



KNOW THY INSTITUTIONS



NATIONAL INSTITUTE OF HYDROLOGY, ROORKEE

The National Institute of Hydrology has been functioning as a premier institute in the area of hydrology in the country since December 1978. It was established with Headquarters at Roorkee by the Government of India as an autonomous society aided by the Ministry of Water Resources, Government of India.

The NIH Society is headed by Union Minister for Water Resources as its President and the Union Minister of State for Water Resources as its Vice-President. The Ministers-in-charge of Irrigation in the States (for ten States to be nominated for every three years by the President of the Society), the Secretaries of different

Ministries in the Govt. of India concerned with water and related areas ; and experts in hydrology and water resources are members of the Society. The total membership of Society is 47 including the President and it reviews the progress and performance of the Institute in its meetings held atleast once a year. The Society has a Governing Body with a total membership of 14, with the Secretary, Ministry of Water Resources, Government of India as the Chairman. The Governing Body looks over the administration, performance and utilisation of funds of the Society by drawing annual and supplementary budgets ; allocates funds for various purposes and determine agreements with

other organisations either in India or foreign for joint endeavours. The Institute's research and other technical activities are monitored and guided by the Technical Advisory Committee (TAC) with 15 members including the Chairman, Central Water Commission as its Chairman.

Keeping in view the need to deal with the specific hydrological problems of different regions of the country and for providing effective interaction at field level with the states, the Institute started setting up Regional Centres from 1987 onwards. The Regional Centres for Hard Rock region, North Eastern region and Western Himalayan region were established at Belgaum, Guwahati and Jammu respectively during the seventh five year plan period (1985-1990). In 1991, under eighth five year plan scheme one Regional Centre for Ganga Plains at Patna in Bihar and one for Deltaic and East Coast region at Kakinada in Andhra Pradesh were set up. One more Centre for Ganga Plains (South) at Sagar in Madhya Pradesh was set-up in December 1995.

Keeping in view the requirements for hydrological research and studies in the country for a period of five years, the TAC and Governing body of NIH has approved the areas of study and research for the Institute for the IXth plan period (1997-2002). The annual programmes are formulated and considered by the working groups and the TAC. As per the directions of Technical Advisory Committee, efforts have been made to include basic and applied research as a part of regular work programme of various scientific divisions. At the regional centres more stress is being given to field and applied research.

Director of the Institute is the Principal Executive Officer of the Society, and is appointed

by the Government of India. The staff of the Institute comprises of scientists, supporting scientific and technical staff, and administrative staff. The Institute has highly qualified scientists with specialisation in various areas of hydrology and water resources. Out of the 80 scientists in position in the Institute and its regional centres, 28 have Ph.D. degree and 52 have ME/M.Tech. degree.

Objectives

The National Institute of Hydrology has been established with the following main objectives :

- i To undertake, aid, promote and coordinate systematic and scientific work in all aspects of hydrology ;
- ii To cooperate and collaborate with other national, foreign and international organisations in the field of hydrology ;
- iii To establish and maintain a research and reference library in pursuance of the objectives of the Society and equip the same with books, reviews, magazines and other relevant publications ; and
- iv To do all other such things as the Society may consider necessary, incidental or conducive to the attainment of the objectives for which the Institute has been established

As per the guidelines given to NIH, the time devoted for basic and applied research related studies should be atleast 60%, while for the sponsored research and consultancy related studies not more than 20% and technology transfer activities not more than 20% of the total time of scientists should be normally used

Activities

The Institute's activities are carried out by the scientific divisions at the Headquarters and

its 6 Regional Centres. The scientists and scientific staff of the Institute have published large number of technical papers in international and national journals, and proceedings of international and national conferences and symposia. Reports on studies and research covering several topics including identified thrust areas in hydrology have been prepared.

The Instruments developed by the Institute with indigenously available components and systems are being tested under field conditions. Under the technology transfer programme besides publication and circulation of technical reports, the institute organises short duration training courses and workshops on different topics relevant to field engineers at Roorkee and in the States.

The Achievements Review Committee (1994-99) constituted in 1999, submitted its report to the President of NIH Society on April 26, 2000 where the work done by the Institute was highly appreciated.

The Institute is also assisting several organisations in the country for solving various complex and typical field problems through sponsored projects and consultancy projects. The work has been continuing on 6 ongoing projects. Besides this, the Institute also undertook 3 new sponsored projects. Four sponsored projects which were taken up in earlier years were completed.

Under the aegis of the Indian National Committee on Hydrology and with a view to disseminate hydrological knowledge in the country, the Institute brings out State-of-Art reports in emerging and thrust areas of hydrology. These reports contributed by national experts are released on different occasions and are received by the hydrologic community with

great interest. These reports are being circulated in India and abroad. Number of projects are being funded under INCOH activities and these are closely monitored by the INCOH Secretariate which is with the Institute.

The Hydrology Project for Peninsular rivers of India was finalised by Ministry of Water Resources for funding by the World Bank. The Institute has been entrusted with the responsibility of training the field engineers which is one of the important components of the project. The project is being implemented by five Central Government organisations and Irrigation Departments and Ground Water Organisation in eight Peninsular States. During the year 2000-2001, three-weeks Training Course on Basic Surface Water Data Processing and Analysis (HYMDS) was organised from April 24-May 12, 2000 at Roorkee which was attended by 15 officers from the Godavari basin organisations. The Institute also organised a three-weeks Course on "Basic Surface Water Data Processing (HYMDS) during February July 3-21, 2000 at Roorkee for Mahanadi basin and eastern rivers in Orissa. This course was attended by 15 officers from the Central Water Commission and State Water Resources Departments.

