Presidential Message

This issue of the e-Newsletter of Indian National Chapter is being released on the eve of World Water Day, i.e. March 22, 2021 falling soon after the recently organised e-seminar by Indian Chapter of IAH on the Topic of ‘Resilience of Groundwater Resources for accommodating changing Climate Scenarios’ on February 27-28, 2021. The character of the seminar had to be changed from the physical format to the Virtual the ongoing Corona pandemic. Yet the event was a spectacular success due to the involvement of a galaxy of leading groundwater scientists of the country in the event. The main highlight of the seminar was the presence of the Chief Guest, Sri B. Navalwala, Advisor to the Chief Minister of Gujarat, who exhorted the groundwater scientists of the country to meet the challenges of the recently witnessed adverse climatic changes resulting in significant variations in the rainfall pattern in different parts of India. Shri G.C. Pati, Chairman, Central Groundwater Board, Faridabad, the Guest of Honour, also spoke on the occasion, highlighting the difficulties faced by the farmers of the country due to extreme variations like floods and droughts occurring due to climatic changes. The seminar featured a number of Keynote speeches and paper presentations, besides live discussions on the technical themes of the Seminar including the topic of climate resilient groundwater resources management in India.

I wish to extend my good wishes to all the members of the Indian Chapter of IAH during the webinars and other meetings organised by various institutions and organisations on the occasion of the World Water Day, throughout the country.

(Prof. D.C. Singhal) March 22, 2021

Message from Secretary

Hope everything is well with you and your family. We have just successfully organized the National E-Seminar on “Resilience of Groundwater Resources for accommodating changing climate scenarios” “Resilience of Groundwater Resources for accommodating changing climate scenarios” on 27th and 28th Feb 2021. One of the major activity of International Association of Hydrogeologists - Indian National Chapter (INC-IAH) is to publish e-Newsletter. With untiring effort taken by Sh Ranjan Sinha and Dr. Sudhanshu Shekhar the Newsletter has now become a regular feature of INC-IAH. It encapsulates lot of features, information, news and notes related to groundwater issues in India and also globally. The e-news letters are widely circulated, not only in India but also to all National Chapters of International Association of Hydrogeologists across the globe. Besides, it is permanently preserved in the website of INC-IAH.

I hope you will also enjoy this 4th e-Newsletter which is being released on the auspicious World Water Day on 22nd March, 2021. We shall be obliged if you kindly send your feedback. Also requesting all to send material for the next issue, the information which will be circulated by Sh. Ranjan Sinha in due time.

Wish you all the best and with warm personal regards

Dipankar Saha,
Secretary INC IAH

March 22, 2021
It is our privilege to edit this issue of e-news letter on the occasion of World Water Day, 2021. In this issue, we’ve tried to capture all the preceding activities –the highly successful and well-appreciated e-conference held during 27th – 28th February, 2021. The glimpses of 3rd National Groundwater Lecture Series has also been captured. The successful completion of PhD by member of INC-IAH has also been captured and show cased to motivate young scientists. In addition, a new concept has been introduced – Story of field experiences of water professionals in field, so as to visualize the challenges faced by field hydrogeologists. In this issue of the e-news letter we have tried to stay true to our roots and maintained a lot of what made the previous issues so successful and admired. However, borrowing from suggestions and our own experiences, we have tried to make the e-news letter more interesting. When bringing out this special issue, our aim has been to keep in line with the recent groundwater issues and news country wide. Our main aim & objective within this edition is to involve the people of groundwater fraternity to a larger extent and we hope to achieve that. Lastly, this news letter is yours’ and we would love to know how we can improve it further and make it more interesting for you. Let us know what you think and we will do our best to design the next issue keeping that in mind. Finally we would thank all the Authors for contributors the articles.

In this Pandemic environment wish all of you to stay safe.

- Ranjan Sinha, Dr. Sudhanshu Shekhar & Dr. B. S. Chaudhary
OBITUARY

Dr. Devinder Kumar Chadha, Ex-President, INC-IAH

Dr. Devinder Kumar Chadha was IAH Vice-President Asia, Chair Professor & Chairman, Centre for Advanced Water Technology & Management, Manav Rachna International Institute of Research & Studies, Faridabad, India. He was Chairman, Central Ground Water Board & Central Ground Water Authority (1997-2002), apex organization of Ministry of water Resources (now Jal Shakti, Govt of India) and also held roles from Deputy General Manager to Group General Manager in RITES, India (1984-1997), a public sector enterprise for earth sciences technical services. He was President/Chief Advisor, Global Hydrogeological Solutions. His collaborative work includes UNESCO, Reliance, CAPART, GGSIP University.

