



Discussion of Liquid Waste Management – Subject Expert Group (SEG) Experts on Concern about presence of SARS - CoV-2 in water and waste water systems

Monday, 04.05.2020

Details

Date	Time	Mode
04.05.2020	11:00 – 12:15pm	Cisco Webex

Brief Agenda

To finalize the objectives and discuss the formulation of respective working groups for framing guidelines as discussed in the previous meeting.

Attendees

S.No	Name of Expert	Name of the Institution
1.	Prof Vivek Kumar	IIT Delhi
2.	Prof Priyanka Kaushal	IIT Delhi
3.	Dr. Madan Kumar	IIT Delhi
4.	Prof Anushree Malik	IIT Delhi
5.	Prof TR Sreekrishnan	IIT Delhi
6.	Prof Bakul Rao	IIT Bombay
7.	Prof Anurag Garg	IIT Bombay
8.	Prof Ligy Philip	IIT Madras
9.	Prof Indumathi M Nambi	IIT Madras
10.	Prof AB Gupta	MNIT Jaipur
11.	Prof Anupam Singhal	BITS Pilani
12.	Prof Vimal Shrivastav	IIT Roorkee
13.	Prof Anshu Gupta	IP University
14.	Prof Neetu Rani	IP University
15.	Prof RC Vaishya	MNNIT Allahabad
16.	Prof Naddeem Khalil	AMU
17.	Dr PS Harikumar	CWRDM Calicut
18.	Prof Sivasubramanian V	NIT Calicut
19.	Dr. S.K. Ambast	ICAR-Indian Institute of Water Management
20.	Dr Ashish Yadav	CIR-IMMT, Bhubaneswar
21.	Prof Saswati Chakraborty	IIT Guwhati
22.	Dr Smita S Kumar	JC Bose University of Science & Technology, Y.M.C.A., Faridabad
23.	Prof MA Rather	NIT Srinagar
24.	Prof Alok Mittal	MANIT Bhopal
25.	Prof Ramakar Jha	NIT Patna
26.	Prof IM Mishra	IIT-ISM Dhanbad
27.	Prof NK Shrivastav	NIT Jalandhar
28.	Prof Debraj Bhattacharyya	IIT Hyderabad

29.	Prof. Manoj kumar Tiwari	IIT Kharagpur
30.	Dr.ShyniD.S	SLWM Consultant, Swachh Bharat Mission
31.	Prof Debashish Chatterjee	University of Kalyani
32.	Prof TV Ramchandra	IISC Bangalore
33.	Prof ST Ramesh	NIT Trichurapalli
34.	Prof Urmila Bhrigu	MNIT Jaipur
35.	Dr Rajesh Biniwale	CSIR-NEERI, Nagpur
36.	Prof Vivekanand	MNIT Jaipur

Minutes of Meeting:

- Prof. Vivek Kumar welcomed all the experts and shared the concern about the formulation of working groups for creating guidelines on five working points as discussed in the previous meeting:
 1. *Group -1: Guidelines for drinking water system in the present scenario (to address the possibility of mixing of sewage with drinking water/groundwater in both Urban as well as Rural areas)*
 2. *Group- 2: Review and suggestions for modification of guidelines for reuse and recycle of municipal wastewater after treatment in view of pathogenic microbes.*
 3. *Group-3: Guidelines for septage and sludge management and disposal (may be done separately for Urban and Rural India specifically wrt Sanitation)*
 4. *Group-4: Strategy and guidelines for sewage management in Hospitals and temporary quarantine facilities*
 5. *Group- 5: Efficacy of Disinfectants for different pathogenic microbes to identify suitable tertiary treatment stage.*
- He took the suggestions and opinion of the experts, for finalizing the objectives and time line for compilation of the guidelines. Prof. Vivek also requested all the experts for adding other researchers or experts who can help in the guidelines. Prof. Vivek suggested the working team members of Group-1 to discuss the title and modify accordingly.
- First of all, the first working point was discussed and the title was modified so as to address the possibility of contamination as “*Guidelines for drinking water system in the present scenario (to address the possibility of drinking water/groundwater contamination in both Urban as well as Rural areas) and possible low-cost remedial measures*”.
- In this regard, Prof Debashish Chatterjee suggested to make it clear whether we are going to address local mixing or regional mixing.
- Prof. Nadeem supported Prof. Vivek’s viewpoint to modify the title and use *contamination of sewage* in place of *mixing of sewage*. Prof. Bakul Rao suggested that the possibility of mixing can be studied in Group 3 and then the linkages can be passed on to group 1

