CII-TRIVENI WATER INSTITUTE

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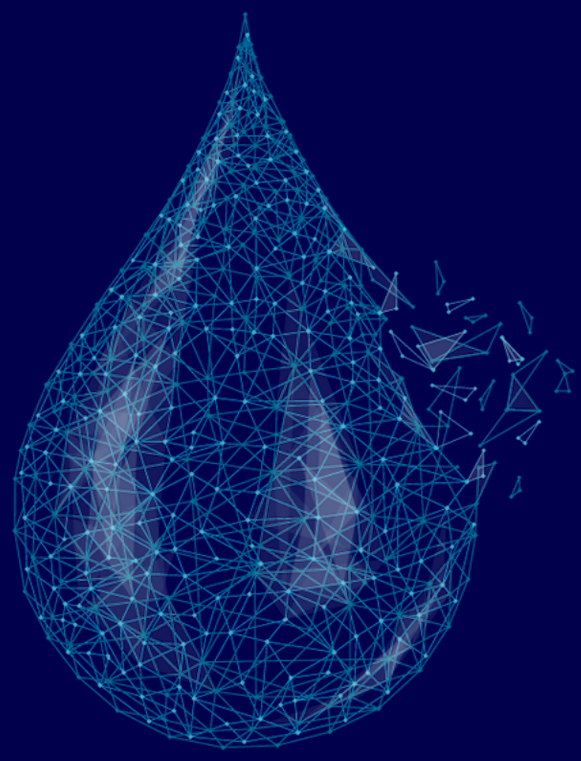
WATER-TECH 2023

"Transforming Water Management with Cutting-Edge Technology: Within & Beyond"

10-11 AUGUST 2023: NEW DELHI



A RETROSPECT

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CONTENT

About the Conference

The expansion of scientific knowledge and technological applications can impact the way water and wastewater are managed to cater to human, economic, and environmental needs. Hence, the adoption of new and cutting-edge technologies, digital interventions with a focus on sustainability assumes key importance.

Against this backdrop, **CII's Water-Tech Summit 2023**, centered on the theme ***"Transforming Water Management with Cutting-Edge Technology: Within & Beyond,"*** was organized as one of the B20 events on 10-11 August 2023, in New Delhi. The two-day conference witnessed rich exchange of knowledge and high-quality presentations from speakers of national and international repute. **Over 35 speakers, including representation from G20 countries – the UK, USA, European Union (Denmark, Netherlands and Sweden)**, shared their perspectives and good practices to tackle critical issues related to water management. The conference was attended by over 300 participants.

Six sessions focusing on various aspects of the use of technology in water management brought out excellent insights on leveraging technological advancements in water and wastewater management along with people's participation.

Inaugural Session

(L-R): Dr Parveen Arora, Head – Water Technologies Cell, Department of Science & Technology, Ministry of Science and Technology; Dr Ajay Popat, Conference Chairman & Chair, Core group on New and Cutting-Edge Technologies for Wastewater Management - CII National Committee on Water & President, Ion Exchange (India) Limited; Mr G Asok Kumar, Director General, NMCG, Ministry of Jal Shakti and Dr Kapil Narula, CEO and Executive Director, CII – Water Institute

1. INAUGURAL SESSION

1.1. Opening remarks and Context Setting by Dr Ajay Popat, Conference Chairman & Chair, Core group on New and Cutting-Edge Technologies for Wastewater Management, CII National Committee on Water & President, Ion Exchange (India) Limited

Dr Ajay Popat opened the session and highlighted the critical role of technology for treatment and conservation of scarce water resources. In this context, he applauded the efforts of industry in embarking upon circular economy, leveraging technological advancement and demonstrating holistic management of water & wastewater. Dr Popat observed that it is important that industry should take effective management of water resources seriously as its variability and availability can compromise their competitiveness in every aspect of their operation.

1.2. Special Address by Mr G Asok Kumar, Director General, NMCG, Ministry of Jal Shakti

Mr G Asok Kumar in his inaugural address urged industry to emerge as a self-regulator in managing the water resources. Stressing on the 3 E's- Cost Effective, Energy Efficient and Environment Friendly technologies for water and wastewater management, Mr Kumar, urged the industry to demonstrate a sense of proactiveness in deploying these solutions in their industrial operation.