He has a PhD in Geology from the Panjab University, Chandigarh, India. He pioneered research in managing saline aquifers, rain-water harvesting, aquifer protection, regulation and governance. His involvement with institutions in over 20 countries includes UNESCO, US-EPA, IAEA, Asia Pacific Network on Climate Change, and technical presentations. He has received several awards including the Bhoo-Vigyan Ratna Award and UNESCO IHP Water Award.


Most unfortunately he passed away on 30th December 2020. It was a great shock to the National and International Hydrogeological fraternity. President IAH, Professor David Kreamer has expressed profound grief on his demise. The entire INC IAH Executive Council has also expressed heart felt condolence to his family.

INC-IAH Confers Life Time Achievement Award to Dr. D.K. Chadha

May he be in eternal peace in his heavenly abode......
The names of the awardees for Smt Savitri Chadha INC-IAH Awards for 2019 (Sponsored by Dr. D.K. Chadha, Former President, INC-IAH) and Shri Haridas Saha Memorial Best Paper Award 2019 (Sponsored by Dr. Dipankar Saha, Secretary INC-IAH) were on-line felicitated as recommended by the chairman of the selection committee. The announcement was made by Smt. Savitri Chadha Memorial INC-IAH Award for Ground Water Excellence -2019 in Ground water Investigation and Management- Shri Ranjan Sinha, Deputy General Manager (Hydrogeology), Cairn Oil & Gas Vedanta Ltd.

Smt. Savitri Chadha Memorial INC-IAH Award for Ground Water Excellence -2019 in Ground water Science - Prof. Rashid Umar, Prof. AMU, Aligarh (Joint winner)

Smt. Savitri Chadha Memorial INC-IAH Award for Ground Water Excellence -2019 in Ground water Science : Prof. Madan Kr Jha, Prof. IIT, Kharagpur, (Joint winner)

Shri Haridas Saha Memorial INC-IAH Award for best Paper for 2019- Dr. Ajit Kr Behera, Assistant Professor, BIT, Sindri.
INC-IAH organised e-National Seminar

Indian National Chapter Of
International Association of Hydrogeologists (INC-IAH)
In Association with Central Groundwater Board, Organizes

RESILIENCE OF GROUNDWATER RESOURCES FOR ACCOMODATING CHANGING CLIMATIC SCENARIOS

During February 27-28, 2021
Venue: Online-AIRMEET Platform

The e-seminar was forecasted live throughout in you tube on both the days meant for a wider circulation amongst the INC-IAH members, ones colleagues, friends etc. The Youtube can be viewed easily using the two seperate links given below for both the days.

Day - 1 (27/02/2021): https://youtu.be/xhzFGZOZkU8
Influence of the Najafgarh drain

• The annual exchange to the groundwater from land cover is highest in second these decades the most prominent being Najafgarh drain. (Gupta, 2013).

• The increased rainfall in this area is due to the major contributions from the drains and flood channels. The drains and flood channels help in reducing the intensity and duration of floods and runoff, thereby reducing soil erosion and sedimentation.

• A study was conducted to assess the impact of the Najafgarh drain on the urban environment. The study found that the drain has a significant impact on the urban environment, affecting both surface water and groundwater resources.

• The study also found that the drain has a significant impact on the urban environment, affecting both surface water and groundwater resources. The drain is a major source of pollution, due to the discharge of untreated sewage and industrial effluents.

• In order to mitigate the impact of the drain on the urban environment, it is necessary to implement effective waste management practices and to promote the use of alternative sources of water, such as rainwater harvesting and greywater reuse.

• The study recommended the following measures to mitigate the impact of the drain on the urban environment:
  1. Implement effective waste management practices.
  2. Promote the use of alternative sources of water, such as rainwater harvesting and greywater reuse.
  3. Construct additional drainage systems to accommodate the increased flow from the Najafgarh drain.
  4. Conduct regular monitoring and evaluation of the impact of the drain on the urban environment.

• The implementation of these measures will help to mitigate the impact of the drain on the urban environment and to promote sustainable development.
One geophysical field work was assigned to me during my tenure at CGWB, Guwahati near Jaintia hill, Nogkлем, Meghalaya. So far I can remember that the area was located near Jaintia cement factory, Jowai. Some portion of the foothill of Nongkлем limestone ridge was planned to be procured by M/S Lafarge cement during the year 2001. They have given some advance to our office for geophysical survey and thereby to ensure the depth of ground water source. Tremendous pressure was created to our office for taking up the work early. If the water is available in bigger amount then only they will take the land and establish the factory, that was the initial condition. Hence the whole project had to depend only on geophysical investigation and its proper interpretation.