The Institute has in general, carried out various activities with the objectives of effectively contributing to water sector in the country through basic and applied research in various areas of hydrology.

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92ND INDIAN SCIENCE CONGRESS

BRIEF REPORT AND RECOMMENDATIONS

1. SUMMARY OF THE 92ND SESSION

The 92nd session of the Indian Science Congress was jointly hosted by the National Institute of Occupational Health (Indian Council of Medical Research) and the Nirma University of Science & Technology. It was held at the picturesque campus of the Nirma University, Ahmedabad, during 3-7 January 2005. The focal theme of the Congress was 'Health Technology as Fulcrum of development for the Nation'.

1.1 Inauguration

The Hon'ble Prime Minister of India, Dr. Manmohan Singh, inaugurated the Congress on 3rd January 2005. After releasing the souvenir, he addressed the august gathering of scientists from different parts of our country and abroad and urged them to work for up-liftment of the society and mankind at large. Pledging commitment to the promotion of science, he acknowledged the role of 'The Indian Science Congress Association' for its pioneering work not only in promoting science, but also in shaping the science policy of the country. Expressing his concern over various issues that have created barriers to nurturing science in the country, he assured of a proactive role and support of his government to the cause. He recognized the acute problem of quality manpower in the realm of science in the country and shared concern over non-existence of science as a career for the youth in India. He committed support of the government in creating systems for retention of

bright people in science and encouraging them for taking it as a lifelong career.

Dr. Singh quoted Winston Churchill "empires of the future are going to be empires of minds" and emphasized that use of science and technology should not only be towards addressing social and economic problems in the country but should also affect our thinking approach and our way of working. Dr. Manmohan Singh said that S & T must play a greater role in our strategy to address problems of mitigation and management of impact of natural disasters, including pre-disaster preparedness.

He expressed to improve the quality of teaching and increase the enrolment of students in science and mathematics at the school level. He added that apart from keeping the international commitments, an important objective of the government is to bring in balance in intellectual property regime, which will give a full expression to the creative ability of India's intellectual prowess and also protect interest of the society at large. Research and innovation in agriculture and energy has been emphasized. A new technological revolution in the energy sector is required that would meet the growth demand for energy in more economical and sustainable ways.

Focusing on the theme of the Congress, the PM added that biotechnology, pharmaceuticals and health technology are priority areas for

public policy. Alternative pathways for drug discovery, where India has distinct comparative advantages, must be created. Dr. Singh informed that the government is formulating programmes to launch a National Rural Healthcare Mission. The PM also announced the constitution of a Scientific Advisory Council, under the chairmanship of Prof. C. N. R. Rao, to address the challenges of Indian Science. Dr. Singh avowed his government's following commitments :

- 1 Development of basic and applied science and the promotion of excellence, with no discrimination between applied and basic science
- 1 Rebuilding the science base in universities, which will include creating synergy between new initiatives in science and technology and our university system
- 1 Promotion of public-private partnerships, to increase funding for frontier areas of scientific and technological research
- 1 Ensuring the de-bureaucratization and the academic autonomy of science and technology institutions
- 1 Restructuring of the science and technology support systems

His Excellency, The Governor of Gujarat, Pt. Naval Kishor Shama, expressed the hope that India would find a significant place in the global scientific community. He added that healthcare for over one billion people demands changing the spectrum of health care technology in India. He summed up saying that our vision must be to make India a developed nation by 2020.

Shri Kapil Sibal, Hon'ble Minister for Science & Technology, Government of India in his address, referred to a quote from Jawaharlal Nehru "The future belongs to those who make friends with science", delivered at the 24th Indian Science Congress on 26th December 1937. The Minister stressed upon the need for gene revolution, without any environmental hazard or tinker in any fundamental manner with the ways of nature, to make India self-sufficient with regard to food. He mentioned that Govt. of India has evolved many models at the national level through programmes and initiatives, such as Technology Development Board, Programme Aimed at Technological Self-Reliance, New Millennium Indian Technology Leadership Initiative and Drug and Pharma Programme of Ministry of Science & Technology. The Government has signed intellectual property right agreement on science and technology with the European Union and Russian Federation. Shri Sibal announced that the Department of Science & Technology plans a *Ramanna Fellowship*, in the memory of Prof. Raja Ramanna. The scheme will offer continuous research support to 'performing scientists', irrespective of their employment status, affiliation and age, with the idea of guaranteed working-level support to them in an un-interrupted fashion based only on their track record. While minister urged the scientific community to provide solutions to the issues of national importance, he in turn made the following commitments :

- 1 Provide necessary enabling environment and autonomy to the functioning of the scientific community.

- 1 Invest in human resource development and expand the skilled human resource base to meet the needs of technology for industry, academia and Research & Development (R & D) institutions.
- 1 Provide a suitable regulatory mechanism for an effective bio-technology policy.
- 1 Strengthen the management system for intellectual rights including awareness, modernization of the patent office, providing for an effective system of enforcement of such rights and helping educational institutions and small industries in protecting their intellectual property.
- 1 Provide for an effective public private partnership in R & D and technology-based industries.
- 1 Set-up national missions in nano-technology, transport intelligence systems, technology development for judicial re-engineering, eradication of malnutrition and discovery of curative and preventive medicine for malaria, HIV-AIDS and tuberculosis.

