

RESEARCH PAPER ON THE EFFECT OF BIOMEDICAL WASTE DISPOSAL IN SURROUNDING AREAS OF DEONAR DUMPING GROUND

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ABSTRACT

This research paper focuses on the emerging trends of open dumps and sustainability with specific reference to India. A case study has been conducted through empirical research on the waste management problems in Deonar dumping ground, in light of the above-mentioned trends. The paper traces the evolution of conventions relating to biomedical waste and solid waste and the obligation it imposes on the signatory parties. It also focuses on India's stand on various conventions like Basel Convention, Rotterdam Convention, Stockholm Convention and Minamata Convention. Furthermore, an emphasis is made on the need to combine the concepts of sustainability and open dumping in such a way, that it leads to adoption of sustainable methods in dealing and disposal of waste.

The paper subsequently addresses matters about human right violations, health hazards and problems that affect the residents of Deonar. The data collected has been analysed in detail, and an attempt has been made to highlight the impending issues. The researcher has also noted a few recommendations, which when implemented can lead to a probable solution to Deonar's never ending waste problem.

Keywords: Basel Convention, Rotterdam Convention, Stockholm Convention, Biomedical Waste Management Rules, 2016, COVID-19, MPCB, Sustainability, Waste management, Deonar Dumping ground.

INTRODUCTION TO OPEN DUMPS AND SUSTAINABILITY

Evaluating and estimating the relationship between open dumps and sustainability is a herculean task. The fundamental principles of sustainability were laid out in the report of the World Commission on Environment and Development, in 1987. ⁱ According to the World Summit on Sustainable Development (WSSD), in Johannesburg, the three pillars of sustainability are: *economic development* (economy), *social development* (society) and *environmental protection* (environment). ⁱⁱ Thus, these mentioned pillars are represented by intersecting circles and so, we can infer the true challenge when it comes to sustainability-balancing social and ecological objectives, along with the thirst for economic development and advancement. ⁱⁱⁱ

Dumping of municipal waste in an uncontrolled manner is the most common method of disposing waste, which is heavily practised by developing countries. The whole process of dumping waste is not environment friendly, and to make things worse, is damaging to public health. We can attribute the ever increasing disposal of solid waste, to consumers desires, be it their eating habits, income, fluctuating preferences, or simply as a result of the dynamic society that we live in. ^{iv}

Some popular methods of waste disposal are as follows: Composting (for biodegradable waste), Incineration, Landfills, and Plasma Gasification (where elements from the solid municipal waste are extracted and converted into energy). ^v However, for the purpose of this research paper, emphasis will be laid on open dumps and the underlying hazards.

When there is an open dump, there invariably happens to be open burning of that dump. These are two separate issues which need to be identified and analysed in a mutually dependent manner. ^{vi}

The real challenge is maintaining or rather introducing landfills in such a way that sustainable practices are adopted. There needs to be a gradual shift from indiscriminate open dumping and burning to adopting approaches that assimilate well in the environment. An attitudinal change is required where we, the world should *treat waste as a resource*, and do our level best to salvage any utility or final value from this precious resource called waste. ^{vii}

INTERNATIONAL CONVENTIONS

There have been various conventions and agreements relating to biomedical waste and waste management:

Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was ratified on 22nd March, 1989. Presently, there are 188 parties, including India. The aim of this convention is to ensure that parties to the convention are responsible for the transportation and disposal of infectious and poisonous waste in an environmentally friendly manner.^{viii} The parties have a responsibility to minimise the waste generated at source and can transport the waste only if the solution is environmentally sound. Meanwhile, the convention is adopted on a country level, thereby enabling the attainment of such objectives on a large-scale.^{ix}

Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention was ratified on 22nd May, 2001, in Stockholm, Sweden, comprising 184 parties.^x The main aim of this convention is to protect the health of human beings and the environment from any chemicals or pollutants which pose to be a threat by their sheer presence.^{xi} Exposure to these pollutants can pose to be dangerous by causing some birth defects or abnormality to the immune system, or even cancer. Thus, parties to the convention had identified 12 chemicals initially, (currently it has been increased to 23 chemicals), which were declared as hazardous pollutants, thereby enabling the parties to either restrict its production of the said chemicals or eliminate it in its entirety.^{xii}

Minamata Convention on Mercury

This convention was ratified on 10th October, 2013, and was a global treaty, comprising 128 countries, including India and was adopted with the aim of spreading awareness about the dangerous effects of mercury on human health and environment.^{xiii} The parties to the convention acknowledged that mercury is a ubiquitous metal being a natural element. However, if exposed to human beings, it can affect the kidneys, lungs and even nervous system.

^{xiv} This convention is a protocol where leaders around the world, come together to prevent catastrophes of emission of mercury.

Rotterdam Convention

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was ratified on 10th September, 1998. The convention enumerates 47 chemicals (consisting 33 pesticides and 14 chemicals emitted by industries) which are banned due to environmental or health reasons.^{xv}The parties to the Convention, work together and disseminate information about possible and existing hazardous wastes. We live in a world where the disposal, treatment and handling of chemicals (hazardous wastes) are crucial as these chemicals are utilised by industries like construction, consumer care products and even used in plastic, so we can conclude it has an effect on the recurring activities of people.

World Health Organisation Guidelines

Ever since the pandemic struck the world, the biggest weapon that people now use to hold on to their dear lives are equipment like face masks, shields, gloves and other various forms. However, the real challenge is in its disposal. The WHO has recommended different colours for different kinds of waste, to enable proper segregation and awareness of the different kinds of waste.

According to the WHO, different kinds of waste should be treated differently. For instance:

Recommended colour schemes for disposal^{xvi}

Even after following the above colours to aid segregation, it is important to treat waste the right way especially if it is biomedical waste being generated.

Hence, we can say that different biomedical waste needs to be treated by varied methods at hand. This can be done if there is teamwork, good backing by the government, and scientific methods adopted by healthcare workers.

Type of waste	Colour of container and markings	Type of container
Highly infectious waste	Yellow, marked "HIGHLY INFECTIOUS"	Strong, leak-proof plastic bag, or container capable of being autoclaved
Other infectious waste, pathological and anatomical waste	Yellow	Leak-proof plastic bag or container
Sharps	Yellow, marked "SHARPS"	Puncture-proof container
Chemical and pharmaceutical waste	Brown	Plastic bag or container
Radioactive waste ^a	—	Lead box, labelled with the radioactive symbol ^b
General health-care waste	Black	Plastic bag

Even after following the above colours to aid segregation, it is important to treat waste the right way especially if it is biomedical waste being generated.

