

# Indian Journal of Science Communication

*Communicating Science of Science Communication*

Risk Communication: Communicating science of life threatening risks

Community Radio: An information intermediary for rural community

Public acceptance of mass movement for health and science: The Tripura experience



**Public Opinion Research: Predicting the pulse of a society**

# Indian Journal of Science Communication

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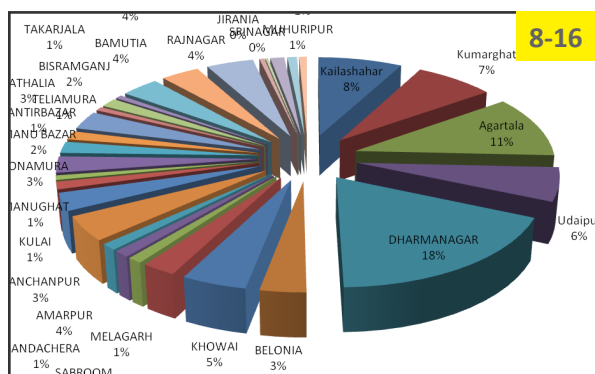
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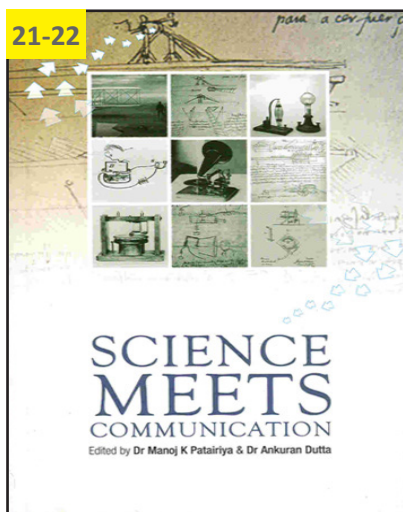
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# Innovation and Communication



The Prime Minister of India Dr. Manmohan Singh, unveiled the Science, Technology and Innovation Policy 2013 and presented its first copy to the President of India Shri Pranab Mukerjee at the inaugural function of the centenary session of the 100 years old Indian Science Congress held in Kolkata on January 03, 2013 in presence of Governor of West Bengal Mr. M.K. Narayanan and Chief Minister of West Bengal Ms. Mamta Banerjee. The focal theme was 'Science for Shaping the Future of India'. The science policy, for the first time in India, gives much emphasis on innovation and seeks to encourage multiple efforts focusing to boost innovation in the country at all levels. Prime Minister has already announced 2011-2020 as the 'Decade of Innovation'. A variety of programmes and activities are envisaged to form part of major initiatives towards successfully making advantage of the decade to boost an innovation culture in the country, and science communication could be at the forefront of these initiatives.

India has been encouraging creative minds towards invention and innovation in much more vigorous manner. Earlier it was being done by National Research Development Corporation (NRDC) and subsequently, the National Innovation Foundation (NIF) was brought in place in 2000. Techno-preneur Promotion Programme (TePP) was introduced to support and encourage grass root innovators. An international programme 'Steer the Big Idea' in 2005 was started in association with Confederation of Indian Industry (CII). Some 10 young innovators were selected from across the country based on their innovative ideas and were taken to an International Innovation Fair held in Japan organized by Japan Institute of Invention and Innovation. Now the programme has been given new shape under the title 'Initiative for Research & Innovation in Science (IRIS)' incorporating two programmes – 'Intel Science Talent Discovery Fair' and 'Steer the Big Idea' - offering a variety of innovative activities for Indian children as well as their exposure to international innovation scenario. In the light of new IPR regime spearheaded by WTO, a new initiative called I<sup>3</sup> (India Innovation Initiative) could form a major component of innovation programme. Another important programme 'Developing the Spirit of Innovation' has 3 major elements: i) orientation of artisans and techno-students towards innovativeness; ii) identification of areas of innovation and developing innovative ideas; and iii) innovation awareness. The module was successfully tested and being implemented to encourage innovativeness.

In addition to technological innovation, it is an opportune time to encourage innovation in all walks of human endeavour and science communication is no exception. A national seminar on 'Innovation in Science Communication' was organized at Mahatma Gandhi Gramodaya University, Chitrukut in November 2005 to offer a forum to discuss and deliberate on these issues and evolve newer and innovative areas of science communication and explore alternative modes of science communication. Though a variety of science communication programmes and activities have been tried out successfully, a whole host of innovative science communication activities awaits a spark to occur.

Couple of new 'innovations in science communication' have been successfully conceived and implemented recently, to cite a few: 'Science Communication through Cultural Events', like Ganpati Festival, Eid, Durga Pooja, etc.; 'Science Communication through Folk Arts', like Vellupatu (Tamil Nadu), Bihu (Assam), Nautanki (Uttar Pradesh), Puppetry (Rajasthan), Garva (Gujarat), Kathkali (Kerala), etc.; and 'Science Communication through Digital Media', like internet, social networks, multimedia, webcast, podcast, blogs, etc.

'Innovative Communication' may be attributed to experimental mass communication practices developed and employed by many scholars and civil society activists, such as community newspapers, farmers' awareness visits, and communication through Self Help Groups (SHGs), etc.

'Innovation Communication' is yet another area which emerged as a potential sub-discipline of science and technology communication attracting a number of scholars and professionals, where a large canvas is yet to be painted and newer and innovative ideas still remain unexplored for communicating innovations and inculcating innovativeness amongst people.

Generally it is believed that 'necessity is the mother of invention' and new ideas come either when there is a need or something may click all of a sudden. Both of these types of ideas have their own importance. However, there are many other factors which are responsible for a successful innovation, i.e.: i) how quickly one is able to identify the necessity or a problem; ii) how he or she develops an urge to find ways and means to solve that particular problem; iii) how one is equipped, in terms of skill and technology; iv) how he moves on to solve the problem; and v) how he involves people through group discussion for further refinement of the solution of the problem reaching to a socially acceptable innovation! India's traditional innovation system demonstrates a great deal of people's collective wisdom and potential.

There is a need to find out problems those impede creative and innovative practices and explore ways and means to further strengthen the innovation systems to enhance the pace of developing the spirit of innovation amongst people. All that needed is to explore, discover, adapt, and support such innovative ideas and put them in to practice. So let us tune in and condition ourselves for the same. Who knows, when a bright innovative idea flashes in whose mind!

**Dr. Manoj Kumar Patairiya**

# Community Radio: An information intermediary for rural community

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*Climate change is a serious threat confronting the world today having huge implications on the Indian economy with more than 65% percent of the population dependent on the natural resources such as agriculture, water and forests. Large number of researches have been done nationally and internationally to cope up with its impacts in the climate sensitive region. However, there is a need for communicating climate change issues in locally relevant and culturally appropriate ways. Development Alternatives has taken several initiatives to use “Community Radios”- the rural dominant Information and communication technology (ICT) based communication medium as a powerful communication tool to play a critical role of information intermediary between the rural communities and science to address climate change concerns of the vulnerable communities of Bundelkhand.*

**Keywords:** Community radio, Rural communication, Climate change adaptation, Climate change practice-policy connect

## Climate dialogue – A Prelude

Climate change is a serious threat confronting the world today. Climate change poses a direct and growing threat to the livelihoods of millions of people all over the world. According to the Intergovernmental Panel on Climate Change (IPCC -2007) one billion people in Asia could be exposed to water shortage by 2050. Crop yields could reduce by up to 30% in some parts of Asia putting many millions of people at risk from hunger. The Intergovernmental Panel on Climate Change 4th Assessment Report and an evergrowing body of scientific research continue to illuminate the

perilous nature of global climate change and the need to take action against the potential impacts. In India, climate change is a particularly serious challenge that will significantly impact the Indian economy (and the livelihoods that depend on it) due to a high reliance on climate-sensitive sectors such as agriculture, forestry, and fishing. It may alter the distribution and quality of India's natural resources and adversely affect the livelihoods of its people by affecting the agricultural productivity and thereby quality of human life. The state of Madhya Pradesh has a well-formulated State Action Plan on Climate Change (MPSAPCC) that predominantly focuses on adaptation. Madhya Pradesh State Action on Climate

Change (MPSAPCC) ensured that grassroots voices were taken into account through an extensive consultation process; however the plan has not been implemented.

Similarly the Bundelkhand region in Central India pertaining to its fragile geophysical is significantly sensitive to climate change. The Bundelkhand region comprising seven districts of Uttar Pradesh and six districts of Madhya Pradesh is one of the most backward regions of the country. It is largely rain fed and is perturbed with drought conditions frequent in the region leading to unstable socio-economic conditions and food insecurity. According to MPSAPCC More than 70% of the rural population is engaged in agriculture and agri-based activities. The sector contributes 30% to the State Net Domestic Product. The sector is highly vulnerable to the vagaries of climate and 60% farmers who work in the sector are small and marginal farmers. Extreme events like frost, excess rain and high temperatures cause huge losses in productivity. According to the MPSAPCC, the average surface daily maximum temperatures, in the period 2030s is projected to rise by 1.8-2.0°C throughout Madhya Pradesh and the daily minimum temperature is projected to rise between 2.0°C to 2.4°C during the same period. Shifting of the rainfall pattern seems to have affected cropping patterns and short term gains through mono-cropping reduces the crop diversity and adversely affects the soil health in the long term increasing vulnerability of the agriculture sector. According to the MPSAPCC, projections of rainfall in Madhya Pradesh for the period 2021 to 2050 indicates that there is likely to be decrease in winter rainfall as one moves from eastern part of MP to western part of MP. In pre-monsoon period, the rainfall is increasing only in the southern part of MP, with decrease in rainfall in all other parts. The growing population and parallel increase in demand for natural resources has left the agricultural and water resources in the region susceptible to increasing climate change risks affecting the livelihoods of the communities. As the climate change impacts are likely to be faced most severely by such vulnerable regions of developing countries like India, there is an urgent need to integrate adaptive strategies at the local level and work towards strengthening national capacities.

Since the climate change impacts may

have serious repercussions on the development (particularly in rural areas). Consequently it is necessary that adaptation measures are integrated into the rural development strategy and planning specifically in areas where communities are most vulnerable so as to minimize the cost of climate change impact.

Despite extensive research *and increased information*, existing knowledge on how to adapt to climate change is fragmented and dispersed. In India, new knowledge generated from research often fails to reach or appropriately address the concerns of those who need it most. One of the key barriers to meeting these challenges has been a failure to harness effective local-level forums supported by appropriate technologies that allow for dialogue and exchange between researchers, community members, and community intermediaries (individual or institutional).

There is a need for communicating climate change issues in locally relevant and culturally appropriate ways (Gauthier 2005, Agrawal and Perrin 2009). While many ongoing research initiatives are studying impacts of climate change on communities and packaging adaptation models in India and other developing nations in South Asia, studies suggest that research being conducted has had limited success in being taken up at the local level, partly due to challenges of communicating scientific research in ways that are appropriate to local stakeholder needs (Gauthier 2005). Failure to meaningfully engage existing local institutions (Agrawal and Perrin 2009) and local cultural practices minimise adaptation to climate change (Ensor and Berger 2009).

Much of what has been termed “knowledge sharing” in climate change adaptation has relied upon the online databases, or periodic workshops. As a result, these initiatives have frequently failed to reach the most vulnerable communities in ways that address barriers presented by technology, language, power, etc. It is important to link with existing channels of communication that communities rely upon; or to build upon ongoing activities and social sphere of vulnerable groups (Harvey *et al.* 2009).

### **Communication conundrum**

The use of practical components of anticipatory

climate change adaptation including improving information, strengthening institutions, and devising sustainable climate resilience strategies for reducing the negative impact on vulnerable communities is the need of the hour. However, a clear understanding of sustainable adaptation and climate resilient development is still missing at the grassroots level. Helping the local communities to understand, access, and utilize climate change related information is still a huge challenge. This is further hindered because efforts creating climate change awareness and the necessity for adaptation are still met with low interest levels. This is partly due to the inappropriate nature of the awareness efforts and partly due to the cynicism that has developed among the communities towards any sustainable solutions without immediate benefits. New means and interesting ideas of outreach to the communities are thus required to propel them towards adopting sustainable adaptation measures.

### **Catalyzing communication for action**

Radio is still the dominant media format among poorer communities in India and it is assumed that radio can play an important role if used. Realizing the importance of this medium, Development Alternatives analyzed different climate change communication models in Bundelkhand based on the Community Radio under its shubh kal campaign. *Shubh Kal is a campaign of Development Alternatives to inform and educate the rural community of Bundelkhand, regarding the hazard of climate uncertainties and its impact on their lives. The drive communicates the possible adaptation and mitigation measures by influencing them towards behaviour change, as well as for influencing policy makers at different levels to make these changes sustainable and replicable. The first initiative (Rural Reality Shows for Catalyzing Large Scale Climate Change Adaptation) communicates critical climate change adaptation options in simple and edutainment (Education + Entertainment) format to the rural communities. The second ongoing initiative (Shubh Kal- From Information to Knowledge and Action) aims to develop an innovative model of learning and action to connect community, media, researchers and policy makers.*

The idea of *Rural Reality Show for Catalyzing*

*Large-Scale Climate Change Adaptation* won the *Development Marketplace Award from the World Bank in 2009* under the Innovation category. The show was designed as a “Reality Show on Community Radio” in which contestants competed in the adoption of various climate adaptation options such as Agro-forestry, organic composting, rainwater harvesting, kitchen gardening etc. It helped more than 500 households to adopt climate friendly household practices in their day-to-day life and created 25 Climate Change Agent from the rural community. The Pilot was based on edutainment approach of communication and Desire, Behavior, Bonding, Belief (D-B-B-B) strategy of communication. The idea presupposes that the adaptation options are known but has not been discussed with an effective way to the community.