The Chief Minister of Gujarat, Shri Narendra Modi narrated the scientific achievements of the state of Gujarat. He informed that the Government of Gujarat has created an independent department of Science and Technology, in the year 2003. In order to ensure a unified effort for the development, Shri, Modi said that health care delivery could now be taken to the doorsteps of the common man at very little cost due to the advances in the communications system. The CM said that Gujarat instituted the Bhaskara Institute of Space

Application and Geo Informatics, and it is engaged in the advancement in remote sensing applications for inventory, mapping and monitoring of natural resources and to enable effective developmental planning.

Prof. N. K. Ganguly, Director General-ICMR, the general president of the 92nd Indian Science Congress, stressed upon the focal theme of the Congress "Health Technology as fulcrum of development for the nation". The president emphasized that the human health is at the center of concern for sustainable social and economic progress in all countries. He stated that India accounts for over 20% of the world maternal death. Prof. Ganguly stated about the module for home care in the case of pneumonia in children, providing antibiotics at home and referral guidelines, a module on reduction of mortality due to septicaemia through administration using robotics, and also about the indigenously produced HIV vaccine to prevent HIV pneumonia.

Prof. Ganguly stated that proportion of genetic disorder could be prevented by appropriate approaches in primary public health care. Prenatal genetic diagnostic facilities identifying mutations specific to Indian population are now available in the country and will help in reducing childhood disabilities. He added that effective injectable, long-acting contraceptive, drug for safe medical abortion, non-injectable oral drug for reduction of postpartum bleeding and a technology for effective management of anemia are available in the country. India is fast developing into a vaccine manufacturing hub and some of the vaccines identified for development on priority include those for



cholera, diarrhea, malaria, rabies, meningitis, HIV, tuberculosis and a vaccine against cervical cancer. Prof. Ganguly pointed out India's advancement in drug development, such as developing new drugs for tuberculosis, a new antidiabetic topically delivered insulin, anti-retroviral drug, a novel drug for psoriasis and anti-malarials, etc. He was worried about the cardiovascular diseases affecting our population at a much younger age. In the field of cancer, India has a cancer mapping system which uses advanced computer and information technology. A peptide-based anticancer drug for the treatment of colorectal cancer has been synthesized indigenously in the country and is ready for human trials. The president emphasized on the need for immediate attention in the area of manufacturing of medical and scientific instruments. There is a need for critically reviewing the teaching methods in medical courses. Prof. Ganguly in his address included medical insurance, funding for S & T sector and scientific autonomy.

1.2 President's Visit and Address to the Congress :

His Excellency, the President of India, Dr. APJ Abdul Kalam addressed the Congress at a special ceremony held at the Science City, Ahmedabad on 5th January 2005. The president narrated his experience how Science activated his imagination, creativity and knowledge as a result of his association with Shri Vikram Sarabhai, at the Physical Research Laboratory at Ahmedabad. Dr. Kalam emphasized the role and potential of R & D in the Pharma sector and expressed his confidence that India can now compete on a world stage. The President delineated specific

areas like stem cell research, converting molecules to drugs, where India was now emerging as a global trendsetter. He then explained how an interactive tele-education delivery system could help remote areas to have access to quality education. He made emphasis on the use of bio-fuel that could create at least 12 million jobs. Dr. Kalam is in favour of competitive production of supersonic Brahmos missile. The President was touched by the calamity of the tsunami and urged upon the need for Tsunami prediction system. In his address, the specific points made are :

- 1 India to be a nation with no rural-urban divide
- 1 Equitable distribution of resources
- 1 Agriculture services and industry sector should work in perfect harmony.
- 1 Education for all and should not be denied to all meritorious candidates because of societal and economic discrimination.
- 1 The country would be the best destination for the most talented scholars and scientists from all over the world
- 1 The best of the health care will be available to all and communicable like AIDS/TB, water and vector-borne diseases, cardiac diseases and cancer would be eradicated.
- 1 The Government will use the best of technology to be responsive, transparent, easy accessible and simple in rules, thereby being corruption-free.
- 1 There will be a prosperous, healthy, secure, powerful and happy society.

1 India will be one of the best places to live in on the earth and bring smile on billion-plus faces

1.3 Technical Sessions of the 92nd Science Congress :

Around 4,500 delegates including scientists, science managers, policy makers and science students attended the 92nd Science Congress. The technical sessions were attended by the best health specialists and other experts from different parts of the world who gave direction to combat dreaded diseases like malaria, cholera, HIV/AIDS, TB, diabetes, coronary heart disease, amongst others.

This time more than 150 foreign delegates attended the Indian Science Congress, which is a record in the history of ISC. There were special delegations from US, Germany, Canada and many other nations. In the Congress, there were 14 parallel sectional programmes in different field of science, which included nearly 350 symposia lectures, special lectures, invited talks, young scientists' lecture and a large number of poster presentations, 14 plenary sessions (nearly 70 presentations by eminent scientists), 6 special lectures, 2 public lectures, 3 panel discussions and award lectures in diverse fields of science. On 6th January 2005, there was Health science summit for the entire day. There were special symposia on Malaria, Maternal and child health during the Congress. A total of 450 plus special lectures by eminent scientists and nearly 750 presentations by researchers spread out in 14 sections and other plenary programmes.

