THE BLUE PRINT

@ Department of Civil Engineering, VNRVJIET

Volume-1 2016-17

In this issue

Department of Civil Engineering

VISION

To develop Civil Engineering Department as a Centre of Excellence for imparting value based education to the students at under-graduate and post-graduate level to meet industry needs and to develop as a major research centre to meet the national and international standards

MISSION

- To impart in-depth and up-to-date knowledge of Civil Engineering, stressing concepts with focus on character enhancement, leadership qualities, effective communication, social responsibility, pursuit of lifelong learning and professional development.
- To provide a platform to students to engage in innovative research work

Department of Civil Engineering Faculty and Staff

A good teacher can inspire hope, ignite the imagination, and instill a love of learning

Principal's Message

It's indeed a pleasure to announce that the Department of Civil Engineering is bringing out the Newsletter. The Newsletter will definitely help to bring forth the activities of the department. It will provide a platform for presenting the events, activities and academic achievements of the students, faculty and the department. This would definitely create an impact in the minds of readers, by providing larger visibility and new dimensions. Civil engineers have one of the world's greatest jobs such as building the quality of life. With technical and creative skills, the civil engineers plan, design, construct and operate the infrastructure required to modern civilization, ranging from highways and bridges to water treatment plants and energy efficient buildings. They are the problem solvers and decision makers who meet the challenges of pollution, overcrowded traffic, drinking water, community planning and urban development. This newsletter will also serve as a platform to discuss various topics of interests and to explore the nuances in their domain, in order to interact and collaborate for better future of computing. I congratulate the team on their efforts in bringing out this newsletter. All the Best!!!

Editorial Note

It is a great pleasure to share the first issue of the Civil Engineering News letter *"THE BLUE PRINT"*. It has been a very exciting and eventful year for the students, faculty and staff of the CE department. One of the most exciting pieces of news I want to share is that our UG (B. Tech. Civil Engineering) program is conferred with 5 years of accreditation from NBA (National Board of Accreditation), New Delhi. Department is reinforced with 10 doctorates in this academic year with the addition of three doctorates. This academic year students bagged good GATE ranks and one student got an offer of Rs. 11 lakhs in IOCL. Many other graduate students went abroad to pursue their higher education in prestigious universities. Some of the students are placed in the IT & core sectors. Our faculty research profile continues its growth in terms of publications. We continue to make improvements in our work and learning environments. I congratulate the entire team for their efforts in taking the Department into the track to achieve its vision.

Department News

ACHIEVEMENTS THIS YEAR

Civil Engineering Department UG program (B. Tech. Civil Engineering) is accredited by National Board of Accreditation (NBA) for five years (2016-2021) in November 2016.

Indian Green Building Council local chapter was launched by the department of Civil Engineering in February,2017

Launch of IGBC local chapter

GUEST LECTURES:

- Revathi Turaga, International Trainer & Inspirational Speaker, Hyderabad delivered a lecture on "7 Habits of Highly Effective People" on 19th September 2016 to I B. Tech Civil Engineering students to impart lessons on responsible behavior and personality development, time management skills, working effectively, and solving problems in different ways
- Dr. B.K Parvati, Hyderabad delivered a lecture on "Positive thinking and personality development" on 23rd Dec 2016 to II B. Tech Students to create awareness among the students about positive thinking and personality development.
- Dr. Ashutosh Das, PRIST University, Tamilnadu interacted with faculty for knowledge sharing on "Life Cycle Assessment" on 28th December 2016
- Dr. K. Srinivasu, Principal, RVR&JC, Guntur gave a lecture on "Computer Applications in Civil Engineering" on 9th Jan 2017
- Dr. Paul Fanning, Professor, School of Civil Dept., UCD, Ireland delivered a lecture on "Long Term Monitoring of Bridges using Sensor Data & Numerical Models" on 31st Jan 2017
- Mr. Kota Suman, Chief Consultant, Kota Consultant Corporation, Hyderabad delivered a lecture on "High Rise Buildings" on 3rd April 2017
- Mr.P.V.Rao, Director, Pennar, Pre Engineered Building Systems, Hyderabad delivered a lecture on "Pre-Engineered Building Systems" on 12th April 2017
- Dr.I.C.Das Scientist, NRSC, Hyderabad delivered a lecture on "RS&GIS in Groundwater targeting and watershed management" on 28th April 2017
- Prof. K.S.V. Radha Krishna delivered a lecture on "Introduction to pre-stressed concrete and losses in pre-stressed concrete" on 4th May 2017.