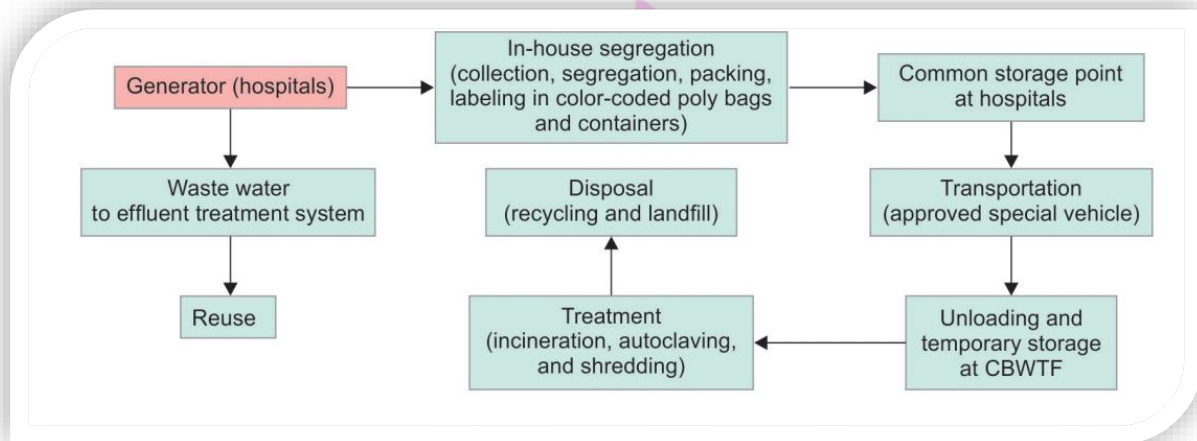
Hence, we can say that different biomedical waste needs to be treated by varied methods at hand. This can be done if there is teamwork, good backing by the government, and scientific methods adopted by healthcare workers.

NATIONAL BODIES AND GOVERNING REGULATIONS***Biomedical Waste Management Rules, 2016***

These rules give a framework for the handling and disposal of biomedical waste and provides an in-depth explanation of the duties of an operator, segregation and transport of waste. It even

highlights the different labels for different coloured waste bags.^{xvii} The prescribed authority to govern these matters is the State Pollution Control Board for different States and the Pollution Control Committees for Union territories.^{xviii}

Process of Biomedical Waste Management^{xix}



Incinerators which treat biomedical waste, mandatorily achieve certain operating standards and emission standards. Thus, we can say all this is done in the most environmentally sound manner, keeping in mind the health of workers and environment.

Environment Protection Act, 1986

After the horrifying and saddening incident in 1984, i.e. the Bhopal Gas Tragedy, the Environment Protection Act came into existence in 1986. This act is an umbrella legislation, thereby empowering the Central Government to investigate various environmental issues. There are 3 aspects which can be highlighted:

- i. Harm to the environment- Section 7-: No person carrying on an activity or industry can exceed the amount of pollutants as may be prescribed.
- ii. Information on accidents and spillages- Section 9-: If there has been any accidental spillage, either due to a foreseeable or unforeseeable event, it is the duty of the polluter to help mitigate that pollution and inform the concerned authorities.^{xx}
- iii. Polluter Pays Principle- Section 9 (3)-: Here, the polluter pays two kinds of costs for the harm or pollution done to the environment. First, is in the form of *private cost*, by way of interest and expenses which is recovered by the concerned authority. Second, is

in the form of *social cost*, by way of environmental cost, which is an additional expenditure.^{xxi}

Solid Waste Management Rules, 2016

The Solid Waste Management (SWM) Rules, 2016 superseded the Municipal Solid Wastes (Management and Handling) Rules, 2000. Under these rules, the waste generator must segregate the waste at source into three categories: "biodegradable waste, dry waste and domestic but hazardous waste."^{xxii} The Ministry of Environment, Forest, and Climate Change is responsible for overseeing the enforcement of the SWM Rules by various government ministries, including the CPCB.^{xxiii}

Central Pollution Control Board (CPCB)

The CPCB comes under the ambit of Ministry of Environment, Forest and Climate Change and is also set up under the Water act, 1974.^{xxiv} It regulates different spheres of the environment, ranging from water, environment, air, noise and different types of waste (biomedical, e-waste, municipal solid waste, to name a few).^{xxv}

With specific reference to COVID-19, the CPCB has released guidelines while dealing and treating biomedical waste which must be adhered to. There are guidelines which cover procedures in isolation wards, duties that operators of quarantine centres must compulsorily follow, role of State Pollution Control Board (SPCB) in combating the virus and even touches upon the disposal of used equipment like PPE, masks, gloves.^{xxvi} The CPCB has also made it mandatory for all states to use the software application called 'COVID19BMW' so that information can be disseminated regarding generating and treatment of waste at labs, isolation wards, hospitals, and quarantine centres at home.^{xxvii}

Maharashtra Pollution Control Board (MPCB)

MPCB is a statutory body which governs the enforcement of different environmental regulations by monitoring the amount of pollution and can issue legal notices to comply with the same, in the state of Maharashtra.^{xxviii} In light of COVID-19, The MPCB, like the CPCB

has introduced a set of rules to be followed while handling infected waste or waste which has the potential to be infected.

The MPCB, based on directions from the CPCB, has issued directions on how infected Personal Protective Equipment (PPE), should be treated if infected. (PPE includes N-95 masks, face shields, full sleeves gowns), authentic sanitisers to sanitise objects, surfaces and even the precautions that self-quarantined patients are supposed to take. The MPCB has granted 30 biomedical treatment facilities a go-ahead to cater to the needs of hospitals, laboratories and vehicles have been designated to transport the waste, and are distinguishable with a bio-hazard sign.

HARMONY BETWEEN OPEN DUMPS AND SUSTAINABILITY

When one hears the name open dumps and sustainability, one essentially thinks of two completely contradictory topics which have no correlation to each other. However, contrary to popular belief, the two above terms have a level of interconnectedness and some level of relevance in our era.

Below are two ways in which an open dump can be made sustainable:

- *Sanitary Landfill:* A sanitary landfill is a landfill that adopts a sustainable means of waste disposal. In this type of landfill, alternative layers of soil and waste are spread out in a thin layer, in a deep and wide pit, where the purpose of the soil is to fasten the process of decomposition. This is done, keeping in mind that garbage emits toxic pollutants like methane, and instead of this gas being emitted and polluting the environment, it can very well be used to generate electricity, thereby treating waste as a resource. This fashion of arranging waste and soil is such that any liquid which is generated, does not percolate and pollute the groundwater. This landfill requires constant monitoring; however, this is effective and beneficial to the environment in the short and long run.
- *Waste-to-energy plant:* This comes under the ambit of the Ministry of New and Renewable Energy. As the name suggests, this converts municipal solid waste into electricity. This waste is burned at very high temperatures to result in steam, which then creates electricity. Here, there is fruitful usage of waste and thus, this is a renewable and clean source of energy

which does not harm the environment. Although this concept is relatively new in India, it is a point to ponder for a country like ours.

LITERATURE REVIEW

The researcher has gone through various papers which focus on waste management, biomedical waste as a result of COVID-19, and its relation to sustainability. Few relevant ones have been listed below.