1.4 Children Science Congress :

The Children's Science congress continues to be a parallel national event, along with the annual event of the Indian Science Congress. This year the Congress location was arranged at the Science City. The selection of students for participation in the Congress was made from the district level. The criteria for selection include teamwork, innovation, practicality and relativity to societal problems. The theme for the Children's Science Congress is declared at the beginning of every year at the Indian National Science Congress. The theme for this year is 'Harness Water Resources for a Better Future'.

The children's participation include interaction with major scientists, including His Excellency, Dr. A. P. J. Abdul Kalam, President of India. The interaction of students and scientists is one of the major reasons to enable students to discourse with, and question the leading brains, thus enabling them to strengthen their grasp on the subject, while reassuring the older generation that there is indeed scope among students to grow with a scientific attitude towards life.

Visits to places like SAC-ISRO and VSCSC were aimed at furthering the scientific thirst already present in the participating students. Events were planned on Origami workshops, essay competitions, rocketry workshop, vedic mathematics, to encourage the students to their overall development and improve practical skills. While profiling the schedule for the duration of the Congress, a special mention may be made of the projects of the students-those have acted as a key to their participation. These projects

have served their purpose of building up their inquisitive and co-operative spirits and are proofs that with a little guidance, children are capable of doing wonders.

1.5 Science Expo-Pride of India exhibition

Shri Kapil Sibal, Hon'ble Minister for Science & Technology, Government of India, inaugurated the Pride of India exhibition on the sidelines of the Congress. The exhibition had a special section called "Hall of Pride", dedicated to the two sculptors of our nation-the nuclear scientist, Prof. Raja Ramanna and the industrialist, Kasturbhai Lalbhai. The 'Pride of India Expo' included more than 80 participants from various R & D laboratories, major corporates, state and central government institution and departments, amongst others took part in the exhibition.

The Indian Council of Medical Research depicting achievements and activities of its institutes, put up the largest pavilion in the Pride of India Expo. As the host of the Congress, the National Institute of Occupational Health has a pavilion, showcasing its range of activities. The expo got an overwhelming response from the public and around two lakh people visited the exhibition.

2. RECOMMENDATIONS

Science and Technology Policy

- 1 In order to see India as a prosperous, healthy, secure, powerful and happy nation, a greater emphasis must be placed on the science and technology policy.
- 2 In the long term science has to come to our rescue for understanding the designs of

nature, foretelling them and devising methods for reducing the damage and post disaster management, even if the investments required are high.

- 3 The scientific community must move away from trodden path onto a new road to discovery and invention through the use of technologies in collaboration with nature for the good of humanity.
- 4 Science must provide acceptable solutions for everyday problems of the common man. The development of newer indigenous technology will help create jobs, capital and wealth for the poor.
- 5 Science & Technology must find solutions for industries, which are employment oriented to make Indian goods competitive in the world market.
- 6 Scientists must design their efforts to develop a new mind-set focusing on discovering new technologies for industries generating employment, for low cost yet pucca shelters, for curing or preventing disease, for agricultural growth and whatever it takes to make India's products competitive in the world market.
- 7 In the knowledge age the scientific community that consists of providers and seekers of knowledge must become agents of change. Agents who can bring about intellectual competitiveness and new economic opportunities for India.
- 8 The public-private' partnerships will have tremendous influence on the development of technologies and how these are managed.

There is a need for high level of funding for research, including contract research

- 9 The domain knowledge for traditional professions is under constant change and revolutionary revision. There is a need for a new system of learning to serve the ever-changing educational needs of knowledge age workers.
- 10 Only 20% of the science budget is allocated to CSIR, DBT, DST & ICMR together. There is a need for massive renewal of our science and technology infrastructure. The health budget is also inadequate and health research budget is meager. We need to address these issues with urgency and find solutions applicable to our setup. One solution is allocating a percentage of funds collected through sale of substances injurious to human health like tobacco and alcohol for restoration of health
- 11 We can open up our science to the world so that we have relevant players not only in India but also in global arena
- 12 In India, a large number of scientific organizations generate data, which are of paramount importance. The 92nd Science Congress recognizes the importance of creating national databases, which can be used by one and all to submit their observations to a central location
- 13 Restructure science and technology support systems as well as debureaucratize science and technology policy implementation

Health Technology

- 14 Health plays a vital role in development, not only an outcome, but a co-determinant. Enhancement of investment in health is necessary to yield exceptionally high rates of return
- 15 There is a need to develop technologies for achieving our millennium goals of reduction of infant mortality rate and reduction of maternal mortality.
- 16 Strengthening of policy for education of girl child will check a cycle of late marriage, lower fertility rate, lower infant mortalities and greater economic independence of women.
- 17 It is absolutely necessary to translate the Indian health research system data into preventive and intervention health strategies for the country. We now need to create a National Health Research Forum, and integrate with the National Health system to provide guidance.
- 18 Immediate attention is required in the manufacturing of medical and scientific instruments in our country, so that we become the leading suppliers of the instruments in the world market.
- 19 There is a need to strengthen and develop appropriate animal facilities for health research, for drug development, etc.
- 20 Innovative methods need to be developed to differentiate between those who can pay for health care and for those who cannot pay, for the people who are at the age group with peak levels of earning and for people who are at lowest level of earning like children and old people.