Dr. Ashutosh Das from PRIST University

Dr. Paul Fanning from Ireland

Mr. Kota Suman interacting with students

Mr. P. V. Rao from Pennar

Dr. I. C. Das from NRSC

FACULTY CORNER

JOURNAL PUBLICATIONS:

Dr. P N Singh, Professor, in collaboration with scholars at University of California, Davis published a paper on "Coastal development and precipitation drive Pathogen flow from land to sea: evidence from a Toxoplasma gondii and field host system" in an international journal on July 26th 2016, Nature's Scientific Reports (6:29252). The journal is indexed in SCOPUS / Web of Science / Google Scholar

Dr. B.Narendra Kumar , Professor published a paper, "Comparative Study on High Strength Fiber Reinforced Self Curing SCC and Conventional Cured SCC" in i-Managers Journal on Structural Engineering, in July 2016

N.Chandana , Assistant Professor published a paper, "Studies on Bioremediation of Lead by Lead Resistant Microorganisms" in Journal of applied & environmental microbiology, in August 2016

K.Suresh published a paper, "Effect of pH and curing time behavior on strength properties of expansive soils' in a national journal , June - August 2016.

U.S. Hari Krishnan , Assistant Professor published a paper, "Evaluation of Communication pattern and Nos in Construction industry" in International Journal of Emerging Technology and Advanced Engineering, in September 2016

B.Narendra Kumar , Professor published a paper, "Development of Ultra High Strength Self Compacting Fiber Reinforced Concrete Using Latest Admixtures" in i-Managers Journal on Structural Engineering, in September 2016

P. Ramu , Assistant Professor published a paper, "Analytical method for asphalt concrete job mix formula design" in International Research Journal of Engineering and Technology, in October 2016

Dr. A. Mallika , Professor published a paper, "Effect of tank height on seismic performance of intze type water retaininig structures" in i-Managers Journal on Structural Engineering, in October 2016

Dr. A. Mallika , Professor published a paper, "Seismic analysis of multistoried steel frames with perforated steel plate shear walls" in i-Managers Journal on Structural Engineering, in October 2016

Dr. P N Singh , Professor published a paper, "Soil stabilization using Terrasil , Cement and Fly ash" in i-manager's Journal of Civil Engineering, Vol 6, No 4, September - November 2016.

Dr. P N Singh , Professor published a paper, "Investigation on Fluid flow behavior through Granular soil" in i-manager's Journal on Structural Engineering, Vol. 5, No. 3 September- November 2016

K.Suresh, Asst.Professor published a paper, "Rectification of heavy metal contaminated soils using photo remediation process" in a national journal , November 2016

P.Arti Sudam, Asst. Professor i published a paper, " Effect of tyre powder on strength characteristics of black cotton and red soil" in a national journal , November 2016.

K.Suresh, Asst.Professor published a paper, "Swell and strength characteristics of expansive soil reinforced with synthetic fibers in an national journal , September - November 2016.

K.Suresh, Asst.Professor, published a paper, "Effect of various sizes of stone dust on strength characteristics of clayey Sub grade soil" in an national journal. September - November 2016.

P.Arti Sudam, Asst.Professor, published a paper, "Effect of fly ash and Geosynthetics on strength properties of clayey soil in a national journal, September - November 2016.

K.Suresh, Asst.Professor published a paper, "Role of molding water content on the deformation characteristics of lime treated black cotton soil" in a national journal, September - November 2016.

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "Dynamic analysis of laminated composite plates" in International journal of research in engineering and technology, in December 2016

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "Effect of earth quake incidence angle on seismic performance of irregular rc buildings" in International journal of research in engineering and technology, in December 2016

K. Tejaswi, Assistant Professor published a paper, "Response spectrum analysis of symmetric and asymmetric buildings with variation in natural time period and soil strata" in ELK Asia Pacific Journal of Civil Engineering - Special edition , in December, 2016.

K. Tejaswi, Assistant Professor published a paper, "Estimating peak dynamic response from pushover type analysis using a semi-empirical method" in an international journal, December, 2016.

T. Naga Teja , Assistsnt Professor published a paper, "Speed Profile Analysis at Speed Breakers on an Urban Road" in i-Managers Journal on Material Science, in December 2016

G. Lalitha , Assistant Professor published a paper, "Experimental Study on concrete (M_{30}) by partial Replacement of fine aggregate with Copper Slag" in International Journal of Civil Engineering and Technology, in January 2017

Dr. A.Ramesh, Associate Professor published a paper, "Evaluation of Rutting Characteristics In Stone Mastic Asphalt Mix When Added With Basalt Fiber" in an international journal, January 2017.