1. "Challenges, opportunities, and innovations for effective solid waste management during and post COVID-19 pandemic"^{xxix}

This paper focuses on new challenges in disposal of municipal solid waste, food waste, biomedical waste and plastic waste, in times of COVID-19. It also mentions the stay of duration of the virus on different kinds of surfaces, ways to treat or dispose of the surface. It also gives a comparative analysis of the challenges that developing countries would face as compared to developed ones.

Meanwhile, the researcher has focused on analysis of biomedical waste but on a narrower scale, as opposed to a global approach. The researcher has given importance to solid waste and biomedical waste respectively but has focused on biomedical waste as part of the study, laying more emphasis on the challenges such as segregation, treating and its disposal.

2. "Environmental sustainability assessment of land disposal of municipal solid waste generated in Indian cities – A review"^{xxx}

This paper analyses a plethora of ways that Indian cities have adopted and can adopt to treat waste sustainably like pyrolysis, gasification, waste-to-energy and many more. It compares the existing reforms and practices abroad. Apart from sustainability, it also emphasises on the different groundwater pollutants and its ill effects.

Meanwhile, the researcher has included part of these aspects in the study when an attempt was made to link sustainability to dumps. However, the solutions and strategies provided are general in nature and not specific to any city. The researcher also has briefly analysed the impact of waste on the environment and has not dived deep into the harmful pollutants or elements of waste.

3. "Case Study of Mumbai Decentralised Solid Waste Management"^{xxxix}

This paper focuses on the alternatives of adopting a decentralised system of waste management as opposed to a centralised system where power is vested with municipal bodies for its governance, and believes that a centralised form has its own limitations, and feels that a decentralised approach can give informal players a platform to better succeed at waste management. The paper also highlights different strategies and methods adopted by informal players while segregating and handling waste.

Meanwhile, the researcher believes that a centralised and a decentralised form of managing waste, could be effective, however, both forms have lacuna. However, the researcher's opinions tilt more to the side of a decentralised form of waste management. The researcher has focused more on gathering secondary data, rather than primary data on decentralised form of waste management.

4. "Waste pickers in Western Mumbai"^{xxxix}

The paper talks about waste pickers at dumping grounds and the lack of recognition given for all their efforts in segregating waste. It goes on to highlight their contribution to make dumps more sustainable and even enumerates the form of harassment and intimidation faced while selling scrap. It showcases the kind of ill treatment faced and the toll on their health resultant of the waste.

Meanwhile, the researcher has highlighted the problems that waste pickers face in a superficial manner and has placed more emphasis on the kind of infections that the residents face due to the ill effects of the dumping ground. The researcher has chosen a sample of 25 residents in the surrounding and neighbouring areas of Deonar and was unable to reach out to people who were clustered near the ground.

5. "Current Research in Environmental Sustainability"^{xxxix}

This paper analyses the characteristics of solid waste and meticulously talks about the linkage of socio-economic issues with waste. It recognises the informal sector that deals with waste and values its contribution. In addition, the paper disseminates information about the strong and solid practices undertaken by different cities in the country.

Meanwhile, the researcher has linked sustainability to open dumps and lists measures that a country like India should undertake to make waste disposal sustainable. The researcher has not

laid emphasis to prevalent socio-economic issues which has a bearing on how waste is treated and handled but has laid more importance to biomedical waste and solid waste disposed in Deonar.

6. "Open dumping site and health risks to proximate communities in Mumbai, India: A cross-sectional case-comparison study"^{xxxiv}

This paper analyses the co-morbidities that people in the region of Deonar faced, when the fire broke out in the dumping ground in 2016. For the purpose of this study, a sample size of 200 has been considered, targeting those people who have similar socio-economic conditions, making their audience uniform in nature.

Meanwhile, the researcher too has analysed the surrounding environment of Deonar and the impact of the dumping ground on the environment and health of residents. However, the researcher has not done an in-depth analysis about the kinds of diseases people face due to an event (a fire), neither has statistical tools been used to gather findings.

7. "Novel coronavirus disease 2019 (COVID-19) pandemic: considerations for the biomedical waste sector in India"^{xxxv}

This paper talks about the challenges that India faced specifically in the month of July and still faces in dealing and handling biomedical waste. It also lays emphasis on rules and guidelines governing such treatment of waste by the CPCB, WHO and the Biomedical Waste Management Rules, 2016. Additionally, the paper gives a brief background on the evolution of COVID-19 and its relation to SARS.

Meanwhile, the researcher has taken into account the challenges that India is facing, more specifically, Mumbai and has tried to analyse the biomedical waste challenges in COVID times by making an effort to understand the level of segregation being done and the role that municipal bodies play. However, all focus has not been given to biomedical waste solely, but has also been given to dumping grounds.

8. "Sustainable Municipal Solid Waste Management in India: A Policy Agenda"^{xxxvi}

This paper analyses the present scenario of solid waste management in the country, and notes few of the success stories across different states like Goa, Madhya Pradesh, Sikkim and many others. It also highlights a practice called 'Zero waste' which has been successfully adopted by

cities like Pune and explains the corrective steps taken. It mentions a few government initiatives and advanced sustainable technology to deal with waste.

Meanwhile, the researcher has linked sustainability to open dumps and enumerates measures that a country like India could undertake to make waste disposal sustainable. The researcher has laid more importance to biomedical waste and solid waste disposed in Deonar and has marginally focused on sustainability as a mere recommendation.

9. "Prevalence, predictors and economic burden of morbidities among waste-pickers of Mumbai, India: a cross-sectional study"^{xxxvii}

This paper analyses the co-morbidities of rag pickers, the kind of health issues they face, and the level of health expenditure incurred by them. The author conducts a study by comparing 200 people (rag pickers who live near the dumping ground) to a group comprising 103 people who were non- waste pickers. For the purpose of this research, regression was used to draw findings.

Meanwhile, the researcher has considered the issues that rag pickers face, superficially in the study but has placed more emphasis on the kind of infections that the residents face due to the ill effects of the dumping ground. The researcher has chosen a sample of 25 people scattered in the surrounding and neighbouring areas of Deonar and was unable to reach out to people who were clustered near the ground.

10. "Innovation in solid waste management through Clean Development Mechanism in India and other countries"^{xxxviii}

This paper talks about the effectiveness of Clean Development Mechanism (CDM) that countries like China, Mexico and Brazil have followed. It briefly talks about the 22 CDM projects that have been set up in India, and highlights the technologies used under CDM for the safe disposal of waste. The main essence of CDM, is to reduce greenhouse gases like methane, and thus provides solutions on its treatment and how one can effectively use such gases.

Meanwhile, the researcher on the other hand, has mentioned a few techniques that India could adopt to achieve a sustainable form of waste management. However, there has been no emphasis on CDM specifically as a form of sustainable waste management as the subject of effectively dealing and treatment of greenhouse gases has not been considered for this study.

