

HCFI Dr KK Aggarwal Research Fund

HCFI Round Table Environment Expert Zoom Meeting on “Challenges in Municipal Waste Management: Technological Interventions”

January 8, 2023 (Sunday 12 noon – 1 pm)

- The gap between waste generation and its scientific disposal is increasing leading to land, air and water pollution.
- Municipal solid waste (MSW) was not a problem in the past in India. It is a recent problem and is man-made.
- It is one of the most neglected subject in municipalities.
- The Technological Development Board under the Ministry of Science and Technology has initiated a program on waste management technologies, which is aligned with Swachh Bharat Mission Urban 2.0 aiming towards garbage-free cities.
- The program encompasses a variety of interventions in waste generation prevention, characterization and monitoring, treatment, handling reuse and ultimately residual disposal of solid wastes in a scientific manner.
- Lot of research is going on in this subject. The time has come for smart solid waste management. The routine practices are no longer sufficient for proper waste management.
- Waste to energy generation is the most innovative method in waste management. Smart bins, robotic recyclers, robotic trash cans are some other innovations in waste technology.
- MSW management starts from households with segregation of waste at source followed by collection, transport to the right place for processing, resource recovery and finally disposal.
- The biggest challenge in MSW management is waste segregation. Interventions and technologies are needed so that the right kind of waste in the right quantity reaches the right place where resource recovery takes place and least goes to disposal.
- In biomedical waste management, source segregation is a big help. Biomedical waste is segregated into contagious waste, less contagious waste and highly contagious waste, which goes into bar-coded different colored bags. Each bar code is monitored as to where the waste should move from collection point to the processing point. The technology of bar coding the type of waste is helping to collect the waste.
- Almost 70% of waste is getting collected. We should monitor GPS driven tracking of waste. There is an improvement in collection but more needs to be done.
- A technology which can be useful here is putting a barcode or weighing scale in the transport vehicle itself. This is important to understand which type of waste should go where.
- Dry waste goes to MRF (materials recovery facility) plants or to waste to energy plant/refuse-derived fuel (RDF) and finally the disposal of inerts in the landfills.
- In MRF plants, the dry waste can either go through optics or through weight density (densification) or through characterization of types of waste. While doing this, the entire system should be under a manifest system.
- The estimated waste should be audited by independent committees and validated through regulatory bodies like municipal corporations, pollution control boards, public works department (PWD).
- Technology can be adopted in the manifest system.
- The masterplan has to include planning for the place for waste management – processing or disposal facility, waste to energy plant, leachate treatment plant, biomethanation, etc.
- The MSW waste Rules have to be read in a holistic manner and technology has to be brought in.
- Waste is wealth only if it is properly managed. Intangible benefits of proper waste management are in terms of air pollution, ground water.
- No legacy waste should go in dumpsite. Only inert waste should go in dumpsites.
- Despite technological interventions, the net result is very disappointing. The output is not proportional to the investment done by the government and private sector. Small solutions are not sustainable.
- The problem should be analyzed. Reasons for failure should be discussed.

- In India, waste is mostly managed by the unorganized sector. However, the unorganized sector has become skilled with experience. They should be incorporated in the organized sector. They should not be condemned; instead their expertise should be utilized.
- Segregation at source is not being done in many homes. Waste from home is thrown out on the roads. The problem is due to the indifference of the home owners.
- There are technologies and mechanisms by which this can be managed but commitment from all stakeholders is essential to manage MSW.
- Attitude, training and awareness are missing. Waste is just being collected and dumped at the dumpsite. Awareness has to be tackled like a revolution.
- Waste can be better managed in a decentralized way.
- We should focus more on composting and biomethanation. Biodegradable waste can be either converted to compost which can be reused by the local horticulture department. Biomethanation produces some kind of biogas, which can be reused for heating or cooking purpose.
- Decentralization should be CBE (community-based enterprise) system.
- The Indian Pollution Control Association has a robust system of collection and using plastic waste to make bags, containers, etc.
- Individuals have to be sensitized about this and the learnings have to be practically implemented. Academic discussions no longer serve the purpose. The help of NGOs, religious trusts can be taken to get the message across to the people. School children should also be involved.
- Segregation and the idea of using what is obtained after processing should penetrate as deep as possible.
- Plastic waste should not go to waste to energy plants because of emission of furans.
- Recycling can have environmental and ecological benefits if it is done sustainably.
- A political will is necessary.
- All wastes can be handled at one place provided there is enough space for segregation and treatment.
- Solid waste should be considered a single subject, as there may not be experts at the municipal levels who can handle all types of waste separately.

- Use of incineration technology should be avoided as much as possible.
- A link with industries that can use the collected material should be established.
- MSW should be called household solid waste. This term is already being used in some countries.
- It is easier to implement waste collection system in housing societies.

Participants: Mr Paritosh Tyagi, Dr Dipankar Saha, Dr Ravindra Palakurthy, Mr Pradeep Khandelwal, Mr Sanjiv Kumar, Mr Neeraj Tyagi, Mr Lovekesh Chandra, Dr Anil Kumar, Dr S Sharma

Coronavirus Updates

BA.5.2 and BF.7 causing the surge in cases in China

The surge in cases in China is mainly due to the BA.5.2 and BF.7 sublineages of the Omicron variant causing 97.5% of all local infections, according to the World Health Organization (WHO). More than 2,000 genome sequencing have been performed by the Chinese Center for Disease Control and Prevention (CDC)... (Source: Reuters, Jan. 4, 2023)

Japan imposes strict border control measures for Chinese travelers

Strict border control measures for inbound travelers from China will be implemented from 1st January in view of the sharp increase in the number of people who test positive on arrival at airports. All travelers from China are required to submit a negative COVID test within 72 hours of the day of departure. Airlines have been asked to restrict the number of flights from China... (Source: Medscape, Jan. 5, 2023)

Negative COVID test mandatory for travelers from China coming into the US

Travelers from China, Hong Kong and Macau coming into the United States are required to furnish a negative COVID-19 test or documentation of recovery within 2 days of their departure from these countries. This is regardless of their vaccination status... (Source: CDC, Dec. 28, 2022)

XBB.1.5 causing surge in cases, says WHO

The XBB.1.5 Omicron sublineage may be causing the rise in number of cases, according to the WHO following a technical meeting recently. However, it also notes that since more than 80% of the sequences were from the US, this might not be an accurate assessment... (Source: Reuters, Jan. 12, 2023)

With inputs from Dr Monica Vasudev