G. Lalitha , Assistant Professor published a paper, "Experimental study on Mechanical properties of concrete(M30) by adding Natural fibres (Jute fiber)" in International Journal of Civil Engineering and Technology, in January 2017

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "Analysis of transmission towers for optimal bracing configuration" in i-Managers Journal on Structural Engineering, in February 2017

G. Lalitha , Assistant Professor published a paper, "A Review Paper On Strength and Durability Studies On Concrete Fine Aggregate Replaced With Recycled Crushed Glass" in International Journal of Civil Engineering and Technology, in January 2017

G. Lalitha , Assistant Professor published a paper, "Experimental study on strength parameters of concrete by partial replacement of cement with recycled fresh glass powder" in International Journal of Civil Engineering and Technology, in January 2017

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "Dynamic analysis of RC chimneys" in i-Managers Journal on Structural Engineering, in February 2017

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "Seismic behaviour of plan irregular rc buildings" inIndo global journal of applied engineering, in March 2017

K.Suresh published a paper, "Improvement of bearing capacity of soils using bamboo geosynthetics" in i-manager's Journal on Structural Engineering, in April 2017

Dr. B.D.V. ChandramohanaRao , Professor published a paper, "A comparitive study on time history analysis of plan irregular RC buildings" in i-Managers Journal on Structural Engineering, in April 2017

Dr. B.Narendra Kumar , Professor published a paper, "Development of High Strength (M100 Grade) Self Compacting Concrete using Quartz Sand as an Alternative of Natural River sand." in Indian Concrete Journal, in April 2017

K.Suresh published a paper, "Prediction of soaked CBR value with index properties of black cotton soils for sangareddy district region" in i-managers Journal of Civil Engineering, in April 2017

Dr. A. Mallika , Professor published a paper, "comparative study on seismic responses of multistorey building frame with infills using linear and non-linear" in i-Managers Journal on Structural Engineering, in April 2017

K.Suresh published a paper, "Effect of rice husk ash on strength characteristics of black cotton soils" in i-manager's Journal on Structural Engineering, in May 2017

IN CONFERENCES:

Dr.K.Ramujee, Professor, presented paper titled "Parametric Study On Geo-polymer Concrete Beams Reinforced With Geogrids Using Abaqus" in Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

G AVS Sandeep Kumar, Assistant Professor, presented a paper, "Mechanical Properties Of Concrete With Partial Replacement Of Cement With Silica Fume And Fine Aggregate With Crumb Rubber" in national conferences on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016),

Dr.K.Ravi Kumar, Associate Professor, presented a paper, "Effect Of Size Of Coarse Aggregate On The Strength Of Concrete in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

Dr.K.Ramujee, Professor, presented paper, "Molding Of Geopolymer Concrete Specimens Using Taguchi Method" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

Dr.B.Narendra Kumar, Professor, presented a paper, "Study On Effect Of Quartz Materials And Manufactured Sand On Fresh And Hardened Properties Of Self Compacting Concrete" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

R.Durga Prasad, Asst.Professor, presented a paper, "Strengthening Of Masonry Structures Using Glass Fibre Reinforced Polymer Wraps" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

Dr.K.Ramujee Professor, presented paper, "A Review On Effective Utilization Of Wollastonite In cementetious composites" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

Dr.K.Ramujee Professor, presented a paper, "Development Of Mix Design For Self-Compacting Geopolymer Concrete" in national conference on Modern Concretes Driving Profit and Sustainability (MCDPAS -2016)

Dr.B.Narendra Kumar, Professor, presented paper, "A Comparative Study On Durability Properties Of Conventional Cured SCC And Self Cured SCC" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

G AVS Sandeep Kumar, Assistant Professor, presented a paper, "Study On The Performance Of Concrete With Partial Replacement Of Cement With Silica Fume And Coarse Aggregate With Coconut Shell" in national conference on Modern Concretes Driving Profit And Sustainability (MCDPAS -2016)

P.Arti Sudam, Assistant Professor, presented a paper, "Behavior of soil by using tyre powder"in Indian Geotechnical Conference IGC 2016 15-17 December 2016, IIT Madras, Chennai, India.

LECTURES DELIVERED BY OUR FACULTY AT OTHER INSTITUTIONS:

Dr.A.Mallika, Professor & Head, delivered a lecture on "Finite Element Applications in Civil Engineering" at Osmania University, Hyderabad on 30th August 2016

Dr.A.Ramesh, Associate Professor, delivered a lecture on "Pavement Material Characterization and Its Evaluation Techniques" at National Academy of Construction, Hyderabad on 12th August 2016

Dr. A.Ramesh, Associate Professor,s delivered a lecture on "Introduction to Dock & Harbor Engineering at NAC, Hyderabad on 22nd December 2016

FACULTY SPONSORED FOR CONFERENCES/SEMINARS/WORKSHOPS/FDPS/OTHER PROGRAMS:

Dr.A.Deepti, Associate Professor was sponsored for National Conference, Fifteen Years of Pradhan Mantri Gram Sadak Yojana (FPMGSY) at IIT Roorkee on 6th & 7th August 2016 and presented a paper titled – "Reclaimed Asphalt Pavement Materials in Indian Rural Roads"

Dr. B.D.V.Chandra Mohan Rao, Professor was sponsored for National Conference on Sustainable Materials and Management Systems in Civil Engineering at CBIT, Hyderabad on 15th & 16th December 2016 and presented the paper titled- "Optimization of Bracing System for Steel Transmission Towers"

Dr. A.Ramesh, Assoc. Professor was sponsored for National Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC) at IIT Bombay, Mumbai from 19th to 21st December, 2016 and presented the papers titled – "Development of Deterioration Model from Functional Characteristics and Evaluation of Structural Performance on Selected Corridor of Hyderabad City – A Case Study" , "Assessment of Rutting Characteristics on Fiber Reinforced Conventional Mixes over PMB"

T.Nagateja, Assistant Professor was sponsored for National Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC) at IIT Bombay, Mumbai from 19th to 21st December, 2016 and presented the papers titled – "Assessment of stone mastic asphalt performance with the inclusion of fiber material on resilient characteristics"

K.Tejaswi, Assistant Professor attended a 3 day workshop at NIT Warangal on Finite Element applications in engineering analysis from 10th to 12th March 2017.

M.Jyothi, Assistant Professor attended a 3 day workshop at NIT Warangal on Structural Health Monitoring from 17th to 19th March 2017.

Dr. A. Deepti, Associate Professor had attended a Faculty Development Program at Vardhaman Engineering College, Hyderabad on 8th December 2016 to present on "Evaluation of activated fly ash treated reclaimed asphalt pavements for sustainable design of base courses".

Sri A. Mathru swamy,Kum. V.Ramya Krishna,Sri B.A.V.Ram Kumar,Kum. K.Tejaswi,Smt. A. Jyothirmayi, Asst. Professors conducted a Training Program for Young Faculty (Think – Pair – Share) at VNRVJIET, Hyderabad on 22nd October 2016 - Collaborative active learning methodology.

M. Jyothi & S.Sangeetha, Asst.Professors conducted a Training Program on Moodle in Department of Civil Engineering

PROGRAMS ORGANIZED:

Two-day National Conference on "Modern Concretes Driving Profits and Sustainability" was organized by Dr. B. Narendra Kumar, Professor during 26th August – 27th August, 2016.

Inaugural of National Conference

- Dr. P. Srinivasa Rao vice Principal, JNTUH, Dr. P. Rathish Kumar NIT Warangal Dr. P. N. K. Rao, BITS Hyderabad Dr.G.Rajesh Kumar Professor, NIT Warangal were the keynote Speakers.
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- A two day Training Program on ETABS was organized at VNR VJIET,on 28th-29th June, 2017
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- K. Praveen, L&T, Chennai conducted a work shop on Training Program on MX Road Software for 2 days at VNR VJIET, Hyderabad.

FACULTY ACHIEVEMENTS

- J Y V Shiva Bhushan, Assistant Professor, secured 88% in Geo-technical engineering laboratory, NPTEL Course.
- G. Anuja, Assistant Professor, secured 93% in Reinforced Concrete Road Bridges, NPTEL Course.
- V. Ramya Krishna, Assistant Professor ,secured 88% in Foundation Design, NPTEL Course.
- A. Jyothirmai, Assistant Professor, secured 97% in Design of reinforced concrete structures, NPTEL Course.
- Dr. B D V Chandra Mohan Rao, Professor , secured 94% in Structural Analysis - I, NPTEL Course.

STUDENT CORNER

INDUSTRIAL VISITS:

- Students of 4th B. Tech visited PEBS Pennar Engineered Building Systems Ltd, Hyderabad on 29th September 2016.
- Students of 4th B. Tech visited Indian National Centre for Ocean Information Services (INCOIS) Hyderabad on 22nd October 2016 to learn about earthquake and tsunami monitoring activities.
- Students of 2nd B. Tech visited Survey of India, Uppal, Hyderabad on 20th February 2017. Students of 3rd B. Tech visited a Water Treatment Plant and a Hydro Power Project at Singur on 11th March 2017
- Students of 4th B. Tech visited TS Engineering Research Labs, Himayath Sagar on 27th March 2017

Students at Himayath Sagar

Students at Hydro Power Project, Singur

STUDENT ACHIEVEMENTS

- B.Dinesh and K Harshith of 3rd B. Tech Civil Engineering bagged the first prize in quiz conducted by the Institute of Engineers on Engineers Day, 14th September 2016.