Mr Kumar also underlined the availability of reliable data without any human intervention for enabling improved decision making. Data generated from effective metering and monitoring of water extraction and usage at various levels can help in strengthening water use efficiency across sectors, said Mr Kumar. He highlighted the critical role of advanced technology which is rendering feasible solutions in water treatment and management and urged industry to adopt technologies for judicious and efficient water management.

1.3. Address by Dr Parveen Arora, Head – Water Technologies Cell, Department of Science & Technology, Ministry of Science and Technology

Dr Parveen Arora, while highlighting various challenges encountered with respect to water management emphasized for identification, integration and innovation on existing technologies to address water related challenges. Providing a snapshot of various initiatives undertaken by the DST, Water Technology Cell, he opined for active participation of industry in taking forward the agenda of water security for the country. He urged the industry to explore convergent solutions to solve pretreatment, treatment and post treatment challenges encountered for effluent management.

1.4. Concluding Remarks & Vote of Thanks **by Dr Kapil Narula, CEO and Executive Director, CII – Water Institute**

Dr Narula stressed the need to look at both water quality and quantity in an integrated manner and called for participation of all stakeholders in making water a sustainable resource.

Session 1: Disruptive Technologies for Water and Wastewater Management

(L-R): Mr Turbaashu Bhattacharya, Business Unit Head, Roserve Enviro Pvt Ltd; Mr Rohit Nair, Dy GM – Technical Service Industrial Chemical Division, Ion Exchange (India) Ltd; Mr Deeraj Kumar, Director Marketing, Nalco Water, An Ecolab Company; Mr Kandarp Kishore Shivpuri, Counsellor, CII – Water Institute; Mr Amit Kulkarni, Lead – Control and Automation, Digital Transformation in Water and Waste Solutions, Thermax Limited; Ms Debra Martin, Acting Deputy Senior Commercial Officer, U.S. Commercial Service, Embassy of the United States of America and Mr Sarvesh Ashok, Manager (Marketing), Gradiant, USA

2. DISRUPTIVE TECHNOLOGIES FOR WATER AND WASTEWATER MANAGEMENT

2.1. Moderator

- Mr Kandarp Kishore Shivpuri, Counsellor, CII – Water Institute

2.2. Speakers

- Ms Debra Martin, Acting Deputy Senior Commercial Officer, U.S. Commercial Service, Embassy of the United States of America
- Mr Deeraj Kumar, Director Marketing, Nalco Water, An Ecolab Company
- Mr Amit Kulkarni, Lead – Control and Automation, Digital Transformation in Water and Waste Solutions, Thermax Limited

- Mr Rohit Nair, Dy GM, Technical Service Industrial Chemical Division, Ion Exchange (India) Ltd
- Mr Turbaashu Bhattacharya, Business Unit Head, Roserve Enviro Pvt Ltd
- Mr Sarvesh Ashok, Manager (Marketing), Gradiant, USA

2.3. Focus / Objective

The session highlighted wastewater as “renewable water” and examined the use of energy-efficient, cost-effective digital technologies for water and wastewater management.

2.4. Discussions

1. Digital Transformation in Water Solutions towards IoT and digital innovations are revolutionizing water management, covering water treatment, sewage treatment, industrial effluent recycling, ZLD, and desalination units. IoT enhanced system offers insights into optimal system changes and integration, improving efficiency and resource utilization in wastewater management.
2. Integrated Wastewater management combines IoT, analytics, and human expertise for solutions. Industries are increasingly embracing digital technologies and taking responsibility for wastewater management through various innovations like compact ETP (Effluent Treatment Plants), STP (Sewage Treatment Plants), PTRO (Pollution Treatment and Resource Recovery Operations), and evaporation technologies. These innovations are aimed at not only improving wastewater treatment but also reducing capital expenditures (CAPEX) associated with traditional wastewater management methods.
3. Digital tools are now available to optimize chemical dosing, frequency of auto-backwash in RO units which enable enhancing resource efficiency through predictive forecasting and generate actionable insights. Innovations in brine management systems help to improve water and resource (salt) recovery in existing desalination units.
4. While technology streamlines task and enhances safety, the role of human intelligence remains essential for effective decision-making and problem-solving alongside its implementation.

