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Exploring the Socio-Economic Dynamics in Environmental Health Impacts: A Case Study of Noapara, North 24 Parganas

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Abstract

This research study explores the socio-economic differences in environmental health impacts among communities residing near the Pramod Nagar municipal dumping ground in Noapara, North 24 Parganas, West Bengal. A descriptive research approach has been employed to conduct 51 household surveys over a radius of 5 km of the dump site accompanied with evidences from field observations and institutional interviews conducted with sanitation inspectors from the five municipalities responsible for the upkeep of the dumping ground. Socio-economic status of surveyed households has been calculated using the Modified Kuppuswamy Scale, 2024. Analysis of findings establish a positive relation between distance from the dump yard and vulnerability of lower socio-economic groups. Households situated within 1 km from the dump site belong to lower socio-economic groups, thus reporting an increased incidence of respiratory problems, skin irritation, and gastrointestinal issues. Although several respondents have denied chronic illnesses, participant observation reveals underreporting stemming from dependency of livelihood on dump-related employment. Structural interviews conducted with institutional officers' underscores gaps in environmental maintenance and surveillance, accompanied with irregular waste segregation practices and restricted health defences for residents and waste labourers. This research concludes that environmental exposure, socioeconomic marginalization, and limited institutional proactivity culminate into the intensification of health inequalities in peri-urban settlements.

Keywords: Socio-Economic Status, Kuppuswamy Scale, Waste labourers, Environmental and Health Awareness, Waste Management, Environmental Vulnerability

1. Introduction

The incorporation of hazardous substances into the environment which has adverse effects on the ecosystem as well as human health, in many cases which are irreversible, is pollution. In India, various different sources increase the level of pollution, many of which are vehicular emissions, industrial activities, improperly managed waste disposal, burning of domestic fuel, and construction waste. These different sources ultimately result in an elevated level of air and water pollution, ultimately affecting public health as well as damaging the ecosystem. With preliminary focus on dumping grounds and landfills, individuals residing in close proximity to aforementioned solid waste management areas are liable to increased health difficulties rising from environmental vulnerabilities (Shri Kant Singh et al., 2021). However, an interesting fact to be noted is that environmental vulnerabilities are not equal across all socio-

economic classes. Households with a lower income, implying that they belong to lower socio-economic status (SES), are more susceptible to residing in areas that are situated near landfills and dumping grounds, making them highly prone to developing health issues that may prolong over a long period. It is also observed that their socio-economic status has a direct link with the quality of healthcare that is received by them as result of continued institutional negligence (Jialong Tan et al., 2024).

Numerous studies have established the very fact that lower socio-economic groups are susceptible to health impacts rising from their proximity to landfills as a result of environmental degradation. However, India does not, yet, have enough micro-level, community-focused studies that represent the actual experiences of people living near these landfills and dumping grounds. Their health impacts are undocumented, long-term effects are disregarded, and the residents are further left vulnerable to institutional ignorance when medical assistance is sought. Thus, this research focuses on the 20-acre municipal dumping site in Pramod Nagar, Noapara, North 24 Parganas, West Bengal, which is the central waste dumping site for five urban municipalities. Regular hazardous incidents like frequent fires, unregulated dumping, and lack of policies with regards to waste segregation have made the nearby areas susceptible to air and groundwater pollution, where residents complain of a number of issues that are neglected by local government.

The majority of people that are living in the immediate vicinity of about 600 metres to 800 metres around the dumping yard belong to the lower socio-economic classes, many of whom work in the dumping yard itself, which further increases their chances of developing health issues in the long run due to unavailability of proper, dignified employment opportunities, inability to socially migrate, and institutional negligence. This study lays emphasis on the spatial and socio-economic concentration of environmental vulnerability, inequalities in healthcare accessibility and awareness. It also endeavours to evaluate how affected communities react to state-led mediation. By combining household-level qualitative data with field observations and institutional interviews, this research aims to provide a realistic perspective on environmental health inequalities and their interlink with socio-economic status in peri-urban cities.