So, I had to proceed immediately to the site along with the manager, Lafarge (forgot the name) who was present at Shillong most of the time. Frequently he used to come to Shillong to look after the project. During this period for almost 6 months continuously he was visiting our office with very short intervals to persuade the work as early as possible and to receive the report. The man was very jolly and giving me lots of energy during my field work. He arranged the circuit house nearer to the place of investigation during the field work and always used to ask for food, tea, snacks etc. During my work he was always asking the questions regarding the readings and probability of the ground water resources. So far I can remember I conducted 7 nos. of VES (Vertical Electrical Soundings) in 7 spots/stations. Almost in 5 points the field curves were showing excellent results. In the field itself I interpreted the curves. Geophysically the curves were H and HKH type, resistivity values are within 30 to 100 ohm m and thickness was within 20 to 30 meter. As hurriedly I went to the site I could not study the actual geology of the area of investigation. As the work was going on at the foothill of limestone hill I understood that there may be sandstone or limestone below the ground. With this little geological knowledge of the area I thought the result (curve patterns) may be due to weathered sandstone or cavernous limestone. This resistance is very good for ground water. At that juncture, I could not resist myself and told him spontaneously with joy that ‘there is lots of water’. He also shouted with joy ‘ureka’ as if he visualised that the project is running smoothly under his managerial guidance along with foreign equipments and full establishments. That day, evening, he was very happy and showing his attitude that he can do everything for me.

After completion of the field work I came back to Guwahati and he went back to Kolkata taking my assurance that I should try to complete the report within very short time as because the foreign equipments are about to reach to the site.

I completed the report and submitted it to the office within 15 days. When he visited our office I told him that it has been submitted in the office and it will take some time for draftsman work, typing and printing work. He went to meet our then Director who also assured him that shortly he will receive the report. But the manager was in a hurry, and constantly persuading for the report which he was not getting. He used to come to my sit and complain about the system but I used to tell him that ‘I am helpless’.

This was going on almost more than one month. I took the work in the month of 1st to 5th April, 2001 and in the mid of May he was very angry and telling me ‘why they are not issuing the report?’ He told me that he met the Regional Director who told him that they will visit the site and verify the geology of the area then only they will issue the report. That day the temperament was hot between both the people, manager and Regional Director. After his departure I also got little bang from the Regional Director because I have told him in the field that there is plenty of water. Regional Director told me that there may be lots of change in geology and other factors, I should not have uttered with confidence that water is there. RD says ‘now the manager is claiming when Mr. Adhikari has finalised the report with positive findings why you are not releasing the report’.
Next day Regional Director and another sc. ‘D’ went to the site and visited the area of investigation and tried to understand the geology of the area. Day after their visit Regional Director called me and explained that the area is belonging to top copili shale and the Shella formation (Sylhet Limestone and lower Sylhet sandstone). The lower sylhet sandstone (Theria) is overlain by sylhet limestone. In his opinion the theria sandstone does not bear much ground water. It cannot produce that amount water which Lafarge cement factory requires. Regional Director advised me to change the report immediately so that it can be send to them. I denied and told that there may be presence of cavernous limestone which is giving low resistivity than that of hard formation. I was still very much hopeful about the presence of ground water.

Then he arranged a meeting with Lafarge cement experts regarding the finalisation of the event after a few days. That very day Lafarge cement company brought a eminent geologist along with other officers. I was also asked to attend the meeting only to jot down all the points of discussions of the meeting step by step for preparation of minutes of the meeting. The condition was imposed on me that I should not comment anything regarding the probability of the water or any issue. I was afraid and didn’t say anything though I was being pressurised, so many time, to expose my findings and feelings.

Ultimately, Regional Director with other geologists and senior scientists concluded that one slim hole should be drilled by the Lafarge cement company, if water is available then only we will submit the report with positive way. They were not agreeing with this conclusion that on the basis of the minutes of meeting a borehole to be drilled by them. Geologist also tried to put their complete knowledge of local geology and chance of presence of ground water. Unfortunately, everything failed and they left RD’s chamber and left to Kolkata on the same day, i.e., at the end of May 2001.