5. High-end technology demand is rising in India, with the India-US bilateral trade partnership exceeding $190 billion. US firms offer technology transfers in AI and data analytics.

KEY MESSAGES / TAKEAWAYS

1. Climate change, rising costs, regulations and social impact are necessitating the need for digital water solutions/ technologies.
2. Application of digitalization and IoT can enable enhancement of water use efficiency, but role of human intelligence cannot be replaced.
3. Technologies for recovery of water as well as other value-added products such as salts is the way forward.
4. The technology developed must be user friendly and the data security must be taken care of. These two are the most important for transforming digitally.
5. US – India technology partnership is playing an important role in propagating application of new and emerging technologies in India.

Session 2: Emerging Contaminants: Technologies for Measuring, Monitoring & Controlling

(L-R): Mr KVSN Raju, President, Elico Group; Dr N Anbananthan, Executive Vice President, Ion Exchange (India) Ltd; Ms Shilpa Nischal, Principal Counsellor, CII – Water Institute; Prof. Eelco Van Beek, Senior Strategic Advisor, Indo-Dutch Water Partnership and Mr Niranjan Sinha, Business Development Head – India, Chart Industries

3. EMERGING CONTAMINANTS: TECHNOLOGIES FOR MEASURING, MONITORING & CONTROLLING

3.1. Moderator

- Ms Shilpa Nischal, Principal Counsellor, CII – Water Institute

3.2. Speakers

- Prof. Ligy Philip, Dean, Planning Nita and KG Ganapathi Chair Professor, Department of Civil Engineering, Indian Institute of Technology, Madras (Over Virtual Platform)
- Mr KVSN Raju, President, Elico Group
- Prof. Eelco Van Beek, Senior Strategic Advisor, Indo-Dutch Water Partnership

- Dr N Anbananthan, Executive Vice President, Ion Exchange (India) Ltd.
- Mr Niranjan Sinha, Business Development Head – India, Chart Industries

3.3. Focus / Objective

The session discussed the issue of emerging pollutants in water, current regulations in response to control these chemicals and potential technological solutions to tackle the challenges posed by Emerging Contaminants (ECs) to both human health and the environment.

3.4. Discussions

1. Monitoring for two Indian rivers under the UK-India project - the Cauvery and Yamuna –revealed the presence of over 100 pharmaceutical active compounds. This monitoring also highlighted a substantial contribution of pollutant load from tributaries, notable seasonal variations in Pharmaceuticals and Personal Care Products (PPCPs) distribution, and the accumulation of PPCPs in riverbeds.
2. Numerous treatment options, encompassing both conventional and advanced technologies, have been explored for removing ECs from water sources. Conventional and biological treatments alone are insufficient to eliminate ECs and can be enhanced through methods such as adsorption, advanced oxidation processes, and engineered natural systems, achieving higher removal rates for pharmaceuticals. It is imperative to assess and characterize the efficiency of pharmaceutical removal during wastewater treatment processes, considering tailored solutions.
3. Standard analytical techniques employed for measurement of ECs are highly sensitive, accurate, and specific, but they do have limitations, particularly in terms of portability and real-time monitoring. Emerging techniques such as electrochemical and optical methods based on sensors and biosensors are being utilized for on-site and real-time evaluations and continue to be subjects of ongoing research.
4. The Netherlands faces water quality challenges stemming from nutrients, eutrophication, emerging contaminants, microplastics, among others. The country-initiated water quality management in 1970 and has 100 percent sewage and water treatment coverage. Water quality monitoring in the Netherlands occurs both at the national and water board levels, with water

boards monitoring the quality at wastewater treatment plant entrances and tracking incoming contaminants. The continuous monitoring also contributes to the generation of extensive data, aiding in the analysis of public health status. In addition to treatment measures, water boards have adopted advanced policies for recycling, reusing, and promoting a circular economy. These boards are net energy producers and reduce greenhouse gas emissions from their processes, all while maintaining user charges at an acceptable level.