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- Prof. T.R.Sreekrishnan provided a different insight on the requirement of guidelines and mentioned that such guidelines are pre-existing. To this, Prof. Vivek clarified that throughout India we do not have functional tap connections. Even in urban areas, pipeline connections are not present in all communities and water is being sent through water tankers. Specifically, in rural areas, untreated water is being supplied and there is possibility of contamination. So, in case this water is being used for drinking purpose, our aim is to suggest the preventive measures that can be adopted by the user for safety in case there is some kind of contamination. COVID outbreak has made us realize that it is the time to rethink our existing strategy and take necessary precautions about water borne diseases in rural areas.
 - Prof. Anurag also supported Prof Vivek's point of view and added that in spite of the existing guidelines for drinking water system the expert members in this group should focus on the reviewing the existing guidelines so as to improve the implementation side.
 - Prof. Ramakar Jha – shared his observation that the villagers are drinking river water, which could be harmful. He suggested that UBA adopted villages can be provided with these guidelines and should be circulated gram panchayat and district level for effective implementation. Also, he suggested to provide low cost remedial measures at community level. He added that all the Titles should start with Review of existing methods and then suggestions for improvement in guidelines. He also brought focus on the rainwater drains which had been missed out from all the groups. Dr. Harikumar also raised the concern for the contamination through rainwater.
 - Dr. Shyni D.S suggested to share the data/details of rural water supply available with Ministry of Jal Shakti to all the expert members.
 - In reference to *Group-2*, Prof. M.K.Tiwari shared that in spite of not being very much sustainable, one of the most common strategy of reusing treated water is for agricultural purposes. So, the existing guidelines should be carefully reviewed and evaluated. The possibility of movement of pathogens in the agricultural fields should be carefully studied in context of direct contact reuse in Indian scenario. Then low-cost preventive measures should also be suggested to prevent the entry of pathogens.
 - Prof. Nadeem suggested to modify the title of the *Group-2* to include '*reuse and recycle of wastewater*'. Prof. A.B.Gupta – shared that there are no guidelines for disinfection of rural sewage.
 - Prof. T.V.Ramachandra – shared that open defecation issue still exists in the rural areas. He also shared the observations of his study in Karnataka and Kerala as the drinking water is contaminated in both urban and rural areas and mainly contains pathogens. So currently if the committee is looking for virus removal, that treatment of sewage should be taken care of appropriately. He emphasized on proper implementation of Clean India program guidelines in both urban and rural areas. He added that in most of the cases, the rural areas are affected by the untreated sewage of the urban areas that is released to the rivers. The
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farmers are using this sewage for growing vegetables. He opined that the proper sewage treatment in urban areas can minimize the chances of contamination in the peri-urban areas. OD in rural areas should immediately come to an end to eliminate the chances of pathogens in our food system.