2. Study area

This study was conducted in Noapara, located in North 24 Pargana, West Bengal which houses a 20-acre municipal dumping ground, serving five urban municipalities, namely- Baranagar, Dum-Dum, North Dum-Dum, South Dum-Dum, and New Barrackpore. The Pramod Nagar dumping ground is located 800 metres away from the Noapara metro station, adjacent to which lies an informal and frail settlement consisting of about 30-35 aluminium makeshift rooms, occupied by residents who are unable to afford housing in the Pramod Nagar neighbourhood located behind the dumping ground. These residents all belong to lower socio-economic classes, facing direct and daily exposure to pollution emanating from the open dumping ground.

Household surveys were carried out in these settlements, as well as in selective households in Pramod Nagar, which also consists of a Primary Health Centre under the supervision of South Dum-Dum municipality. To identify differences in health issues among people residing directly adjacent to the dumping ground and residing a few kilometres away, surveys were also conducted in Notun Bazar, approximately 3.5 kilometres away from the dump, where residents belong to relatively higher income groups. Few household surveys were also conducted near Tobin Road to underscore the difference in health impacts. Apart from these household surveys, institutional interviews were conducted with the sanitary inspectors from all five municipalities.

3. Literature review

Studies have presented that residents living near landfills and open dumping grounds experience a higher level of morbidity than those who are located further away. Shri Kant Singh et al. (2021) presents that there is an increased level of respiratory problems, eye irritation and stomach issues among residents living in close proximity to the dumping yard. This observation has been correlated with the analysis which confirms strong interlinks between the proximal distance of these households to the dumping ground and their subsequent health outcomes. Regular fires release PM10 and PM2.5, which further deteriorates the local air quality. In relation to this study, Rajarshi Kar et al. (2020) analyzed the Noapara dump site and reported severe conditions like respiratory problems, fever, cough, and skin allergies, as well as persistent ailments such as asthma, hypertension, diabetes, gastrointestinal issues, and gallbladder problems. These conclusions highlight that proximity of residence to the dumping ground increases the chances of developing such conditions over time, which ultimately make these groups environmentally vulnerable.

Research establishes that air pollution also adds on an additional layer of exposure that leads to the deterioration of health, particularly among communities residing near these dump yards where frequent fires and dust suspension worsens the overall environmental condition. Paul E George et al. (2024), underscores that PM2.5, in addition to various factors like the quality of housing, ventilation, and overcrowding, leads to an increase in the level of respiratory ailments among children under the age of 5. In India, where a poor standard of living enables the threat of infection, further studies also show that environmental health impacts are not equally distributed over the world. Lower-income groups in North America have been susceptible to greater traffic-related exposures, as outlined in the study by Anjum Hajat et al. (2016). Jialong Tan et al. (2024), observed that migrants have to face the bulk of environmental health impacts as a result of their socio-economic disadvantages in China.

Thus, these studies highlight that residents near dumping sites face high levels of health risks pertaining to respiratory, visual, and gastrointestinal illnesses. These health outcomes are not only shaped by their physical proximity to the dump site, but are also impacted by their socio-economic positions, housing conditions, crowding, fuel use, and access to facilities. Ample evidence suggests that increased proximity to polluted sites and a lower socio-economic status directly increases the risk of environmental health impacts. However, significant gaps exist with few case studies focussing upon spatial exposure with regards to socio-economic status, household infrastructure like ventilation, sanitation, access of marginalized groups to quality resources and amenities, but environmental justice is hardly ever linked to local governance in suburban and peri-urban settlements. This current study aims to address these gaps through a focused study on the Noapara municipal dumping ground, integrating household survey data along with field observations and structured institutional interviews, aiming to affirm the objectives highlighted.

4. Objectives

The objectives of this study are:

1. To assess the environmentally vulnerable groups around the Noapara dump site and evaluate their socio-economic status using the Modified Kuppuswamy Scale.
2. To identify differences between perceivedand documented health problems among the residents.
3. To analyse state mediation through the lens of environmental justice and local government accountability.

5. Methodology

This study undertakes a descriptive approach to analyze the interlink of socio-economic vulnerability and environmental health impact among the residents of Noapara living near the dumping ground. In the pre-field phase, a thorough literature review was conducted to determine the areas where prior research is lacking. This review led to the formulation of the research problem and the development of the objectives, including structured household interview schedules and semi-structured interview schedules prepared to conduct institutional interviews with key stakeholders such as municipality officials and healthcare providers.