5. Regulatory frameworks in the European Union (EU) and the USA are addressing Per- and Polyfluoroalkyl Substances (PFAS) in drinking water. Recent US EPA Interim Health Advisory Levels issued on June 15, 2022, have set stricter limits for PFAS in drinking water, with Perfluorooctanoic Acid (PFOA) limited to 0.004 ppt (ng/L) and Perfluorooctane Sulfonic Acid (PFOS) to 0.02 ppt, which are more stringent than the 70 ng/L (ppt) total recommended by the EPA in 2016. Presently, “GenX Chemicals” [hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt] are being considered as a replacement for PFOS.
6. Several technologies have demonstrated effectiveness in controlling PFAS, including granular activated carbon, ion exchange resins, and high-pressure membrane systems.
7. In India EC are not regulated in environmental, water quality and wastewater discharge regulations. Not only that, the water utilities are also not designed to treat EC. This necessitates to strengthen scientific knowledge and adopt appropriate technological and policy approaches to monitor emerging pollutants in water resources and wastewater, assess their potential human health and environmental risks, and prevent and control their disposal to water resources and the environment.

KEY MESSAGES / TAKEAWAYS

1. There is an urgent need to strengthen scientific knowledge and adopt appropriate technological and policy approaches to monitor emerging pollutants in water resources and wastewater, assess their potential human health and environmental risks, and prevent and control their disposal to water resources and the environment.
2. Significant investment in research, integration of technology with data analytics, along with comprehensive approach and capacity budling is imperative for undertaking rigorous analysis of Emerging Contaminants.
3. Handling PFAS would require collective efforts from various stakeholders- individuals, health professionals, business, and policy makers for undertaking analysis of concentration of PFAS chemicals, limiting, phasing out or banning its use and developing healthier alternatives.
4. Advancing policy measures and leveraging cross learning from other countries can prepare the country to embark on sustainable water quality management.

Session 3: Financial Sustainability and Successful Approaches/ People Participation for Water Supply and Wastewater Management

(L-R): Mr Søren Nørrelund Kannik-Marquardsen, Commercial Counsellor, Head of the Trade Council New Delhi & Regional Coordinator South Asia, Embassy of Denmark; Mr Madhav Kejriwal, Whole Time Director, Electrosteel Castings Limited; Dr Kapil Narula, CEO and Executive Director, CII – Water Institute; Dr M Dhinadhayalan, Advisor, CPHEEO, Ministry of Housing and Urban Affairs, Government of India; Mr A Naushad, Retd. Suptd. Engineer, Kerala Water Authority; Mr Roop Mukherjee, Technical Expert – Wastewater and NRW & Entrepreneur, Water360

4. FINANCIAL SUSTAINABILITY AND SUCCESSFUL APPROACHES/PEOPLE PARTICIPATION FOR WATER SUPPLY AND WASTEWATER MANAGEMENT

4.1. Moderator

- Dr Kapil Narula, CEO and Executive Director, CII – Water Institute

4.2. Speakers

- Mr Madhav Kejriwal, Whole Time Director, Electrosteel Castings Limited
- Dr M Dhinadhayalan, Advisor, CPHEEO, Ministry of Housing and Urban Affairs, Government of India
- Mr Søren Nørrelund Kannik-Marquardsen, Commercial Counsellor, Head

of the Trade Council New Delhi & Regional Coordinator South Asia, Embassy of Denmark

- Mr Roop Mukherjee, Technical Expert – Wastewater and NRW & Entrepreneur, Water360
- Mr A Naushad, Retd. Suptd. Engineer, Kerala Water Authority

4.3. Focus / Objective

To discuss crucial aspects of water supply, sustainability, and management along with people's participation and successful approaches for Water Supply and Wastewater Management implemented in India and globally.

4.4. Discussions

1. The significance of non-revenue water (NRW) reduction was highlighted. Asset management, digital mapping, and raising community awareness were suggested as essential steps to tackle NRW.
2. Dr. M Dhinadhayalan's Advisor, CPHEEO, Ministry of Housing and Urban Affairs, Government of India shared the progress made in the water supply and management through programs like AMRUT, 24x7 water supply in cities, focus on reducing NRW and promoting water reuse. He mentioned the new manual on water supply soon to be released in October 2023 aims to support all state government and UTs to upgrade their water supply systems to 24X7 by leveraging information technologies. The new manual will cover among others GIS based decentralized planning, use of modern digital technologies, financial recovery and management.
3. The Danish holistic approach towards sustainable water management with use of technology and dedicated efforts of its people towards water conserving has helped in reduction of water consumption. Denmark's high taxation on water has helped bringing about a behavioral change in the citizens towards conserving water and addressing leakages, leading to a reduction of NRW to 8 percent. Denmark's innovative approach refilling the aquifers by separating rainwater collection for treatment and aquifer recharge was discussed.
4. The need for improving water use efficiency in agriculture, building, industry etc. through use of water-saving technologies and smart water