Rural Reality Show intended to empower rural women and youth as ‘change agents’ for climate change adaptation in 100 villages of Bundelkhand. The women and youth adopted ‘do-able’ adaptation measures and their efforts were recognized and disseminated through specially designed ‘edutainment’ programmes in reality show format. This was broadcasted using innovative local communication media like Community Radio and Video Resource Centers (VRCs).

In the Rural Reality Show, “*Kaun Banega Shubh Kal Leader*” the contestants competed in the adoption of various climate adaptation measures at grassroots level. A basket of 25 house hold based adaptation options were identified with the help of community and validated by the scientists. The selected options were based on the few criteria which attract villagers to adopt such as easy to adopt, cost effective, economical, health as well as environment friendly. The selected adaptation options were in food, energy, water and livelihood security categories.

Over twenty episodes of the show were broadcasted to over 100 villages by Radio Bundelkhand –a community radio. 187 group from approximately 100 different villages registered themselves to participate in the show. Over the course of the contest, contestants adopted different household climate change adaptation techniques, such as rain water harvesting, seed treatment, water recycling, improved agriculture practices etc. Through several elimination rounds, groups

were selected to advance by expert evaluations and audience polls on the basis of their success in implementing adaptation techniques—both on their own and by others in their village. After the conclusion of the reality show, members of the top five teams participated in additional training exercises to become “climate change agents” for the various adaptation techniques they learned through the show. Each team member is now capable enough to teach other community members in their villages about different climate change adaptation techniques.

The edutainment based rural reality show model endeavored to simplify the critical climate change messages and motivate community member to adopt and help realize economic and social importance of these adaptation options. The tested model can be adopted in any region for behavior change on other social and environmental issues as

well.

The other experimental communication model is one step further from our first communication model. “Shubh Kal- From Information to Knowledge and Action” is strengthening and promoting Community Radios (Radio Bundelkhand, Lalit Lok Wani, Radio Dharkan and Chanderi ki Awaaz) intermediary to connect the rural communities, researchers and decision makers. The communication model seeks to strengthen community knowledge on climate change impacts and adaptation measures by facilitating the process of integration of grassroots voice into local scientific research and policy dialogues. The model piloted in the state of Madhya Pradesh, India’s largest state where the impact of climate change is already having serious repercussions on water availability and agricultural productivity. The process is still underway and outcome cannot be discussed at this point.

**Table 1. Category wise adaptation options chosen under the project**

Category	Adaptation options
<b>Food security</b>	Vermi composting Organic farming Kitchen garden Line sowing Seed Bank Organic Fertilizer Efficient irrigation methods Agro forestry (planting of indigenous fruits, fodder trees, shrubs, grasses, pasture legumes) Tree plantation People's biodiversity register Seed treatment Access to information -farmers advisory, in general about climate change Nurseries
<b>Energy security</b>	Smokeless cook stove Biogas plants Solar home system (lantern) Recycle products (bags, mats, rope etc)
<b>Livelihood security</b>	Amrut Mitti Poultry Value addition to agro products (pickles, medicines, groundnut decorticator) Self Help Groups
<b>Water security</b>	SODIS Water recycling Rain water harvesting Ground water recharge



## Conclusion

The use of “Community Radio” as a communication medium demystifies the critical climate change messages thereby reducing the cynicism of the rural community towards climate change adaptations. Also “Community Radio’s” a powerful communication tool as an information intermediary can build up a strong linkage between the rural communities, science and policy to address climate change concerns to the vulnerable communities of Bundelkhand.

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# Public acceptance of mass movement for health and science: The Tripura experience

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*Science communication and health education are the master tools to generate awareness and prevent and eradicate deadly diseases for the well beings of a nation. Communication strategies on Hepatitis and the follow up feedback to eradicate Hepatitis in Tripura state have proved the success of the principle thoughts of science communication. Hepatitis B is an infectious and complicated fatal disease and needs significant attention of the society for its prevention. It has become a burning concern over the period for public health. Besides awareness, vaccination could be another way to prevent such public health crisis. A successful health education and communication campaign in the region had an impact. Interested people of the state, who have taken the HB vaccination, confirmed the success of implementation of the scientific awareness and science dissemination organized by the Govt. of Tripura through a PPP model. Tripura is a small state of North East India, where Hepatitis B susceptibility is high and needs to tackle through health education and science dissemination amongst a mix population consisting over 19 tribes and Bengalese besides socio-economic and cultural differences. The experiment projects the public acceptance of science communication and mass movement for up-gradation of living style. The mass movement through three tier networking may be categorized from planner, volunteer, and to implementer. The Tripura HB vaccination project establishes that the science communication leads to change the life of people and health education transforms the people's opinion to accept science based solutions.*

**Keywords:** Hepatitis B vaccine, Science and health communication, Public acceptance, Health campaign

## Introduction

Tripura has shown remarkable development in every sphere of life. After the transformation from royal to a democratic state, Tripura conquers the high status

in development since its merger with the Republic of India in 1949. Tripura now started to twinkle with the mark achievements in various socio-scientific parameters. Tripura is the state where people are literate by above 80%. Tripura now is the only state,

where almost 100 percent voters cast their votes in elections. Health status is subject to understanding of health education and willingness to the wellbeing. The high valued health education and health science communication converts a simple society into a better health conscious one, without a fail and also builds a confident populace for future. Health education and science communication sector offers a feedback to be analyzed aftermath any health education or science communication activity to record people's reaction.

Tripura is a state, where the government through a PPP model initiated Tripura HB vaccination project to vaccinate people with Hepatitis B vaccine in a mode of mass health and science movement by 20% population, which has been possible for sustained health education and science communication process. Though, it was difficult to convince people in the beginning, but slowly they started believing in the science process. It has become evident that now people are aware to the rules of wellbeing. Implementation of the campaign got value for the same reason and further such consciousness ensures prompt walk of the people from their homes to clinics.

## Methodology

Networking is the vital character and factor to any mass health science movement to ensure the success. To utilize the human power property, the networking in two different modes is the basic principle for success of any mass movement. Networking system, which has been developed and discussed here towards conducting the movement, may be classified as follows:

### 1. Intra-personal networks

To organize the mass movement the collective work of a group of organizers, resource persons and coordinators is essential. The depth of relationship and coordination between the organizers ensures the quantum of the success of a programme.

- i. Intra personal network strengthens the coordination to organize mass movement through which science can be disseminated and can be accepted by the public.

- ii. The network plans the programme in a better way to resolve a concerted decisive opinion, which became a better output from a broad group discussion.
- iii. The relationship made under the system may be between different types of personalities of experts having different kind of expertise.
- iv. Success of the programme depends on better activity and coordination.
- v. Faces are known to each other as maximum as possible.
- vi. The group may be divided into different categories, where each category may have specific work or activity.
- vii. The duty, dignity and job profile of members are important to conduct the specific activity and it should consist of a core team of specialists.

### 2. Inter personal network relationship

Mass movement has a great responsibility to the society, which majorly needs to reach the masses. Preparation of the information dissemination through single window system is the basic principle to the root networking for the mass movement to the society. This better root networking confirms the proper field work among the society and masses or target audience to implement the awareness projects. Involvement of these groups ensures the success of a mass movement. Hence, the inter personal network is the middle order which links and relates the organizers to the masses, i.e. the plans or inputs and the success or outputs.

- i. The network should include the persons, who have better ability to communicate social and scientific matters to the target masses.
- ii. Networking people may understand the masses and their needs, they may plan to disseminate science in a way, so that it is understandable and finally acceptable to the concerned target group.
- iii. The public acceptance is the basic and major factor here on which the success depends.
- iv. Selection of the host lecturer, who is the resource person, to communicate with the target masses, should be a well-known and socially honourable person, so that the person may attract public acceptance.
- v. The group will act as field staff to conduct the

programme and work in the field.

### 3. Characteristics of masses

Mass movement in the health sector and related science communication is dependable to the masses. Such programmes have a hidden concept of “by the people, of the people, and for the people”, which made the programme public dependent. The advantage characteristic of the Tripuraian is literacy and aggressive interest towards wellbeing and livelihood, which transform it into a willing society to absorb the public interest factors from a mass movement. The group itself acts as a grass root level networking structure to manage manpower to disseminate the scientific thoughts as a part of the mass movement; and shaping networking structure as three tier system.

### Challenges for a mass movement

Mass movement in Tripura is a challenge because of the positional placement of the state both characteristically and geo-graphically different from every aspect. Communication is a prime factor to achieve satisfactory result in any mass movement. The communication status of Tripura may not be comparable to any other state. The Himalayan range extends through the states of North East India; hence Tripura has maximum hills against its tiny plains. So the land locked Tripura has limited scope of communication through road.

Challenges	
A	Road connectivity
B	Organizing the population
C	Arrangement of programme
D	Language of interaction
E	Date and time convenient
F	Highlighting public interest
G	Personal benefit of the individual
H	Geo barriers

**Road connectivity:** The state is a hilly area; hence the road communication is not proper to reach the remote villages. The transit needs maximum time, which may be one of the reasons to disturb the normal life style apart from disturbing the movement to

reach the target people.

**Geo barriers:** Tripura has mainly (14-18) hills with their series spread across the state. It disturbs the road communication and connectivity throughout the state. Apart from the hills, the state has ten rivers. The leading barrier is the land locked position, where the state is surrounded at 3 sides by a neighbouring country Bangladesh, with a narrow linkage at one side only with rest of India, connecting with Assam and Meghalaya.

**High the public benefit:** Public benefit must be a major factor to be highlighted in the field by the networking volunteers, who are operating in the field with the masses. Highlighting public benefit can attract the minds of people to make a positive opinion. Public benefit is paramount, which ultimately leads to the acceptance of the health awareness programme. Realization of personal benefit focuses on the opinion building to upgrade the life and living status with scientific messages and opinions. In Tripura, which is geographically a disease prone state, the benefits of disease-free life gets value in the minds of the masses.

### Techniques and process of mass movement

Dissemination procedure	Targeted mass public group
a) <b>Group discussion</b>	Opinion makers family and group heads
b) <b>Awareness camp</b>	School institution of groups community level
c) <b>Short seminar/ lectures</b>	Leaders of social bodies
d) <b>Press information/ media</b>	Masses
e) <b>Quiz/ competitions</b>	Interested pupils & guardians
f) <b>Film show</b>	Public places at evening / busy hours
g) <b>Advertisement</b>	Local publication and press for masses
h) <b>Announcement</b>	To inform localities
i) <b>Messaging</b>	To educated mobile users
j) <b>Door to door</b>	Conducted a survey for information dissemination

The world's first Hepatitis B virus universal vaccination programme for infants was launched in Taiwan in July 1984<sup>5</sup>. Subsequently, since 2007 Iran's Ministry of Health carried out a nationwide HB vaccination programme. In 2009, 177 countries reported that they had included HB vaccination into their national infant immunization programme<sup>3</sup>.

The major factor of the social and mass vaccination programme is to provide and to disseminate the health science or the concept of ultimate result of the preventive medicare, which can be realized through proper scientific education.

The mass vaccination or any inject-able prevention of disease is the ultimate feedback of positive concept building, concrete and strong mindset for wellbeing and also guaranteed acceptance of health and social science, which may also be taken forward to the next generation by the educated guardians.

**Involve personals:** To conduct the designed awareness campaign on health, here various professionals

were involved utilizing their potentialities to disseminate science to masses in various ways and in multi-dimensions.

**Hepatitis B as a medium for science communication:** Hepatitis B is an infections virus with a significant global public health and social problem. 350 million people in the world are chronically infected by the HBV and estimated 2 billion are exposed to virus in the life time<sup>1,2</sup>. About 78% of global pool of HBV infection is from Asian countries, particularly developing countries in Asia-pacific region. HBV accounts for at least 50% of the chronic Hepatitis cases and 70-85% of Hepato-Cellular Carcinoma in this region.