21. A strong public health care system, supported by education and awareness, is required to reduce the disease load and the burden on health services, to enhance productivity and catalyze a vibrant economy. It is recommended for more investment on public health, building up health care systems and infrastructure, enhancing access to effective health interventions for poor and vulnerable groups, etc.

Agriculture and Food Policy

22. Science & Technology must provide answers for the undernourished and the illiterate. Fortifying the crops is a realistic and achievable breakthrough. This ensures that chronically undernourished segment of the population derives micronutrient supplementation from the staple diet and even with little variety in the food, and thereby nourishment status is improved.
23. Implement nutrition safety net schemes in an integrated manner on a life-cycle basis. Promote the widening of the food security basket by encouraging the establishment of Community Grain Banks based on local grains. Organize a Food Guarantee Program combining the principles of Employment Guarantee Scheme and Food for Work.
24. Engender the Food for Work Program so as to assist women to undertake a wide variety of human and social development programs. Sustain, strengthen and spread the on-going self-help revolution by ensuring backward linkages with technology and credit and forward linkages with markets. Enhance

the productivity of cropping and farming systems by helping to bridge the prevailing gap between potential and actual yields, through mutually reinforcing packages of technology, services and public policies

25. Promote a Food based approach to Nutrition Security through the widespread cultivation and consumption of vegetables, fruits and a wide range of millets, legumes and tubers and by introducing a nutrition dimension in land use planning

Biotechnology

26. The gene revolution should be such that it should not bring about an environmental hazard or tinker in any fundamental manner with the ways of nature. We need new seeds for our farmers, which are drought and pest resistant and bio-fertilizers. We also need bio-fuels to resolve energy crisis
27. The capability of decision-making in the area of GM food items in the country needs to be reviewed on an urgent basis. It appears that the welfare gains resulting from the health enhancing attributes of golden rice will even dwarf the farm productivity gains in Asia
28. We need to put resources for appropriate capacity building in the areas of tissue culture and bioengineering, stem cell biology, nano-technology and undertake vast programmes in these areas. A strategic initiative in this direction is highly warranted
29. The Indian Council of Medical Research and the Department of Biotechnology (Govt

of India) have embarked on a stem cell research programme in a mission mode, to promote 'stem cell city clusters', to link all publicly and privately-funded research groups within a city, enabling them to share facilities, ideas, and research and business opportunities, as well as promoting interactions between researchers and clinicians

Innovation and Intellectual Property :

30. The basic innovation lies in identifying new ways to indigenously develop services and products in India : example Biometrics Suite, menthol mint oil, new molecules.
31. Intellectual and technological capability is concentrated in a small part of the population ; every effort should be made to attract and retain capable people.
32. The 92nd Indian Science Congress acknowledges with high esteem of the declaration of the Prime Minister of India, constituting National Science Advisory Council. The scientists look forward to pursue the Council's guidance in addressing the challenges facing Indian science.
33. It is recommended that the young scientists may be motivated to work on local problems that are alarming and need indigenous solutions-be it housing, education, food, healthcare, environment, handling of wastes, etc. and build a pool of intellectual property.
34. Awareness of the Indian Science Congress must reach smaller cities and villages, particularly among students. The Children

Science Congress should be a part of the Indian Science Congress. It may be worthwhile to introduce a special section titled "Science for School Children", within the framework of the science Congress. An ideal regime of intellectual property rights would need a balance between the private incentives for innovators and public interest of maximizing access to the fruits of innovation.

Drug Development

35. There are concerns of a global decline in the manufacturing of new drugs in the category of "neglected diseases". Emphasis is required on the upgradation of drugs and technology to tackle diseases prevalent in this part of the world.
36. To raise India as a pharma giant, steps should be taken for quality and quantity of technical manpower, reinforcement of infrastructure and need for expanded spending on R & D in medicinal chemistry, molecular modelling, the study of complex chemical structures, modern analytical techniques, etc.
37. A system should be developed to introduce pharmacology at an earlier stage in education and set up regional drug research centers.

Vaccine Research

38. We should hasten our indigenous vaccines development programme for vaccines against cholera, diarrhea, malaria, rabies, meningitis, HIV, tuberculosis, and cervical cancer at a fraction of the cost of the imported vaccines.

39. A mechanism may be evolved so that the research institutions and the pharmaceutical industries can effectively participate in the Global HIV Vaccine Enterprise. The Global HIV Vaccine Enterprise will emerge as a massive experiment for a new way of both cooperating towards a common goal in mitigating the deadly diseases of the century while maintaining the essential competition of ideas that compels scientific progress.

Communicable Diseases

40. Tuberculosis—There is a necessity of developing laboratory technique, as clinical diagnosis is insufficient. Basic science needs to be promoted to develop new drug and diagnostic surveillance to be intensified and society has to sustain the quality of DOIS program
41. HIV—Monitoring strategies are suggested, including expansion in ANC and STI surveillance across the nation to create a central long-term bio-repository. High emphasis should be given to accelerate the development of microbiocides, the topical products, to prevent the sexual transmission of HIV/AIDS.
42. Kala Azar—A national action plan is warranted to avert a possible epidemic of this potentially fatal disease
43. Cholera—It is proposed to set up a global warning system for pre-indication of the cholera outbreak
44. Bio-Terrorism—The preparedness for bio-terrorism requires strategies for detection, integration, surveillance systems, reporting communication, vaccine production, regulation and application, as well as judicious implementation of regulatory measures.