The data was collected over a period of 5 days. Using Purposive Sampling, surveys were conducted in 51 households within a 5-km radius from the dump site in order to represent a diverse range of socio-economic data based on the modified Kuppuswamy scale. The interview schedule was used to record data on the health problems experienced by the residents of the specified area. At the same time, field observations were made throughout this entire period to understand conditions of the dumping site and the techniques adopted to manage the waste, sewage and the infrastructure used to do the same. One-on-one interviews were conducted with sanitary inspectors from all five municipalities to correspond it with the responses received from the residents and to understand the alignment of their responses with the local data.

Finally, in the post-field phase, the quantitative data was analysed using cross-tabulation to highlight the correlations between various parameters and their influence on other variables. The field-observations were utilised during inferring from the cross-tabular data. The data from stakeholder interviews were analysed to understand the institutional take on policy implementation and future plans with regards to environmental governance. This methodology allowed for thorough exploration of spatial, social and health disparities in the context of environmental concerns, thus fulfilling the research objectives stated.

6. Findings

Table 1:

Table showing the Socio-Economic Status of Households using Kuppuswamy Scale

Socio-Economic Status	Number of Households	Percentage of Households (%)
Upper (I)	1	1.9
Upper Middle (II)	12	23.5
Lower Middle (III)	15	29.4
Upper Lower (IV)	18	35.2
Lower (V)	5	9.8

SOURCE: Primary Survey, Apr-Jul 2025

Table 2:

Table showing Distance of Households from the Dump Yard

Distance from the Dump Yard	No. of Households	Percentage of Households (%)
less than 1 km	19	37.2
1 - 2.5 km	10	19.6
2.5 to 5 km	22	43.1

SOURCE: Primary Survey, Apr-Jul 2025

Table 3:
Table showing Instances of Health Issues Experienced in the Household

Instances of Health Issues Experienced in the Household	No. of Responses			
	Always	Frequently	Rarely	Never
Respiratory Issues	2	9	10	30
Skin Issues	0	9	9	33
Gastrointestinal issues	0	5	16	30
Headaches	1	9	15	26
Eye Irritation	2	6	9	34
Dengue or Malaria	0	1	5	45

SOURCE: Primary Survey, Apr-Jul 2025

Table 4: Table showing Cross-Tabulation between the Duration of Residence in the Area and Persistence of Health Issues in the Family over Consecutive Generations

Duration of Residence in the Area	Persistence of Health Issues in the Family over Consecutive Generations			
		Yes	No	Total
	Less than 1 year	0	0	0
	1 to 6 years	0	2	2
	6 to 10 years	1	4	5
	More than 10 years	14	30	44
Total		15	36	51

SOURCE: Primary Survey, Apr-Jul 2025

Table 5: Table showing Frequency of Odour Emanating from the Dump Yard

Frequency of Foul Odour Emanating from the Dump	No. of Households	Percentage of households (%)
Always	44	86%
Frequently	6	12%
Rarely	1	2%

SOURCE: Primary Survey, Apr-Jul 2025

Table 6:
Table showing Choice of Medical Attention

Choice of Medical Attention	No. of Households	Percentage of Households (%)
Government	37	72.5
Private	14	27.4

SOURCE: Primary Survey, Apr-Jul 2025

Table 7:
Table showing household awareness of government initiatives

Awareness of Government Initiatives	No. of Households	Percentage of households (%)
Yes	16	31.3
No	35	68.6

SOURCE: Primary Survey, Apr-Jul 2025

7. Analysis of Findings

Table 8: Table showing the Socio-Economic Status of Households with Respect to their Distance from the Dump Yard

Socio-Economic Status (Kuppuswamy Scale)	Less than 1 km	1–2.5 km	2.5–5 km	Total
Lower	5 (9.8%)	0	0	5
Lower middle	4 (7.8%)	2 (3.9%)	9 (17.6%)	15
Upper lower	9 (17.6%)	7 (13.7%)	2 (3.9%)	18
Upper middle	1 (1.9%)	1 (1.9%)	10 (19.6%)	12
Upper	0	0	1 (1.9%)	1
Total	19	10	22	51