**Overview on Hepatology:** Prevention of Hepatitis is of paramount importance. Understanding the disease and its fatality, a vaccine against Hepatitis B has been available since 1982. This vaccine was plasma derived vaccine and was not free from side-effects. In 1987, recombinant DNA technology

Professionals	Targeted society	Mode of science dissemination	Impact on society
Doctors/ health-care providers	Patients	Direct awareness about sufferings and benefits of the programme	The group is small but due to direct and single window dissemination procedure its impact is high
	Relatives of patients	Silently highlighted the severity of the disease and suffering with example/ sample patient	Knowing or understanding the examples of the sufferings, the targeted group accepts the facts of science communication
Journalists	Masses	Utilizing both the potentiality of science writing/ communication and habit of society of reading newspapers/ magazines	Through this process, science may be disseminated to a large group, but the impact is uncertain to judge the feedback properly due to unknowing facts of acceptance of the thoughts
Writers	Educated public	They may build the mind set, concept and confidence of the society to mobilize the society in a positive direction to get better feedback of science communication	The group is small but too intellectual, who may further developed a prefect mind-set group
Political leaders	Masses	They can utilize their own personal and ideological influence to generate public awareness and organize a large group of followers for the motive	The professionals have their own admirers/ followers, who obey the instruction of professionals and they have good network to disseminate the message to each and every one in a short time
Teachers/ professors	Students/ guardians	They can educate the pupils who ultimately upgrade the concept of the next generation, apart from building-up a high impactful awareness amongst guardians and relatives of students	The output of such awareness is high impactful and creates a positive outlook beyond the age barriers.

become available and till date this vaccine is in use worldwide. The vaccine has an outstanding record of safety and effectiveness. The vaccine is 95% effective in preventing HBV infection and its chronic consequences. In 1992, World Health Assembly passed a resolution to recommend global vaccination against Hepatitis B<sup>3</sup>.

Mass vaccination programme ensures well-being along with good health and safety. It also indicates an increased health awareness and belief in science concepts. Mass vaccination programme against Hepatitis B has not been implemented by many countries, though it is considered that high vaccination levels in the population are necessary to decrease the prevalence of disease<sup>4</sup>.

### The Tripura experiment

The Government of Tripura through Department of Health joined hands with Hepatitis Foundation of Tripura to plan a mass vaccination programme with

effective impact and mass health awareness. The team, which consists of social workers, professionals, communicators, government authorities, public servants, and students, healthcare providers, has prepared a plan to make people aware about health science aspects of deadly disease, simultaneously running number of vaccination clinics. The preparatory phase of the programme began in 2002. Since 2003, the team started running vaccination clinic at capital city Agartala to immunize interested people and families with Hepatitis B vaccine as a proper medical procedure.

Within a short span of time, the clinic has been transformed into a relievable medical counseling center beyond a immunization centre only, where people started visiting in search of answers to their questions about diseases and wellbeing related health science issues. The team realized the awareness factor and to utilize this formula, the team has established 32 counseling centers-cum-vaccination clinics throughout the state at the government hospi-

Programme	Coordinator	Targeted group	Impact
<b>Community awareness</b>	Community leaders	Masses of a society or village	It creates the curiosity and also satisfies it. It should be in favor of society and build the concert concept of a large size masses
<b>Awareness for professionals</b>	Association portfolio stalwarts, HODs	Professionals	It builds mindset as well as concept and supports the programme. Participants may disseminate the scientific message to the society or community. So that they may consider as the middle part of the networking relationship, who are forwarding the message to the society. They perform as a second step forward to the organizers and between the organizers and masses
<b>Cultural activity</b>	Season's favorite personalities	Masses along with singers/ artistes	They may disseminate the scientific views in a simple way, which may be attractive and acceptable to the public, artistes and informed citizens, through the awareness process
<b>Press\ media coverage</b>	Largest/ larger circulated mass media	Educate masses, administrators and press personnel	Such coverage helps in documentation of the programme, inform the educated public and to build up the confidence of administrators for the programme and high value mindset and acceptance amongst administrators. Press coverage has broad impact and gets maximum millage
<b>Books</b>	Premium publishers, book sellers	Bookworm people	Book has taken in the account as a valued medium of communication and for circulation
<b>School based awareness campaign</b>	School teachers, academicians or coaches, NSS activists	Students with teachers and guardians	The talk of a teacher or an academician gets maximum value in the minds of students and guardians and also confirms the guaranteed output
<b>Hepatitis B immunization clinic and counseling</b>	Vaccine	People interested to vaccination and responding to the science communication	It's a direct communication between the vaccine beneficiaries and organizers.

tals and healthcare institutions, serving as community awareness hubs. Initially, the team has focused on efforts to develop a health conscious concept for the society, especially public acceptance of inject-able immunization.

To disseminate the medical science to the people of Tripura, the team has planned various modes and means under the programme to make people aware to spread acceptance to generate values of health education and increased vaccination turn-around at the centres. The persons, who are taking the vaccination, have been recognized as a group, who understands science of vaccine in a better way. Before that there was no awareness generation on health and hepatitis management in the state in a proper scientific way.

### Observations and analysis

Through the movement to prevent the prevalence of HBV in the state was then getting good response from people across the state, still something was needed to take this quest against HB a step ahead. The team planned to further strengthen the programme through its 32 permanent HB clinics along with 150 temporary HB clinics especially and only to provide facility at the doorsteps of the people to get better response. It worked very well and got a remarkable response. Though, the team partly failed to provide the facility to all who wanted to avail

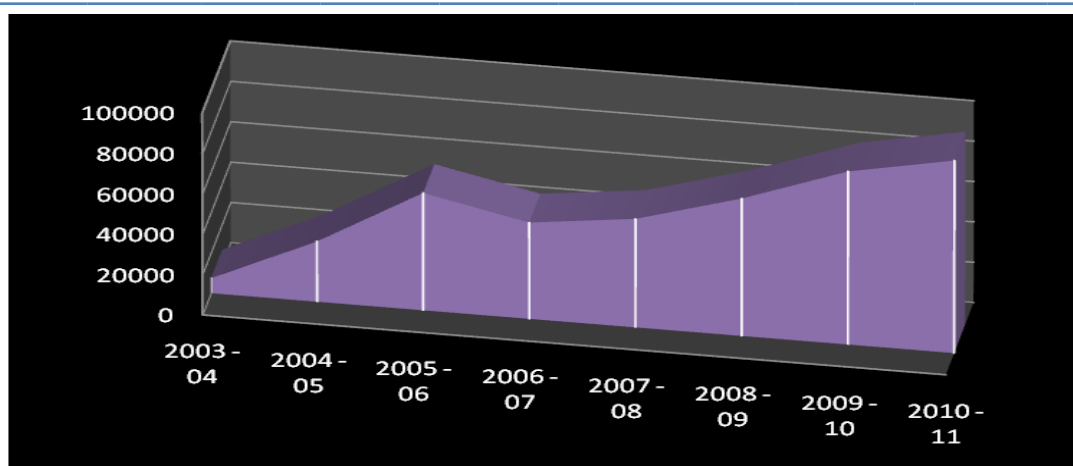
of the facility of vaccination at their doorstep. The team again planned a mega project next year in 2010-11 onwards with a larger public demand created by a workable communication strategy. The programme result reveals that science communication efforts have renewed the people's desire to remain healthy and live long with a dose of scientific knowledge and mood.

**Studying samples:** Vaccination is in uprising mode since 2003. In 2005-2006 it touched a very satisfactory level. However, 2006-08 observed a poor growth, but that has been recovered by 2009-10 at the end of the decade and touched the ever highest peak which is 21.37% of the total vaccination response in a single year only. The year by year cumulative analysis of response has been analyzed as follows:

**Cumulative increase of vaccination and impact of science communication: Assessment of regular clinic data (2003-2011)**

Year	Cumulative year wise increase	%
2004-05 over 2003-04	22480	0.030419
2005-06 over 2004-05	28311	0.03831
2006-07 over 2005-06	-10473	-0.01417

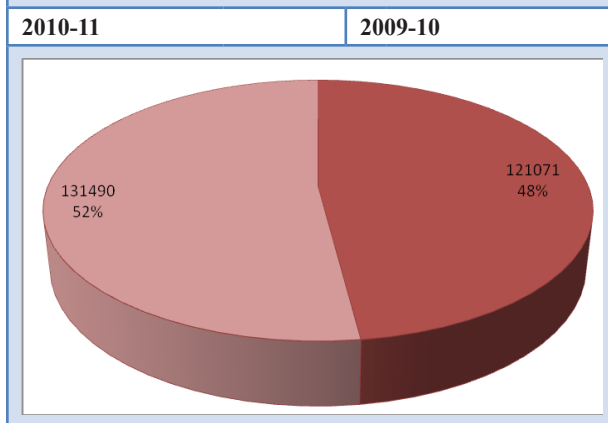
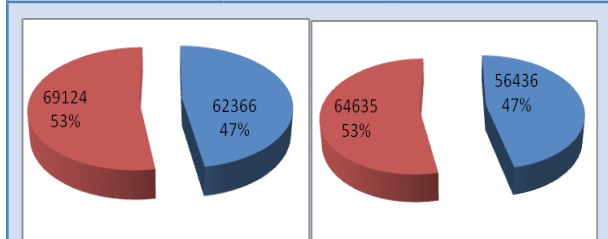
**Rising status of gatherings of aware population regularly at Sunday Hepatitis Clinics<sup>6</sup>**



Years	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Total
Vaccinated Population	7390	29870	58181	47708	53804	68146	85747	95404	446250

2007-08 over 2006-07	6096	0.008249
2008-09 over 2007-08	14342	0.019407
2009-10 over 2008-09	17601	0.023817
2010-11 over 2009-10	9657	0.013068

**Acceptance of science communication and vaccination in a single day<sup>6</sup>**



Projects	Children (up to 10 yrs)	Adult (10 yrs +)	Total
1 <sup>st</sup> Hepatitis B Eradication Programme: 2009-2010	56436	64635	121071
2 <sup>nd</sup> Hepatitis B Eradication Programme: 2010-2011	62366	69124	131490
<b>Grand Total</b>			<b>252561</b>

**Analyzing samples:** Hepatitis B eradication programme had an impact assessment of understanding the science behind it practically. In a single day programme across the state, with permanent 32 HB clinics and 150 temporary special programmes oriented clinics, the vaccination was done for the people who strengthened their minds for inject-able vaccination. Three doses on three different dates based programme of last two years, since 2009-10, confirms that the people are responding to science and health communication. The 2010-11 outcomes

were too higher than that of the last year 2009-10. But the child and adult ratio of vaccination for both the years is almost same, which confirms that the total family vaccination has taken place due to family package based science communication methodology.

**1<sup>st</sup> Hepatitis B eradication programme 2009-2010: First information based result<sup>7</sup>**

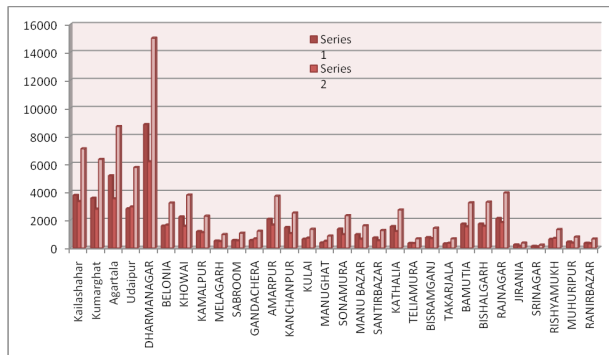
No.	HFT Branch	Adult	Child	Total
1	Kailashahar	3767	3326	7093
2	Kumarghat	3560	2782	6342
3	Agartala	5168	3523	8691
4	Udaipur	2812	2946	5758
5	Dharmanagar	8835	6171	15006
6	Belonia	1576	1644	3220
7	Khowai	2229	1558	3787
8	Kamalpur	1179	1103	2282
9	Melagarh	502	465	967
10	Sabroom	544	520	1064
11	Gandachera	544	660	1204
12	Amarpur	2061	1647	3708
13	Kanchanpur	1470	1038	2508
14	Kulai	637	710	1347
15	Manughat	373	487	860
16	Sonamura	1354	963	2317
17	Manu bazar	963	635	1598
18	Santirbazar	727	528	1255
19	Kathalia	1536	1182	2718
20	Teliamura	335	326	661
21	Bisramganj	751	671	1422
22	Takarjala	307	351	658
23	Bamutia	1715	1521	3236
24	Bishalgarh	1720	1565	3285
25	Rajnagar	2112	1832	3944
26	Jirania	229	130	359
27	Srinagar	123	86	209
28	Rishyamukh	629	695	1324
29	Muhuripur	431	357	788
30	Ranirbazar	343	308	651
<b>State total</b>		48532	39730	88262

**Examining samples:** The primary status of HBEP 2009-10 has been published with details so immediately<sup>7</sup>. The status confirms that the vaccination

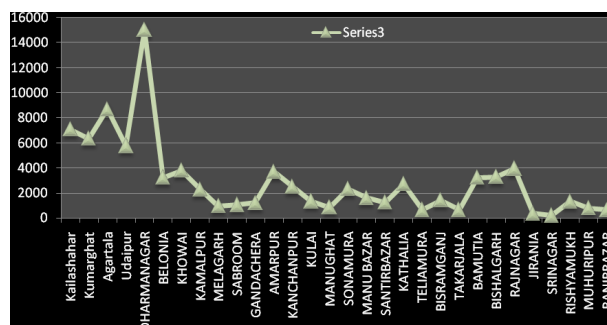


to the children has been given maximum priority by the people to whom science of vaccination was communicated. It also reveals that the health consciousness for the children is higher as compared to those of adults. For instance, in any health issue, if we are able to relate the same to the child health, then it may be easier to motivate the masses at large. Parents are generally too sensitive to their children's health.

maximum response to vaccination aftermath of science communication. Four areas including Agartala have shown high acceptance of science communication on Hepatitis management. Rest of the 10 areas is moderately positioned. 15 spots were recognized for poor communication of science, as the number of responders remained marginal, which indicates that communication process across the state succeeded by 50% only at 15 branches only out of 30. The poorly respondent area has also been detected as Srinagar, but child vaccination response was higher to the adult vaccination in this area.