management was emphasized. Examples of smart meter installations and efficient plumbing fixtures in Kerala for improving water efficiency were shared.

5. For the maintenance and management of water assets both old and new - mapping of underground assets through GIS/CAD platforms, decentralized approach and planning, availability of accurate data, involvement of local people in operation and maintenance of assets are important for asset maintenance and financial sustainability of the project.
6. To tackle the issues in an integrated manner, it is important that there should be a common nodal point for water. All Urban Water & Wastewater could be under a common Ministry. All water utilities in the State to be headed by a single entity.

KEY MESSAGES / TAKEAWAYS

1. Improving financial sustainability for 24X7 water supply would require enhancing the quality of water supply meeting water quality standards IS 10500:2012 which will lead to willingness to pay by the consumers. Further 100 percent metering will help in increased revenue generation.
2. Collection of data through efficient managing and monitoring essential for bringing improvements in the water supply and quality systems.
3. NRW monitoring and reduction measures using meters and communication technologies will improve revenue and financial sustainability of water supply systems.
4. Operation and Management of water supply assets would require comprehensive monitoring and rejuvenation of fresh water, upgradation of water supply system to a common performance standard, private and stakeholder participation and involvement of local people in operation and management of the water supply system.

Session 4: Digital – IoT Based Solutions

(L-R): Ms Nishita Parte, Digital CoE - India Leader, Veolia Water Technologies & Solutions; Mr Ajay Popat, Conference Chairman & President, Ion Exchange (India) Limited; Mr Prateek Khattri, Lead Business Development, Siemens Ltd., India; Mr Manmohan Prajapat, Consultant, ITRON India Private Limited

5. DIGITAL – IOT BASED SOLUTIONS

5.1. Moderator

- Mr Ajay Popat, Conference Chairman & President, Ion Exchange (India) Limited

5.2. Speakers

- Mr Prateek Khattri, Lead Business Development, Siemens Ltd., India
- Ms Nishita Parte, Digital CoE - India Leader, Veolia Water Technologies & Solutions
- Mr Manmohan Prajapat, Consultant, ITRON India Private Limited
- Mr Tony Gwynne, Leakage Solutions Sales Director, Ovarro – UK (Over Virtual Platform)

5.3. Focus / Objective

The session deliberated on the role of digital technologies and data analytics in improving water distribution, monitoring, and governance.

5.4. Discussions

1. Impacts of climate change are prominently seen on world's water resources and non-revenue Water (NRW) is amongst the major challenges for efficient water management. Digital tools such as "Digital Twin" which integrates Civil, Mechanical & Electrical aspects of a water distribution system with hydraulic modelling enables data analysis in addition to collection and organization of data. Further, collaboration is essential for leveraging the potential of digitalization.
2. Digital IoT solutions should be applied for quality improvement, energy savings, cost efficiency and sustainability. Transparency (in data collection) to build resilience through applying AI ML for predictive maintenance would enable attaining sustainability (Net Water Positive). Industry 5.0 should focus on well-being and value creation for the society.
3. The common challenges in municipal water supply systems are lack of clarity, continuous degradation and missing components in network operation. Leveraging power of digital infrastructure (sensors, measurement devices) for maximizing data collection across water distribution network holds the key for enhancing efficiency. Updating the network changes in the digital platform is imperative for better planning using decision support systems.
4. In addition to installation of digital platforms (dashboards) for data collection, trend analysis, both spatially and temporally, is need of the hour to enable identification of leakages and losses. Optimization in installing data loggers can help maximize efficiency with minimum inputs.
5. The digital intervention makes a big difference in recycling of industrial & municipal effluents by enhancing performance of membrane systems and thereby resulting in increased savings in energy and chemical consumptions.

