 farmers, SHG's member and villagers attended the programme and shared their experiences regarding "Cultivation of edible mushroom", "Production of Vermicompost".
Chief Scientist, Dr. D Ramaiah, Dr P. Sengupta and other senior scientists from CSIR-NEIST Jorhat attended the programme.

The scientists provided the information regarding relevant CSIR-NEIST Technology such as low dusk chalk pencil, bio pesticide, liquid and solid deodorant, banana fibre etc which can be implemented in Arunachal Pradesh with low investment.

http://www.arunachaltimes.in/entrepreneur-cum-beneficiaries-meet-organised/

June 12, 2016