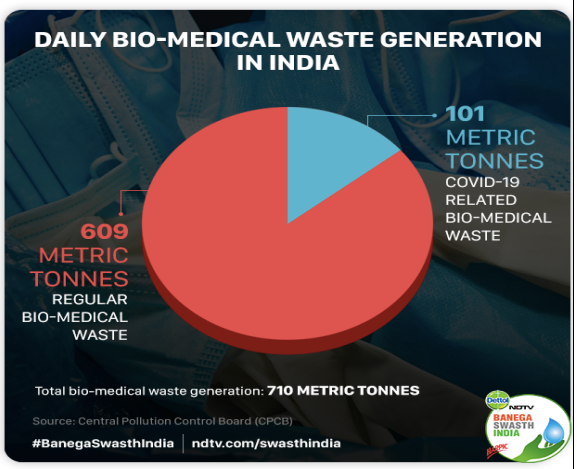
Photo by Indian Express

Covid- 19 waste management derailed in Bhubaneswar

By Jeevan Rekha Parishad
Plot no 387 Damana Square, C.S.pur, Bhubaneswar, Odisha -751016

Research Coordinators: Dr. M.R.Mishra & Gouri Shankar Mishra

Email:jeevanrekha@hotmail.com



Facts about the country pandemic situation

The World Health Organization (WHO) has recently declared the COVID-19 epidemic a public health emergency of international concern. The ongoing outbreak presents many clinical and public health management challenges due to limited understanding of viral pathogenesis, Therefore, conscious integrated risk analysis is more important when trying to manage a health emergency. In this kind of emergency pandemic situation bio medical waste management is an important factor but like any other place, the chaotic situation and lack of clarity were clearly observed in Bhubaneswar Municipal Corporation (BMC) and its other stakeholders during COVID-19 pandemic management.

Biomedical waste is defined as any type of waste created during a diagnostic process, the treatment of a condition or disease, or immunizations of humans or animals. It also includes any research activities or processes that involve biological testing.[1] In essence, it's any type of waste that contains any type of material that may be contaminated with potentially infectious properties. Infectious properties can be found in syringes delivering medications or chemotherapy. They can be found in bedding, bandages, or clothing contaminated with blood or bodily fluids of a person infected with a communicable disease. [2]

Improper segregation and disposal of biomedical waste has the potential to contaminate groundwater sources, which in turn may infect humans and animals alike. From a hospital's waste and storage receptacles to landfills, biomedical waste needs to be properly contained to keep it away from birds, rodents, and stray animals (as well as humans). This enhances packaging and labeling of contaminants and helps prevent the spread of illness through human and animal populations – by air, land, or water.[2]

If not properly contained and segregated, environmental hazards associated with improper healthcare waste management can contaminate the air we breathe through dangerous airborne particles. Radioactive particles produced with diagnostic

[1] Biomedical waste management in India: Critical appraisal (nih.gov)
[2] https://www.danielshealth.com/knowledge-center/effects-biomedical-waste

technologies have the potential to reach a landfill or other areas of the environment, especially air. Air pollutants disseminated over huge areas of inhabited land have the potential to trigger a number of illnesses.[2]

Rule 7 of Bio-Medical Waste Management Rules, 2016[3] provides guidelines with respect to transportation and disposal of a bio-medical waste with regard to plastic waste –

1. Every occupier shall phase out use of non-chlorinated plastic bags within two years from the date of publication of these rules.
2. After two years from such publication of these rules, the chlorinated plastic bags shall not be used for storing and transporting of bio-medical waste.
3. The recyclables from the treated bio-medical wastes such as plastics and glass shall be given to such recyclers having valid authorisation or registration from the respective prescribed authority.
4. The Occupier or Operator of a common bio-medical waste treatment facility shall maintain a record of recyclable wastes.[4]

COVID-19 situation in India

The COVID-19 pandemic in India is a part of a worldwide pandemic of Coronavirus disease (COVID-19) caused by severe acute respiratory syndrome, Coronavirus 2 (SARS-CoV-2). [5]The first case of COVID-19 in India, which originated from China, was reported on 30th January 2020. India currently has the largest number of cases in Asia. It has the second-highest number of confirmed cases globally after the United States, with more than 10.3 million reported cases of COVID-19 infection and more than 154,000 deaths as of 2nd February, 2021.

Like any other place in the world, Bhubaneswar Odisha has been facing an existential threat. As per JRP's COVID vulnerability study April 2021, nearly half of the workforce is at risk of losing their livelihoods. Informal economy workers are particularly

[3] Bio-Medical Waste Management Rules, 2016
[4] https://amielegal.com/laws-on-bio-medical-waste-in-india/#
[5] https://www.unicef.org/india/coronavirus/covid-19

vulnerable because the majority lack social protection and access to quality health care, and have lost access to productive assets.