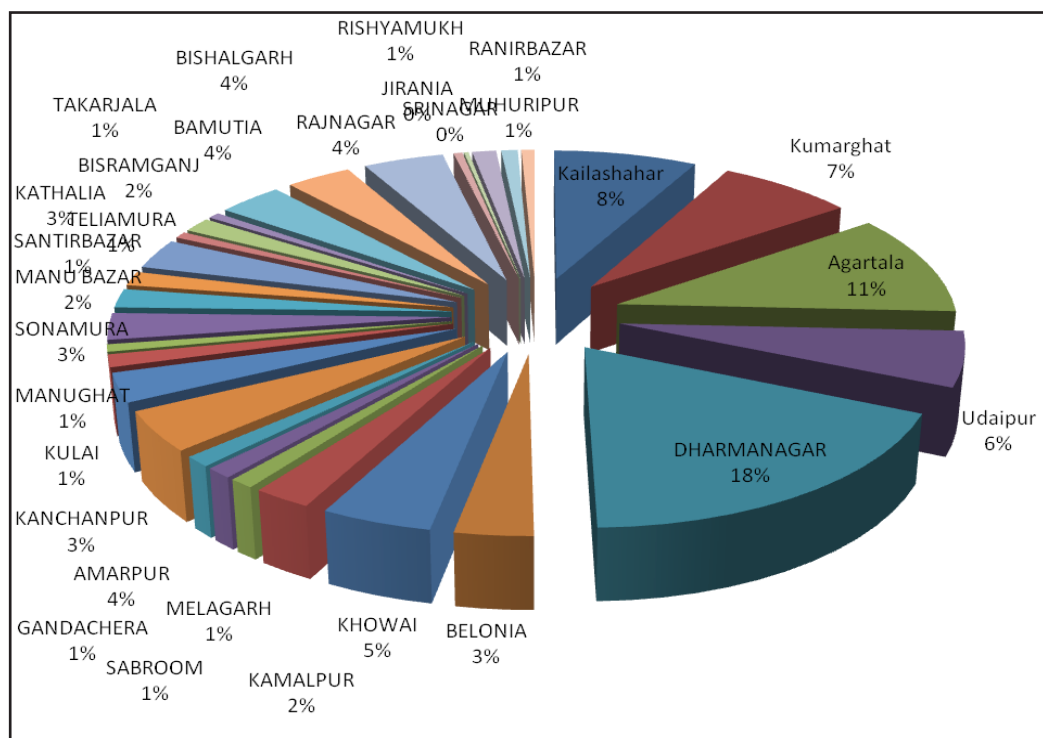


**1<sup>st</sup> Hepatitis B eradication programme 2009-2010: Branch wise child and adult vaccination**



**1<sup>st</sup> Hepatitis Bb eradication programme 2009-2010: Branch wise public response**

**Scrutinizing samples:** Dharmanagar, the only area of the state attached to the rest of India showed the



**1<sup>st</sup> HBEP 2009-2010: Area wise contribution percentage of public response**

**Investigating samples:** The public response to science and health communication considering the percentage of feedback of vaccination as stated above, is higher at the areas linked to the highways and capital, i.e. Agartala, Dharmanagar, Kumarghat, and Udaipur, etc. The areas like Kailashahar are little out of main track, but the District town area proved its active participation in the response to the HB management campaign. Other areas are just maintaining their placement on the chart with a negligible response, due to several challenges and field factors.

### Scope and limitations

Vaccinated persons are recognizing as a group that understands the value of science communication, more than the group of people, who have lack of confidence or fear to the vaccination due to painful injection system. Hence, science communication scores more than it was originally imagined for such a mass health awareness movement.

Health education and science communication have prepared the people for vaccination, where own values and confidence building capability had a significant role. Due to these reasons and through a complex methodology, huge number of persons have taken the vaccination and followed the path from awareness to determination and finally moving towards a HBV free future. The clinics, besides vaccination, have been able to recognize the might of public engagement with science and imparted better understanding of health science to visitors in a methodical manner indeed.

### Conclusions

1. 20% vaccination against 3.65 million mass population of Tripura is possible due to better implementation of science communication and awareness programmes across the state and the

same model may be adopted for betterment of the other states.

2. Everyone wants to update his lifestyle. Such physiological feelings remain high in the society and it's the hidden cause behind willingness for wellbeing and upliftment of lifestyle.
3. People of Tripura are highly interested to understand health science of wellbeing and diseases.
4. Health education and science communication are the prime tools to update the masses. It also strengthens the confidence of people to prevent and combat diseases.
5. More science communication efforts ensure more value addition to the society.
6. Science communication has basic and effective role to change the mindset of public as a master tool to improve general health index of the nation.

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# Language of communication from brain to brain

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Conscious life leads through the mind - man's brain and nervous system. Knowledge of the health and illnesses of the mind is therefore of interest and importance to everyone. Mental illness is not only everybody's business but also the individual's most important business because it is only up to him or her to obtain and to give as much 'mental health' as possible if he or she wants to lead a happy life. Everyday everybody encounters with mental or emotional issues or problems of own or fellow people. In a day, several times one attempts to overcome and prevent such issues.

Each of these actions and thoughts involves an act of communication. Every act of communication is itself, in a sense, an action for or against mental illness or mental health, if communication is more effective and thoughtfully used, mental health will be improved and mental illness reduced – for the individual and for his/ her fellows.

The mental health promoters come primarily from the ranks of psychology, social work, education, liberal arts and common people, along with practical clinicians. The fact remains that health is infinitely harder to define than disease. This is because health does not challenge us while disease/ illness do. Health and illness are like peace and war. We pay less attention to the peace of health than we do to war of illness. When feeling good, we do not think much about health but disease (our own/ or somebody known) becomes a personal challenge. We think of health longingly, while, sick. Health is a barrier between life and disease although life can exist with disease. Life shows chemical changes, growth, ageing, reproduction and powers of adaptation to the environment. Life is also a vital force, a living power – to say life is life.

It is equally difficult to define health. It has been called a state of being hale/ sound in body, mind and soul especially freedom from disease/ pain. The medical definition of health as a normal

condition of body or mind also does not help much.

Positive mental health requires focus not only on sick behaviour but also on human behaviour as a normal phenomenon. Mental health is as per studies an individual and personal matter and although environment may be involved in the causes of mental sickness the illness is an individual characteristic that does not necessarily indicate a sick society/ a sick community. Another conclusion was that standards of mentally healthy or normal behaviour vary with time, place, culture and expectations of the social gap; that is different people have different standards. Our scriptures have deep knowledge about health, language and happiness. They write balance /harmony with oneself, environment and nature, equilibrium (sthit-pragya) amid extremes of life. (loss/ profit, victory/ failure, fame/ defame). We need not to go anywhere to understand that peace of mind adds to happiness and inner peace leads to eternal happiness (Sat-chit-Anand).

The studies have found that mental health is one of the many human values and should not be regarded as the ultimate good or bad in it. No completely acceptable, all inclusive concept exists for mental state. Psychological health education involves fewer close personal relationships on one-to-one basis as compared to the technique of consultation and counseling. It aims to provide accurate information and encourage understanding in an effort to replace misinformation, as well as to fill information gaps, it also seeks everyone to gain knowledge, attitudes and behaviour patterns which will promote and sustain one's psychic health. Such education is aimed at all ages and all education levels, pursues all available courses to affect action for positive behaviours. It's methods range from talks, group meetings, workshops and other gatherings to school, industry, and other programmes along with the use of print and electronic media.

Our built-in biological clock (circadian rhythm) is

also important to understand mental health. It is also important to look at mental illness and its effects on several life stages. Challenges to mental health come from heredity as well as from environment. Mental hygiene is the science that deals with ways to maintain mental health.

Information – communication – education serves the ends of research as well as the application of knowledge from research. They also have an identity of their own. It is a bridge between research and services and the individual. It is a catalytic and utilizing force. They are parts of a whole and have a directional flow. Communication comes next - the processing and conveying information by all media, from word of mouth to the massive means of TV and internet. The education conveys the facts for long term action. This may be a thought/ attitude, more, positively a deed. Education leads to action by a group and the individual for better mental soundness. Information should be selected, prepared and made available.

A vast amount of mental health communication and a great deal of education is going on. All the communication media need to be involved, such as books, booklets, articles, lectures, TV and radio programmes, websites – to bring the results of mental health research to everyone. The entire education organization from preschool, elementary to higher education should also be concerned with mental upbringing. It could be an inherent part of curriculum and field activities under education endeavour. It is a search for better ways of life, a quest for wellbeing as an individual and as groups. Behavioural science studies have provided useful insights – better understanding of attitude and personality development, uncovering origins of particular behaviours and use of computers to investigate into the basis of man's intellectual functions.

Changing demographic patterns are going to poise mental health problems, such as urban crowding, over pollution, racism, pollution (air, water soil and electronic pollution), rampant technology, and mind control by media, etc. An understanding of the principles of mental and emotional health is essential for anyone who wishes to lead an active role in today's world. A study of these principles is essential with factors which affect those vital and sensitive sources of motivation: feelings, attitudes, and dynamics of interpersonal relations.

Definitions of psychological health may be examined in terms of the extent to which certain kinds of behaviours are normal, adjusted or mature. The mentally healthy person is one who is well adjusted to the reality to the others, to society in general, and to his own psychological inner stresses. The ability to develop mutually satisfying relationships with others, most particularly with those individuals with whom he interacts in his everyday activities is very important. Maturity varies at different levels and degrees. While analysing intellectual, emotional and social maturity, we can identify abilities such as flexibility in self expression, skill in problem-solving, skill in interpersonal relations, emotional control, conflict of interest, self-acceptance, etc. The stronger mental and emotional maturity of the adult also enables him to be more creative, productive and altruistic than the adolescent. Alexander sees the mature person as being flexible and adaptable, one who can face the realities of the world around him and accept his limitations realistically.

A more effective understanding of him and others adds to the ability to participate effectively in the real world. The process of becoming emotionally and socially more mature is facilitated by our ability to understand, tolerate, accept and respect ourselves and others. It can be impeded by negative forces or conditions which are present to some degree in and around all of us. True joy and happiness are valuable and they are the ultimate goal of life. Happiness is a condition or state of wellbeing, contentment, pleasure, joyful, cheerful, untroubled coexistence (the reaction to mentally having nice things happen to one). Mentally healthy people lead lives of fulfillment. The person with a healthy personality enjoys just being alive, takes pleasure in helping others to make their dreams come true and adds zest and enthusiasm to each human adventure. Man's search for greater happiness is as old as his existence and continues even today. Mentally healthy people tend to enjoy life more, respond to many dimensions of life, have deep and lasting human relations with others, tend to lead happier lives as a result of fulfillment, their families and children tend to be happier and they perform better in their work (personal/ professional). In short they tend to get much more out of life. The results of research indicate that it is possible for people to learn to become healthy persons. Mentally healthy people have been labeled as self

actualizing people (A.H. Maslow), adequate personalities, more fully functioning persons (Carl R. Rogers). Independent studies confirmed this (Maslow, Arthur W Combs, Carl R. Rogers, etc.). Mentally healthy people have an ability to accept oneself and others, have profound interpersonal relations, efficient perception of reality and are comfortable with it, have continued freshness of appreciation, are autonomous (independent from culture and environment) and rely more on their own standards of behaviour and values than always overemphasizing what others expect of them, are creative, have a democratic character structure, higher frequency of peak experiences, mission to help mankind, deep feelings of fellowship, a compassionate sense of humour, willingness to continue to grow as a person, etc. In a true sense all of us can become the principal architects of our personalities; just as we build healthy bodies, we can build more exciting and happier personalities.

Mental and physical health is interrelated. Poor mental health affects physical health and vice versa. Psychological factors are considered to play a major role in disorders such as essential hypertension, asthma and most of the life style health problems. The ideal, mental health may however remain a mirage because everything in our life is subject to change. Health fluctuates within a range, varying from optimum well being to various levels of dysfunction. The transition from good health to ill health is often gradual one and the line of demarcation is very thin and the goal is better mental health.

Junk food, alcohol, drugs, tense atmosphere, toys, objects with harmful chemicals and toxics, cigarette, smoking, less sleep, air and water pollution, high sugar intake, lack of peace and negative environment, etc., affect mental health negatively.

Communication is the key to the survival and progress of an individual and a group. The very fabric of society depends on communication both within and with-out. Communication with each other and also about each and every object, mood, thought and imagination that plays a role in one's life is worth communicating through talking, writing, singing or painting about. Indeed we communicate almost everywhere and do it with other species too.

Words unfortunately are not objective reality. However both words and sounds fall short of being communicative enough. At this stage symbols

serve better. Arthur Eddington asserted that levels matter and all else that is in the physical world is no more than shadowy symbolism. But we have to realise that neither words nor symbols take us very far. This is one reason why knowledge after crossing the coalesced barrier of information gets to become a seamless whole and turns into philosophy. The path to ultimate knowledge goes through following stages: information-knowledge-intuition-symbols-reality. The most knowledgeable among us stop at symbols. Here message is not the medium. We give message through symbols.