ISSUE OF DEONAR DUMPING GROUND

The Deonar dumping ground is Asia's largest dumping ground, spread across 132 hectares of land. Apart from this dumping ground, there are two major dumping grounds in the city, one at Kanjurmarg and the other at Mulund (which is no longer operational as this ground has reached its tipping point). There is also a new dumping ground at Taloja MIDC, however, with the 450 metric tonnes a day of waste being disposed, its capacity might give way in the upcoming months. So, we can conclude that the two fully operational dumping grounds are in Deonar and Kanjurmarg.

For the purpose of this research, the researcher will be dividing the underlying issues into three categories:

- I: Effects on the the health of residents in the area and the surrounding environment
- II: Effect of COVID-19 waste on the dumping ground
- III: Miscellaneous issues governing the dumping ground

Effects On Health and Environment in Deonar

It is no rocket science that a dumping ground as polluted and big as deonar, would have an effect on the residential areas surrounding it, such as Govandi, Mankhurd, Chembur.

Institutions like Tata Institute of Social Sciences and the Director of NGO named Apnalaya has concluded that, “The life expectancy of people still hovers at 39 (as against an urban life expectancy of 73.5 in Maharashtra.”^{xxxix} This statement about age speaks volumes about the average expectancy of a person. Deonar dumping ground began its operations in 1927, and the operations of a dumping ground usually ends after 40 years from its inception. However, we can see the extent of overuse being done.

The dumping ground poses risks to all people around it; however, the ones who truly suffer are those people whose hands are tied. For instance: waste pickers, slum dwellers, residents even in high buildings and not to forget, our precious environment.

The condition of residents around the ground becomes alarming, especially when the monsoons arrive. Because of the slope and inclination of the dump, rain water usually hits the surface of

the waste, accumulates on the surface or collects near the ground. This collection and accumulation of water poses a great risk for people to contract leptospirosis, more so for those people who have no choice but to tread along the water in search for scrap, or simply in search for shelter.

After a fire broke out in the dumping ground, in 2016, the Air Quality Index (AQI) fluctuated between 302 and 308 for weeks to come, falling under the ambit of "very poor" and was ironically even higher than the AQI of Delhi which fluctuated between 215 and 219.^{x1} Even in general times, what poses risk is the particulate matter from the waste that is released in the air, which has the potential of getting stuck in the respiratory system, making it difficult to breathe easily causing detrimental effects in the long term.

Effect of Covid-19 Waste in Deonar

Even though Deonar dumping ground should have stopped its operations more than 40 years ago; this dumping ground must counter more alarming issues like disposal of biomedical waste, especially during COVID-19 times. Even before the pandemic struck Mumbai city, the condition of waste disposal was in a state of disaster. In Mumbai, there is a need of a common biomedical waste treatment facility (CBMWTF), and there happens to be one such treatment facility at the Deonar dumping ground. The facility has been set up and is handled by SMS Envoclean Pvt Ltd. Their treatment facility can incinerate approximately 7 tonnes of COVID-19 waste daily; however, with the surmounting waste and inability to treat the continuous incoming biomedical waste, a part of this waste in the month of September 2020 was sent to Taloja. But due to its over utilisation, the waste must forcefully be deposited in Deonar itself. The residents themselves have claimed that people are dying due to respiratory infections. Due to the polluted air over the numerous years, people's immunity have lowered significantly, making them extremely susceptible to a disease like COVID-19.

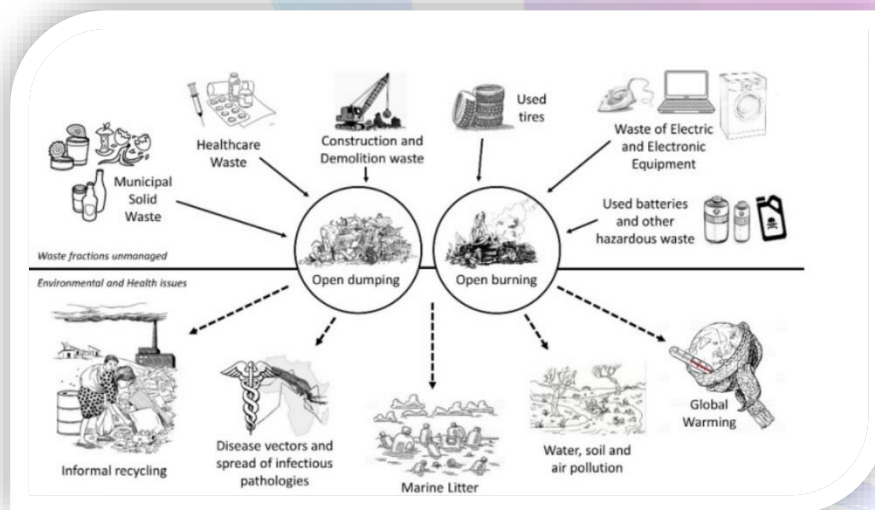
To summarise, in times of the pandemic, the kind of issues that people are facing are health risk due to lowered immunity, apprehension about the treatment, handling of waste, inhaling those pollutants like methane and others which are emitted while in the phase of incineration, loss of jobs (especially for waste pickers) and lastly violation of their human rights for many years, without any due consideration from the BMC or national authority.

Miscellaneous Issues Governing Deonar

- Implications of a dumping ground:

Open dumps do not have a liner system. The purpose of a liner system is to separate the waste from the environment so that the environment does not get polluted. However, without this, open dumps cause serious threats. There is no cost involved in dumping the waste, except for the cost to the environment. Open dumping is indiscriminate in nature, and that in turn leads to open burning, again in an indiscriminate manner, if proper segregation is not done.

Effect of unsustainable solid waste management on the environment^{xli}



- Waste pickers

Waste pickers surrounding the dumping ground have made scavenging and rummaging waste a profession. According to independent reports, the waste transported from sites to the dump is approximated to 75 lakhs, making it a flourishing business. Recognising this as a business opportunity, there have been small enterprises which have been set up, who purchase these scraps and sell the pickings to large organisations who recycle the waste.

The dump has witnessed 3 widespread fires in 2015, 2016 and 2018. With such a thriving business, it is expected that foul play will certainly come to the fore. Despite the persisting assurance of the BMC that there were combustible elements of the waste which reacted together, the rag pickers and surrounding people in the area, tell a different story.

The role of the mafia is simple- enter a business where the money is and make maximum money, even if it is through illegal means. The entry of one gang opens the doors for plenty others to join in. However, the real issue starts when controversy in their hands arise. One strategy employed by these gangs is to burn scraps. Scraps can be set on fire so that the metal emitted can be sold in the market. The scraps which are usually set on fire include stolen vehicles, and by burning them, the culprit is left untraced. As a result of burning such scraps, the remains reacted with medical waste, causing such a rampant fire and its long-lasting effects. Additionally, burning of scrap is also a way for gang rivals to send indications to their fellow mates about territorial demarcations.