COVID-19 situation in Bhubaneswar Municipality

As per the Government of Odisha official health department dashboard under Bhubaneswar Municipality, a total of 31956 COVID-19 cases were reported till 23rd February, 2021. Out of this, 31615 cases have already recovered from the disease. As per Bhubaneswar Municipality, 248 deaths are recorded till February 23rd. In its 17th November publication, the Times of India estimated that around 40 % of people of Bhubaneswar have already taken different COVID-19 tests. [6] The cases have since been increasing at the rate of 3000 per day.

Health facilities available inside BMC area

Apart from Capital Hospital situated in Bhubaneswar, there are thirteen urban primary health centres (UPHC) and three urban community health centres (UCHC) where COVID -19 testing facilities were provided. The government also recognized seven private labs for testing facilities. Nine private hospitals provided COVID care, treatment, and management facilities along with the capital hospital.

The missing link – COVID waste management, including bio-medical waste management, in BMC during the COVID-19 pandemic

Waste management, specifically bio-medical waste (BMW) management, is one of the most important sanitary barriers to prevent the dissemination of illnesses and diseases. During the Coronavirus pandemic, BMW mismanagement could be one of the most important challenges to every member of society. The improper management of the produced waste during this pandemic may present serious environmental and health related issues because of the fact that SARS-CoV-2 can survive from several hours to days depending upon the contaminated surfaces.[7]

During mid-March to the end of May 2020, the number of persons infected with the coronavirus disease was continuously rising inside BMC. Our fieldworker observed that during the viral outbreak, many types of additional medical and hazardous wastes

[6] Covid-19 tests cover 40% of Bhubaneswar residents | Bhubaneswar News - Times of India (indiatimes.com)
[7] Environmental survival of SARS-CoV-2 – A solid waste perspective (nih.gov)

are being generated, including infected masks, gloves, syringes, samples, and other protective equipment, drain bags, urine bags, body fluid or blood-soaked tissues/cotton, and empty ampules, etc. These have been noted in and around health service centres; namely, KIMS hospital, High Tech hospital, Sparsh hospital, and Capital Hospital, and, according to relatives of patients, these wastes lay around for more than one week before they are disposed of in a dump yard. We found in KIMS hospital that the general waste and BMW are mixed before being transferred to the dump yard, despite having separate waste management protocols in the hospital. Both types of waste are dumped together, including the COVID bio-medical waste. Therefore, safe handling and disposal of such waste are essential.

We visited the four hospitals in Bhubaneswar city on October 5th, 6th and 7th, 2020. Our fieldworker very clearly observed, during visits to the health service centres, that the state government authority issued guidelines, including extensive checklists, based on the World Health Organization (WHO) and national and state pollution control board guidelines for mandatory practices of COVID bio-medical waste management in the hospitals during identification, selection, and issuing of certificates for COVID care and management hospitals.[8] During our visits to the hospitals and interactions with some of the staff of the hospitals, it was observed that, except in a few big private hospitals, COVID bio-medical wastes are not appropriately managed (mainly in the government hospitals). Instead they were stacked along with general solid waste, sometimes inside the hospital campus, and in few cases near the campus, before being transported to a segregation place. In this kind of situation, chances of infection are higher for sanitary workers as well as for the general public.

Parameters of our informal interview with the staff were-

1. Health and hygiene system in the COVID ward
2. COVID waste disposal management system
3. Dumping areas of the COVID waste
4. Guidelines of the government followed
5. Safety and security policy for waste pickers

[8] Rev. 4 Guidelines for disposal of COVID 19 Waste generated during treatment, diagnosis, Quarantine of COVID-19 Patients 17.07.2020 (1) (cpcb.nic.in)

The following information came out very clearly during our health service centres visits:

1. Health service centers are not prepared for BMW management on general days, even before the pandemic had hit the world.
2. However, the Central Pollution Control Board (CPCB) released guidelines for handling the COVID-19 BMW with constant updates. Except for KIMS hospital and Capital hospital, no hospitals, including High tech hospital and Sparsh Hospitals were concerned about and followed prescribed guidelines on various parameters such as safety and security for waste pickers, COVID waste disposal systems in the dump yards, hygiene of the COVID ward, and social distancing mechanisms.

3. No official data was available in the hospital or from any specific person responsible for BMW management for the pandemic.
4. However, according to the CBWTF in Delhi, a government or a private hospital would typically produce 500 grams of biomedical waste (like syringes, urine bags, gauze, etc.) per bed daily in normal times. Now, due to the pandemic, that number has gone up to between 2.5kg to 4kg per bed, daily. This waste is not limited to the hospitals, but also occurs at the isolation homes or quarantine centres, containment zones / red zones, (ii) quarantine facilities / COVID care centres, (iii) isolation homes, (iv) home quarantine, and (v) health care facilities / hospitals / labs. This is a major problem in managing and dealing with the BMW.
5. When Executive Engineer, Shri Asim Mishra, BMC was asked on October 17th, 2020 whether COVID-19 cases increased among individuals employed in garbage collection and disposal, the authorities said the data is not maintained yet.