For example while talking about poverty one employs several concepts like average man, poor, poverty and they are all relative as well as symbolic. We seldom find an objective portrayal of poverty. What is being described as objective reality is no more than its highly personalised and subjective description. The reality eludes description.

Language is a form of communication. Much of our traditional learning and evaluation takes place in the language context. Language is an arbitrary and traditional system of symbols (sounds & signs). Language uses letters, words and grammar. Our language affects our non verbal behaviour also. To depict the close connection between language and thinking process, J B Watson calls ideas Laryngeal Habits.

To quote Benjamin Lee Whorf, language influences not only our ideas but also our observation and perception of the real world. It shapes our ideas. We analyse nature according to the traditional outlook peculiar to a language. Different languages have different categories to describe and differentiate various perceptual experiences which evolve gradually. These differentiations become more marked in those aspects and areas more important to a group/culture. The structure of a language also influences our attitude. Some concepts are easily expressed in some languages. New words are coined as the need arises. At times more information and use also add to better and varied expression/s and language is not the reason. Computer is largely dominated by English language today. Political hegemony also leads to extended boundaries of language.

Clarity leads to better learning and sharp memory. Fuzzy categories are difficult to learn and differentiate from other concepts. Communicability or the clarity of communication has more profound impact

on memory as compared to codability value. Experiments found naming a fuzzy object and its configuration in memory related issues. The post event information was found to transform our memory. Verbal labels attached to a stimulus also influence our memory. Many experiments and experiences also confirm that language influences our thinking process. But at the same time thinking process of dumb-deaf, deaf-blind, small children and animals is not related to traditional language. Language is not the sum total of communication but a part only. The most intense moments also find language short of expression. This confusion about the interdependence of language and thinking is also due to the conceptual thinking being largely dependent on language. Intelligence tests also face this dilemma. Our day to day life experience also goes to memory largely as expressed by our words. The adjectives or labels attached to our experiences increase or decrease intensity of their communicability.

Today we use the words like tension, stress, frustration, and depression with every anxiety, problem and event, unnecessarily highlighting and intensifying their negative aspects. The language used by the mass media also alters the quality of the experiences of audience. In this regard, Indian languages and literature are very helpful. Sanskrit has very specific structure and use of words is also very specific leading to clarity and richness of expression and thought. This becomes important with working parents, nuclear/ single parent families, devoid of the support of joint families living in close proximity or in the same city. The security concerns become more crucial nowadays. We, as teachers, guardians/ parents/ adults should use correct language models. Children should not be treated with distorted language. They should learn to describe their experiences in pure form-to enable them to have a real perception of the world. This real and positive perception will lead to cognitive development and emotional maturity in when they grow adult. Emotions and behaviour are also determined by our internal dialogue. Our ancestors recognised the importance of language. It becomes essential to present a correct/ pure, clear, real and positive language model to keep children mentally healthy, so that they accept themselves while respecting individual/ cultural differences including language variations. Exposure to different languages could also enrich them. Teacher

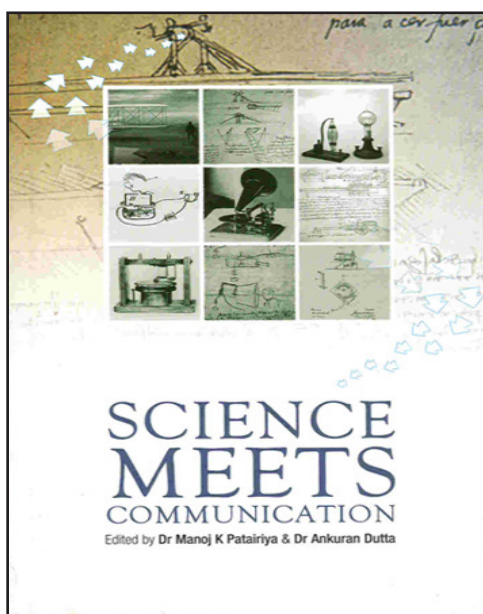
training should include special stress on language models which are correct, clear, real, positive and free of biases. Teacher has to accept his students and their differences with fairness and being impartial.

Family, teachers and the media are the most crucial factors of a child's environment, especially during his or her formative years. They provide the role models quite frequently followed by children. Communication is the key to the development of personality and of mental health. Acceptance by elders, teachers and peer group is important for a healthy person. Independence and space are needed to grow. Communication provides help. Family, elders and teachers should use clear, reality-based and positive language. Language has to be clear to them and accommodating in different situations. Language should be formal and expressive of concern, respect and limits to one's autonomy as well. Language cannot always belie emotions, and one has to learn to be calm amid stress and disturbance. In the global village acceptance and appreciation of oneself in different and diverse cultures becomes very crucial. Then the language of communication from brain to brain could offer the only means for establishing harmony in a given situation.

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## Understanding dynamics of science and its communication



***Science Meets Communication***  
***Edited by Dr. Manoj K. Patairiya,***  
***Dr. Ankuran Dutta***

The Governor of Assam, Shri Janaki Ballav Patnaik released the book ‘Science Meets Communication’ on the occasion of the 5<sup>th</sup> Foundation Day Celebrations of Krishna Kanta Handiqui State Open University (KKHSOU) on July 20, 2011 at Rabindra Bhawan, Guwahati (Assam), who was the Chief Guest on the occasion. The book is brought out as an offshoot of the 9<sup>th</sup> Indian Science Communication Congress (9<sup>th</sup> ISCC-2009) organized by (KKHSOU) in association with the National Council for Science & Technology Communication (NCSTC), Department of Science & Technology, Govt. of India. The university took the opportunity for release of the book, which deals with a very relevant subject area of carrying science and technology related news and information to the common people in the simplest language possible.

Shri Patnaik in his inaugural address expressed

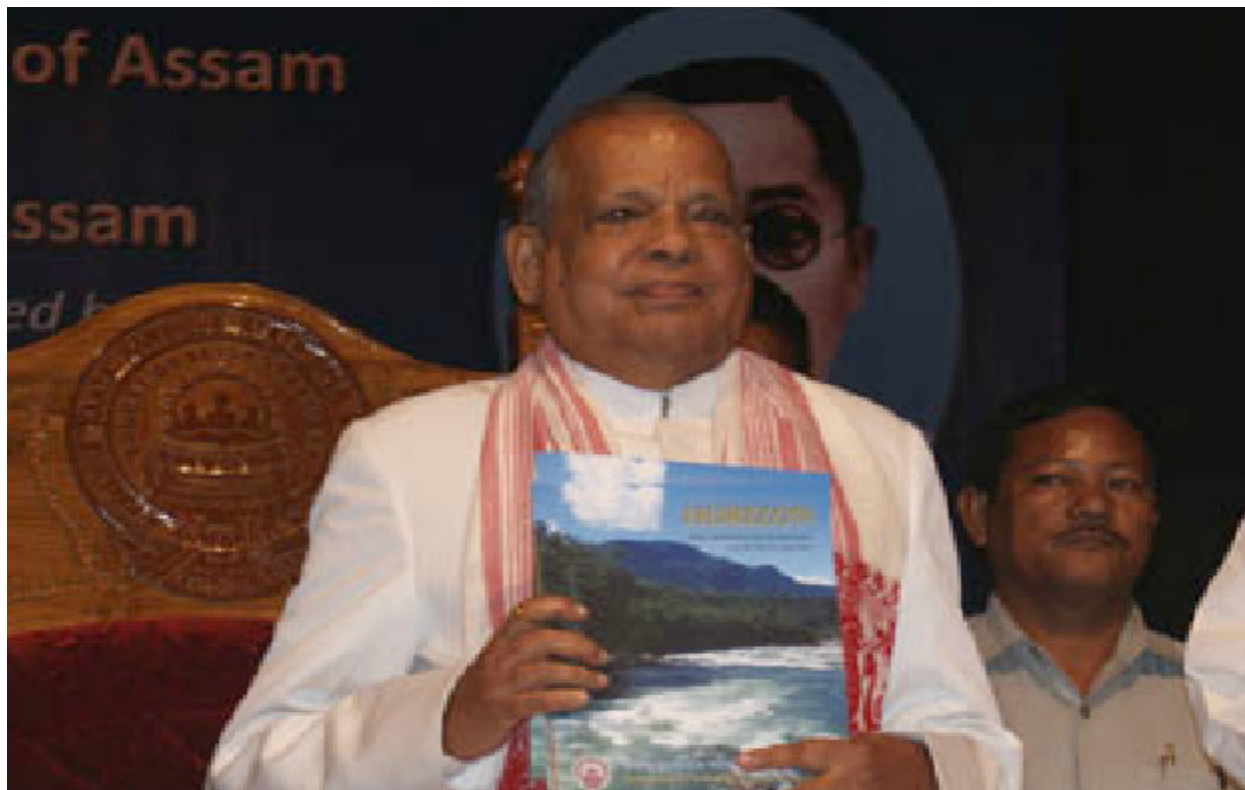
his happiness on the joint initiative of NCSTC and KKHSOU for the common cause of promoting science education and communication. He said that it is the age of development in the interdisciplinary areas and there is the necessity for awareness among the masses. And hence, according to him, the scientists’ community and the communicators’ community should join hands to interpret the jargons of scientific facts to the common people in an understandable form.

Shri Patnaik while expressing his views said that the university has been successful in achieving its goal and imparting education in formal and informal manner in north-eastern region in general and Assam in particular. He congratulated the university for the rapid progress it has achieved in a short span of period, well equipped with multimedia facilities, studios, and ICT enabled interactive teaching-learning systems, etc.

The event commenced with an enthralling *Borgeet* by Queen Sarma from KKHSOU. It was followed by felicitation of guests and lighting of ceremonial lamp.

Dr. Manoj Kumar Patairia, Director/ Scientist ‘F’, NCSTC, gave introduction of the book before it was released. Dr. Patairiya said that with a view to finding, benchmarking and understanding the inherent dynamics of science and its communication, and its interaction with other layers of human life, the theme for 9<sup>th</sup> Indian Science Communication Congress (9<sup>th</sup> ISCC-2009) was decided as “Science Meets Communication”, which is also the title of the book carrying papers and studies on varied areas on the focal theme. He hoped that the chapters included in the book will spark innovative ideas amongst researchers and scholars in the area of science and technology communication.

Prof. Mrinal Miri, Chancellor, Rajiv Gandhi University graced the occasion as Guest of Honour and delivered the 5<sup>th</sup> Foundation Day Lecture on



*His Excellency Governor of Assam, Shri Janaki Ballav Patnaik at the function*

“University Education and Autonomy”. He spoke about the importance of distance education in the present scenario, various challenges to distance education and the importance of freedom and autonomy of both the conventional and distance modes of higher education. The lecture was well received by one and all.

Prof. Srinath Baruah, Vice Chancellor, KKHSOU, while welcoming the guests and distinguished gathering, said that the university is successfully offering a variety of academic programmes, comprising both vocational and professional. He highlighted that a 75 years old student was to appear for B.Com. examination and university is all set to provide quality education to differently-able people as well. Prof. Baruah told that it is a matter of satisfaction that high quality study materials of the university are also being adopted by other universities.

The function was presided over by Dr. Manoj Kumar Patairia. Dr. Patairiya in his presidential address said that science and technology had been at

the forefront of development of physical tools and techniques of mass communication ranging from ancient drumstick and feather pen to modern information communication devices and gadgets. Similarly, media and communication had been instrumental in educating, arousing and enlightening the people at large on various subjects and issues of human life, including commerce, trade, sports, culture, glamour, politics, and other social issues, but science and technology! He lamented on the need of creative and strategic leadership in the field of science communication for overcoming the situation and making progress.

It was also an opportunity for launch of a web portal <[www.kkhsou.in](http://www.kkhsou.in)> of the university by the Governor of Assam, Shri Patnaik. The KKHSOU Newsletter and Multimedia Learning Products were also released on the occasion. Registrar, KKHSOU, Shri Rajat Baran Mahanta offered a vote of thanks and highlighted programmes and activities of the university.

**[Ms. Juri Hazarika, Editorial Assistant, Horizon, Guwahati, Assam]** ■



## Risk Communication: Communicating science of life threatening risks



*Prof. Krishan Lal, President, INSA, Prof. Samir K. Brahmachari, Director General, CSIR, Prof. Ved Prakash, Chairman, UGC, and Dr. R.K. Bhandari, Former Chairman, Centre for Disaster Mitigation, VIT, at inaugural session*

‘Risk Communication and Development’ was the focal theme of the 12<sup>th</sup> Indian Science Communication Congress (ISCC-2012) organized during December 17-21, 2012 at Indian National Science Academy (INSA), New Delhi. The conference was jointly organized by National Council for Science and Technology Communication (NCSTC/DST), Indian Science Writers Association (ISWA), Vidyadeep Foundation (VDF), and Jan Sewa Ashram (JSA).

Around 250 scientists, science writers, academicians, science correspondents, communicators and young researchers from all over the country participated in the congress. Several interesting topics, such as risk communication and management,

nuclear energy and environmental awareness, public appreciation of health risks and genetically modified organisms, etc., were discussed and deliberated upon during the conference.