SOURCE: Primary Survey, Apr-Jul 2025

The link between socio-economic status of household and the distance of their residence from the dump yard has been displayed in the above table. It can be observed that 19.6% of the households residing between 2.5 to 5 km from the dump yard belong to the upper middle class; 3.9% of households belonging to the same group are in the upper lower class; 1.9% are in the upper class. However, 17.6% of the households lie in the lower middle group. 1.9% of the households residing between 1 to 2.5 km from the dump yard lie in the upper middle class; 13.7% lie in the upper lower class, and 3.9% of the households lie in the lower middle class. 1.9% of households living within the 1 km radius from the dump yard lie in the upper middle class; 17.6% lie in the upper lower class; 7.8% lie in the lower middle class, and 9.8% lie in the lower middle class.

It can be inferred that households residing within the 1 km radius are more vulnerable to lower socio-economic conditions rather than households who are residing at a greater distance from the dump yard. Thus, it can be stated that there is a direct link of the socio-economic status with their radius of residence from the dump yard. Individuals who are unable to afford proper housing in highly urbanized areas have to finally resort to residing in temporary squatter settlements closer to unhygienic places like the dump yard which would not be occupied by people belonging to higher socio-economic classes.

Table 9: Table showing Frequency of Respiratory Health Issues with Respect to the Distance of Households from the Dump Yard

Distance of Household from the Dump Yard	Always	Frequently	Rarely	Never	Total
Less than 1 km	1 (1.9%)	5 (9.8%)	3 (5.8%)	10 (19.6%)	19
1–2.5 km	1 (1.9%)	4 (7.8%)	1 (1.9%)	4 (7.8%)	10

2.5–5 km	0 (0%)	0 (0%)	5 (9.8%)	17 (33.3%)	22
Total	2 (3.9%)	9 (17.6%)	9 (17.6%)	31 (60.7%)	51

SOURCE: Primary Survey, Apr-Jul 2025

The above table demonstrates the frequency of respiratory health issues with respect to the distance of household from the dump yard. Upon conducting the primary survey, it was observed that 1.9% of the households with 1 km distance from the dump site always experience respiratory issues, 5.8% rarely, and 19.6% never experience respiratory health problems. The households located between 1 to 2.5 km from the dump site recorded that 1.9% experience respiratory health issues 7.8% experience frequently, 1.9% experience rarely, and 7.8% never experience any sort of health problems. The households located between 2.5 to 5 km stated that they rarely ever feel any kind of respiratory discomfort as stated by 9.8% of the households. The remaining 33.3% of the households mentioned that they never feel any kind of respiratory discomfort. This reinstates the fact that with proximity to the dump yard, frequency for respiratory health issues do increase. It is a possibility that not all individuals will develop respiratory issues like breathing troubles and severe problems like asthma. However, individuals who are already at risk of certain health issues become susceptible to developing even severe respiratory issues with proximity to such pollution.

Table 10: Table showing Frequency of Skin Irritations with Respect to the Distance of Households from the Dump Yard

Distance from the Dump Site	Frequently	Rarely	Never	Total
Less than 1 km	4 (7.8%)	4 (7.8%)	11 (21.5%)	19
1–2.5 km	5 (9.8%)	2 (3.9%)	3 (5.8%)	10
2.5–5 km	0 (0%)	3 (5.8%)	19 (37.2%)	22
Total	9 (17.6%)	9 (17.6%)	33 (64.7%)	51

SOURCE: Primary Survey, Apr-Jul 2025

Similarly, a relation between frequency of skin irritation with respect to the distance of households from the dump yard was framed, where it can be observed that 7.8% of households located within 1 km from the dump site frequently experience skin irritations, 7.8% rarely do and 21.5% never do. Households residing between 1-2.5 km stated that 9.8% of households frequently experience skin irritation, 3.9% rarely do and 5.8% never do. Among households residing between 2.5-5 km, 5.8% stated that they do experience skin irritations but their frequency is rare and 37.2% stated that they never do never experience such skin irritation. Thus, it can be inferred that proximity to the dump site does increase their chances or does increase their probability of having skin irritations or skin allergies. During the primary survey, in a specific household, a child's back was demonstrated to represent the fact that the younger generation is falling prey to such kind of health diseases due to their sensitive age.

