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पेयजल एवं स्वच्छता विभाग
जल शक्ति मंत्रालय
भारत सरकार

DEPARTMENT OF DRINKING WATER AND SANITATION
MINISTRY OF JAL SHAKTI
GOVERNMENT OF INDIA



‘The Future of Liquid Waste Management Amidst COVID-19: What lies ahead?’

Report of
High Level Webinar
organized by

India Water Foundation

In collaboration with

United Nations Environment Programme



October 23, 2020, 15:00-17:30 Hrs (IST)

The Future of Liquid Waste Management



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Acknowledgement



Figure 1 <https://www.bywaters.co.uk/services/recover/clinical-waste>

India Water Foundation would like to thank United Nations Environment Programme for collaborating with us for this high-level webinar. We record deep appreciation and gratitude to the Department of Science and Technology, Government of India for their support and encouragement. Also, Ministry of Jalshakti, Government of India and Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Government of India for supporting us. I also thank my colleague Shweta Tyagi and Mr. Jitendra Sharma from UNEP for their support in making of this report.

Dr. Arvind Kumar

President

India Water Foundation



Figure 2 <http://newvisionbusiness.com/5-components-of-a-liquid-waste-disposal-service/>

Introduction

The sudden onset of the COVID-19 pandemic in early 2020 imposed massive health and economic burdens on communities around the world, and affected every sector of society, including the wastewater sector. Among all, the category of Bio medical waste, liquid waste poses a serious threat to human health and the environment because of their ability to enter watersheds, pollute ground water, and drinking water when improperly handled and disposed. Recent studies in Australia, France, the Netherlands, and the United States reported that the Ribonucleic acid (RNA) of the SARS-CoV-2 virus that causes COVID-19 was successfully detected in wastewater. Raw sewage and partially treated wastewater is a potential vehicle for COVID-19 spread for example, in areas where sanitation is poor, or where communities are exposed to open-sewers and grey water. The surge in biomedical waste could soon overwhelm countries installed capacity to treat it, which is around 840 tonnes daily and spread over more than 195 (200 under construction) common biomedical waste treatment facilities (CBWTFs). The UN Basel Convention's Technical Guidelines on the Environmentally Sound Management of Biomedical and Healthcare Wastes, includes information and practical aspects of waste management useful for authorities seeking to minimize hazards to human health and the environment.



To deliberate on the same and come up with tangible concrete outcomes and recommendations India Water Foundation in collaboration with United Nations Environment Programme and supported by the Ministry of Science and Technology, Government of India, Ministry of Jalshakti, Government of India and Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Government of India organized a high-level webinar on “The Future of Liquid Waste Management amidst COVID-19: What lies ahead” on 23rd October 2020 at 3 PM (IST) onwards. The objective of the webinar was contributing to the holistic understanding on various facets of liquid waste management in the context of COVID-19. Effective waste management to scale up innovative solutions through sustainable approaches with a mandate to reduce, recycle and rethink solutions & prioritize action at source rather than on downstream pathways was deliberated and discussed.

Welcome Address

Dr. Arvind Kumar, President, India Water Foundation

Dr. Kumar welcomed all the dignitaries and participants and gave an introduction about the webinar highlighting the need for customized solutions for waste management in clean & green way through integrated systems approach. He said bio-medical waste is seen as a vector for the transmission of the virus, a considerable threat to not only the medical fraternity but communities as well.