Information Technology & Health

45. Every village should have connectivity so that interaction between the people of the country increases and sharing of the knowledge and information takes place efficiently.
46. It is time to harness this IT revolution as development of high capacity and widely accessible networking infrastructure, that would permit the country's science and technology to flourish domestically and globally. Effective telecommunication policies with proper investment in facilities and training are needed to stimulate entrepreneurship and capital formation in the country.
47. The use of telecommunication, internet and other technologies for connectivity in communication will serve as a backbone for the successful management of science and disease management requirements.
48. The reuse, retrofit and replication of what is developed globally to meet the local in country requirements; and not "reinventing the wheel" syndrome will support the disease management requirements at a fraction of the cost.
49. Proper communication of science is pivotal to its success, as all of the stakeholders ranging from scientific community, population at large, government professionals, public policy organizations and science student need many levels of

information in many forms and at many stages. It is crucial for optimal communication that "information" be acquired, integrated, managed, analyzed and disseminated on demand, on time and as needed.

50. Science Information delivery and proper communication will dramatically improve the disease management processes of awareness, registry, surveillance, control, prevention, epidemiology clinical research, clinical trials, treatment, care and post treatment care components.

Remote Sensing and Disaster Management

51. Application of remote sensing technology should be strengthened in priority areas like food security, water security, highway planning, railway network, and environmental conservation, weather and ocean state forecasting and disaster support.
52. The seismologists, geologists and other scientists should work to develop suitable natural disaster (Tsunami, Earthquake, etc) prediction system. There is a need to strengthen research in this area on a priority basis.

Environment

53. We need to undertake massive remedial measures on four fronts—water, air, soil and occupational health hazards. Emphasis

is required for wilful enforcement of regulatory provisions and technology implementation for safeguarding environment and health of the people.

University Education policy

54. The crumbling state of our medical education needs immediate attention.
55. Our universities need to be dynamic and adoptive to the changing needs and priorities of the society and should provide an arena of freedom to young innovative minds. The universities are plagued with a number of problems of teaching faculty and relevance or otherwise of science courses. It is disturbing that there are declining number of students opting for undergraduate courses in basic sciences. The institutes are under-financed and under-staffed.
56. Effort should be made to harness the full potential of trained workforce spread all over the world.
57. Creation of science cadre with the help of strong universities, which would be able to provide high quality science education. A database of experts in frontier areas of science such as nano-technology, genetic engineering, tele-medicines and awareness of patent laws needs to be prepared. It also proposes to set up several centers of excellence in science education throughout the country.

Conferences / Meetings / Symposia

Date	Topic	Contact
14-17 November, 2005	International Conference on Toxicology, Environmental and Occupational Health-2005 Lucknow	Dr. Anand Prakash Sahu Organization Chief ICIEOH-2005 Industrial Toxicological Research Centre, Mahatma Gandhi Marg, Post Box-80, Lucknow-226001 E mail : sahuap@yahoo.com
19-20 November, 2005	15th Annual Conference of Purvanchal Academy of Sciences, Jaunpur	Dr. N. L. Singh Head, Department of Mathematics T. D. Postgraduate College Jaunpur, Pin 222 002
25-27 November- 2005	International Symposium on Medicinal Plants and Herbal Products in Biomedicine and their Efficacy in the Present Era & XXVI Annual Conference of Indian Association of Biomedical Scientists, Kolkata	Dr. Debjani Guha Professor of Neuroscience S N Pradhan Centre for Neurosciences, University of Calcutta 244BAJC Bose Road, Kolkata 700 020 E mail : debjani.guha@rediffmail.com
30 November- 2 December 2005	National Symposium on Instrumentation, Cochin	Dr. K. N. Madhusoodanan Department of Instrumentation Cochin University of Science and Technology Cochin 682 022 E mail : nadhu@cusat.ac.in
30 November, 2 December 2005	10 th National Conference of Indian Association of Public Health Dentistry Udaipur	Conference Secretariat Pacific Dental College & Hospital P.O. Box No. 116, Debari, Udaipur (Raj.)-313024 E mail : pacificdental2000@yahoo.co.in

Date	Topic	Contact
1-2 December, 2005	National Seminar on Tribes of West Bengal in the New Millennium, North Bengal	Mr. S. R. Mandal Head, Dept. of Anthropology University of North Bengal, Raja Ramohanpur, Dt. - Darjeeling Pin-734430 E mail rahimanthhnbu@yahoo.com
1-3 December, 2005	XVII Annual Conference of National Physiological Society of India, Gulbarga	Prof. Dr. B. R. Doddamani Department of Physiology M R Medical College Gulbarga, Karnataka, E mail : mrmphysio@yahoo.com
8-9 December 2005	Seventy-Fifth Annual Session of The National Academy of Sciences, India Pondicherry	Prof. P. K. Seth National Academy of Sciences, 5, Lajpatrai Road, Allahabad 211 002 E mail : nasi@sanchamnet.in
10-11 December, 2005	National Seminar on Pollution in Urban Industrial Environment, Kolkata	Dr. A. K. Mitra Department of Microbiology and Environmental Studies St. Xavier's College, Kolkata - 700 016 E mail : draknitra@sxccal.edu
15-18 December, 2005	XX Congress of the International Sericulture Commission, Bangalore	Mr. K S S Reddy Central Silk Board, Level 5 CSB Complex, Madivala Bangalore 560 068 E mail : iscc@silkboard.org
21-23 December, 2005	XXII Conventions of Indian Association of Sedimentologists on Sedimentary basins of the Himalayans : Challenges for the future, DehraDun	Dr. Sumit K. Ghosh Wadia Institute of Himalayan Geology, 33, GMS Road Dehra Dun-248001 E mail : skghosh@wihg.re.in