- Prof. Bakul Rao added that right now the groups have been formed on the basis of our specializations, but eventually while working in these groups we need to understand it at systemic levels i.e. urban and rural due to which revisits are probable. Suggestions can then be discussed on what actually happening in urban and rural areas so that final urban/rural ministries can be contacted to bring forward these guidelines. So, after deliberating on our own area, guidelines should be designed and rolled out for proper implementation in specific systems. Prof. Vivek insisted on collection, exchange and sharing the materials/information with each other in one group as well as with other groups with the help of google docs or some similar mechanism.
 - For group 3. Prof Bakul suggested to modify the title to *Guidelines for septage and sludge management and disposal (may be done separately for Urban and Rural India specifically wrt Sanitation)*. Dr. Shyni shared about the finalization of Swachh Bharat phase -2 guidelines, where the focus area is fecal sludge and rural management in India. She promised to share the same draft within 2 weeks, which would be helpful for all the experts in relation to *Group-3*. Prof Vivek added that while working for the modification and development of new guidelines, it should be taken care that the concerns of those who are handling the sludge are also included. Most of the types of sludge contain a number of threats that need to be addressed in the guidelines. Prof. Tiwari stressed on exploring the disposal and reuse possibilities associated with sludge. Dr. Rajesh Biniwale added that with respect to the septage and sludge management, the sludge from septic tank needs to be taken care of, and owing to its fertilizer potential it can be converted into Bio-solids, which are helpful in Biogas generation. Septage management is usually done in open sludge beds which may be dangerous so needs to be taken care of. He also shared the availability of BSL3 Lab in Nagpur and KGMU, Lucknow. Timeline for *Group-3* was set to be for 30 days after consultation with all the experts.
 - Then Prof Vivek asked the experts in group 4 to discuss and finalize the objectives and direction of work. Prof. Vimal –stressed on the requirement of literature review and said that it is important to share the knowledge with each other. He shared that no such guidelines are available yet. Even WHO has not come out with any such guidelines. In this context, Prof. Vivek added that CPCB has shared the guidelines for Handling, Treatment and Disposal of Waste generated during Treatment/Diagnosis/Quarantine of COVID-19 Patients which will be circulated to all the expert members for reference. However, in these guidelines as well there is no mention of the sewage and sludge management. Prof N K Srivastava also added that sufficient material is not available on this issue. Prof. Debraj Bhattacharyya emphasized the compilation of wastewater characteristics that is generated from the hospitals treating Covid-19 patients so that systems for the treatment of such wastes and wastewater can be designed. Then the performance of conventional and advanced treatment technologies should be assessed to
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come out with viable solutions. Such hospitals wastes would also contain emerging contaminants such as pharmaceuticals that need to be addressed simultaneously for designing the treatment systems. Prof. Debraj suggested few reframing of the titles as follows:

- a. Guidelines for drinking water supply and practice in the present context (to address the protection from contamination of sewage with drinking water / groundwater) and possible low-cost remedial measures.
 - b. Review and suggestions to upgrade the existing standards for reuse of municipal treated wastewater to safe grade migration of pathogens.
 - c. Practical guidance for management (both handling and disposal) of septage and sludge notably Urban and Rural setting separately including impact of sanitation.
 - d. Effective ground level Hospitals and temporary quarantine facilities sewage management (both macro and micro levels) to formulate strategy and guidelines to protect ecology and human health
 - e. Prolonged effectiveness of Disinfectants for all types of pathogens to recommend for tertiary treatment stage.
- With respect to the characterization of sewage generated from hospitals, Dr. Biniwale shared his experience to deal with hospital wastes with the help of advance oxidation process such as ozonation as a pretreatment method to breakdown pharmaceutical molecules such as antibiotics so as to stop the development of antibiotic resistance in bacteria in the secondary treatment plant. However, he suggested that there is a need to include pathogens in the characterization process. In hospitals sewage is generated from labs, wards and OPDs. These are some of the critical points that we need to ponder on while reviewing and drafting the guidelines in group 4. Primary treatment with strong oxidation seems to be a potential immediate measure to deal with the sewage that is currently being generated from such facilities.
 - With respect to group 5, Prof Anurag added that it is the time to upgrade our facilities in order to address the problem of emerging contaminants along with pathogens. In the present scenario, Chlorination is the conventional disinfection method. However, there are many other alternative disinfectants available that are able to make water pathogen-free without any toxic disinfection byproducts and simultaneously help in the removal of emerging contaminants. Efficiency of different disinfectants can be compared on lab scale to assess the efficiency devise better ways forward for water/wastewater treatment. Prof Vivek added that there is a need to compile all the information available in the public domain and try to review them critically so as to come out with some possible strategies, summarize and share with other groups. Prof Anurag suggested to carry it out in two phases, in the first phase i.e. short term, the available information can be compiled, while in the second phase we may work on the problem and then come out with suggestions. Prof. Vivek added that *Group -5* should start working immediately and insisted on setting the timeline as 2-3 weeks for *Group-5*. Prof Vivek requested Prof. T.R. and Prof. Anushree Mallik to join *Group-5*.
 - Prof. Jha then suggested to have one group coordinator in each group. Prof. Anurag added to conduct their internal group meetings. Prof. Vivek also suggested to decide the group
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coordinators for better execution and coordination. All the experts were requested to provide their phone numbers for the formulation of whatsapp groups so as to ensure quick communication. Ms.Bharti Jasrotia (UBA) will formulate the WhatsApp group for knowledge sharing. Finally, Prof Vivek delivered the concluding remarks to all the experts calling the discussion important and successful and conveyed to share the minutes of the meeting as soon as possible.