Webinar on biomedical waste management in Bhubaneswar

We conducted two webinars on October 21, 2020 and November 2, 2020 on COVID waste management in Bhubaneswar. The following guests/ resource persons/ panellists participated in the meetings and shared their respective experiences and concerns. A total of 50 participants from NGOs, corporate agencies, private organizations, University representatives, etc., attended these webinars. Male

attendees of webinar were 40 and female were 10 i.e. 4:1 ratio of male female attendants.

Speakers:

1. Er. Asim Mishra, Executive Engineer, Bhubaneswar Municipality Corporation
2. R.N. Senapati, Retd IAS – former Chairman Odisha Pollution Control Board
3. Dr. Pratyush Mishra, MBBS, MD, AIIMS, Bhubaneswar
4. Dr. M. R. Mishra, Director, JRP
5- Ms. Nadia Mukbolpur, Chairman Inner-Wheel Club of Bhubaneswar
6- Mr. Gouri Shankar Mishra, Former Regional Director, JAICA, Cuttack

The agenda of the meeting was-

1. The COVID situation in Bhubaneswar municipality in Odisha
2. Role of BMC in COVID waste management policies and perspectives
3. Hospital COVID waste management
4. Socio-economic and health impacts on waste pickers and the general public in Odisha

During our webinar, participants stated that they believe that there is an increased generation of plastic waste in the COVID times and stated the reasons such as online delivery, panic buying, stockpiling, and PPE disposal. They expressed concern about the generation of plastic waste, especially the single-use plastic like gloves, masks, and aprons, which is high in demand among the public. This waste is not being appropriately managed and is being disposed of with the general waste.

Moreover, the panelists stated the factors that are discouraging the plastic recycling sector include: (a) Stump in oil prices, (b) Transport restrictions, (c) Staff shortages due to the Coronavirus pandemic. Further, during the discussion it was agreed that because of COVID-19, there has been a change of consumer preferences considering the hygiene factor. Thus, there is an increase in the use of single-use plastics instead of reusables, creating a high demand for single-use plastics.

Asim Mishra, a panelist, stated the proposed practices of waste (plastic) management to fight the future pandemic. They include incineration, chemical recycling (where

plastics are recycled and used for different purposes), and bioplastics. However, incineration should not be practiced as the burning of plastics leads to the release of dioxins and furans and is harmful to the environment. The panelist concluded the presentation with the comparative analysis of solid waste management from a usual scenario versus that of the COVID-19. They suggested that there is a need for coordinated efforts from all sections of society to control and regulate waste. There is also a need for individual participation and community engagement to manage BMW. Awareness materials in local languages by international agencies and the private sector can help sensitize the people on the ground. Collaborative efforts from the private sector, international agencies, and government departments will bring the necessary changes.

Panel member R.N. Senapati Sir, former chairman of Odisha state pollution control board, also added that there is a need to reinvent systematic waste management that leads to cost-saving for the government and to promote entrepreneurship and decentralization of technology. We also need to move towards a circular economy as an alternative to a traditional linear economy. This will involve sustainable production and consumption processes, reduce waste, and recover resources at the end of a product's life. This can then be channelled back into production, thus significantly reducing pressure on the environment. Waste management should be a non-negotiable priority for urban departments and municipal bodies in the post-pandemic era.

Field survey

1. **Household survey**

During the project implementation period, a survey was conducted both online (***https://docs.google.com/forms/d/1BCZGRQFw9I1bztwTzCNt-m4ZErVOw-JI2yMmEBi7ZdQ/edit***) and offline from 85 households whose members were COVID positive and mostly remain in home isolation.

Questions of the survey form-

1. Do you segregate your daily masks and other essentials related to covid-19? If yes, how?
2. Do you know Municipality has Covid waste collection and recycling protocol?
3. Have you witnessed any covid positive patient disposing of covid waste in the locality?
4. Whose concern is it to manage the covid waste? Do you have any suggestions for the same at the household level?