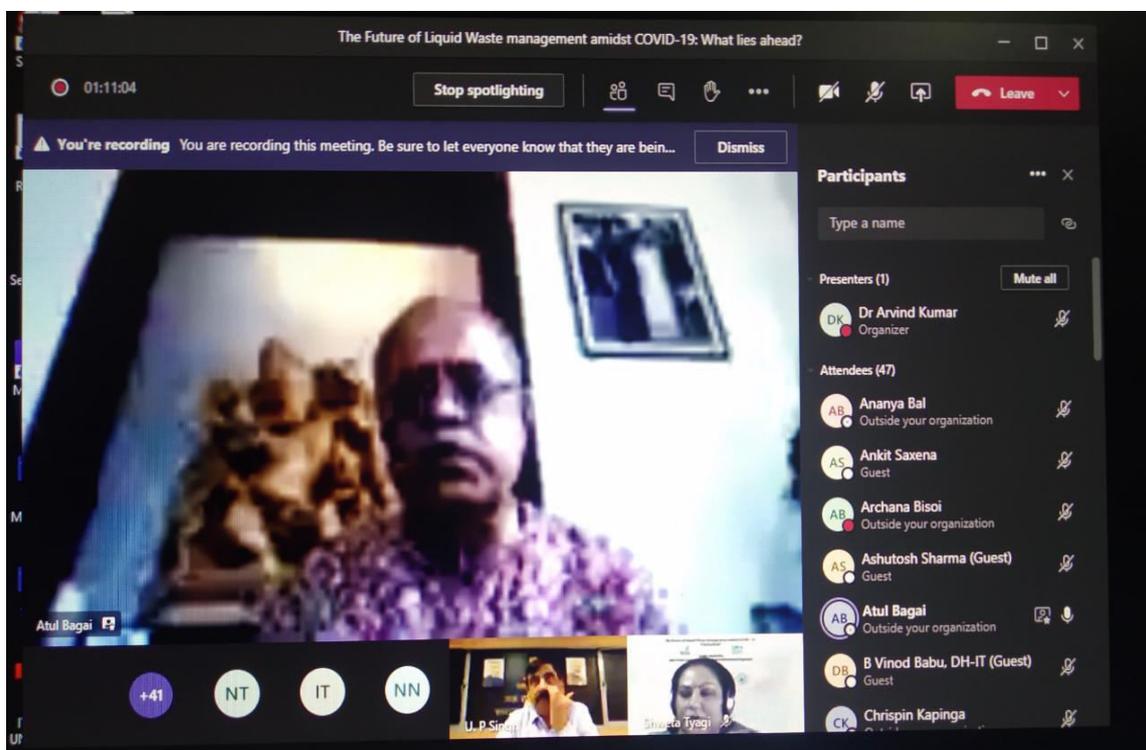
“I am hopeful that the takeaways and suggestions from this webinar shall lead an enriching pathway to tackle the menace of liquid waste management in the post-COVID world and look forward to an engaging discussion leading to recommendations and strategies from a wide pool of brilliant and vibrant domain experts assembled today.”



Mr. Atul Bagai, Head, UNEP India

While welcoming the dignitaries and guests Mr. Bagai highlighted the close link between pandemic, wastewater and sanitation. He expressed his concern to break the chain of transmission due to increasing waste accumulation. He further added that Improper treatment and disposal of healthcare waste poses serious hazards of secondary disease transmission due to exposures to infectious agents among waste pickers, waste workers, health workers, patients, and the community in general where waste is improperly disposed.

The safe handling, and final disposal of this waste is therefore a vital element in an effective emergency response. He concluded his remarks by hoping for tangible deliberations and concrete recommendations at the end of the webinar.



Inaugural Session

Inaugural Speech by chief guest

“The entire globe is under an umbrella of the outbreak of COVID-19 wreaking havoc in our everyday lives with trickle-down impacts on every sector, but the consequences are widely felt specifically in health sector. Our Ministry is working round the clock with Central and State governments and WHO to contain outbreaks spearheading efforts to focus on development of vaccines, antivirals and understanding disease models. My Ministry along with the Ministry of Environment, Forest and Climate Change have recently constituted a high-level steering committee on Environment and Health with the members from various other Ministries and Departments including UNEP and WHO. I would suggest the two ministries to focus on capacity building and institutional strengthening of environmental health issues. The present webinar fits well into the priority work of environment and health and focused discussions on the topic suggested would lead to some policy suggestions.



This webinar shall discuss the future of liquid waste management and understand that bio-medical waste is a contemporary challenge, which is growing concern, especially in the backdrop of large volumes of bio-medical waste being accumulated. In this context, health care waste management is quite significant and there exists designated rules for disposal of wastes and today, we are looking for long-term solutions for liquid waste management and ease the pressure on health care but also the environment. Currently, bio-medical waste is seen as a vector for the transmission of the virus, a considerable threat to the medical fraternity but communities as well. Additional measures should be considered, and I am hopeful that today’s webinar shall highlight multifaceted perspective of liquid waste management in holistic terms.

I would like to thank, UNEP India office and India Water Foundation for supporting member states including India through an environmental strategy working with the Environment to Protect People.

I wish you all the best for enriching and engaging discussion and looking forward for recommendations and strategies from a wide pool of brilliant and vibrant domain experts assembled.”

Policy session

Mr. U.P. Singh, Secretary in the Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti



He raised a concern towards Sewage treatment-data highlighting the amount of waste generation & treatment amidst COVID-19 and stressed on the lack of reliable data on sewage generation, treatment of sewage, and capacity utilization of the existing sewage treatment infrastructure. Also advised for a proper wastewater policy for states and highlighted the need of mandating activities and incentivizing. He also said we must have a robust recycle and reuse policy. At healthcare facilities agencies should ensure disinfection of treated wastewater as per prevailing practices to inactivate corona virus. As is evident from the current situation of the pandemic, basic infection control practices are the only measures for containment.