KEY MESSAGES / TAKEAWAYS

1. Technology at ground level (sensors, loggers, transmitters) are important parts of system architecture in addition to data analytics and machine learning.
2. Integration of hydraulic models into analytical models for NRW reduction is very important.
3. Inclusion of KPI monitoring in dashboards for water network monitoring increases transparency.
4. Use of data analytics helps to save water, improve asset life, reduce downtime and avoid wastage of not only water, but also energy and chemicals.
5. Skill development has an important role to play in ensuring success of digital transformation in water supply networks.
6. All components of a network- loggers, data collection, analytical framework should be included during planning of the project, to achieve maximum benefits.
7. Need of the hour is technology integration with a focus on sustainability to create value for society.

Session 5: Waste to Wealth: Good Practices

(L-R): Ms Aditi Haksar, Counsellor – Head Projects, CII Water Institute; Mr Sanjeev Kumar Jha, Executive in Charge – Water & Wastewater Services, TATA Steel Utilities and Infrastructure Services Limited; Mr Sanjay Gupta, Senior Counsellor, CII Water Institute; Mr Mehul Chawla, Business Leader Heavy & Managed, Operations India Nalco Water, An Ecolab Company; Mr Madhusudan Joshi, Manager Technical Support, Hydranautics – A Nitto Group Company

6. WASTE TO WEALTH: GOOD PRACTICES

6.1. Moderator

- Mr Sanjay Gupta, Senior Counsellor, CII Water Institute

6.2. Speakers

- Ms Aditi Haksar, Counsellor – Head Projects, CII Water Institute
- Mr Mehul Chawla, Business Leader Heavy & Managed, Operations India Nalco Water, An Ecolab Company
- Ms Rupali Deshmukh, Country Manager (INDIA), Business Development and Marketing, IVL Swedish Environmental Research Institute (Over Virtual Platform)
- Mr Sanjeev Kumar Jha, Executive in Charge – Water & Wastewater Services, TATA Steel Utilities and Infrastructure Services Limited

- Mr Madhusudan Joshi, Manager Technical Support, Hydranautics – A Nitto Group Company

6.3. Focus / Objective

To discuss innovative approaches and technological innovations for effective water and wastewater management for industries and communities.

6.4. Discussions

1. NITI Aayog in association with CII Water Institute has recently published "Guidelines on achieving Water Neutrality for Indian Industry". The essence and underlying principles for the prescribed guidelines were presented at the forum, to enable appropriation of practices and measures for an improved water scenario, considering both water resource availability and water quality.
2. Optimization of water and energy management together is critical, given that a substantial portion of manufacturing energy consumption is water driven. Successful water conservation strategies by Ecolab's efforts in Singapore and India, were presented.
3. Sweden's progressive approach to wastewater management, treating treatment plants as production facilities, was highlighted. The Henriksdal Wastewater Treatment Process was showcased as an efficient and innovative example. The Swedish Water Innovation Centre's role in driving research projects of national and international significance was emphasized. Approaches of IVL Swedish Environmental Research Institute in tackling environmental challenges were discussed.
4. JUSCO's initiative in water and wastewater management and successful reduction in river water intake through effective wastewater management was presented. Community engagement and awareness programs were conducted to promote responsible water usage. The initiative has led to a substantial reduction in river water intake and significant cost savings.
5. Importance of innovation and introduction of three impactful products developed by Nitto Hydranautics were presented. These innovations have led to improved water treatment efficiency, reduced energy consumption in evaporators, and enhanced RO recovery in the textile industry. The use of Ultra High-Pressure Membranes resulted in a notable operational cost reduction of 30%.