Date	Topic	Contact
26-30 December 2005	XXIX Indian Social Science Congress on Facing up the Challenges of modern Civilisation, Lucknow	Dr. N. P. Chaubey Indian Academy of Social Sciences Iswar Saran Ashram Campus Allahabad 211004 E mail : issa@sanchamet.in
27-29 December 2005	Annual Convention of Operational Research Society of India, Bangalore	Dr. M. Mathirajan Department of Management Studies, Indian Institute of Science Bangalore 560 012 E mail : orsibengit.iiscernet.in
16-17 January 2006	International Conference on Free Radicals and Antioxidants in Health, Disease and Radiation, Kolkata	Dr. Sandip K Bandyopadhyay Department of Biochemistry Dr. B C Roy Post Graduate Institute of Basic Medical Sciences 244B A J C Bose Road Kolkata 700 020 E mail :
20-22 January 2006	International Conference on Ethnopharmacology and Alternative Medicine, Thrissur	Dr. K. K. Janardhanan Anala Cancer Research Centre Anala Nagar, Thrissur-680555 E mail : info@iceam.org
3-5 February 2006	International Conference on Innovation and Technology Management (ICITM 2006) Kolkata	Prof. Hem Shanker Ray Central Glass and Ceramic Research Institute 196 Raja Subodh Chandra Millick Road, Kolkata 700 032 E mail : hs_ray@yahoo.com

S & T ACROSS THE WORLD**PLASMA POLYMERIZATION**

Plasma is a partially or fully ionized gas or vapour and sits somewhere between a liquid and a gas. It is polymerized in specially constructed chambers under vacuum conditions by feeding different monomers into the plasma process, which gives rise to a chemically tailored surface that is incredibly liquid repellent.

The plasma coating can be applied to practically any material, for example textiles, wood, glass, plastics, etc. It works on nano-scale permeating the surface of the material, so that the coating actually covers the fibres, rather than merely forming a barrier on top. The material retains its original bulk properties and thus a textile with this polymer coating will maintain its original shape, even if liquid is poured over it, which will be just like water on a duck's back !

(DSTL as on June 24, 2005)

KEEPING FARM PRODUCE FRESH

New export packaging techniques have been developed in Australia which can maintain the freshness of selected farm produce during extended periods of storage and shipping

It is moisture loss during storage and long distance shipping which is the main cause of the produce losing the freshness. Now a moisture control technology (MCT) liner, which consists of a bag that fits inside a carton or box, has been developed which retains the water vapour content around the produce and reduces moisture loss significantly during long voyages.

(CSIRO, June 22, 2005)

X-FACTOR, A CAUSE OF HIGHER HEART DISEASE IN SCOTS

Studies undertaken at the University of Edinburgh, Scotland, reveal that the Scots are more susceptible to heart disease than the English, for reasons unconnected with diet, smoking or poverty.

It is true that the Scots tend to smoke more, and take less exercise. They on the whole also tend to be less wealthy than the English. However, they are estimated to be 50 percent more likely to have heart disease than the English and the magnitude of the difference cannot be ascribed wholly to the factors just named.

Scientists have yet to discover what this X-factor is, which makes the Scots so very prone to heart disease, and have called for further research on the subject.

(Communications & Public Affairs, June 23, 2005)

VEHICLES PROPELLED BY HYDROGEN FUEL CELL

Vehicles powered by hydrogen fuel cells instead of fossil fuels, are expected to provide significant health and pollution benefits. These cells may even be cheaper fuel than petrol or diesel, according to new research published in the 24 June 2005 issue of the journal 'Science'.

Fuel cell vehicles using hydrogen produced by wind and natural gas, offer the greatest potential health benefits. Converting to cell vehicles using hydrogen produced by coal may improve health but would damage climate more than fossil-electric hybrids would, according to the findings.

(AAAS Release, June 24, 2005)

LIBRARY SERVICE

The Indian Science Congress Association

14, Dr. Biresh Guha Street, Kolkata-700 017

The library of the Indian Science Congress Association subscribes the following Indian and Foreign journals.

Indian

Current Science
Down to Earth
Food & Nutrition World
Indian Journal of Experimental Biology
Indian Journal of Biochemistry and
Biophysics
Indian Journal of Marine Sciences
Pramana
PII Science Service
Science Reporter

Foreign

Ambio
American Scientist
Endeavour
Interdisciplinary Science Reviews
International Studies in the Philosophy of
Science
Journal of Environmental Planning and
Management
Nature
Natural History
New Scientists
Policy Studies
Science
Science & Society
Social Choice and Welfare
Technology Analysis & Strategic Management
Tropical Science

In addition to those subscribed above, the following journals/newsletters are also received by the Library in exchange of the Association's journal "Everyman's Science" :

Chemecology
CSIR News
DRDO News
Environmental Awareness
Environmental Health Perspectives
Gana Darpan
Gyan Bigyan
IASSI Quarterly
INSA News
Indian Journal of Physics

JIMA
Natural History (Bombay)
Science & Culture
Spices India
University News
WMD Bulletin
WISTA

The Library is open to all categories of members of the Association as well as school, college and university teachers on all weekdays (except Saturday, Sunday and holidays) from 10.00 a.m. to 5.30 p.m.