Table 11: Table showing the Preference for Healthcare Providers Depending Upon Their Distance from the Dumpsite

Distance from the Dump Yard	Government Healthcare Facilities	Private Healthcare Providers	Total
Less than 1 km	18 (35.2%)	1 (1.9%)	19
1-2.5 km	8 (15.6%)	2 (3.9%)	10
2.5 to 5 km	11 (21.5%)	11 (21.5%)	22
Total	37 (72.5%)	14 (27.4%)	51

SOURCE: Primary Survey, Apr-Jul 2025

As established, households belonging to the lower levels of the socioeconomic status are found to be residing closer to the dump site. In relation to it, this table demonstrates the preference of these households for healthcare providers. 35.2% of the households residing within 1 km from the dump site prefer government healthcare facilities, whereas only 1.9% of the households opt for private healthcare providers. Households located within 1 to 2.5 km also share a similar trend, where 15.6% opt for government healthcare facilities, and 3.9% opt for private healthcare providers. Finally, households lying between 2.5 to 5 km distance from the dump site show a neutral preference, where 21.5% opt for government facilities and 21.5% opt for private healthcare providers. Thus, it can be understood from the data that individuals of lower socioeconomic status have to opt for government healthcare facilities in cases of urgency. Pramod Nagar itself has a primary health center where instant medical relief can be acquired while the Baranagar State General Hospital, located 2 km away from the dump site, offers services for much intense care.

51 respondents were interviewed over the months of April to July where their perceived health conditions were recorded. Although a significant number of households do experience certain specific health issues, it was noted that maximum households have responded stating that they do not experience any sort of health issues regardless of their proximity to the dump yard. Participant observation states that a significant number of households, more than the mentioned ones, do experience health issues, however, they are reluctant to document such health cases. Many of these household members are employed in the dump yard for menial tasks like segregation of waste or maintaining the machinery that is used to manoeuvre through the waste, or they are employees in the local government. Thus, as a result of their livelihood being dependent on the dump yard, they refrained from expressing any negative opinions or documenting any negative occurrences during the conducted interviews.

Few households which run independent shops, grocery shops or tea stalls, mentioned very clearly the kind of impact that they have been experiencing due to their proximity to such a hazardous area. One household member had mentioned that the children and the elderly people are the ones who are most vulnerable to respiratory issues or skin related problems. There was a record of another woman from a different household who mentioned that she experienced terrible breathing issues and respiratory problems one night during the rainy season when the smell of the dump yard becomes unbearable to all residents and the wind blows the smoke towards the settlement. When this particular respondent had rushed to the

hospital to seek assistance for her rapidly worsening health, she was denied intensive assistance and was diagnosed of viral cold, although the respondent truly believes that she was suffering due to the smoke released from burning the garbage at the dump site. Another respondent had shown the back of his child having tiny red bumps on it, which has resulted due to the proximity to the dump yard, the usage of water that is tainted by the waste, and sustenance on land that is polluted. Another such respondent, an elderly lady, had also mentioned that the younger members of the household are the ones who are severely impacted, children especially below the age of 6. Certain perceptions were noted down which contradict the responses provided by each specific household.

The following observations were made upon interviewing the Sanitation Inspectors of five municipalities responsible for the Pramod Nagar Dump yard in Noapara.

Table 12: Table showing Data Gathered from Interviews Conducted with Sanitation Inspectors of Five Municipalities

Category	Common Findings / Responses	Municipalities Reporting
Waste Segregation Practices	The waste is segregated before transportation into four categories that are mixed, dry, wet, construction, and demolition waste. Households are provided with color-coded buckets and non-segregated waste is often not accepted.	Baranagar, Dum Dum, North Dum Dum, South Dum Dum, New Barrackpore
Transportation & Collection System	Electric tricycle vans are utilized by the municipalities where daily collection schedule varies across the areas under designated municipalities. Wet waste is often collected 5 days a week whereas dry waste is collected 2 days a week. Waste is then further taken to the compactor stations for further checking.	Baranagar, Dum Dum, North Dum Dum, South Dum Dum, New Barrackpore
Processing & Dump Yard Management	State Urban Development Agency (SUDA), is responsible for the operations undertaken in the dump yards, environmental audits, and biomining efforts. Eastern Organic Agency is newly set up that processes waste into fertilizers, legacy waste is being removed presently where 80% of it is already removed.	Baranagar, Dum Dum, North Dum Dum, South Dum Dum, New Barrackpore
Biomining & Legacy Waste Measures	The legacy waste is further sent for biomining, whereas the fresh waste is utilized for the production of fertilizers. Biomining has been made mandatory across the state. Interviews with residents reveal that they believe fertilizers are sold to larger companies nationally and internationally.	Baranagar, Dum Dum
Environmental Audits & Inspections	The municipality do not conduct any environmental audits by themselves. These audits are conducted only when specific complaints are lodged against the placement of the dump yard. Certain municipalities have	Baranagar, Dum Dum, South Dum Dum, New Barrackpore, North Dum Dum