Professor Ashutosh Sharma, Secretary, Department of Science and Technology, Government of India

He highlighted about innovations to tackle this waste that have been developed in the last 4-5 months like garbage bins with virus neutralizing inner lining for hospitals by institutions like Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. They are now being produced commercially. Prof. Sharma explained the connection of water with a range of sectors. “75% of the water goes to Agriculture, and there is also a nexus between water and health, especially in the times of COVID-19. Even when the COVID-19 would disappear from the world, water problems would still be there. Science & Technology is not the limiting factor to prevent the use and abuse of water. There are a whole lot of factors like economics of situation, public behaviour, and awareness in the society which need to be focused to prevent the abuse of water,” he pointed out. “The upcoming Science, Technology and Innovation Policy, 2020 with a very wide stakeholder consultation will address many of the issues connected to water,” added Prof. Sharma.

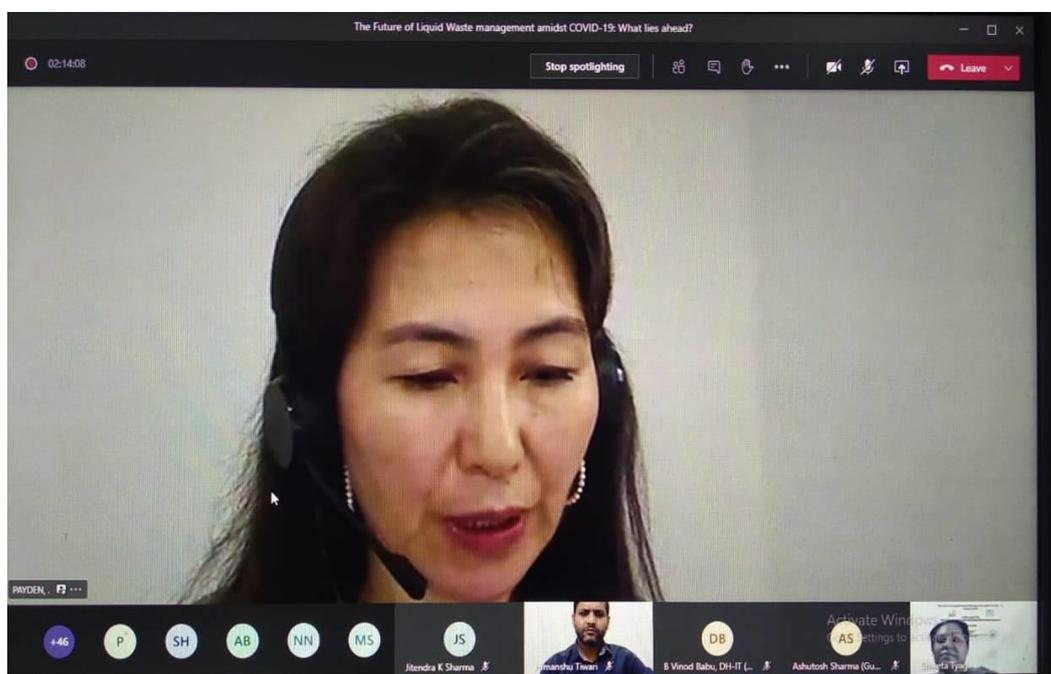


Technical Session

The webinar was organised to also understand the technical implications posed due to the sudden onset of the COVID-19 pandemic in early 2020 resulting in massive health and economic burdens. Amongst all the category of bio-medical waste, liquid wastes posed a serious threat to human health and the environment because of their ability to enter watersheds, pollute ground water, and drinking water when improperly handled and disposed. In this regard, the technical session was held to address the broader aspects of technical solutions to waste management.

Ms. Payden, Deputy WHO Representative, India

Ms Payden as the first speaker in the technical session set the foundation tone of the session and explained that sanitation is much more than toilet facilities, it is about the entire chain from toilet to conveyance of sewage, its treatment and safe disposal. Diseases like cholera, typhoid, polio, hepatitis A & Bare spread when sewage is not treated adequately and disposed in water bodies which in turn reach our drinking water supplies also in food chains when the same untreated water is used for irrigation purposes. She also mentioned that the presence of COVID 19 virus is found in the infected persons stool but not yet confirmed whether it spreads through oral or faecal route.



Appreciating the Government of India, she highlighted that Government is looking beyond Open defecation free but also providing access to clean drinking water, spreading awareness and behaviour change in people to use toilets and dispose sewage adequately. She recommended we must have strict monitoring and enforcement of standards for wastewater especially effluent standards of waste from homes, industries, and health facilities to prevent and combat diseases and microbial resistance.