The dignitaries at the inaugural session amongst others included Prof. Krishan Lal, President, Indian National Science Academy (INSA), Prof. Samir K. Brahmachari, Director General, Council of Scientific & Industrial Research (CSIR), Prof. Ved Prakash, Chairman, University Grants Commission (UGC), Dr. R.K. Bhandari, Former Chairman, Centre for Disaster Mitigation, Vellore Institute of Technology (VIT), and Dr. Radhey Shyam Sharma, senior journalist, *Tribune*, Chandigarh.



*Prof. Samir K. Brahmachari, Director General, CSIR lighting the ceremonial lamp*

In his presidential address Dr. Krishan Lal highlighted the importance of fact based debates and discussion between scientists, communicators and common people. In his felicitation address Prof. Samir K. Brahmachari said that science communicators should come forward for bridging the gap between scientists and common people.

In his inaugural address Prof. Ved Prakash emphasized the importance of quality education and research in higher science education. Dr. Radhe Shyam Sharma shared his experience of active journalism. Dr. R.K. Bhandari gave the keynote address. While elaborating the theme of the conference, Dr. Bhandari suggested that people and children friendly talks and discussions on disaster mitigation could be useful, besides introducing disaster preparedness in school curriculum.

The convener of the conference Dr. Manoj Kumar Patairiya, Director/ Scientist 'F', National

Council for Science & Technology Communication, gave the concept of ISCC and elaborated the theme 'Risk Communication and Development'; he talked about dilemma over emerging conflicting issues of science and technology and role of scientists and journalists for addressing the same, such as genetically modified foods, nuclear controversies, and climate change, etc. Prof. Deepak Tatpuje offered a vote of thanks at the end of the inaugural session. The inaugural session was conducted by Dr. N. Murugan, Director, All India Radio.

The dignitaries also conferred ISWA National Awards on some 40 leading scientists, journalists, and communicators in recognition of their valuable contributions in promoting science awareness and scientific temper. Some of the recipients were awarded in absentia. A welcome song was presented by a group of students from Govt. Co-education Senior Secondary School, Dwarka, New Delhi.

## Recipients of ISWA National Awards 2012

### ***“Dr. R.D. Sharma ISWA Honorary Fellowships for Science Popularization”***

1. Prof. Krishan Lal, President, Indian National Science Academy, New Delhi
2. Dr. Sameer K. Brahmachari, Director General, CSIR, New Delhi
3. Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences, New Delhi
4. Dr. K. Radhakrishnan, Chairman, Indian Space Research Organization, Bangalore
5. Dr. S. Ayyappan, Director General, Indian Council of Agricultural Research, New Delhi
6. Dr. V.M. Katoch, Director General, Indian Council of Medical Research, New Delhi
7. Prof. Ved Prakash, Chairman, University Grants Commission, New Delhi
8. Prof. R.K. Bhandari, Former Chairman, Centre for Disaster Mitigation, VIT, Ghaziabad
9. Shri G.S. Rautela, Director General, National Council of Science Museums, Kolkata
10. Prof. Pramod K. Verma, Director General, M.P. Council of S&T, Bhopal
11. Dr. (Smt.) Madhu Pant, Children’s Writer, New Delhi
12. Dr. P.K.B. Menon, Former Adviser, Department of Science & Technology, Delhi
13. Prof. P.C. Vyas, Coordinator, Rajiv Gandhi Study Circle, Jaipur
14. Dr. Radhe Shyam Sharma, Journalist, Chandigarh
15. Prof. G.S. Paliwal, Formerly with H.N.B. Garhwal University, Srinagar
16. Dr. Narottam Sahoo, Director, Gujarat Council of Science & Technology, Ahmedabad
17. Dr. P. Iyamperumal, Vice Chairman, Science City, Chennai
18. Prof. B.P. Sanjay, Vice Chancellor, Central University of Tamil Nadu, Thiruvavur
19. Shri S.K. Malhotra, Director, Public Affairs, Department of Atomic Energy, Mumbai
20. Dr. K.K. Agrawal, Physician, New Delhi
21. Shri Gauhar Raza, Head, Multimedia Division, CSIR-NISCAIR, New Delhi
22. Shri Subhash Lakhera, Formerly with DRDO, New Delhi
23. Shri Chaudhary Raghunath Singh, Advisor, Agriculture Programme, Doordarshan, Delhi
24. Dr. Subodh Mahanti, Scientist ‘G’, Vigyan Prasar, NOIDA
25. Dr. Harikrishna Devsare, Former Editor, *Parag*, Children’s Magazine, Ghaziabad

### ***“Shri C.B. Sharma ISWA National Awards for Science Communication”***

1. Dr. K.S. Jayaraman, India Correspondent ‘Nature’, Bangalore
2. Dr. Dheerender Sharma, Science Writer, Dehradun
3. Dr. Y. Bala Murali Krishna, Bureau Chief, *United News of India*, Goa
4. Dr. D.D. Ojha, Science Writer, Jodhpur
5. Shri C.V. Sarveswara Sarma, Science Writer, Amalapuram

### ***“Shri Dilip M. Salwi ISWA National Awards for Science Journalism”***

1. Shri Pallava Bagla, India Correspondent, *Science*; Science Editor, *NDTV*, Delhi
2. Smt. Deeksha Bist, Head, Popular Science Division, CSIR-NISCAIR, New Delhi
3. Shri Tarun K. Jain, Editor, *Vaigyanik Drishtikon*, Jaipur
4. Shri Kapil Tripathi, Scientist ‘D’, Vigyan Prasar, NOIDA
5. Shri Shekhar S. Salunke, Science Communicator, Sholapur

### ***“Shri B.S. Padmanabhan ISWA Samman for Science Writing”***

1. Shri Devendra Mewari, Science Fiction Writer, New Delhi
2. Sushri Ratnabali Mitra, Formerly with All India Radio, New Delhi
3. Prof. Dipak Uttamrao Tatpuje, Science Communicator, Satara
4. Shri Amritesh Srivastava, Manager, Corporate Communications, NPCIL, Mumbai
5. Shri S.R. Dixit, Science Communicator, New Delhi



*Welcome song by students of Govt. Co-education Senior Secondary School, Dwarka, New Delhi*



*Prof. Krishan Lal, President, INSA delivering presidential address*

The increasing public concerns over emerging issues in genetically modified organisms, nuclear energy, climate change, clinical trials, industrial hazards, etc., need to be addressed with fair, honest, and factual scientific understanding; this entire concept opens up a yet another area of science communication, i.e. "Risk Communication".

The deliberations covered a wide range of sub themes, such as: communication for sustainable development; awareness of genetically modified organisms; public appreciation of nuclear energy; public understanding of health risks; environmental risks and communication strategies; public misunderstanding of superstitions; preparedness for disas-

ters - natural and manmade; risk communication and mass media; scientific temper and risk management, etc.

Dr. Seemin Rubab from J&K presented a paper in first scientific session on public awareness of directive on restriction of hazardous substances elaborating the directive on restriction of use of certain hazardous substances found in electrical and electronic equipments that was adopted in 2003 by the European Union.

According to her the directive restricts the use of six hazardous materials (viz., lead, mercury, cadmium, chromium, PBB and PDBE) in the manufacture of various types of electronic and electrical



*Prof. Samir K. Brahmachari, Director General, CSIR gives felicitation address*



*Prof. Ved Prakash, Chairman, UGC delivers inaugural address*



*Dr. R.K. Bhandari, Former Chairman, Centre for Disaster Mitigation, VIT delivers keynote address*



*Dr. Manoj Kumar Patairiya, Director/ Scientist 'F', NCSTC/ DST, presents the concept for the ISCC-2012*

equipments. A long term exposure of these substances may lead to damage of nervous system, kidney, bones, reproductive system and endocrine system.

Maa. Thamizhparithi presented a paper on communication strategies of Nagapattinam district; Mr. Sanjay Verma on risk management and defence science journalism; Dr. T.V. Venkateswaran on towards a critical risk communication model; and Ms. Rita Malik on communicating risks and benefits of nanotechnology. Dr. R.K. Bhandari chaired the first scientific session, wherein Dr. Bhandari very clearly lamented that aftereffects of disasters can be minimized by increased public awareness and preparedness.

Dr. P.K. Verma, Director General, M.P.C.S.T. chaired the second session, wherein main presentations included: environmental ethics by co-curricular activities by Dr. Pradeep K. Mishra; public perception of nuclear energy in India by Mr. Nimish Kapoor; newspaper framing of Kudankulam nuclear plants by Dr. Arul Aram.

The third session was chaired by Dr. V.K. Srivastava, Head, Publications & Information, ICMR, where Mr. Arvind Gupta spoken on green buildings; Dr. Prabha Sharma on bio-economy—for sustainable development communication; and Mr. Manish M. Gore on gene to GMOs: understanding science within, have made their presentations arousing a lot



*Shri Pallava Bagla, India Correspondent, Science and Science Editor, NDTV, receives ISWA Award from Dr. R.K. Bhandari*



*Prof. Pramod K. Verma, Director General, MPCST, Bhopal, receives ISWA Award from Prof. Ved Prakash*



*Smt. Deeksha Bist, CSIR-NISCAIR, New Delhi receives ISWA Award from Dr. R.K. Bhandari*



*Dr. P. Iyamperumal, Vice Chairman, Science City, Chennai receives ISWA Award from Prof. Krishna Lal*

of interest amongst participants.

Dr. Madhu Pant, author; Dr. Arul Aram, Head, Media Sciences, Anna University; Mr. G.S. Rautela, Director General, NCSM chaired subsequent scientific sessions respectively. The other informative presentations included: role of Facebook in disaster management by Dr. C.K.Vanan, climate change – lessons learnt from Montreal protocol by Dr. R. Gopichandran; and disaster and communication by Dr. Sodananda Torasia.

Other topics of the session included, Facebook as a tool for disaster mitigation by Rashi Mishra; risk communication and mass media by Mr. K. Mohan Sanjeevan; disaster communication strategies

for Uttarakhand by Prof. A.P. Singh; A case study on nuclear energy in Indian media by Mr. Rahul S. Mane; public health and behavioral change communication by Dr. Rajiv Das Kangabam; journalists towards environmental conflicts in Tamil Nadu by R. Subramani; socio-cultural dimensions of risk communication by Dr. Subhan Khan; and food processing for food security by Mr. Radheshyam Purohit.

A variety of paper presentations were made on the focal theme and sub themes of the conference that were appreciated by the audience. Lively question and answer sessions were part of every scientific session with a dose of criticality of ideas and creativity led cross questions.



*Shri Amritesh Srivastava, Manager, Corporate Communications, NPCIL, Mumbai receives ISWA Award from Prof. Krishna Lal*



*Shri Tarun K. Jain, Editor, Vaigyanik Drishtikon, Jaipur receives ISWA Award from Dr. R.K. Bhandari*



*Dr. (Smt.) Madhu Pant, Children's Writer, New Delhi receives ISWA Award from Prof. Krishna Lal*

The topics of the evening talks were highly significant and attracted a house full, that covered: 'First Aid in Disaster' by well known physician Dr. K.K. Aggarwal (the session chair was Dr. Ashok Jain, Former Director, CSIR-NISTADS), 'Science and Art of Weather Forecasting' by Dr. Akhilesh Gupta, Secretary, UGC (the session chair was Dr. N. Murugan, Director, All India Radio), 'Public Awareness of Earthquake and Tsunami' by Dr. K.J. Ramesh, Advisor, Ministry of Earth Sciences, Govt. of India (the session chair was Dr. Thokchom Meinya Singh, Hon'ble Member of Parliament, and 'Nuclear Energy Debate' by Mr. S.K. Malhotra, Department of Atomic Energy, Govt. of India (the session chair



*Dr. Akhilesh Gupta, Secretary, UGC gives evening talk; Dr. N. Murugan, Director, All India Radio, chairs the evening session*

was Dr. Subhan Khan, Chief Scientist, CSIR-NIS-TADS).

The poster session was chaired by Prof. K.M. Rafi, Principal, Brown Hills College of Engineering & Technology, Faridabad and a session dedicated for "Young Scholars" was chaired by Dr. M. Prithviraj, Executive Director, Karnataka State Council of Science & Technology, Bangalore.

Open discussion session was chaired by Mr. S.K. Malhotra, Director, Public Affairs, Dept. of Atomic Energy, Govt. of India and rapporteure was Mr. Bajinder Pal Singh, a senior journalist, Chandigarh. Dr. Manoj Kumar Patariya, Convener of ISCC-2012 also shared his views and responded to



*A scientific session in progress*



*A parallel session in progress*



*Dr. Thokchom Meinya Singh, Hon'ble Member of Parliament, chaired an evening session and conferred ISWA Award on Mr. G.S. Rautela, Director General, NCSM, Kolkata*



*A panoramic view of INSA Auditorium during a session of ISCC-2012*

the questions of the delegates during open session. This session was dedicated for open interaction, discussion, suggestions and looking forward with innovative ideas. Some important observations/ suggestions on the 12<sup>th</sup> Indian Science Communication Congress (ISCC-2012) emerged at the open session are summarized here:

1. Participants complimented the ISCC-2012 describing it an important event and thanked the

Organizing Committee for its meticulous and successful organization.