- B.Manideep of 4th B. Tech Civil Engineering won first place in dance competition at IIT Hyderabad.

- 2nd year Civil Engineering Students stood in third place in a QUIZ Competition conducted by “Institution of Engineers” on 'World Water day' on 22nd March, 2017

Receiving award at Institution of Engineers

- 20 students secured good GATE 2017 Ranks.

- Mr.Pranay secured 636 rank in GATE and was offered a job at IOCL with 12 Lakhs package.

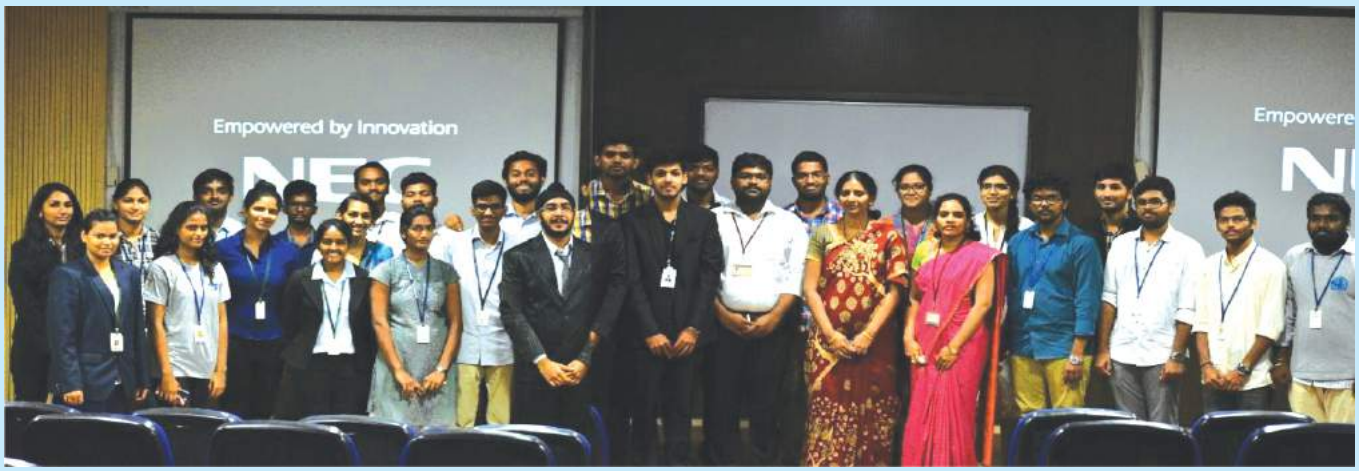
Mr. Sai Pranay (Alumni)

- Manjot Singh Gandhi and Pushyamithra of 2nd B. Tech Civil Engineering demonstrated a model “Effects of Hydraulic Jump” in Open House and were awarded with Cash Prize of Rs. 5000 each.

- Manjot Singh Gandhi secured 92% in Project planning and control and 94% in Design of reinforced concrete structures, NPTEL Courses.

- Gandhe Pushyamithra secured 97% in Structural Analysis - I, NPTEL Course.

Civil Engineering Association (CEA) & Indian Concrete Institute (ICI) Student chapter:



Civil Engineering Association

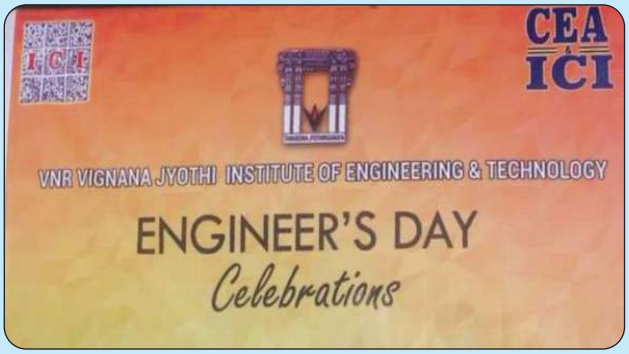
CEA is a student chapter of Civil Engineering Department of VNRVJIET. Department also has registered student chapters with

- Indian Concrete Institute (ICI)
- Indian Green Building Council (IGBC)
- Institute of Engineers (IE)
- Indian society of Technical Education (ISTE)

ORIENTATION: The freshers joining the department are introduced to the chapter through various interesting activities.

Student Chapter Orientation

ENGINEERS DAY: The celebration of engineer's day is done every year by the CEA student chapter with the cooperation of the department.



Engineers Day Celebration

Republic Day Celebrations

REPUBLIC DAY: On republic day there will be a march parade done by all the student chapters. Last January the theme was "Greed and Corruption the real estate weenie".