Dr. Muralee Thummarukudy, Operations Manager, Crisis Management Branch, UN Environment Programme



In his presentation Dr. Thummarukudy said if COVID-19 survives in wastewater then by analysing wastewater in a city one could detect the virus and in that case it could be used as mass use scientific mechanism. That is the kind of research we should do now so that in future the monitoring of sewage could also include monitoring these types of pathogens (COVID-19) so that one could pick up a pandemic developing much before it is portrayed in individual homes by harnessing the sample. Look at new challenges caused by COVID-19 on wastewater also look out for an opportunity to investigate liquid waste management which is a precursor to healthy living around the world.

Dr. Mushtaq Ahmed Memon, Regional Coordinator for Resource Efficiency in Asia Pacific Office, UNEP

He expressed technical opinions and strategies to combat this menace. He stressed on importance of Regulatory frameworks – lack of updated policies, thinly spread in other sectors (water quality, climate change & GHGs, air quality, supply chain, etc.), and for meeting national and global commitments (MEAs, SDGs, NDCs). Institutional arrangements and enforcement – lack of clear institutional arrangements, public sector and private sector arrangements, and lack of capacity for enforcement.



Financing mechanisms - not enough direct taxes based on polluter pay principle and extended producer responsibility, lack of sufficient budget allocation to even meet only collection of waste. Business models – private sector participation in waste management value chain is not designed to sustain on self-earning models and provide

effective services. Most of places still have primitive technologies and infrastructure in operation for segregation, sorting, storage, disposal, and recycling causing inefficiencies, and not sufficient use of digital technologies yet. Informal sector – there is no change in informal sector practices, gender, child labour and livelihoods even after many decades requiring steps to change informal to formal sector with green jobs and quality livelihoods. Behavioural challenges – in source segregation, proper disposal, waste reduction, and polluter pay principle, use of recyclable goods and packaging, and buying products from recycled materials

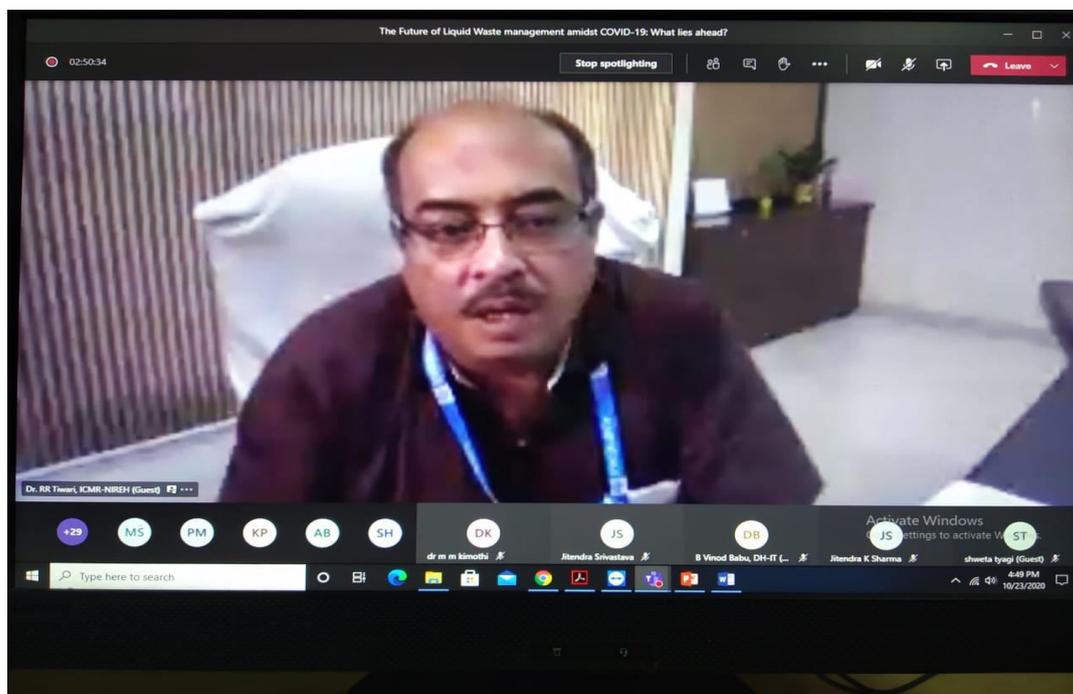
Mr. B. Vinod Babu, Scientist E and DH WM-I, Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Government of India

Mr Babu spoke on behalf of chairman CPCB. He mentioned that CPCB has stringent guidelines for biomedical liquid waste management. The guidelines provide a series of steps for safe disposal of waste generated in hospital isolation wards for COVID-19 patients, testing centres and laboratories, quarantine facilities and homes of suspected patients. We provide specific guidance and closely monitor the deep land burials used for disposal in certain states. Further he added that presence of virus is found in water bodies etc. but whether it spreads through it has not been reported. The medical facilities and hospitals treat the waste water and use it for different purposes like cooling etc for air conditioners, the CPCB has advised them not to use it till the COVID-19 pandemic does not subside.