2. Three aspects came in for special mention: (a) Variety of presentations and papers offered opportunity for learning, (b) ISCC provided a very good platform for networking, (c) The ISCC should be supported and continued annually.
3. One important observation was the importance of creation of awareness. It was pointed out that creating awareness is often more important than



*Dr. Avinash Mishra, Chief Resident Commissioner, Govt. of Arunachal Pradesh, Dr. L.S. Rathore, Director General, India Meteorological Department, and Mr. Anand Khati, Joint Secretary, Ministry of Earth Sciences, at valedictory session*



*Prof. Saroj K. Mishra, University of Houston Clear Lake, USA, Dr. Sanjeev Khajuria, Pro-Vice Chancellor, and Mr. Tariq Badar, Secretary, ISWA, at the valedictory session*





*Dr. Avinash Mishra, Chief Resident Commissioner, Govt. of Arunachal Pardesh, gives presidential address at valedictory session*



*Dr. L.S. Rathore, Director General, India Meteorological Department, delivers the valedictory address*

legislation. The role of communicators therefore assumes increased responsibility in raising awareness.

4. Younger audience – it was suggested that a determined effort may be made to involve youngsters from colleges and universities in the field of science communication. ISCC already attracts a number of young researchers working in this field to encourage them further.
5. Split Group Discussion – it was highly appreciated and encouraged.
6. Papers - papers/ presentations could be available/ circulated in advance for other participants to emphasize quality and diversity.
7. Session for journalists – it was suggested that a session could be focused on journalists; it will encourage journalists to participate in ISCC.
8. Role of science communicators – issues related to science communicators need to be addressed, like career track in media houses and science and technology organizations.
9. If science communication as a profession is not encouraged, it could lead to a kind of brain drain to other more attractive professions.
10. The deliberations emphasized on the need of a policy formulation.
11. Email/ Face Book groups – it was suggested that ISWA e-group and ISWA Face book group



*Mr. Anand Khati, Joint Secretary, Ministry of Earth Sciences, gives special address*



*Eminent physician Dr. K.K. Agarwal receives ISWA Award from Dr. L.S. Rathore*



*Dr. Prabha Sharma, a Delhi University researcher, receives a best paper award from Prof. Saroj K. Mishra*



*Mr. S.K. Malhotra, Director, Public Affairs, Dept. of Atomic Energy, chairs Open Session; Mr. Bajinder Pal Singh, journalist, serves as rapporteure; and Dr. Manoj Kumar Patariya, Convener, ISCC-2012 takes stock of proceedings*

can be joined by ISCC delegates for continuing discussions.

12. Language issues – use of bilingual format (English/ Hindi) was appreciated and translation facilities were suggested for those who are not familiar with each other's language.

It was suggested that scientists and communicators should come forward for taking advantage of this diverse platform for addressing their science communication needs.

The valedictory session was graced by dis-

tinguished experts of the field including Dr. L.S. Rathore, Director General, India Meteorological Department, Dr. Avinash Mishra, Chief Resident Commissioner, Govt. of Arunachal Pradesh, Mr. Anand Khati, Joint Secretary, Ministry of Earth Sciences, Prof. Saroj K. Mishra, University of Houston Clear Lake, USA, Dr. Sanjeev Khajuria, Pro-Vice Chancellor, and Mr. Noorana, Sr. Manager, Corporate Communications, Indian Oil Corporation.

Dr. Rathore highlighted the significance of public awareness for combating risks, while Dr. Avinash Misha suggested public and administrative pre-



*SEARCH team presents a street play on the theme*



*A cultural evening with folk dance from Bundelkhand by Yuva Vigyan Parishad, Gwalior*



*Ms. Maya Mishra, Mr. Arshad Umar, and group present a puppet show on the main theme*

paredness for risk mitigation. Prof. Saroj K. Mishra gave a comparative account of health risks of communicable diseases in India and USA through an interesting power point presentation. Mr. Noorana shared his views on research and development for risk management in oil refineries. Mr. Tariq Badar, CSIR-National Physical Laboratory, offered a vote of thanks.

The best paper awards were given away to the selected presenters two each in junior and senior categories at the valedictory session. Dr. R. Subramani and Dr. Prabha Sharma were awarded in the senior category, whereas Mr. Deepak Das and Ms. Sarika Gharu were awarded in the junior category. Prof. K.M. Rafi presented a comprehensive report of various sessions and the entire conference. Dr.

Manoj K. Patairiya conducted the valedictory session. Dr. R.S. Yadav, All India Radio and Mr. Tarun Jain, Editor, *Vaigyanik Drishtikon* coordinated media coverage for the conference. Mr. S.R. Dixit, Jan Seva Ashram, served as the conference secretariat and Dr. Subhan Khan, Chief Scientist, CSIR-NIS-TADS, served as the conference chair.

It was an opportunity for the Indian Science Writers' Association (ISWA) to organize its Annual General-body Meeting (AGM) on the last day after conclusion of the ISCC-2012. The AGM was chaired by Dr. Manoj Kumar Patairiya, President, ISWA. Elections for the new Executive Committee of ISWA, based on the postal ballots circulated to ISWA members earlier by the Returning Officer Mr L.D. Laka, IIT Delhi, were conducted on the occasion and the names of the new Office Bearers and Executive Committee Members were declared elected by the Returning Officer Mr. L.D. Kala.

Effective science communication is the most important tool for sustainable development. Most of the rural and urban communities are shadowed by superstitions and are poised to several risks of imbalanced developmental concerns. In the era of globalization, sustainable development is possible with increased awareness to decrease developmental risks causing threat to human life. Hopefully, forums like ISCC may offer platforms for sustained discussions and debates towards reaching solutions viable and affordable to the common man.

### Newly Elected ISWA Executive Committee, 2012-2015

<b>President</b>	: Dr. V.K. Srivastava, Head, Publication & Information, ICMR, New Delhi
<b>Vice President</b>	: Dr. Y. Bala Murali Krishna, Former Bureau Chief, UNI, Hyderabad
<b>Secretary</b>	: Mr. V.P. Singh, Academic Coordinator, Science Journalism, Noida
<b>Joint Secretary</b>	: Mr. Tarun Jain, Editor, <i>Vaigyanik Drishtikon</i> , Jaipur
<b>Treasurer</b>	: Dr. R.S. Yadav, Programme Officer, Science Cell, All India Radio, New Delhi
<b>EC Members</b>	: Mr. R.D. Tiwari, Editor, <i>Deenodaya</i> , U.P.
	Dr. Vineeta Singhal, Associate Editor, <i>Science Reporter</i> , Monthly, New Delhi
	Dr. Anurag Sharma, Correspondent, <i>Dainik Bhaskar</i> , New Delhi
	Dr. Manas Pratim Das, Editorial Board, <i>Science &amp; Culture</i> , Bimonthly, Kolkata
	Mr. Anup Chaturvedi, Journalist, <i>Pioneer</i> , Daily, Lucknow
	Dr. S.M. Behra, Former Editor, <i>Vigyan Diganta</i> , Quarterly, Bhubneshwar (Odisha ISWA Chapter)

**[Dr. Seemin Rubab and Mr. Bajinder Pal Singh in association with Mr. S.R. Dixit, Jan Seva Ashram, 65 E, Munirka Village, New Delhi-110067]** ■

## Public Opinion Research: Predicting the pulse of a society

An Asian Conference on Public Opinion Research was organized at Bangkok and Saraburi in Thailand during November 26-29, 2012 by the University of the Thai Chamber of Commerce, Bangkok and Boromrajonani College of Nursing Saraburi, with an aim to offer a platform for exchange of ideas and experience to promote survey research in this region. 3 sessions of country presentations and a Seminar “Cross country surveys in Asian countries” were organized during the conference. A media visit to Thai PBS Television added colours to the conference.

Interesting and informative presentations included: “The Infrastructure of Public Opinion Research in Japan” by Dr. Kubota Yuichi, University of Niigata Prefecture, Japan; “The Infrastructure of Public Opinion Research in China” by Dr. Zhou Baohua, Media and Public Opinion Research Cen-

ter of Fudan University (FMORC); “The Infrastructure of Public Opinion Research in Korea” by Professor, Dr. Sung Kyum Cho, Chungnam National University, South Korea; “Political Public Opinion Research in Malaysia” by Syed Arabi Idid, International Islamic University, Malaysia; “Opinion Polling in Hong Kong” by Winnie Lee, Public Opinion Programme, the University of Hong Kong; “The Deliberative Polling in Macao: Experience Sharing” by Dr. Angus Weng Hin Cheong, Macao Polling Research Association; “Social Weather Monitoring in the Philippines” by Geraldo Sandoval, Social Weather Station; “The Role of Opinion Polls in Taiwan’s Elections”; by Eric Chenhua YU, Election Study Center, National Chengchi University (ESC-NCCU); “Public Opinion Research and Thailand’s Health System” by Dr. Sasitorn Yin-



*A group of delegates*



***Prof. Sung Kyum Cho and Prof. Robert Chung introduce the conference***

grengreung, Boromrajonani College of Nursing Saraburi (BCNS); “New Agenda of Cross-National Survey” by Dr. OckTae Kim, Institute for Communication Research, Seoul National University. Other presentations were: “Social Weather Monitoring in the Philippines”; “Case of Public Opinion Research on Thai Teens’ Alcohol Use”; “AsiaBarometer’s Achievements, Underutilized Areas of the Survey Materials, and Future Prospects” by Dr. Takashi Inoguchi, University of Tokyo.

A variety of participants from various countries enriched the conference with their knowledge and wisdom. Angus W.H. CHEONG is the founder and Research Director of ERS e-Research & Solutions (Macau) which is a research company focusing on web mining and research business in the Greater China Region. Sung Kyum CHO is a professor in the Department of Communication at Chungnam National University, South Korea. Robert CHUNG, established the Public Opinion Programme (POP) at the University of Hong Kong in 1991 and began to study the development of public opinion in Hong Kong. Yashwant DESHMUKH is a seasoned entrepreneur and founder of communications consultancy YRD Media which delivers cutting-edge solutions for a global client base in Media, Communication & Research in India. Seiji FUJI is full-time Lecturer at the University of Niigata Prefecture and Part-time Lecturer at Niigata University. Syed Arabi IDID is a reporter, academician, and administrator at the International Islamic University Malaysia.

***[Prof. Sung Kyum Cho, Department of Mass Communication, Chungnam National University, Dejeion, South Korea]*** ■



***The conference in progress***

Takashi INOBUCHI has an MA from the University of Tokyo, and a Ph.D. from the Massachusetts Institute of Technology. He is currently the president of the University of Niigata Prefecture and Professor Emeritus at the University of Tokyo. Ock Tae KIM is a research fellow in the Department of Communication, Dongguk University in Seoul and has an affiliation with the Seoul National University Institute of Communication Research. Yuichi KUBOTA is a research fellow at University of Niigata Prefecture. Sang Kyung LEE has been the CEO of Hyundai Research Institute since 1987. Winnie LEE is currently a research manager of the Public Opinion Programme at the University of Hong Kong. Shuanglong LI graduated from the University of Tokyo, Japan. Gerardo (Jay) SANDOVAL is Director of Sampling, Processing and Data Archiving, Deputy Director for Training, and Fellow of Social Weather Stations ([www.sws.org.ph](http://www.sws.org.ph)), a private, non-stock, non-profit social research institution in the Philippines. Bing TONG is professor at Journalism School of Fudan University. Ching-Hsin YU is a Research Fellow at the Election Study Center of National Chengchi University, Taipei, Taiwan. Baohua ZHOU is an associate professor at the Journalism School, Fudan University, China.

The conference concluded with creation of the long awaited Asian Network for Public Opinion Research (ANPOR) under leadership of Prof. Sung Kyum Cho from Chungnam National University, South Korea, as the Founder President of ANPOR.

# Asian Network for Public Opinion Research (ANPOR): 1st Annual Conference

## Public Opinion Research in Asia in a Time of Media Revolution and Aging Societies

at  
Hoan Conference Center,  
Seoul National University, Seoul, South Korea  
November 21-23, 2013

### About the ANPOR

The Asian Network for Public Opinion Research (ANPOR) was established on November 28, 2012, by scholars and experts in public opinion research coming from 9 different Asian countries and regions, with an objective to promote in each country or region in Asia the right to conduct and publish scientific research on what the people and its groups think and how this thinking is influenced by various factors, to promote the knowledge and application of scientific methods in this objective, to assist and promote the development and publication of public opinion research in Asia, to promote worldwide the publication of public opinion research on Asia, to promote international cooperation and exchange among academic and commercial researchers, journalists and political actors, as well as between the representatives of the different scientific disciplines. ANPOR's activities include professional meetings and publications, encouraging high professional standards, promoting improved research techniques, informing journalists about the appropriate forms of publishing poll results, observing the democratic process and use of polls in elections, promoting personnel training, coordinating international polls, and maintaining close relations with other international and regional research associations. Founding officers of ANPOR include: President Sung Kyum CHO from South Korea, Vice President Jantima KHEOKAO from Thailand and Secretary-Treasurer Robert CHUNG from Hong Kong.