CONCRETE DAY: Concrete day is celebrated by the civil engineering department to mark the significance of concrete a revolutionary product.

Concrete Day Celebrations

Students at VIBHINN

DISTINGUISHED ALUMNI

- Mr. Rishi Thirupari of 2002 admitted batch has been sponsoring annual tution fee for one Civil Engineering student every year under " Rishi Thirupari Endowement Scholarship".
- Group of alumni of Civil Engineering Department of 2002 batch also extended their help in the name of "Helping Hands".
- 25 alumni of Civil Engineering Department are serving the society as entrepreneurs.
- Rohit Polavarapu of 2012 admitted batch has scored a CAT score of 99.94% in CAT 2016.
- 33 students got placed in various reputed companies.
- 30 students were pursuing their Higher Education in different Universities.

Mr. Rishi Thirupari

Mr. Rohit Polavarapu

TECHNICAL ARTICLES

One shot- Two birds!

RamuPenki, Assistant Professor

NEED FINDING:

Water is very essential for the human existence. There is an old proverb saying: many lived without love-but none without water. The good old proverb indicates how precious water is to the human existence.

Even the significant Vedas of Ancient Indian History have something very crucial to say about the water; 'Water is Life, Water is Food' ---- Yajurvaved . 'Oceans are the cradle of all living beings!' – Atharvaved . 'Water is a reliable remedy, water is curative, and water is a panacea or universal remedy for all aliments and diseases. The water will save you and free you from all inherited diseases' ---- Atharvaved . 'Water is brutal force and it requires wise people to handle it' ---- Mahabharata.

"In the world till date , a person got only one noble prize for his/her valuable contributions to the world for a single genre -but if one can find solution for the problem of water he can get two noble prizes i.e., both Technical and Peace.: Hence, **one shot – two birds!** Today, we are in such a state that 200 ml of the packaged water costs Rs 2/- because of its scarcity. Some of the countries i.e., United Arab Emirates is facing some serious water problems because of lack of fresh water in earth.

What is the problem or Need and why it is important to solve immediately?

In our country 6.3 crore of the population have no access to safe drinking water. This has been declared by the "WATER AID" organization on the occasion of WORLD WATER DAY. Regardless of improvements to drinking water in India, many other water sources are contaminated with both bio and chemical pollutants, and over 21% of the country's diseases are water-related. Furthermore, only 33% of the country has access to traditional sanitation.

In addition, water scarcity in India is expected to worsen as the overall population is expected to increase to 1.6 billion by year 2050. To that end, global water scarcity is expected to become a leading cause of national political conflict in the future, and the prognosis for India is no different.

Who has the problem or Need:

On the entire globe as a whole, 66.3 crore of the population have no facility for safe drinking water out of which 52.2 crore are from the rural areas. It has been declared that the most of the rural population with respect to non- availability of drinking water is in India. Victims of scarce water resources in India equal the entire population of Brittan.

These people are also the victims of deadly diseases like malaria, cholera, dengue, malnutrition etc. Due to increase in temperatures this year, farmers depending on their agricultural lands are getting more disappointed. It is also mentioned that the woman who walks miles far for drinking water might have to walk for more distance than earlier. India is one among the first 38% of the countries affected by variations of temperature and climatic conditions. The C.E.O of WATER AID V.K. MADHAVAN mentioned that 27 parts of our country are in danger of facing the drought conditions and the government has to look into this issue immediately.

Some of the real incidents:

Uddanam kidney problem : Uddanam , Srikakulam, Andhra Pradesh is one of the three regions in the world with highest concentration of chronic kidney diseases (CKD) as per the world health organization. In the last 20 years 20,000 people have died. This problem is due to excess percentage of silica, Phenol and mercury in water, making ipeople suffer fromCKD for the people who drink it.

Fluoride problem in Adilabad: Even as the Telangana State is yet to tackle the dreaded disease of fluorosis in Nalgonda district caused due to presence of alarming levels of fluoride in its ground water, there is more bad news for the State. In fact water samples in Adilabad turned out to be worse than that of Nalgonda followed by Ranga Reddy, Khammam and Medak districts respectively, says Dr. D.Raja Reddy, who had been working for containing the adverse impact of fluorosis on people through better nutrition with optimum intake of calcium, magnesium and Vitamin C.

IDEATION:

Existed Solutions for Water Problem:

A) Conversion of ocean water:

Distillation: -Most commonly used method for converting saline water to fresh water, saline water is boiled or evaporated, the vapours are condensed which gives fresh water.
Reverse osmosis: -Water is forced across a semi permeable membrane by mechanical force.
Electro dialysis: -Salt ions are removed from saline water under the impetus of electric current.
Demineralization: -Salts are removed from water through the use of ion exchangers.
Solar Evaporation: -Solar energy is utilized to convert saline water to fresh water.