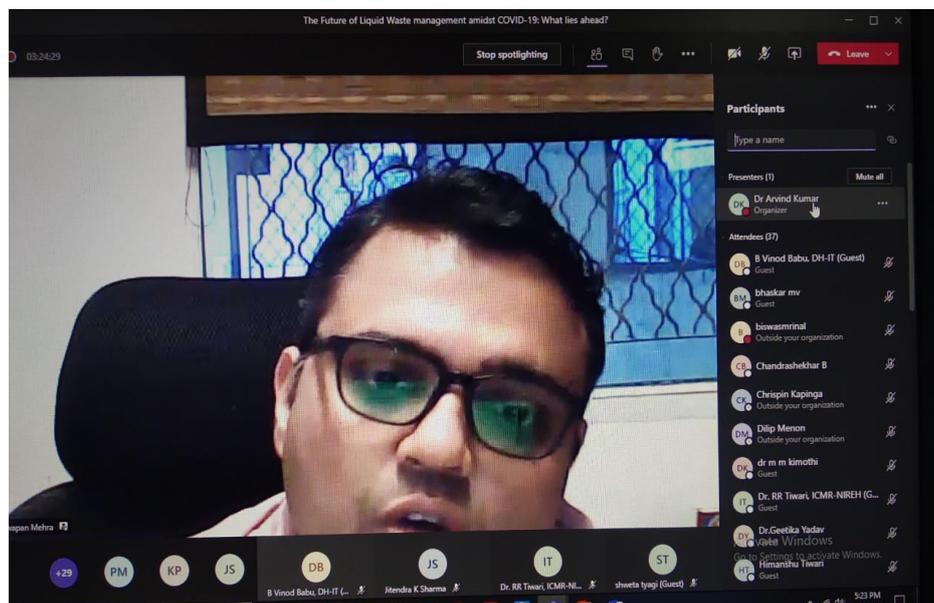
Dr. Rajnarayan R Tiwari, Director, ICMR-NIREH

Dr. Tiwari in his address highlighted that we need to ensure that the health workers and the overall environment remain safe. India's biomedical rules are robust and are being followed. There were similar steps recommended during previous outbreaks. The best management of these items (biomedical waste) is segregation at the time of waste generation, which can be much higher in times of outbreak. He explained that this is a major challenge for hospitals because of overcrowded and overworked hospitals where mixing could happen with regular medical waste. If you go to health centres and hospitals in peripheral areas then the biomedical waste rules are not followed properly due to various reasons like lack of training and frequent transfers of doctors. Rigorous monitoring is required to ensure such waste does not end up infecting others. Also, we need to ensure that people who are at home are disposing of their tissues etc. properly to ensure that they do not end up passing it to anyone including garbage collectors. What we need are universal precautions by everyone.



Mr. Swapan Mehra, office of Principal Chief Scientist and Vice President (Waste to Wealth), Invest India

He highlighted the endeavours taken by the respective organisation towards waste management in the country and leveraging the potential to convert waste to wealth. They are in process of identifying new technologies for biomedical waste also sentinel sites for adequate conservation of land, water and air. The mission prioritises areas like water and sanitation as a key area. Swachh Bharat Unnat Bharat Mission to identify science and technology solutions for India's waste challenges. They have been deploying national challenge of cleaning and restoring India's water bodies across urban and rural settings.



Key Recommendations:

1. Understand data as the ‘New Water’ and streamline ‘data’ linked to COVID-19 waste management by developing better response strategies to tackle waste emergencies
2. Proper wastewater policy for states.
3. Urban Water augmentation must be optimized for water Use, Re-Use, Recycle and Recovery via Circular Economy model
4. Water-Energy-Food Nexus hold a central key intervention to inter-linking water, energy, health and environment in our fight against the pandemic
5. Focus on factors like economics of situation, public behaviour, and awareness in the society to prevent the abuse of water.
6. Stringent monitoring whether the guidelines laid by CPCB to manage biomedical liquid waste are being followed.
7. Liquid waste consisting of black and grey water must be treated at Source with appropriate technologies and interventions with equal focus on the ‘causable factors’
8. From public health view, the chain of sanitation must begin from access to toilets to adequate conveyance of sewage, sewage treatment and finally proper disposal.
9. With pandemic putting a load on the river systems, testing and monitoring is significant towards early detection of contamination trends.
10. Monitoring of pathogens (COVID19) to pick up a pandemic developing much before it spreads by harnessing the sample.
11. Strengthening clear institutional arrangements, public sector and private sector arrangements, and capacity for enforcement.