Thus, waste pickers sell the scraps to these gangs and are at their mercy. They are often ill-treated by gangs and other cartels who have significant power over them. These waste pickers earn a meagre amount for themselves and their families, and to top it all, encounter exploitation at the clutches of the influential.

RESEARCH METHODOLOGY

The researcher has chosen empirical form of study where primary data has been gathered by the researcher herself, through a survey. The researcher focused on the residents surrounding the Deonar dumping ground, as a sample, since the issue is at its pinnacle in that area.

Research objectives

The primary objective of this study is to understand the impact of biomedical waste disposal in the residential areas of Deonar, and to analyse their apprehensions, observations and issues faced by residents in an analytical and legal approach.

Few of the secondary objectives are:

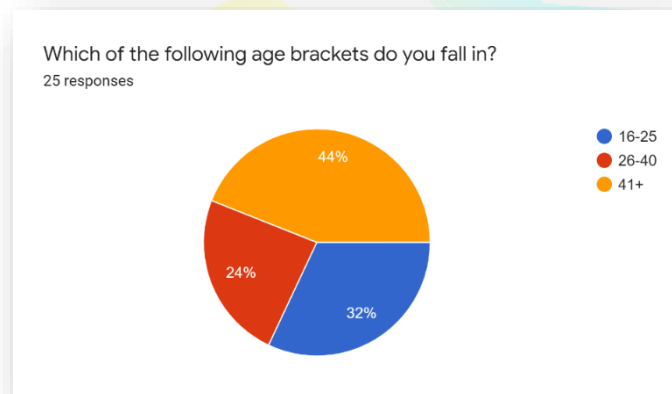
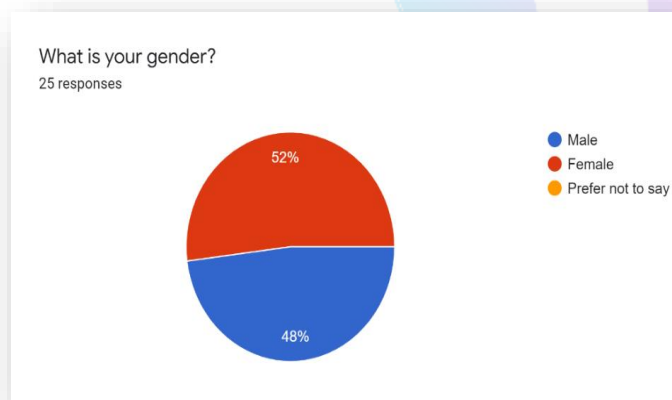
- To determine the health problems that people face in the residential areas of the dumping ground
- To determine the level of segregation being done and ascertain residents attitude towards the contribution of the Maharashtra Pollution Control Board (MPCB)
- To determine the root cause(s) of the surmounting waste at the dumping ground
- To ascertain the extent of the violation of residents environmental rights, and their attitude towards the same

Sample Framework

Unit of Analysis	Individuals
Time Boundaries	October, 2020
Space Boundaries	Mumbai, Maharashtra
Sampling Units	Individuals affected by the Deonar Dumping ground
Sample size	25

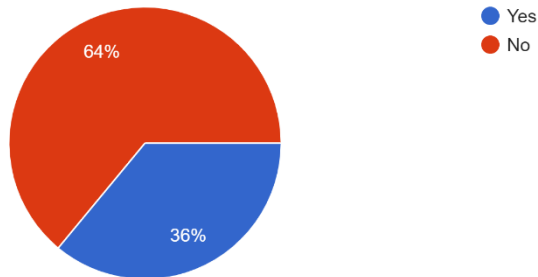
DATA DESCRIPTION

Survey Questions:



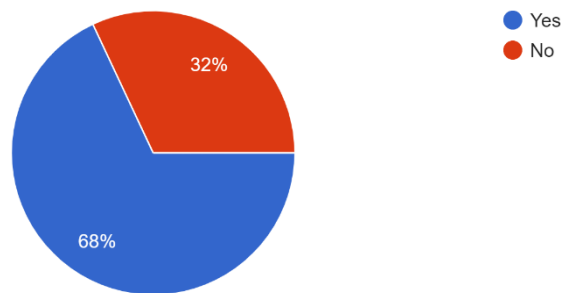
Are you aware about a company called "SMS Envoclean Pvt Ltd." which has it's biomedical treatment facility in Deonar?

25 responses



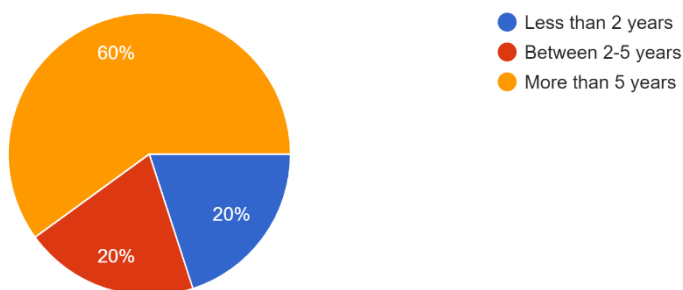
During COVID times, has there been a higher frequency of fumes emitted from the biomedical treatment plant (incinerator) at the dumping ground (as compared to non-COVID times)?

25 responses



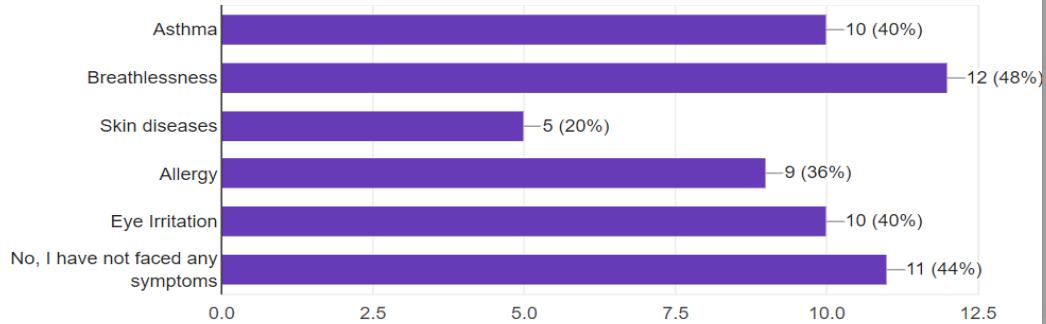
How long have you been staying close to the dumping ground in Deonar?

25 responses



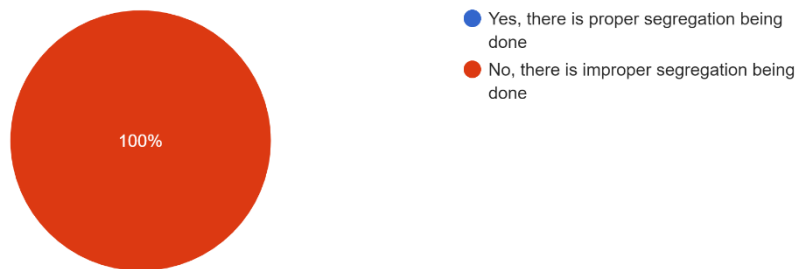
In the months of July-August 2020, there was a continuous thick black smoke emitted by a treatment plant of SMS Envoclean Pvt Ltd. Which of the following symptoms did you face due to the emission?