Session 6: Dealing With Residuals From Water and Wastewater Treatments

(L-R): Dr Raman Sharma, Principal Scientist / AcSIR Faculty, CSIR-NEERI; Dr Kapil Narula, CEO and Executive Director, CII – Water Institute and Mr Dhiren Desai, Head – Solutions, Eurotec Engineering Corporation

7. DEALING WITH RESIDUALS FROM WATER AND WASTEWATER TREATMENTS

7.1. Moderator

- Dr Kapil Narula, CEO and Executive Director, CII – Water Institute

7.2. Speakers

- Mr Marcus Heincke, Business Development Manager, Primozone Production AB (Over Virtual Platform)
- Ms Annemiek Smits, Corporate Partnerships Manager – (textiles, leather and cotton), Solidaridad (Netherlands) (Over Virtual Platform)
- Dr Raman Sharma, Principal Scientist / AcSIR Faculty, CSIR-NEERI
- Mr Dhiren Desai, Head – Solutions, Eurotec Engineering Corporation
- Ms Ulla Chowdhury, Director & Founder, Aqua-Q (Over Virtual Platform)

7.3. Focus / Objective

The session focused on management of waste from water treatment systems through the application of innovative technologies.

7.4. Discussions

1. In hard to abate sectors such as tanneries, safe use of chemicals and greener technologies would help in eliminating hazardous wastes from manufacturing operations while decentralized wastewater treatment would enable segregating hazardous sludge/salt which could be explored for reutilization across different sectors appropriately.
2. Existing solid wastes in disposal facilities, including legacy wastes, needs to be seen as a resource, where recovery of energy, oil, solvents or metals can be achieved through application of appropriate technologies. The recovered resources such as spent acid, oil, etc. could be reutilized while the waste from these recovery processes can be disposed off in secured landfills after stabilization through chemical fixation, encapsulation & solidification. Further, leachability of heavy metals should be taken into account during disposal of wastes in landfills.
3. Managing RO rejects from wastewater recycling plants, which have high TDS concentration is an energy intensive process using evaporators and dryers. An innovative technology using heat pump and waste heat from operations to operate the evaporators claims to significantly reduce the energy consumption for wastewater recycling as well as the fuel usage for heat generation.
4. Residuals from many industrial sectors as well as from municipal STPs contain contaminants of emerging concern such as pharmaceutical residues, pathogens, and nutrients. Real-time monitoring in treated wastewater and disinfection with ozone has potential to enhance use of treated wastewater in various applications including aquaculture. Ozone, unlike other methods of disinfection, damages the cell wall of microbes thereby eliminating potential for reactivation.

KEY MESSAGES / TAKEAWAYS

1. Segregation of wastewater from critically polluting unit operations in tanneries (such as high TDS concentration raw high washing effluent) can help reduce salt loads at ETP.
2. Use of sludge from wastewater treatment can be reutilized for applications such as paver blocks but leachability of heavy metals should be taken into account.
3. DSIIDC is proposing a centralized TSDF for handling hazardous wastes from CETPs for safe disposal and if possible, recovery from the hazardous waste and legacy wastes.
4. Waste heat recovery systems based on heat-pump concept has potential to reduce energy in wastewater treatment as well as replacing low-capacity boilers in some industries.
5. Real time monitoring of treated wastewater for contaminants of emerging concern such as pharmaceutical residues is very important prior to discharge or reuse of treated wastewater.
6. Ozone treatment has the potential to remove microbiological contamination as well as pharmaceutical residues from water.

Glimpses of Event

Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society, through advisory and consultative processes.

For more than 125 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. With its extensive network across the country and the world, CII serves as a reference point for Indian industry and the international business community.

As India strategizes for the next 25 years to India@100, Indian industry must scale the competitiveness ladder to drive growth. CII, with the Theme for 2023-24 as **'Towards a Competitive and Sustainable India@100: Growth, Inclusiveness, Globalisation, Building Trust'** has prioritized 6 action themes that will catalyze the journey of the country towards the vision of India@100.

CII-TRIVENI
WATER INSTITUTE

One among CII's 10 acclaimed Centres of Excellence, CII- Water Institute, (CII-WI), is a unique institution which works exclusively on water and wastewater management. Established in 2012, the institute works closely with the Government, Industry and Civil Society on providing integrated solutions to various water related challenges.

Key services rendered by the Institute include comprehensive water audits, hydrological evaluations for watershed level planning using state-of-the-art tools and techniques, trainings, capacity building and outreach activities.

Vision

To enable India, make substantial progress towards achieving water security.

Core Purpose

The purpose is to transform water conservation and management practices in India by changing the mind-set and behaviour of stakeholders resulting in more effective and sustainable water management practices at the grassroots level.

The Mantosh Sondhi Centre
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