Vote of Thanks

We are thankful to his Excellency Dr. Harsh Vardhan, Union Minister of Health and Family Welfare, Minister of Science and Technology, Minister of Earth Science and chair Executive board World Health Organization (WHO), Prof. Ashutosh Sharma Secretary, Department of Science and Technology, Government of India, Mr. U.P. Singh, Secretary, Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Ms Payden Deputy WHO Representative, India, Dr. Muralee Thummarukudy, Operations Manager, Crisis Management Branch, UN Environment Programme. Dr. Mushtaq Ahmed Memon Regional Coordinator for Resource Efficiency in Asia Pacific UNEP, Mr. B. Vinod Babu, Scientist E and DH, Central Pollution Control Board, Ministry of Environment, Forests & Climate Change, Government of India, Dr. Rajnarayan R Tiwari, Director of ICMR-NIREH and Mr. Swapan Mehra, from the office of Principal Chief Scientist and Vice President (Waste to Wealth), Invest India.

We thank Mr. Atul Bagai and his team at United Nations Environment Programme India office for collaborating with us for such a critical issue. Also, the participants joining from all over the world from different time zones for attending the high-level webinar and making this event enriching and memorable.

Link to the webinar recording:
<https://youtu.be/Gwjfj2CE7IM>

Annexure –A

Agenda

‘The Future of Liquid Waste Management amidst COVID-19: What lies ahead?’

A high level webinar jointly organized by India Water Foundation and United Nations Environment Programme

October 23, 2020, 15:00-17:30 hrs (IST)

Time (IST)	Sessions
03:00-03:07 PM	Introduction by Dr. Arvind Kumar , President, India Water Foundation
03:07-03:14 PM	Welcome and Introduction by Mr. Atul Bagai , Head, UNEP Country Office India
03:15-03:30 PM	Chair address by Dr. Harsh Vardhan , Hon’ble Union Minister of Health & Family Welfare, Science & Technology and Earth Sciences,
03:30-03:50 PM	POLICY SESSION Key Speakers Mr. U. P. Singh Secretary, Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti
03:50-04:10PM	Prof. Ashutosh Sharma Secretary, Department of Science & Technology, Ministry of Science and Technology
04:10-05:10 PM	TECHNICAL SESSION Key Speakers Ms. Payden Deputy WHO Representative
04:10-04:20 PM	Dr. Muralee Thummarukudy , Operations Manager, Crisis Management Branch, UN Environment Programme
04:20-04:30 PM	Dr. Mushtaq Ahmed Memon Regional Coordinator for Resource Efficiency, Asia Pacific, Regional Office, UN Environment Programme
04:30-04:40 PM	Mr. Shiv Das Meena, IAS Chairman, Central Pollution Control Board
04:40-04:50 PM	Dr. Rajnarayan R Tiwari Director, ICMR-NIREH
04:50-05:00 PM 05:00-05:10 PM	Mr. K. Swapan Mehra Vice President(Waste to Wealth), Invest India
05:10-05:25 PM	Q & A
05:25-05:30 PM	Vote of Thanks

Contact focal point: Ms. Shweta Tyagi, Chief Functionary, India Water Foundation shweta.tyagi@indiawaterfoundation.org

Annexure-B Media Coverage



Link of Published News:

- https://dst.gov.in/dr-harsh-varadhan-highlights-need-long-term-solutions-management-biomedical-waste?fbclid=IwAR0s-yl24nuaFJ6J5CV2Ud04eGIUSn-8mOmlouHjvY8c570uqUDrj_D67gE
- https://www.5dariyanews.com/news/305252-Dr-Harsh-Vardhan-highlights-need-for-long-term-solutions-for-management-of-biomedical-waste?fbclid=IwAR127EaoS_sFEcVW0d5CAOj1cH04tcdpVDhtyTHs_IYi7Q2Dy87o2zEVs
- https://www.tribuneindia.com/news/nation/harsh-varadhan-highlights-need-for-long-term-solutions-for-management-of-biomedical-waste-162427?fbclid=IwAR1aQZG3vHs6PXdyWOMEvAT_MCQS8UERbUPi2uMAW7DNq3QOCHtXOfW
- https://english.newstracklive.com/news/managing-biomedical-waste-needs-a-solution-dr-harsh-varadhan-highlights-sc1-nu306-ta306-1126620-1.html?fbclid=IwAR0cua-adt-zs_wwwhsz733bepjxeugst0sh-u5zppqg41aemv2f1nk
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- [https://www.facebook.com/indiaeducationdiary/?_tn=-K-R&eid=ARCT15qs9QKTGLGY04ejkVBfufN7cneYB7cSDoomO4o5upWWill34PWy9wv-2Nk1zaopcV4Q24grp&fref=mentions&_xts__\[0\]=68_ARBWDOZ9N9GvZDeUrW9eZeqXUbyWjGzT_6d445EY-TXoHU6Tq74Sxl8JY3DQ3Fz1G9RAuDK4JH1WslVlOA3p5rB3-vj845sppOPDcbBnVTjmo4yW4A9F3MLVDPRee3zQl2l1Ttrvw_GfyiQBIAkizKVK2LOhhs-9ogkFYHjWlqGhGpU097wWYUJrNcGwCz1WVQ1F5UEbh6RLaGNg2qfivCzwpksKaU9R3v50Bf6PLsClUanGRUeq1z-9IQ_b08CndL0r1BsJVzhM5gCAWV3z-_m8jeASDvSOEqHeZdZWcfuTVW4fpC6qh8D7ix82eBtMS_DMBYE](https://www.facebook.com/indiaeducationdiary/?_tn=-K-R&eid=ARCT15qs9QKTGLGY04ejkVBfufN7cneYB7cSDoomO4o5upWWill34PWy9wv-2Nk1zaopcV4Q24grp&fref=mentions&_xts__[0]=68_ARBWDOZ9N9GvZDeUrW9eZeqXUbyWjGzT_6d445EY-TXoHU6Tq74Sxl8JY3DQ3Fz1G9RAuDK4JH1WslVlOA3p5rB3-vj845sppOPDcbBnVTjmo4yW4A9F3MLVDPRee3zQl2l1Ttrvw_GfyiQBIAkizKVK2LOhhs-9ogkFYHjWlqGhGpU097wWYUJrNcGwCz1WVQ1F5UEbh6RLaGNg2qfivCzwpksKaU9R3v50Bf6PLsClUanGRUeq1z-9IQ_b08CndL0r1BsJVzhM5gCAWV3z-_m8jeASDvSOEqHeZdZWcfuTVW4fpC6qh8D7ix82eBtMS_DMBYE)
- https://www.outlookindia.com/newsscroll/varadhan-emphasis-need-for-long-term-solutions-for-management-of-biomedical-waste/1965957?fbclid=IwAR1loggez6Wf3ojkNKBW_Zv4e-WrtfKMEYrSpxnXju37Da9Qvo5HieNu8
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- https://cdnbbsr.s3waas.gov.in/s3850af92f8d9903e7a4e0559a98ecc857/uploads/2020/10/2020102921.pdf?fbclid=IwAR3FOXYcdpqtE38jdiLe-fHmHT3tkPWZ4Lg4ldo_i6xpVxQuEzOdwkx
- <https://www.biospectrumindia.com/news/2217491/health-ministry-seeking-solutions-for-management-of-biomedical-waste.html?fbclid=IwAR2UEfZ09y2GOCTGZe1sOCQ6gaJcKt0PhgeCoxYAzqWUw5Rv1tkixTwx>
- https://udaipikiran.com/dr-harsh-varadhan-highlights-need-for-long-term-solutions-for-management-of-biomedical-waste/?fbclid=IwAR1zFmBGPVxk2NZR0bqHwMLWWdyMnMnpaJbDbBp_uXZZYk5nQrdZV_YHw0

Annexure-C

Participation

Around 130 plus participants gathered on board ranging from policy makers, practitioners and technical experts, professionals from government, UN and international agencies, development partners involved in solid liquid waste management, bio-medical waste, finance and circular economy, civil society organizations, academia etc. The entire webinar was anchored by Ms. Shweta Tyagi, Chief Functionary, India Water Foundation.