25 responses



Do you feel there is proper segregation of biomedical waste followed in the dumping ground during COVID times?

25 responses



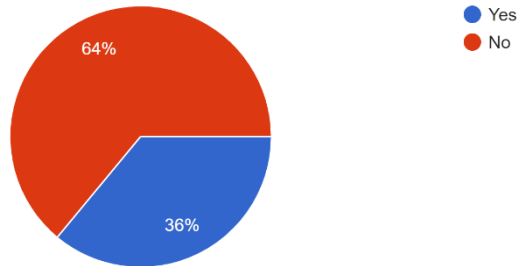
Have you seen any form of biomedical waste, now in COVID times lying openly on the dumping ground? Biomedical waste includes: syringes, masks, gloves, cotton dressings, face shields and other waste emitted by hospitals.

25 responses



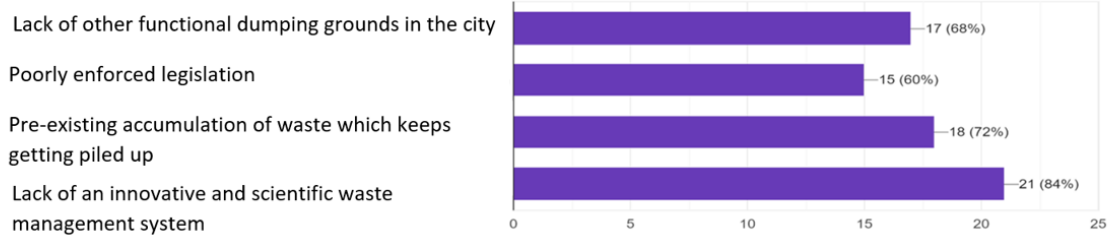
Have you observed yellow bags in the dumping ground?(For the purpose of segregation, all COVID waste is disposed in yellow bags.)

25 responses



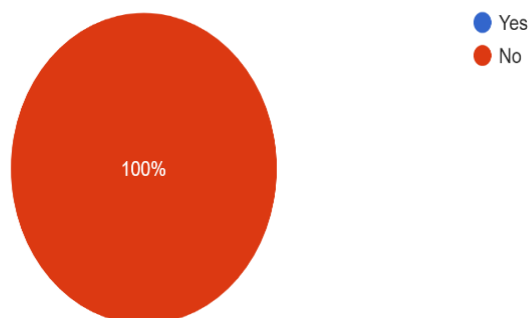
Why do you think there is a never ending waste management problem in Deonar? (Mark all the options that apply)

25 responses



Do you think the Maharashtra State Pollution Control Board (MSPCB) is doing enough to tackle the waste problem in this dumping ground?

25 responses



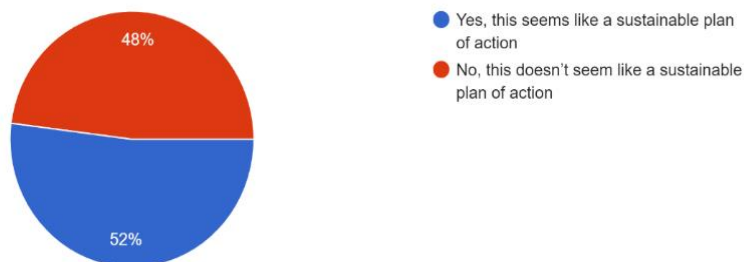
If you selected "no" for the above question, what do you think the MSPCB should be doing to make the matter better at the Deonar dumping ground?

14 responses

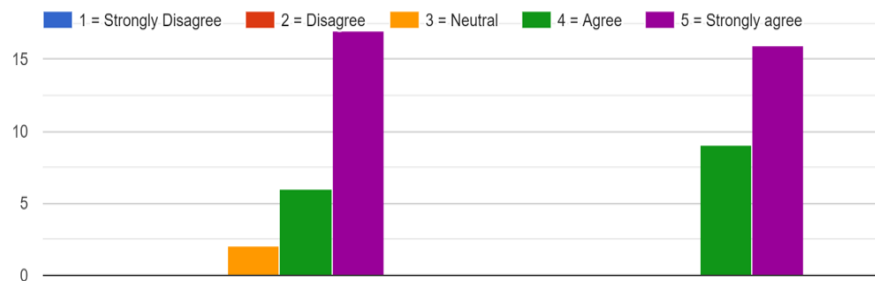
- Introduction of effective system to dispose waste
- Close down Deonar and other dumping grounds in Mumbai and take all the waste to an island outside
- Time to time disposal of already piled up waste may be helpful
- Crackdown on miscreants burning waste, implement proper waste disposals
- Impose stricter laws and harsher punishments for offenders
- Stricter laws for waste disposal.
- Effective recycling Systems.. best possible to use Biodegradable materials.
- They should have proper method to dispose of the wastewet ad try . Wet they can reprocess ad make fertilizer that can be used to plants which are road side
- Take innovative step for scientific waste management
- Enforce strict legislations
- Take legal action for non- compliance
- Better delegation of work

Do you think the waste-to-energy plant to treat the waste at Deonar is a sustainable plan?

25 responses



On a scale of 1-5, please rate the following statements. " 1: Strongly Disagree || 5: Strongly Agree"

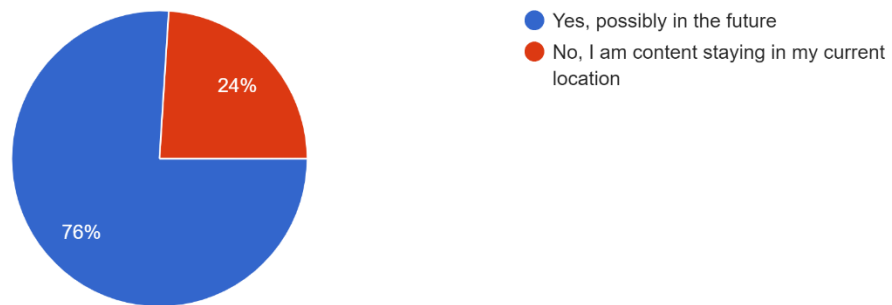


"I am afraid of the waste disposed of in the dumping ground, more in times of COVID, because there is contaminated biomedical waste which has the potential of spreading disease".

"My fundamental right to breathe clean air is being violated".

Would you ever consider moving out of your home due to problems caused by proximity to the dumping ground ?