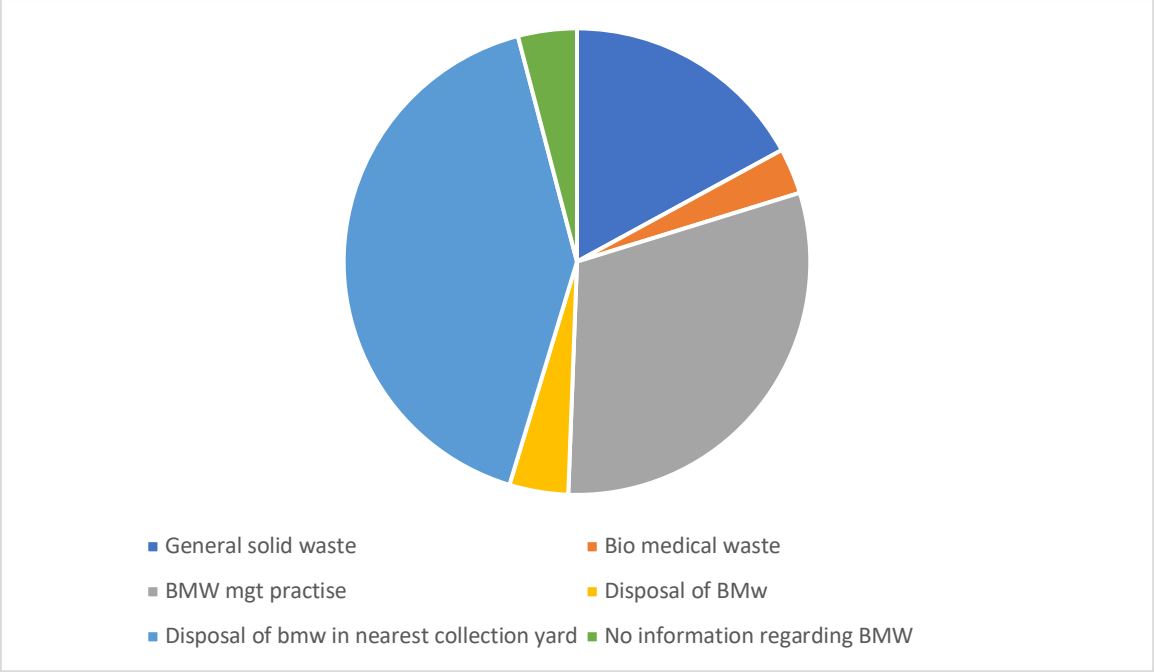
These 85 households were in Chandrasekharpur, Sailssreevihar, Neeldrivihar, Padamabati Vihar, Damana and Patia in Bhubaneshwar. All households are well aware of covid waste segregation guidelines and the required municipality protocol that needs to be followed.

The list of households was collected from BMC Zonal office. A brief analysis of data is as follows

Sl.No	Information collected	Absolute number	%
1	Knowledge regarding segregation of waste at the household level	32	37.64

2	Practice of segregation of general solid waste at the household level	6	7
3	Knowledge regarding bio-medical waste and its negative effect	57	67
4	Practice of positive BMW management for COVID-19 pandemic at the household level	8	9
5	Disposal of BMW through garbage collector from house	77	91

6	Disposal of BMW by self in the nearest garbage collection yard	8	9
7	No quantitative information regarding BMW at the household level	85	100



Hospital Survey

Our field staff visited five hospitals during the field survey, including two private, i.e., KIMS & SUM, and three government hospitals, i.e., Capital, Railway, and Municipal hospital. The lower-level staff, patients, and their attendants expressed fear and

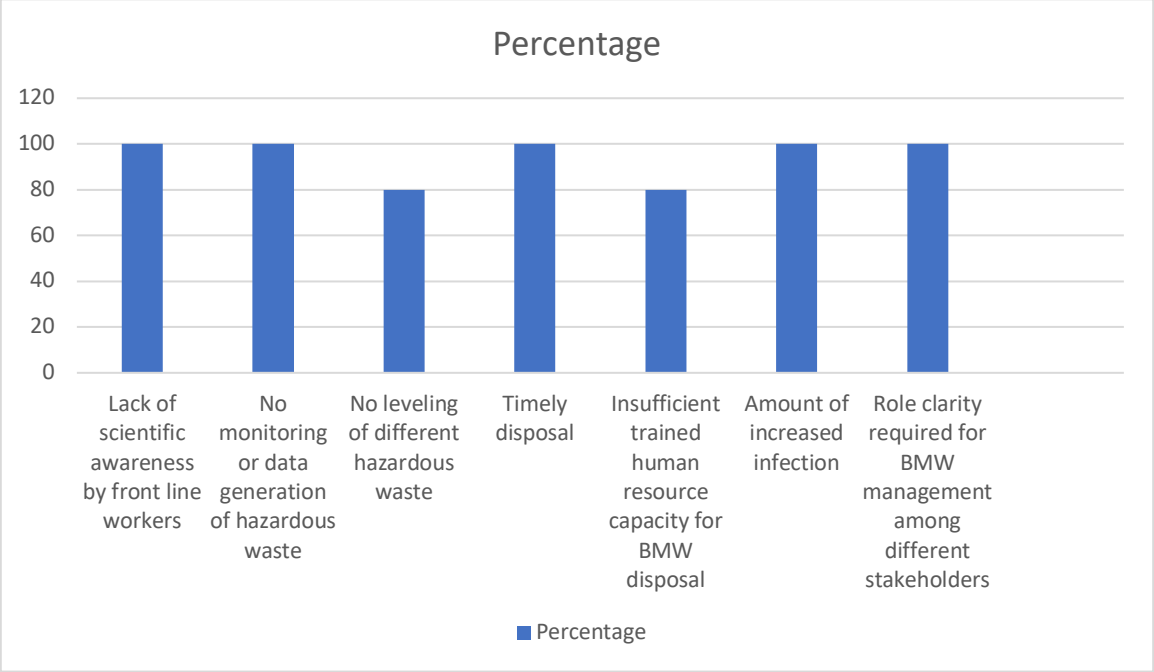
dissatisfaction regarding BMW. The following information was collected from the surveyed hospitals:

Sl.No	Information collected	Absolute number	%
1	Lack of scientific awareness on BMW management by front line workers	5	100
2	No monitoring or data generation of hazardous waste	5	100
3	No leveling of different kinds of hazardous waste	4	80

4	No regular or fixed time of disposal of BMW	5	100
5	Insufficient trained human resource capacity for BMW disposal and treatment expressed by Authority	4	80
6	No leveling of different kinds of hazardous waste	4	80
7	An increased amount of infectious waste generation during the pandemic	5	100

8	Role clarity required for BMW management among different stakeholders	5	100

Strategies initiated by Bhubaneswar Municipal Corporation to deal with COVID waste.



Strategies initiated by Bhubaneswar Municipal Corporation to deal with COVID waste.

- The Bhubaneswar Municipal Corporation (BMC) started collecting bio-medical waste from the doorsteps of houses within the BMC area since 2018. Currently, COVID-19 positive patients are under home isolation and Jagruti Welfare Organisation is engaged with their waste collection. Jagruti Welfare Organisation has started deploying dedicated vehicles in compliance with

standards laid down by the Central Pollution Control Board (CPCB) for transportation of the bio-medical waste to the waste disposal centre of Sani Clean Pvt. Ltd., which is a Common Bio-medical Waste Treatment Facility located at Tangiapada near Khurda, according to a BMC release.

- Jagruti Welfare Organisation is collecting and transporting bio-medical waste.
- BMC has been providing the list of COVID-19 positive and home isolation patients.
- BMC has been educating COVID-19 patients about the disposal of bio-medical waste.
- Jagruti Welfare Organisation is also ensuring sanitization of vehicles with 1 percent sodium hypochlorite solution after each trip as laid down under the guidelines issued by CPCB.
- It is also maintaining the utmost caution and due diligence in handling bio-medical waste for collection and transportation, and ensuring its workmen's safety in compliance with the CPCB guidelines.
- The bio-medical waste is collected through double-layered, non-chlorinated disposable plastic bags in compliance with the guidelines laid by CPCB. The organization itself provides plastic bags.
- The organization is responsible for providing daily collection and transportation reports to BMC. It covers around 100 houses per vehicle.
- BMC, along with the organization, is also educating the houses where a COVID-positive patient is under home isolation about following the protocol by disposing all of their bio-medical waste in the polythene bags provided by Jagurti and not mixing it with general household waste in order to prevent any hazards.
- According to CPCB, biomedical waste at home isolation shall comprise of used syringes, date expired or discarded medicines, and used masks/gloves. Patients with other chronic diseases may also have drainage bags, urine bags, body fluid, or blood-soaked tissues/cotton and empty ampules. As per the agreement, BMC shall pay *Rs.* 5,750 per vehicle to Jagruti for the collection of bio-medical waste in the city in a month.

Mapping and documentation of the COVID biomedical waste vis-a-vis BMC solid waste

During our field visits, it was observed that although BMC rolled out a separate strategy for BMW collection and treatment for the COVID waste by a specialized agency, the strategy was implemented sporadically and could not be scaled up to all BMC areas due to the non-availability of resources. In most places, the same garbage collector was collecting general solid waste and BMW and dumping them together. Then it was transported to the dumping yard for segregation. However, during the pandemic, it was observed that solid waste and BMW were lying for a longer period at the primary collection site due to a shortage of cleaning and supervising staff. There is high mobility of these kind of staff as the outsourced company pays them irregularly.

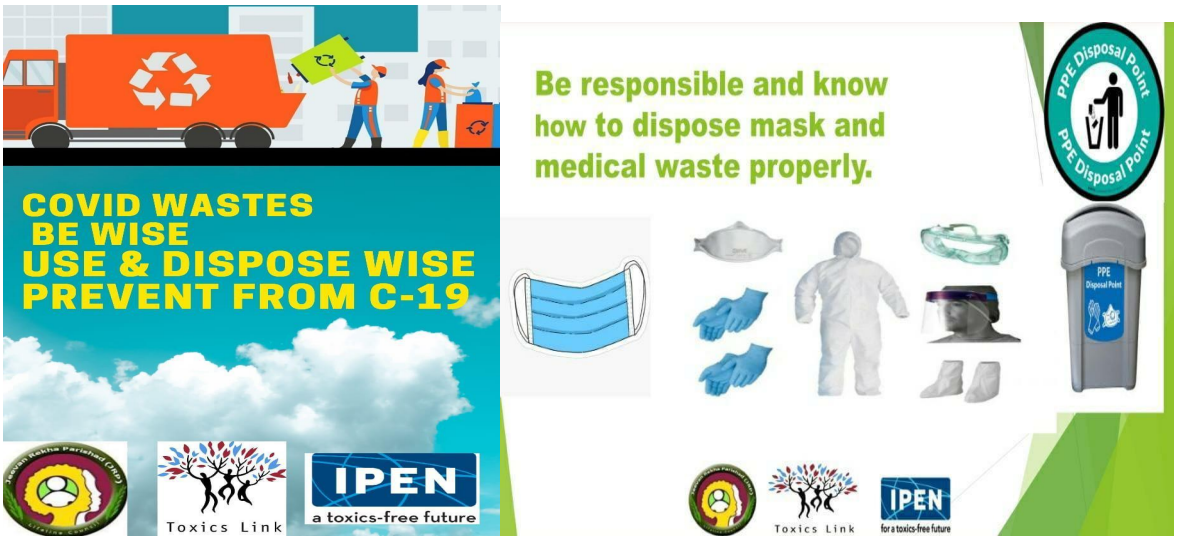
Dumpyard with COVID waste and regular waste mixed. / Open discard of COVID waste outside KIMS hospital.