- | | | |
|---------------------------|---------------------------------------|--|
| 1. U P Singh | 42. Deepanjan Majumdar | 80. Sushil Kumar shilpi |
| 2. Dr R R Tiwari | 43. Tado Karlo | 81. Dr. Surya Singh |
| 3. Jitendra Srivastava | 44. Veena Khanduri | 82. Rudresh Sugam |
| 4. TapanMohanta | 45. Gandhinagar Municipal Corporation | 83. Poonam Rai |
| 5. Shukla Pal Maitra | 46. Dilip Menon | 84. Manish Singh |
| 6. Jitendra K. Sharma | 47. Neha Dharmshaktu | 85. G Sridhar |
| 7. Sonia Devi Henam | 48. V S Singh | 86. Bhaskar MV |
| 8. ChrispinKapinga | 49. Chandrashekhar B | 87. S Chandrashekhar |
| 9. Kavita Prasad | 50. KumareshMisra | 88. MahreenMatto |
| 10. Archna Bishnoi | 51. M K Biswas | 89. Lais Paiva Siqueira |
| 11. Pravakar Mishra | 52. B K Sarangi | 90. Dr. Arvind Kumar |
| 12. Dr. Manoj Kumar | 53. Kanisska Tyagi | 91. Shweta Tyagi |
| 13. Vishal | 54. Archna Datta | 92. Wim Bastiaanssen |
| 14. Priti | 55. Swati Singh Sambyal | 93. Deep Chandra Papnoi |
| 15. Dr. M MKimothi | 56. ThummarukudyilMuralee dharan | 94. Nin Pintov |
| 16. Atul Bagai | 57. Sanjeev Singh | 95. John Barelli |
| 17. Piyush Sharma | 58. Karteekka Tyagi | 96. T RSharma |
| 18. Payden | 59. S K Singh | 97. Danielle Gaillard Picher |
| 19. MushtaqMemon | 60. Minto Reang | 98. Hazi Mohammad Azamathulla |
| 20. Manjeet Saluja | 61. Nidhi Nagabhatla | 99. ICLEI south Asia |
| 21. Dr. Surya Singh | 62. Parul Goel | 100. Rajkumar Thatikayala |
| 22. B Vinod Babu | 63. Piyush Mohapatra | 101. Tom Copping |
| 23. P RMeghanathan | 64. Tanmay Srivastava | 102. Ravindra Dhapola |
| 24. Shyamala Mani | 65. V K Srivastava | 103. Shweta Tripathi |
| 25. Dr.Sanjai Kumar | 66. Dr. Soumya | 104. DiegoJ Rodriguez |
| 26. Prof. Ashutosh Sharma | 67. M Karthik | 105. Water Policy and Governance Institute |
| 27. Yasmin Zaveri Roy | 68. Sandeep HSS | 106. Vijay Aravinth |
| 28. Yoshida Yuki | 69. SwapanMehra | 107. Dushyant Kumar |
| 29. DivyaDatt | 70. Karthik Manikavasagan | 108. ByjeshKattarkandi |
| 30. Anuradha Awasthi | 71. Bhaskar MV | 109. Archana Dash |
| 31. Dr.NeelimaAlam | 72. Rajesh Rajankar | 110. Dr SISIR kumar Patra |
| 32. Dr.Geetika Yadav | 73. Blossoms 1- Sh Gayatri AMM School | 111. Abhijeet Ghorpade |
| 33. Dr. Manoj Kumar | 74. Dr. Sumit Agrawal | 112. ShimaKabiri |
| 34. Noor Afshan Khan | 75. Manisha | 113. Ashish Sharma |
| 35. J K Bassin | 76. Karthik Raghunathan | 114. Ankush Mishra |
| 36. R S Tyagi | 77. TageLapung | 115. PriyamvadaDhage |
| 37. Pankaj Sharma | 78. Nidhi | 116. Hariharan Muthusamy |
| 38. Ananya Bal | 79. VasaviNarla | 117. Md Yusuf' |
| 39. Dr. Sumit Agarwal | | |
| 40. Ankit Saxena | | |
| 41. Shalini Tandon | | |

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|-----------------------------|------------------------------------|--------------------------------------|
| 118. Sunil Nanda | 134. Dr Shahid Siddiqui | 150. Dr Mark Fletcher |
| 119. Mayur Bhadange | 135. David A Dodd | 151. Brajesh Dubey |
| 120. Dr Afedullah Khan | 136. Sanjay Chaudhary | 152. Choudhury Arjya Mishra |
| 121. Ashok Karya | 137. AIDT India | 153. Anant Mishra |
| 122. Parvinder Sangwan | 138. Asheesh Agarwal | 154. Ranjan K Panda |
| 123. Md Nahid Alam | 139. Vikram Pal | 155. Manish Kumar Singh |
| 124. Karin Krchnak | 140. Saurabh Verma | 156. Neha Ninawe |
| 125. Samal Kumar | 141. Jaseph Shine | 157. Sanjay Pandey |
| 126. Abhay Kumar ojha | 142. Stephanie Race | 158. Bhaskar Venkata
Malimadugula |
| 127. Naseem Ahmad | 143. Chandrashekharan
Jayaraman | 159. Dineshwar Sugumaran |
| 128. Sameer Bansal Neha Lal | 144. Dr Narinder Singh Karir | 160. Ravindra Sinha |
| 129. Pranay Kumar | 145. Kameshwar Eranki | 161. Guido Bonig Martius |
| 130. Bholu Gurjar | 146. Patrick Smeets | 162. Mariya Marinova |
| 131. Willian Sarni | 147. R. Pragyanbadini Mishra | 163. Felix Dodds |
| 132. Rajen Kumar | 148. Kishore Saha | |
| 133. Rajul Mehrotra | 149. Amit Mishra | |