25 responses



DATA ANALYSIS

- *Age and Duration of stay*

Among the 25 respondents, 44% of them are in the age group of 41+ making them the most suitable age group to answer the questionnaire, due to their experience in living near the dumping ground and their first-hand information of opinions regarding waste management is better valued as compared to the other age groups. People who are older are also more susceptible to disease (most of the times) and can thus, throw light on the health hazards faced by them. In addition, 60% of the people have been living near the dumping ground for more than five years and are in a good position to pinpoint the core issues which govern the dumping ground.

- *Frequency of fumes emitted during COVID- 19 times & health issues faced due to incineration*

68% of the respondents feel that there was more smoke produced from the treatment facility by SMS Envoclean during COVID-19. Mumbai, sadly has just one treatment facility to treat biomedical waste. With the over piling of waste, the treatment facility has to treat and incinerate more waste than usual, emitting more fumes into the system. In the months of August-October 2020, SMS Envoclean has been releasing continuous fumes in the environment. This has caused people a lot of health issues as narrated below:

The respondents were permitted to mark any number of diseases which they have experienced in the past few months, due to the emission by SMS Envoclean. As per their responses:

~48% suffer from Breathlessness

~ 40% suffer from Asthma

~ 40% suffer from eye irritation

~36% suffer from allergy

~20% suffer from skin diseases

We can clearly see the kind of suffering that people have been facing, not to withstand the sheer fear of contracting the virus. After weeks of constant turmoil, the residents contacted the CPCB which in response, issued a directive to the MPCB, to investigate the matter. NGO's around Deonar are swift to act when it comes to fighting for the people's interest and rights. SMS Envoclean conducts its operations merely 1km, away from the place of stay for slum dwellers. And thus, if the government has approved the place of establishment for SMS Envoclean to run its operations, then it is the duty of the government to ban habitation of the people in the surrounding area. Possibly, even provide accommodation to the indigent ones.

It is important to note that residents too were facing similar issues in the year of 2019 and protests alike were conducted. Resultant, a notice of stoppage of operations was meted to Envoclean. However, Envoclean then proceeded to file a writ petition and was instituted a stay order from the Mumbai High Court. Envoclean then came back to the fore, stronger than ever. They increased the number of chimneys, incinerators and established themselves well again. However, with the surmounting waste at their hands, has left them no choice but to treat it.

It is undisputable that the biggest dumping ground in the city is situated at Deonar and it is bound for indiscriminate dumping to take place, especially in times of a pandemic. However, what is at stake are the lives of the indigent- the ones who cannot afford health expenditure or hospitalisation for themselves or their family, as though living in deplorable conditions is insufficient. Thus, they continue to remain the most affected and trampled upon by organisations and municipal authorities.

- ***Segregation of waste during COVID-19***

~100% of the respondents feel there is improper segregation of biomedical waste being done during the pandemic.

~72% of the respondents have witnessed BMW lying around in the open.

~64% of the respondents have not observed yellow bags near the dumping ground which is used for disposal of BMW.

Although the above findings are inconclusive in nature, they are tilted more towards the inept handling and disposal of waste. An alarming 100%, i.e. all 25 respondents feel that there is improper segregation of biomedical waste being done, which comes as no surprise. The MPCB

has released proper guidelines when it comes to handling waste at source till its disposal. However, there are bound to be some leniency and lackadaisical attitude which cannot be tolerated.

If 72% of respondents have witnessed BMW lying around near the dumping ground, it is only fair to assume that perhaps these yellow bags for COVID-19 waste may not be treated the right way. However, a limitation which arises is that the respondents are scattered across the neighbouring areas of Deonar.

- ***Reasons for never ending waste problem***

~84% of the respondents feel there is a lack of an innovative and scientific waste management system.

~72% of the respondents feel that there is pre-existing accumulation of waste which keeps getting piled up.

~68% of the respondents feel that there is a lack of other functional dumping grounds in the city.

~60% of the respondents feel that there is poorly enforced legislation.

All the above four reasons can be rightly attributed to the problems that Deonar is facing. Evidently a scientific method of dealing waste needs attention. A scientific method would call for an increase in space, money and skilled labour, which our city is unprepared for.

Another cause of concern is the fact that there is a lack of functional dumping grounds in the city (except for Kanjurmarg). This results in over dumping of waste in Deonar, simply because it is 132 hectares in size and since it is near a prominent treatment facility.

- ***Role of MPCB***

100% of the respondents feel that the MPCB is not doing enough to tackle the waste management problem.

Below are some of the fruitful suggestions which respondents themselves have suggested.

If you selected "no" for the above question, what do you think the MSPCB should be doing to make the matter better at the Deonar dumping ground?

14 responses

Introduction of effective system to dispose waste

Close down Deonar and other dumping grounds in Mumbai and take all the waste to an island outside

Time to time disposal of already piled up waste may be helpful

Crackdown on miscreants burning waste, implement proper waste disposals

Impose stricter laws and harsher punishments for offenders

Stricter laws for waste disposal.

Effective recycling Systems.. best possible to use Biodegradable materials.

They should have proper method to dispose of the wastewet ad try . Wet they can reprocess ad make fertilizer that can be used to plants which are road side

Take innovative step for scientific waste management

Enforce strict legislations

Take legal action for non- compliance

Better delegation of work

Let us take a case in point of the fire which occurred in 2016. The National Green Tribunal fined the BMC a sum of Rs. 5 crores, reflecting extremely poorly on the MPCB, as a body who is responsible for overseeing the BMC, and failed in doing so. After investigation was carried out, it was found out that that there was no leachate treatment facility set up which is essential, neither were proper rules adopted when it comes to the safe disposal of waste. The authorities themselves acknowledged that the condition of the people and the environment reflected the damage caused to the surroundings.

Further suggestions and opinions will be put under "Recommendations and Conclusions".

- ***Human Rights Violation***

~17 (out of 25) respondents rated 'strongly agree', to the statement: "I am afraid of the waste disposed of in the dumping ground, more in times of COVID, because there is contaminated biomedical waste which has the potential of spreading disease".

~ 16 (out of 25) respondents rated 'strongly agree', to the statement: "My fundamental right to breathe clean air is being violated".

The judiciary recognises "right to a clean environment", to come under the ambit of "right to life". It is important to note that when the Constitution came into existence, there was no direct mention of the environment. It was only over time that the interpretation of "right to life" has taken place.

~**Article 48A** which is mentioned in Part IV of the constitution says, "the State shall endeavour to protect and improve the environment and to safeguard the forests and the wildlife of the country."^{xlii}

~**Article 51 A(g)** of the constitution says every citizen has a duty, "to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures."^{xliii}

Thus, we can see from the above Articles, that citizens have a duty. However, every duty has a corresponding right. If citizens are carrying out their duty, then by all means, they have every reason to exercise their right.