B) Purification of existing drinking water or fresh water:

a) Removal of Fluorides:

1) Reverse Osmosis **Filtration, Activated Alumina Defluoridation Filter: -** These filters are used in locales where fluorosis is prevalent. They are relatively expensive (lowest 3000 rs /filter) and require frequent replacement, but do offer an option for home water filtration.

2) Distillation Filtration: - There are commercially available distillation filters that can be purchased to remove fluoride from water. On a related note: When looking at bottled water, keep in mind that 'distilled water' does not imply that a product is suitable for drinking as other undesirable impurities may be present.

b) Removal of Silica:

1) Lime softening: Lime softening is one of the most common methods for removing silica from water such as make up to cooling towers, make up to boilers or boiler blow down water. Lime softening utilizes the addition of lime (calcium hydroxide) to remove hardness (calcium carbonate and magnesium carbonate) ions by precipitation. Silica particles are absorbed in flakes of magnesium and calcium hydroxides. These flakes (floc) can then be sent to a clarifier or filter where the separated silica can be disposed. As the percentage of silica in the water changes, so must the percentages of chemicals that must be added. In many cases, heavy metals will be present in the sludge (settled floc) and will require the extra expense of disposal into a hazardous waste facility. Lime softening typically requires a fairly sizable capital investment and can be costly due to the quantity of chemicals used and disposal costs of large amounts of residuals produced, especially if hazardous waste facilities are needed.

2) Ion exchange: An exchange of ions between two electrolytes or between an electrolyte solution and a complex. In most cases, the term is used to denote the processes of purification, separation and decontamination of aqueous and other ion-containing solutions with solid polymeric or mineralic ion exchangers."

Ion exchange works very well for the removal of silica; however, the disadvantage of this process is that the resin exchangers need continual recharging and replacement, adding significant ongoing costs to the process. In addition, if there are heavy metals within the exchange resins with the silica, these concentrated ion metals usually do not pass the TCLP leachability test and must be disposed of in a hazardous classified landfill, adding further expense. **3) A simple, economical and efficient approach to silica removal:** Electro coagulation (EC) will successfully remove silica, heavy metals and other contaminants from aqueous solutions. With the use of clean electricity, electro coagulation efficiently removes a wide range of contaminants with a single system. The EC makes constituents in the water "separable." Heavy metals are converted from ion forms to oxide forms, allowing them to be disposed in a non-hazardous landfill.

Conclusion

Some of the countries banned songs at the time of bathing because people tend to waste more water while singing. Wars in the 20th century were fought over oil and if the water scenario tends to worsen, wars in the 21st century will be fought over water. "A lack of water is a key factor in encouraging terrorism, the Third World Water Forum in Kyoto has heard." Ben Sutherland BBC News, March 2003.

We as an individual should play our role not to waste the water. It can be drinking water or usage water. I hope this article has conceded the importance of water saving and methods use to generate safe water. I am doing my part to save the little I can, are you ready to do your part?

Acknowledgment : I thank the staff, Civil Engineering department VNR VJIET, for their support in this study and Special thanks to P. Anirudh, I.Reshma IV B. Tech Civil Engineering.

CONSERVING WATER WITH AGRICULTURAL HYDROGELS

R. Krishnakanth
IV/IV CIVIL

Agricultural hydrogels are synthetic polymers generally made from petroleum products. They absorb many times their weight in water, and can be distributed into dry regions in order to improve the soil's ability to absorb water. Learn how they're made and how they can be used.

Agricultural hydrogels can change the physical properties of soils by

- Increasing their capacity to hold water
- Reducing erosion and runoff
- Reduce frequency of irrigation
- Increase the efficiency of the water being used
- Increase soil permeability and infiltration
- Reduce the tendency of the soil to get compacted
- Help plant performance

The high cost of these hydrogels has been an inhibiting factor that has drastically affected their universal use. Unless costs are brought down, its use will get limited to government and other well funded organizations, leaving out the private farmers and agriculturists who can benefit from its use.

How Agricultural Hydrogels are Made
Hydrogel polymers are made from petroleum based products, but recent research has enable their manufacture using soy oil. These hydrogels are more biodegradable and therefore kinder to the environment.

Agricultural hydrogels are referred to as water retention granules because they swell to many times their original size when they come in contact with water. Two broad classes of hydrogels are soluble and insoluble. The soluble variety is used to reduce irrigation erosion in fields. The insoluble variety is used in gardens, nurseries and landscapes to reduce frequency of watering.