Created digital IEC materials and disseminated them through various social media

Name of poster/program	Date of sharing	Names of platforms shared	No of Engagement on date shared
Poster 1	02/11/2020	Lets zero waste Whatsapp group, City farmers group, Odisha catalyst group, Trees for tomorrow, Facebook	100 +
Poster 2	05/11/2020	Lets zero waste Whatsapp group, City farmers group, Odisha catalyst group, Trees for tomorrow, Facebook	100+

Poster 3	15/11/2020	Odisha COVID hospital contacts, Lets zero waste Whatsapp group, City farmers group, Odisha catalyst group, Trees for tomorrow, Facebook	100+
Photos on social media on Instagram	25/01/2021	Lets zero waste Whatsapp group, City farmers group, Odisha catalyst group, Trees for tomorrow, Facebook, Instagram	20

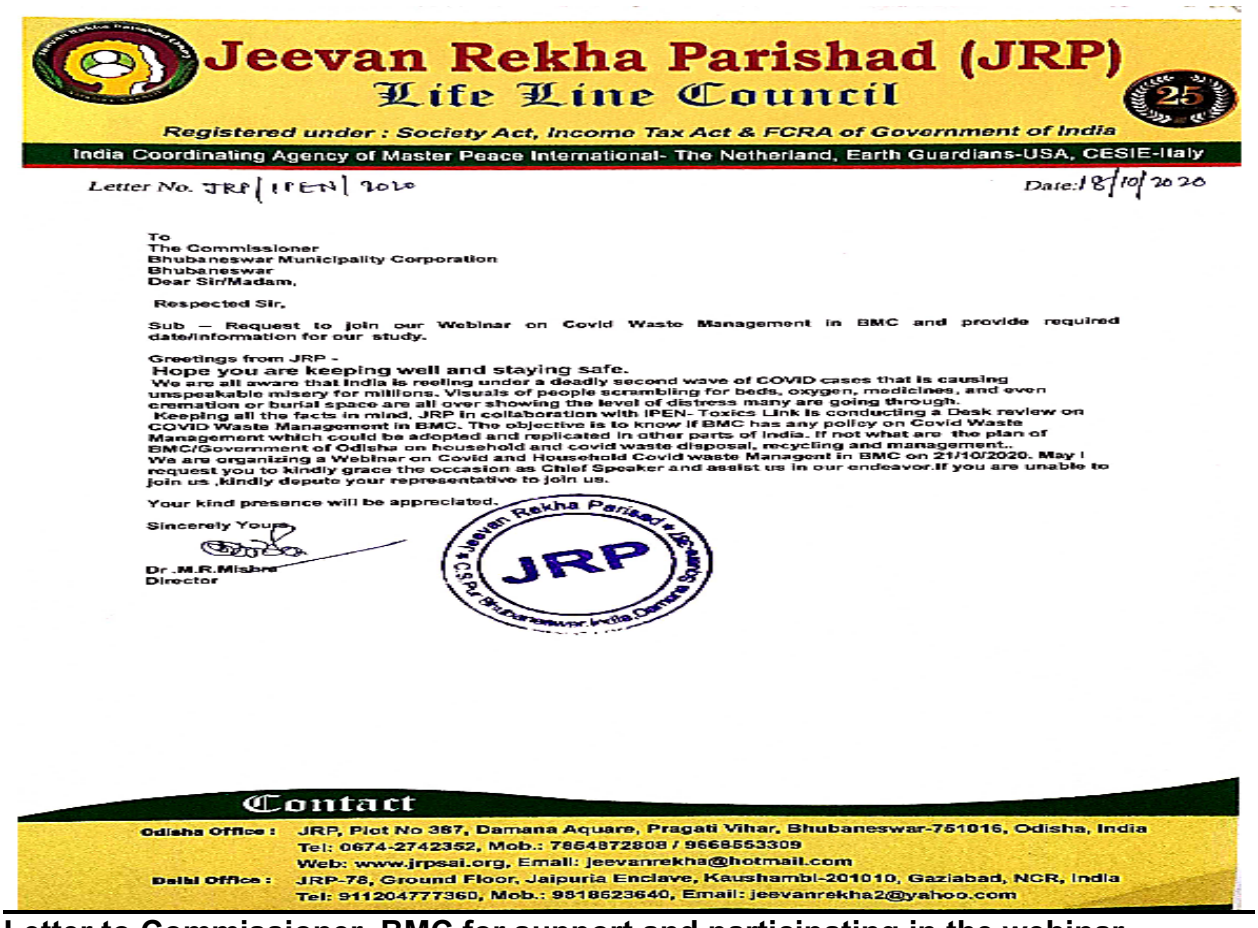
Five E-posters were developed and shared on different social media platforms for awareness generation among the public regarding waste treatment, specifically bio-medical waste.