The Supreme Court recognises the aspect of human rights, in the landmark case such as, "**Rural Litigation and Entitlement Kendra v. State of UP**"^{xliv} and several others which recognised rights such as right to a clean environment and right to be free from pollution. In "**MC Mehta v. Union of India**"^{xlv}, the Supreme Court held that "clean air" comes under the ambit of right to life and issued a notice to buses in Delhi to convert to CNG to reduce air pollution.

The only slight lacuna in the past might have been that Directive Principles of State Policy (DPSP) are not enforceable in court of law, as they are mere guidelines that is mentioned in the Constitution. However, with the contention from the Supreme Court, right to a clean and non-polluted environment, comes under the umbrella of right to life.

Thus, with the amount of suffering that people of Deonar face, we can say that their human rights have been violated. It is only because these rights and duties come under the DPSP, they are not strictly enforceable.

CONCLUSION AND RECOMMENDATIONS

No one is contesting on the role or the contribution of the MPCB. Evidently, they have been set up for a purpose and they are working towards that purpose. However, below are some of the suggestions that could be adopted or few issues that need to be addressed:

- The first underlying issue are the regulatory aspects. Regulations governing the dumping ground have to be strictly enforced by national authorities, thereby cutting off ties with any bribery or mafia which could possibly be involved to cause foul play.
- More emphasis should be made on the informal sector and more recognition should be given to their efforts. There is only so much national authorities like BMC, MPCB can do, and so introducing and redefining the role of the informal sector and giving them a backing can prove to be beneficial.
- There are future plans of setting up a waste-to-energy plant at Deonar to convert this waste into electricity. However, before this step can be done, authorities must ensure that there is proper segregation to enable successful generation of electricity. Another method which can be adopted is a sanitary landfill. However, this requires investment and labour, but still is an alternative that a country like ours can adopt.
- Another major issue is the fact that there is shortage of functional grounds in the city. With only Deonar and Kanjurmarg, dumping of waste is bound to get accumulated.
- The government needs to stop Deonar dumping ground from being operational, as if we go by the books, the ground was supposed to stop its operations in 1967. It is the government who has set such a mandate of functioning for 40 years. It is time that the government picks out another site for disposal, especially, one that is not closely inhabited by residents.
- In 2019, the BMC introduced a scheme that assured a 15% rebate on property tax and could be availed by complexes who segregate their waste from wet and dry waste in different bags along with collecting rainwater for harvesting. Thus, the government should heavily emphasise on such schemes which have a win-win situation for different societies and the environment at large.
- India should follow the footsteps of United Kingdom when it comes to dealing with waste. There is a "Landfill Directive and Greenhouse Gas Emissions Allowance Trading Directive" which makes it a compulsion for member nations of the EU to provide strategies and plans on how they aim to reduce such waste. Their motto is following these several

activities in order of importance "prevention, reuse, recycling, energy recovery and disposal." It is important to note that the exports of items which are recycled amount to £ 7,50,000, thereby providing a financial incentive and bonus to the UK.

To conclude, it is important for national authorities to recognise lacunae in the system and work towards filling the gap. Introducing schemes, methods and effective procedures are the only way that the residents and environment's suffering will finally come to an end.



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APPENDIX

Impact of Biomedical waste disposal in surrounding areas of Deonar dumping ground

Please note: This questionnaire should be filled by only those people who reside near the Deonar dumping ground and have faced some adverse effects due to this dumping ground.

For better user interface, do fill this questionnaire from your laptop.
It would be of immense help if you could forward this to people residing in such areas, to enable a fruitful research, from my end.

Thank you for taking time out to fill this questionnaire!

***Required**

1. Which of the following age brackets do you fall in? *

Mark only one oval.

- 16-25
 26-40
 41+

2. What is your gender? *

Mark only one oval.

- Male
 Female
 Prefer not to say

Skip to question 3

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11/17/2020

Impact of Biomedical waste disposal in surrounding areas of Deonar dumping ground

3. How long have you been staying close to the dumping ground in Deonar? *

Mark only one oval.

- Less than 2 years
 Between 2-5 years
 More than 5 years

4. Are you aware about a company called "SMS Envoclean Pvt Ltd." which has it's biomedical treatment facility in Deonar? *

Mark only one oval.

- Yes
 No

5. During COVID times, has there been a higher frequency of fumes emitted from the biomedical treatment plant (incinerator) at the dumping ground (as compared to non-COVID times)? *

Mark only one oval.

- Yes
 No

6. In the months of July-August 2020, there was a continuous thick black smoke emitted by a treatment plant of SMS Envoclean Pvt Ltd. Which of the following symptoms did you face due to the emission? *

Tick all that apply.

- Asthma
 Breathlessness
 Skin diseases
 Allergy
 Eye Irritation
 No, I have not faced any symptoms

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2/5

11/17/2020

Impact of Biomedical waste disposal in surrounding areas of Deonar dumping ground

7. Do you feel there is proper segregation of biomedical waste followed in the dumping ground during COVID times? *

Mark only one oval.

- Yes, there is proper segregation being done
 No, there is improper segregation being done

8. Have you seen any form of biomedical waste, now in COVID times lying openly on the dumping ground? Biomedical waste includes: syringes, masks, gloves, cotton dressings, face shields and other waste emitted by hospitals. *

Mark only one oval.

- Yes, I have seen waste lying around in the open
 No, I have not seen the above waste lying around in the open

9. Have you observed yellow bags in the dumping ground?(For the purpose of segregation, all COVID waste is disposed in yellow bags.) *

Mark only one oval.

- Yes
 No

10. Why do you think there is a never ending waste management problem in Deonar? (Mark all the options that apply) *

Tick all that apply.

- Lack of other functional dumping grounds in the city
 Poorly enforced legislation
 Pre-existing accumulation of waste which keeps getting piled up
 Lack of an innovative and scientific waste management system

Other: _____

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3/5

11/17/2020

Impact of Biomedical waste disposal in surrounding areas of Deonar dumping ground

11. Do you think the Maharashtra State Pollution Control Board (MSPCB) is doing enough to tackle the waste problem in this dumping ground? *

Mark only one oval.

Yes

No

12. If you selected "no" for the above question, what do you think the MSPCB should be doing to make the matter better at the Deonar dumping ground?

13. On a scale of 1-5, please rate the following statements. " 1: Strongly Disagree || 5: Strongly Agree" *

Mark only one oval per row.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

"I am afraid of the waste disposed of in the dumping ground, more in times of COVID, because there is contaminated biomedical waste which has the potential of spreading disease".

"My fundamental right to breathe clean air is being violated".

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4/5

11/17/2020

Impact of Biomedical waste disposal in surrounding areas of Deonar dumping ground

14. Do you think the waste-to-energy plant to treat the waste at Deonar is a sustainable plan? *

Mark only one oval.

- Yes, this seems like a sustainable plan of action
 No, this doesn't seem like a sustainable plan of action

15. Would you ever consider moving out of your home due to problems caused by proximity to the dumping ground ? *

Mark only one oval.

- Yes, possibly in the future
 No, I am content staying in my current location

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Google Forms

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