Hydrogels are polymers that are physically or chemically cross linked and can absorb large amounts of water while retaining their shape. They also do not dissolve with the ingress of water and the large swelling due to the water does not affect the mechanical properties of the hydrogel. Hydrogels can hold an amount of water that is many times its own weight .This characteristic helps it to store water which can include nutrients. This water is then released slowly negating the evaporation process. This is especially useful in arid lands.

Hydrogels commonly used in agriculture can absorb between 400 and 1500 grams of water for every gram of hydrogel. So using these hydrogels in places where post plantation irrigation has its limitations, the hydrogels can store large quantities of water and make it available to the plantation so that it has time to establish itself.

Hydrogels can be natural polymers, semi synthetic or synthetic polymers. The polymers used for agricultural purposes are the synthetic variety which consists of polyvinylalcohols and polyacrrylamides. The one disadvantage with synthetic polymers is that they may take up to six hours to complete hydration which is three times the time taken by natural polymers. The advantage of synthetic polymers is that they are less biodegradable and would last for a longer time.

The Use of Agricultural Hydrogels

Using hydrogels requires some elementary precautions like masks to prevent eye and skin irritation. A lot of care has to be taken in storing hydrogel, as their huge capacity to absorb water can cause an increase in weight.

Soils sometimes form semi hydrophobic crusts which allow the water to run off instead of being absorbed in the soil. The addition of hydrogels in the soil allows the water to percolate instead of running off and this retained moisture is then passed back to the soil over a period of time.

The use of agricultural hydrogels also allows damaged or unusable agricultural land to be reclaimed. When hydrogels are added to the surface of the soil the water holding capacity is increased and rainfall percolates the soil quite easily. Hydrogels also reduce nutrient loss from soils as runoff is prevented. In saline soils however hydrogels seem less effective.

If hydrogels are allowed to dry out they become less effective, so good irrigation practice is important to the longevity of the hydrogels. Hydrogels have been used for turf management for golf courses and athletic fields. It is also useful for fruit and vegetable production. It can be very easily be used to ensure forestry activities especially in remote areas where irrigation cannot be assured.

Hydrogels can be applied by either mixing with the soil or by spraying. While using the spray technique, hydrogels can be mixed with micro nutrients and pesticides.

BASIC METHODS OF WASTE MANAGEMENT

After the industrial revolution, waste management became an important and necessary function. Learn some of the main methods used in managing waste products today.

Waste management is the control of materials that have become redundant and therefore need to be discarded. The process includes collection, transportation, sorting, recycling, clearance, and disposal of waste materials. Waste management includes radioactive substances and other materials that are in a solid, liquid, or gaseous state, and their management techniques also differ from each other.

Waste management is normally concerned with the materials produced by actions of humans, and unless managed efficiently may have adverse effects on the environment and health of the community. It is an important and complex process due to the multiple varieties of waste produced by industry, each producing different types of materials that require special management techniques.

Techniques Of Waste Disposal
Landfills

Landfills, being simple and economical, are globally the most common system of waste disposal. It involves the burial of waste materials. Landfills that are not properly designed or managed may create several environmental hazards and diseases due to the dispersion of garbage by wind, the attraction of rats, and other similar reasons.

Landfills are normally developed in unused pits located at a distance from the developed areas so that its harmful effects can be avoided. The waste accumulated in the landfill is reduced in size by compaction to permit maximum storage of waste, and is enclosed to avoid rats or mice. Some landfills include systems for the extraction of gas that is used for the generation of electricity.

It is essential that the landfills do not pollute the surface water or the ground water, and this is ensured by lining the landfill, compaction of the upper layer, and selection of sites that are not subjected to floods. Leakage from landfill waste can be minimized by solidification with cement or asphalt.

Incineration

After landfills, incineration is the most widely used method to eliminate the solid, liquid, and gaseous waste. Hazardous air contaminants are released by the burning of waste, due to which there are serious public concerns regarding environmental pollution. The combustion is generally not complete in an incinerator, due to which the gaseous emissions contain micro-pollutants that are not safe for the area near the incinerator. In countries where adequate space is not available for landfills, incineration is more practicable.

Recycling

Recycling is probably the most ideal way of managing waste, but it can be costly and difficult to implement. There are numerous products that can be recycled instead of thrown away including aluminum and steel cans, glass bottles, paper, and scrap metal. It is becoming more popular to complete this process and successful marketing is making recycled materials more likely to be purchased. In the long run, recycling can save money and resources as well as keep the environment cleaner.

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Your feedback and other inquiries are welcome. If you plan to be in Hyderabad, please let us know. We would be happy to personally welcome you back to campus and to the department!

Sincerely,

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“To the optimist, the glass is half full. To the pessimist,the glass is half empty.To the engineer, the glass is twice as big as it needs to be.”

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