One day after suddenly Regional Director called me and told me to change the report immediately where I should write that meagre amount of water will be available and that will not solve the purpose of their project. I requested RD, not to ask me because till I am optimistic about that area. He can modify with his expert geologists because he has got the power. He agreed with me and that day night he changed the report and despatched to the party. The report was released in the month of June, 2001. I heard from somebody that they came back to Kolkata and talked over phone to the then Member, Central Head Quarter (New Delhi) regarding the proposal that one bore hole has to be drilled before getting the report and which was not there in the agreement before the survey work taken up. I also heard that the then member was annoyed over the RD and told him to submit the report either negative or positive. He cannot ask for bore hole drilling before the report. If anybody drills at any spot he will certainly understand what is lying underneath, then why survey required? Also he told that why they should bear the expenditure for drilling.

A few days later when I was entering the office I found right from the peon to officer everybody was looking towards me and trying to talk with me. People were telling me to meet RD. The day became memorable. I heard from a senior scientist that a phone call came from member, HQ, CGWB with the discussion that in spite of our negative report they drilled one bore hole with own expense and found tremendous amount of water from 4 nos. of boreholes. Immediately they informed to our head quarter the story. The then member also told our RD and other scientists with little thrash why they did not listen to my interpretation.

Now a days we are happy to listen that so many cement factories are running there using this huge amount of water resources. In our geophysical investigation the success story does not come always. Sometimes it may mislead due to various types of complicated geology. From the top it is very difficult to understand what is there underneath.

The story was memorable not only for my own success, they have drilled four nos. of bore holes only based on my verbal saying that there is Ground Water. I don’t remember what was the inner confidence and power that I could throw towards him while saying that there is lots of water. This story also gives me energy and confidence while surveying other places.
Title: Geochemical behaviour of fluoride contamination in Groundwater, its distribution and mobilization in and around Jamui, Indo-Gangetic Alluvial Plains, Bihar, India

Name: Suresh Kumar, Scientist, CGWB, Patna

Institution: IIT (ISM), Dhanbad

Supervisors: Prof. G. Udayabhanu and Prof. A.S. Venkatesh

Abstract

Water is a vital natural resource and plays a significant role in all-round socio-economic development. Ground water caters to more than 85% of rural and a major part of the urban drinking needs. The groundwater water quality and its impact on human health is a major concern the world over. In recent years, fluoride-rich groundwater has drawn worldwide attention as consumption of excessive fluoride in drinking water leads to endemic fluorosis. Ground water gets its chemical signature from rock-water interaction. There is an important role of ground water geochemistry in controlling groundwater contamination and movement of dissolved constituents.

The present study aims to investigate the origin and geochemical mechanisms controlling the presence of fluoride in groundwater of the study area. An attempt has been made to ascertain the relevant geochemical factors controlling the source of fluoride enrichment in groundwater, assessment of health risk from fluoride ingestion through drinking water for males, females and children, mapping of fluoride hazard zones by considering various features. Viable remedial measures to be adopted to minimize fluoride contamination and the consequent adverse health impacts due to fluoride exposure is also discussed.

The thesis is presented in eight chapters. First Chapter is of introductory nature, focusing on the statement of the problem, the study area, a review of the existing global and Indian literature on the fluoride contamination in groundwater, objectives, scope, relevance and the methodology of the present study.

National Ground Water Lecture Series

One of the activities that has been initiated by the newly elected (2019-2021) Indian National Chapter of the International Association of Hydrogeologists is initiating a Lecture Series on Ground Water and related issues. The lectures to be delivered by the most eminent National and International experts, at venues in different educational and research institutes in India. The purpose of the lecture series is to disseminate latest development in groundwater science, technology, management, regulation and policy intervention. The lectures will trigger a cross sartorial dialogue and exchange of ideas also.

Third Ground Water lecture Series

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<tr>
<th>Venue/ Platform</th>
<th>organized in a cloud based platform due to covid pandemic situation.</th>
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<td>Date</td>
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<tr>
<td>Lecture Delivered by</td>
<td>This talk was jointly delivered by Shri G.C.Pati, Chairman, CGWB and Sh Avinash Mishra Advisor, water Land Resource, Environment and Forest, NITI Aayog</td>
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Dr. Gopal Krishan, Scientist Groundwater Hydrology Division, National Institute of Hydrology, Roorkee

Attended online virtual conference: Scientific Impacts on a Historic Landscape American Water Resources Association Montana Section 2020 Conference Butte, Montana October 5 - 9, 2020 and presented a paper on "Aquifer salinization in Punjab" and awarded with a certificate of appreciation

Dr. PADAM JEE OMAR, Assistant Professor, Motihari College of Engineering, Motihari, Bihar-845401

Dr. Omar’s research has been published as a book chapter in a book titled "The Ganga River Basin: A Hydrometeorological Approach"