Engagement with Pollution Control Board, Bhubaneswar Municipality Corporation, and Health and Family Welfare Department

We tried to establish contacts with the Pollution Control Board, BMC, and Health and Family Welfare Department for support and cooperation from the beginning of the project's implementation. In this regard, we got support to some extent from BMC, but it was challenging to meet a proper contact person from the Pollution Control Board and H&FWD. We have tried to contact each other over the telephone and by writing formal letters. However, we did not get a response from them. As it was challenging to meet them physically due to lockdown restrictions, we were not able to conduct the meeting. However, with many repeated requests, some of them participated in the webinar.

The findings of our survey were shared with the pollution control board, Bhubaneswar municipality corporation, and the NGO sector for information and awareness.



Jeevan Rekha Parishad (JRP)
Life Line Council
Registered under : Society Act, Income Tax Act & FCRA of Government of India
India Coordinating Agency of Master Peace International- The Netherland, Earth Guardians-USA, CESIE-Italy

Letter No. JRP/IPEN/2020 Date: 18/10/2020

To
The Commissioner
Bhubaneswar Municipality Corporation
Bhubaneswar
Dear Sir/Madam,

Respected Sir,

Sub — Request to join our Webinar on Covid Waste Management in BMC and provide required date/information for our study.

Greetings from JRP -
Hope you are keeping well and staying safe.
We are all aware that India is reeling under a deadly second wave of COVID cases that is causing unspeakable misery for millions. Visuals of people scrambling for beds, oxygen, medicines, and even cremation or burial space are all over showing the level of distress many are going through.
Keeping all the facts in mind, JRP in collaboration with IPEN- Toxics Link is conducting a Desk review on COVID Waste Management in BMC. The objective is to know if BMC has any policy on Covid Waste Management which could be adopted and replicated in other parts of India. If not what are the plan of BMC/Government of Odisha on household and covid waste disposal, recycling and management..
We are organizing a Webinar on Covid and Household Covid waste Managent in BMC on 21/10/2020. May I request you to kindly grace the occasion as Chief Speaker and assist us in our endeavor.If you are unable to join us ,kindly deputo your representative to join us.

Your kind presence will be appreciated.

Sincerely Yours,

Dr .M.R.Mishra
Director

Jeevan Rekha Parishad JRP CSPar Bhubaneswar India Damara Spain

Contact
Odisha Office : JRP, Plot No 387, Damana Aquare, Pragati Vihar, Bhubaneswar-751016, Odisha, India
Tel: 0674-2742352, Mob.: 7854872808 / 9668553309
Web: www.jrpsai.org, Email: jeevanrekha@hotmail.com
Delhi Office : JRP-78, Ground Floor, Jaipuria Enclave, Kaushambi-201010, Gaziabad, NCR, India
Tel: 911204777360, Mob.: 9818623640, Email: jeevanrekha2@yahoo.com

Letter to Commissioner, BMC for support and participating in the webinar.

Project Outcomes:

Activity conducted:	**Outcomes:**
Mapping and documentation of the COVID waste scenario vis-à-vis municipality wastes in Bhubaneswar - with video and photo coverage where the COVID wastes are affecting the environment and general public, including waste pickers. (Sept-October)	-Our Journalist Photographer visited different C-19 waste dumping areas in Bhubaneswar and collected more than 26 pictures and videos on the dumping of COVID wastes. He faced difficulties entering the sites as the government/municipality deployed the guards at the dumping sites, but since he is a journalist, he could manage to enter the dumping sites to take pictures and assess the situation. As stated by our journalist photographer, ten truckloads COVID wastes amounting to approx 5 tonnes are dumped in two major sites in Bhubaneswar every week. The pictures of COVID wastes were shared on JRP's Instagram and other social media platforms. Useful feedback was received, such as campaigning for the safety and precautions taken by the waste pickers, initiatives by SHGs to

	raise awareness in the local areas or slums in Bhubaneswar, etc. Useful feedback was received. Some of them have been reflected in the report. The pictures are enclosed at the end of the project.
Document basic facts about the Bhubaneswar Smart City pandemic situation and find out the sources of plastic wastes, including PPEs, gloves, masks, etc.(Sept-Oct).	Our team members also visited two selected COVID hospitals to observe the COVID waste management. They maintained all COVID protocols, but could interact with hospital authorities (mainly with KIIMS medical college and hospital). The team gathered information about the waste policies the hospitals had adopted and also took pictures and videos. The hospital authorities mentioned that the following COVID-related problems