भारतीय विज्ञान कांग्रेस संस्था

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APPLICATION FORM FOR MEMBERSHIP

To

The General Secretary

The Indian Science Congress Association

14, Dr. Biresha Guha Street, Kolkata-700 017

Dear Sir,

Attach 2
Copies
Photographs

I like to be enrolled as a Member/Life Member/Donor/Sessional Member/Student Member of the Indian Science Congress Association. I am sending herewith an amount of Rs. in payment of my subscription by Bank Draft/Cheque/Money Order/Cash for/from the year 1st April 200..... to 31st March 200..... I would like to have reprint of proceedings of the following Sections (Please tick any one)

SECTIONS

- | | |
|--|---|
| 1 Agriculture and Forestry Sciences | 9 Materials Science |
| 2 Animal, Veterinary and Fishery Sciences | 10 Mathematical Sciences (including Statistics) |
| 3 Anthropological and Behavioural Sciences
(including Archaeology and Psychology &
Educational Sciences) | 11 Medical Sciences (including Physiology) |
| 4 Chemical Sciences | 12 New Biology (including Biochemistry,
Biophysics & Molecular Biology and
Biotechnology) |
| 5 Earth System Sciences | 13 Physical Sciences |
| 6 Engineering Sciences | 14 Plant Sciences |
| 7 Environmental Sciences | |
| 8 Information and Communication Science &
Technology (including Computer Sciences) | |

Yours faithfully,

Date :

(Signature)

Name (in block letters) :

Academic Qualifications :

Designation :

Address for Communication :

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Note : ☐ All Money Orders, Bank Drafts, Cheques, etc. should be drawn in favour of Treasurer, The Indian Science Congress Association. A Bank Charge of Rs. 70/- is to be added to the subscription amount, if paid by an outstation cheque.

Terms of Membership and Privileges of Members :

Membership of the Association is open to persons with *graduate or equivalent academic qualification* and interested in the advancement of science in India

- 1 **Member** : A person willing to be enrolled as new Member has to pay an annual subscription of Rs. 200/- (for foreign * U.S. \$ 50) only, along with an admission fee of Rs. 50/- (for foreign U.S. \$20) only. The annual subscription of a Member shall become due to on the 1st April of each year. Any one who fails to pay the subscription *on or before the 15th July* in any year shall lose the right of voting and/or holding any office of the Association for that year. A Member failing to pay the annual subscription by the end of March of the following year shall cease to be a Member.

Members may contribute papers for presentation at the Science Congress. They will receive, free of cost, reprint of the Proceedings of the Session of any one section of their interest and also the bimonthly journal of the Association "Everyman's Science".

- 2 **Sessional Member** : Sessional Members are those who join the Association for the Session only. They may contribute papers for presentation at the Science Congress and receive, free of cost, reprint of the Proceedings of the session of any one section of their interest. A Sessional Member has to pay subscription of Rs. 250/- (for foreign U.S. \$ 60) only.
- 3 **Student Member** : A person studying at the undergraduate/postgraduate level may be enrolled as a Student Member; provided his/her application is duly certified by the Principal/Head of the Institution/Department. He/She may contribute papers for presentation at the Science Congress, provided such papers are communicated through members of the Association. The subscription for Student Membership is Rs. 100/- (for foreign U.S. \$ 50) only.
- 4 **Life Member** : A Member may compound all future annual subscriptions by paying a single sum of Rs. 2000/- (for foreign U.S. \$ 500) only. Any person who has been continuously a member for 10 years or more, shall be allowed a reduction in the compounding fee of Rs. 50/- for every year of such membership, provided that the compounding fee shall not be less than Rs. 1,200/- (for foreign U.S. \$ 12.50 and U.S. \$ 300 respectively). A Life Member shall have all the privileges of a member during his/her lifetime.
- 5 **Institutional Member** : An Institution paying a subscription of Rs. 5,000/- (for foreign U.S. \$ 2,500) only, can become an Institutional Member of the Association. It shall be eligible to nominate one person as its representative to attend Annual Session of the Science Congress. An Institutional Member shall be eligible to receive, free of cost, a copy of the Annual Science Congress Session as also a copy each of the Association's journal "Everyman's Science".
- 6 **Donor** : Any person paying a lump sum of Rs. 10,000/- (for foreign U.S. \$ 5,000) only, can become a Donor of the Association. An *INDIVIDUAL DONOR* shall have all the rights and privileges of a Member during his/her lifetime. An Institution paying a lump sum of Rs. 50,000/- (for foreign U.S. \$25,000) only, can become an *INSTITUTIONAL DONOR* of the Association, which shall have the right to nominate one person as its representative to attend Annual Session of the Science Congress. An Institutional/Individual Donor shall be eligible to receive, free of cost, a copy of the complete set of Proceedings of the Annual Science Congress Session and also the Association's journal "Everyman's Science".

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- (i) Members of all categories are entitled to Railway Concession of return ticket by the same route with such conditions as may be laid down by the Railway Board for travel to attend the Science Congress Session provided that their travelling expenses are not borne, even partly, by the Government (Central or State), Statutory Authority or a University or a City Corporation.
 - (ii) Members of all categories are entitled to reading facilities between 10.00 a.m. to 5.30 p.m. on all weekdays (except Saturdays & Sundays) in the Library of the Association.

* A Foreign Member means one who is normally resident outside India