**Authors Name:** Padam Jee Omar, Nikita Shivhare, S. B. Dwivedi, Shishir Gaur & Prabhat K. S. Dikshit

**Title of Chapter:** Study of Methods Available for Groundwater and Surface water Interaction: A Case Study on Varanasi, India

**Title of Book:** The Ganga River Basin: A Hydrometeorological Approach

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**Link to where the publication can be found:** https://link.springer.com/chapter/10.1007/978-3-030-60869-9_5

**Email Id of the Corresponding Author:** sss.padam.omar@gmail.com
Achievements of INC-IAH Members

Dr. Anadi Gayen, Hydrogeologist (Scientist - D)
Rajiv Gandhi National Ground Water Training and Research Institute
CGWB, Government of India

Dr. Gayen published two research papers, published one Book Chapter, Two Concept Notes during the recent times.

Ranjan Sinha, EC Member, INC-IAH on 14th March 2021, delivered a invited talk on 10th Foundation Day of Center of Excellance for Energy Studies, Oil India Limited
थार मरुस्थल भूजल समाचार

राजस्थान पत्रिका

बड़ी खबर: बाबू मुंदे से लेकर संबांत तक है पानी का भूर्पन्न विस्तार
रेगिस्तान में मिला 4800 खरब लीटर का जल भंडार

छात्रों को जल संरक्षण की दिलाई शाप

अभी से सताने लगा पेयजल संकट का डर

सीकर भास्कर 02-01-2021

युवाओं को जल संरक्षण की शपथ दिलाई
सीकर | नेहरू पूर्व केंद्र सीकर की ओर से भोज ब्लाक के

अभी से सताने लगा पेयजल संकट का डर

नर्म परिस्थिति के बाद जहां में आकर्षक नहीं कराई गई नल-जल योजना के तहत वरिष्ठ
Climate change is bringing rising sea levels and increased flooding to some cities around the world and drought and water shortages to others. For the 11 million inhabitants of Chennai, it’s both. India’s sixth-largest city gets an average of about 1,400mm (55 inches) of rainfall a year, more than twice the amount that falls on London and almost four times the level of Los Angeles. Yet in 2019 it hit the headlines for being one of the first major cities in the world to run out of water—..


22 Mar 2021 – Online webinar, Workshop on MAR in China, Organised by Danish Embassy in Beijing; co-organiser Danish EPA. E-mail meihon@um.dk


19-30 Apr 2021 – Online vEGU21: Gather Online, Organised by European Geosciences Union (EGU). https://www.egu21.eu/ e-mail egu21@copernicus.org

6-7 Jun 2021 – online, Karst: From Top to Bottom, Organised by Centre for Karst Hydrogeology of the University of Belgrade. Partners: UNESCO-IHP, IGRAC, Regional Water works of Montenegro Coast, City of Trebinje, Geological Survey of Montenegro and Geological Survey of Republic of Srpska B&H. http://www.karst.edu.rs/en/index.html, e-mail- veljko.marinovic@yahoo.com; ljiljana.vasic@rgf.bg.ac.rs

20-26 Jun 2021 – Irkutsk, RUSSIA, All-Russian Conference on GROUND WATERS IN THE EAST OF RUSSIA (XXIIIth Meeting on Ground Waters of Siberia and Russian Far East) Organised by Institute of the Earth’s Crust of SB RAS Irkutsk National Research Technical University Irkutsk State University Hydrogeological and Geoecological Company “GIDEK” International Association of Hydrogeologists (IAH) Russian Public Organization "Russian Union of Hydrogeologists” (ROSGIDOGERO). http://www.gw2021baikal.ru eastwater2021@crust.irk.ru


6-10 Sep 2021 – Brussels, Belgium, 48th IAH Congress – IAH 2021 – Inspiring Groundwater Organised by IAH Belgium (CBH-BCH). http://www.iah2021belgium.org/ iahbelgium@gmail.com


27-30 Sep 2021 – Maastricht, the Netherlands, LuWQ2021 – 5th International Conference on LAND USE and WATER QUALITY: Agriculture and the Environment Organised by Organised by RIVM National Institute for Public Health and the Environment, the Netherlands (principle organiser); Aarhus University (DCE and Department of Bioscience), Denmark; Geological Survey of Denmark and Greenland (GEUS); and Umweltbundesamt (UBA), German Environment Agency, Germany. IAH is Scientific Sponsor of the conference. https://www.luqw2021.nl/ , karel.kovar@rivm.nl ; dico.fraters@rivm.nl


1-3 Dec 2021 – Napoli (Italy) Flowpath 2021, Italian IAH Congress. Organised by IAH Italy. http://www.flowpath2021.unina.it/ flowpath@iahitaly.it

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