### Call for Papers

ANPOR 2013 invites both abstracts and full papers including posters in the area of public opinion research and survey methodology from scholars and professionals. Students' submissions and their participation in our conference will be greatly welcomed too. ANPOR Seoul aims to facilitate interaction and communication among researchers and practitioners who are working in a wide variety of areas with a common interest in improving the content and methodology of public opinion research. We invite the submission of abstracts, full papers and posters from all areas related to public opinion research.

If you are interested in having your paper published in a journal, the *Asian Journal of Public Opinion Research* is also accepting submissions. Journal submissions should be sent as email attachments to [AJPORsubmissions@gmail.com](mailto:AJPORsubmissions@gmail.com). Conference submissions can be made from the conference website <http://www.anporSeoul.org>

### Session Topics

**Knowing Our Neighbours** - Although there are many similarities between Asian cultures, we do not always get along and may have strong opinions about some of our neighbours. Understanding how we feel about our neighbors in other Asian countries may be important in helping to prevent cultural misunderstandings and to address potential sources of conflict. Papers related to surveys on the topics of cross cultural perceptions between Asian countries will be considered.

**Social Networking Sites, Big Data, & Research in Asia** - The use of social networking sites is increasing all over the world. The impact varies from country to country and by demographic situations, depending in part on its penetration in a given population. Mining such data can be a valuable way to

learn about public opinion. Papers on how to analyze big data as well as papers presenting research done on the use and impact in any Asian country, especially in commercial and political areas, will be considered.

**Election Polling** - This is being election season for several Asian countries, assumes more significance. In the period leading up to an election, public opinion researchers are nearly always hired to find out which candidate is currently favored. This session will consider techniques, outcomes, and success for these kinds of polls in various Asian countries.

**Survey Practice and Technique** - Survey practice is always being modified in our ever changing world. Different techniques are needed in different situations. This session will consider any issues related to practice and technique, including the use of new technology (internet, mobile phones, etc.) in conducting surveys, ways to reduce bias, and weighting methods.

**Quality of Life in Aging Asia** - Many Asian countries are now facing the issues of an aging society. This presents a whole new set of quality of life issues. How are elderly people treated? How do we communicate with an aging population? How does an aging society impact the younger generations? These questions and others may be addressed.

**Public Opinion & Media** - The media influences public opinion. It also reports on public opinion. The relationship between media and public opinion in all its forms will be considered. Topics may include the creation of media concentration index, the elimination of media monopolies, and talking to the media about public opinion statistics.

**Science, Environment, and Risk** - Public opinion polls are crucial in understanding what the public thinks about controversial areas of public opinion research as well as finding out whether they are aware of real environmental risks that scientists' attempt to warn people about. Topics may include a discussion of a variety of science topics including public opinion about genetically modified crops, people's awareness of risk factors for various diseases, and impact of natural disasters on our lives.

**Asian Trends** - This session will accept papers dealing with longitudinal or annual surveys tracking trends in any Asian country as well as papers on trends in Asian countries, such as current controversial issues,

**IF: Ideas for the Future** - This session will consist of brief presentations of ideas about how to make the future better. Presentations should include an important visual element and papers should consist of 1-2 pages of text. Possible topics might include how we can cope with climate change or aging societies or other issues. Anyone is welcome to submit to this session, including high school and university students. There will be a poster session with some presenters chosen to present in front of an audience with a slide show.

## Submission and Publications

If you have your abstract or paper ready, please submit it in ".doc" document format via ANPORSeoul@gmail.com or the website <http://www.anporSeoul.org>. Abstracts should be 200-400 words long in English. Papers should be written in English and 2,000-4,000 words long. There will be poster sessions, too. Papers for both oral and poster presentations will be published in the conference proceedings.

## Important Dates

Deadline for Paper or Abstract:  
September 15, 2013

Deadline for Early Bird Registration:  
September 30, 2013

Deadline for Accepted Paper Submission:  
October 31, 2013

## Contact

For more information, please visit:  
<http://www.anporSeoul.org>

If you have any questions, please contact us:  
ANPORSeoul@gmail.com

## PCST – Jakarta International Symposium 2013

### “Developing Science & Technology Culture to Create Green Quality of Life”

at  
Auditorium, BPPT Building, 3rd Floor, Jl, MH,  
Thamrin No.8, Jakarta, Indonesia  
27-28 August, 2013

The globalization era acknowledges that science and technology are fundamental elements in creating economy growth. They are the mechanism for continuing improvements in living standard expectations. Considering the rapid development, it is important to build conducive environment and develop a culture appreciation for such development. Science communication is to make science a way of everyday life, bridge the gap between science and society and make science more accessible and exciting to youngsters, non-scientists and public. Through effective science communication, science would become an integral part of society which will improve the quality of life. The Jakarta event follows previous PCST Symposiums in Beijing and Christchurch. The scholars are invited to submit abstracts.

### Abstract Submission

Abstract should be about 300 words, Arial 11 pt. font, single space, no images, MS Word document, with abstract title as file name. Abstract should follow the order:

- a) title of abstract,
- b) author(s),

- c) affiliation,
- d) email address,
- e) body of abstract,
- f) up to 10 keywords.

The abstracts may be sent by e-mail at:  
dyah@doctorrabbit.com ; finarya.legoh@bppt.go.id

More details are available at website:  
<http://www.pcst-jakarta2013.org>

### Important Dates

Submission of Abstract: July 15, 2013  
Registration: June 30, 2013

### Special programmes

**Journalists' Workshop:** Hosted by Mr. Toss Gascoigne and Ms. Jenni Metcalfe, PCST Network

**Educators' Workshop:** Hosted by APEC Mentoring Center for Gifted in Science (AMGS)

Looking forward to seeing you in Jakarta.

### Dyah R. Permatasari

CEO DoctoRabbit Science Inc.  
Co-organizer for PCST Jakarta Symposium 2013  
E-mail: dyah@doctorrabbit.com  
finarya.legoh@bppt.go.id  
Website: <http://www.pcst-jakarta2013.org>

### To our Readers

*Indian Journal of Science Communication* invites readers' views and critical comments on any of the aspects of the journal. Suggestions for further improvement in presentation of the journal and its contents are also welcome. Selected letters would be considered for publication under the column 'Letters to the Editor'.



## Sustainable agriculture awareness

**Dear Editor,**

It is interesting to note that India is rapidly urbanizing on the paths of industrialization although it is still predominantly an agriculture dependent economy. It is a great strength in one hand while a weakness in another with respect to the huge amount of agriculture waste generated in the country. It is quite unfortunate that due to unscientific management, lack of proper training and awareness among farmers and producers, lack of modern infrastructure facilities such as poor roads and railways network, lack of proper storage facilities, the pre- and post- management lose in agriculture are substantially huge.

It is awe inspiring to just think what tremendous impact these simple facilities could have both with respect to our annual agricultural productions vis-a-vis environmental protection. We will be able to generate additional income for the farming community, add to our foreign exchange reserves, and reduce the level of rural as well as urban unemployment while protecting our fragile ecosystems and environment in a sustainable fashion. These could transform our agricultural sector effectively into a more profit generating enterprise as well as a strong

global industry. In addition this will have huge socio-economic impact on the life of millions of people in the rural and urban areas with substantial reduction of our annual environmental cost. The use of parts of the remaining agricultural field wastes particularly after the harvest needs to be also taken into consideration. This is a huge source of biomass that could be partly used for efficient bio-fuel production and rural electrification as also in the production of organic manures. Researches need to be conducted in the effective and efficient use of agricultural wastes, byproducts and post harvest wastes.

A small Asian country like Bhutan is working towards developing environmentally sustainable agricultural production system; hence we cannot afford to fall back in making our global effort to reduce agricultural wastes and make South Asia region a responsible agricultural giant in the coming years. We need to take the steps now to reap the harvest in not so distant future. I sincerely hope that we will be able to identify these weaknesses and guide Indian agriculture to a new dimension both in terms of socio-economic development as well as increase agricultural production in a sustainable fashion.

***[Mr. Saikat Kumar Basu, Ph.D. Candidate, Bio-molecular Science Department of Biological Sciences, University of Lethbridge, 4401 University Drive, Lethbridge AB T1K 3M4 Canada]*** ■

### Commissioned Studies/ Papers

Indian Journal of Science Communication encourages potential scholars to undertake short term studies/ research/ surveys on specific area/ topic/ sector concerning S&T communication. It is expected that such studies will also lead to writing of a paper/ article and can subsequently be published in IJSC, if found suitable. A committee of experts will evaluate and recommend carrying out of such studies. A nominal amount towards honorarium may be granted for undertaking such studies.

Proposals, including information pertaining to title of the study, scope and objectives, methodology, expected outcome, budget estimates and time schedule, etc., may be sent to the Editor, IJSC.

## Indian Journal of Science Communication

*An International Half-yearly Research Journal in Science & Technology Communication*

A Joint Publication of

National Council for Science & Technology Communication, New Delhi

and Indian Science Communication Society, Lucknow

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# Indian Journal of Science Communication

## Instructions to Contributors

- The scope of the IJSC encompasses all aspects of Science Communication and Popularisation (SCP); including Public Understanding and Engagement of Science (PUES); Public Communication of Science and Technology (PCST); and Science Technology and Society studies (STS). The communication of 'science' incorporates all its forms, i.e. Science, Technology, Research and Innovation (STRI), including Method of Science, Scientific Temper, and Scientific Culture. The communication of 'science' is inclusive of all basic, applied, and derivative sciences consisting of physical, chemical, biological, health and medical, animal husbandry and agricultural, environmental, space, nuclear, defence, and earth sciences, etc. It excludes contributions on basic and applied sciences and anything bracketed as popular science writing or science education. It also excludes technology development but includes its social and cultural implications and such studies.
- The IJSC invites original research papers, review papers, case studies and other contributions in any aspect of 'science communication' in the form of articles, assessment studies, book and programme reviews, survey reports, guidance and science dissemination project analyses from scientists, scholars, researchers, communicators and authors. Write-ups on science communication skills, innovative ideas to communicate science, cartoons (scientoons), etc., are also welcome. Science software materials, such as books, monographs, copies of TV and radio programmes, science kits and toys, etc., are considered for review, for which two copies may be submitted. News, views, opinions, debates, letters to the editor and suggestions are solicited for inclusion.
- Manuscripts should be submitted in hard copy and electronic form. Good quality printouts (two copies) in the Times New Roman font size 11 point are required. The pages should be numbered. The corresponding author should be identified by an asterisk (include E-mail address). Electronic form of the manuscript should be submitted via E-mail and/ or in a CD/ DVD. Text should be entered using word processing software MS Word without any commands, formatting or designing.
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- The authors' photographs along with names and E-mail addresses may be provided for publication.
- The papers should be arranged in the order of - Title, Name(s) of author(s), Affiliation(s), Abstract, Keywords, Main text, Acknowledgements, Appendices, References, and then Footnotes/ Endnotes.
- Each table should be given on a separate sheet of paper and not to be adjusted into main text. Tables should be numbered consecutively and given suitable titles.
- Normally, the abstracts should not exceed 250 and the papers should not exceed 2500 words.
- The number of keywords should be around 5 and be placed in alphabetical order.
- The acknowledgements, if necessary, may include only special nature of assistance; no routine 'permissions' or 'thanks' to be mentioned.
- The references for sources cited in the text should be given at the end of text, numbered consecutively. In the text, the reference should be indicated by a number placed above the line (superscript). If done so, the reference should be listed in that order. If a reference contains more than one author, the names of all the authors should be given. References should be given in the following form:
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  2. Sharma R.D., Communication of science and technology in ancient India, *Indian Journal of Science Communication*, 1(1), pp 3-7, 2002. The sources such as unpublished papers and personal communications should also be included in the references in the following form:
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  4. Das Anamika, Unpublished work, 2002.
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- The national currencies may be converted into US \$; the equivalent national currencies be given in parentheses following US \$.
- No fee is charged from authors for their contributions for publication in the journal, similarly no remuneration is paid to them for their contributions.
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- Since the periodicity of the IJSC is 6 months and even if your contribution is scheduled for the next issue, it may take at least one year for publication!
- The contribution once submitted to IJSC normally cannot be withdrawn.
- Contributions submitted for publication should necessarily conform to these guidelines and while submitting manuscripts, the guidelines become acceptable to the authors.
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### The Editor

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### Biodegradable nanoparticles for delivery of Cancer drugs

A Dutch researcher has developed biodegradable nanoparticles which may be used to encapsulate and deliver fat-soluble anticancer drugs.

The nanoparticles consist of Polyethylene glycol (PEG) chains which are attached to recently developed components: lactic acid derivatives of polymethacrylamides.



“Why can't you appoint me? It is strange that you believe more in nano particles than me. Look. I am delivering pizzas for the last ten years and always dot on time.”

**Bioremediation** can be defined as any process that uses microorganisms, fungi or their enzymes to return the environment altered by contaminants to its original condition.

An example is the clean up of oil spills by the addition of nitrate or sulphate fertilizers to facilitate the decomposition of crude oil by bacteria.



“I told you in the very beginning that it is a toxic stuff. But who listens to old people like us. Now since they have found you fit for the job so whole life you will keep eating this toxic waste.”