	are occurring in KIIMS for hospital COVID waste: ● An increased amount of infectious waste generation has been found during the COVID-19 pandemic. ● Improper healthcare waste management policy by Bhubaneswar Municipality/government of Odisha. ● Hospital waste management and treatment are absent in Bhubaneswar. ● Suspension of recycling activities due to COVID. No recycling is done to Covid wastes. ● Insufficient capacity for waste treatment and disposal by medical college and hospitals – this is often an issue, but a drastic incline could be seen during the pandemic.
Household COVID waste management in BBSR- Online Google survey	Our IT Coordinator developed a google-based questionnaire and circulated the same among 85 houses of Bhubaneswar

	having COVID-positive members or members recovered from COVID. The results /findings have been quoted above. However, the following other observations were also collected from secondary data: ● 100% of respondents informed us that the increased amount of mixed waste, including infectious waste, is found in their houses due to low levels of segregation at the source. ● 95% of respondents informed us that an increased amount of plastic waste is found in houses due to poor market linkages, non-availability of domestic help, etc. People start using disposable plastic plates and cups in order to avoid doing the dishes when domestic help is not available. ● Increased littering, illegal dumping, and open burning have been found by 76% of respondents. ● 100% of respondents informed us that due to the suspension of recycling activities, the COVID waste volume is increasing day by day. ● Mixing of infectious waste such as gloves, masks, tissues, and gauze

	with other wastes (exposure to transmission) was found in 80% of houses.
Create digital IEC materials on COVID Wastes and Municipality Wastes	5 E- Posters were developed and circulated on social media, including JRP's Instagram, reaching many people in Bhubaneswar and outside. The instagram link is given below.

	
Create awareness among the general public through different social media platforms about the impact of COVID wastes on human health and the environment.	We organized two webinars on C- 19 waste management where representatives from government, NGOs, UN agencies, Bhubaneswar Municipality Corporation and Odisha Pollution Control Board participated and suggested different preventive measures and policy guidance. Besides, we

	published an article in the Oriya newspaper, Instagram, and FB pages of JRP about the issues. The recommendations of the webinars have been given above under the title Webinar- Virtual meeting. (p 5-6)
Engagement with Odisha Pollution Control Board, Bhubaneswar Municipality, and Office of Bhubaneswar Smart City by writing them letters with information about the findings of our assessment on COVID wastes in the city.	We contacted them several times, but due to their engagement in other issues, they did not give much information about the COVID waste management policy, etc. However, they participated in our webinar and suggested having a concrete COVID waste management policy after seeing our pictures and video on how the COVID wastes have been dumped in the dumping yard where the waste collectors are collecting plastics, etc.

Provide policy recommendations through virtual sharing meeting with policy makers, municipality, civil society, etc. relevant to the findings of the report. Convene webinar to disseminate results of the project. The primary audience for the webinar is public interest NGOs, but the webinar could include policymakers, journalists and others (Dec)	It was done through a virtual meet - Following topics were discussed- 1- COVID waste management methods 2- Healthcare waste management from healthcare facilities Following recommendations were made- Educate the people to use double bags for potentially infectious waste. The waste pickers should be trained to separate and keep recyclable materials at the source before being discharged. The COVID Health Warriors should cut/destroy used disposable PPE to avoid reuse, mainly in hospitals. The Housekeepers and health workers should seal the plastic bag when it is two-thirds full. Awareness outreach for generators (source separation manner, recyclable material concern, stop littering and open burning, etc.) should be conducted by the municipality and civil society members.

Communication with National or Local Authorities:

Contacted Municipality and Office of Bhubaneswar Smart City by writing them letters with information about the findings of our assessment on COVID wastes in the city.

Policy and regulatory aspects:

National, provincial, and municipal governments with existing healthcare waste management plans and policies will benefit greatly from using these plans and policies in their response to COVID-19 waste. Within the municipal solid waste sector, existing contingency plans for disaster waste, particularly those including healthcare waste, can also be useful in the context of COVID-19. For municipalities or countries who do not have existing strategies, plans or policies, when they are developed, they should include contingency planning for epidemic situations, and this content can be informed by ongoing local COVID-19 waste management challenges.

Resources on chemicals and waste:

- Waste Management during the COVID-- From Response to Recovery- IGES Center Collaborating with UNEP on Environmental Technologies (CCET)
- BMW-COVID.pdf (odisha.gov.in)
- Health Department (odisha.gov.in)
- Covid-19 Spread: Mismanagement Of Biomedical Wastes Puts Additional Challenges In Odisha (odishatv.in)
- Advisory-for-HR-management.pdf (odisha.gov.in)
- COVID-19: Odisha State Dashboard

Some pictures on COVID wastes in Bhubaneswar:

Dumping Yard- Bhuashuni, Bhubaneswar

Dumping Yard- Sainik School Square, Bhubaneswar


2020.11.10 09:06

.