	stated that they wish to initiate air and water inspection, but no specific timeline has been disclosed.	
Public Complaints & Resident Concerns	Residential complaints have mostly been launched from Ashok Nagar in Kamarhati, where the residents have complained about the smoke, smell and mismanagement of the dump yard. Historical grievances triggered the setup of the Fertilizer Unit, Eastern Organic Agency. Few residents during the survey reported poor quality of the drinking water and revealed their dependency on purchased packaged drinking water.	Baranagar, South Dum Dum
Water Supply & Drinking Water Issues	Areas with poor quality of water are provided with water tanks for fulfilling the basic need. Yet groundwater quality concerns persist across municipality areas. Some households stated that municipal water is unusable because of its strong pungent smell.	Baranagar, South Dum Dum
Health Measures & Worker Safety	Bleaching sprays are utilized in the surrounding areas of the dump yard. NAMASTE scheme provides safety gears to the workers. However, no long-term rehabilitation has been provided. And there are no structured health interventions for waste pickers or residents residing in the immediate neighborhood of the dump yard.	Baranagar, Dum Dum, South Dum Dum
Local Initiatives & Awareness Efforts	Awareness drives are conducted by designated municipalities in their specified areas. Tree plantation is promoted. However, civic sense and improper waste disposal by the residents still remain to be a major challenge.	North Dum Dum, South Dum Dum
Informal Waste Picking	Although the municipalities have specified that the waste is segregated by the households which is then verified at the compactor stations, yet manual segregation by waste pickers was observed near the dump site on the banks of the Bagjola Khal, suggesting that inconsistent segregation practices prevail across municipalities.	Observed in Dum Dum jurisdiction

SOURCE: Primary Survey, Apr-Jul 2025

8. Conclusion

The findings from the research study exhibit, reaffirm that proximity to the dump yard is positively linked with an increase in environmental vulnerability. The households located within a kilometre from the dump yard are more prone to belong to the lower socioeconomic groups, subsequently living in fundamentally weak structures and displaying a greater probability of experiencing various ailments, including respiratory, skin, and gastrointestinal issues. Several respondents may have verbally denied experiencing such health problems; however, observations made during fieldwork reinstated that several illnesses continue to remain unreported due to the fear of losing employment linked with the dumping site. Structural interviews conducted with institutional officers exposed gaps in environmental maintenance,

segregation practices, and ineffective measures undertaken to safeguard the health of the residents and workers. On consolidation of all data, the study affirms that environmental exposure, socio-economic marginalization, and limited institutional accountability combine to create an unequal health burden, validating the objectives of assessing vulnerability, identifying health disparities, and analysing governance mechanisms.

9. Limitations

- Limited sample size: Only 51 households within a 5-kilometer radius from the dump yard were surveyed for the study, constraining the application of generalizations to larger peri-urban areas.
- Time: The fieldwork was conducted over a short period of time, which restricted repeated visits, observing detailed nuances over various seasons, and tracking long-term health impacts within the residents.
- Bias: Several respondents are directly linked with the dump site. As a result of their entire livelihoods depending upon that very dumping ground, these individuals were reluctant to share authentic responses, often resorting to alterations made in order to safeguard their employment.
- Absence of advanced statistical analysis: Descriptive correlations were calculated to draw inferences and state interpretations of the data. However, higher order statistical analysis methods were not employed to include more quantitative results.
- Environmental parameters not measured instrumentally: Although pollution levels could be felt during field visits, however, accurate measurements of various parameters like air pollution, groundwater pollution, soil toxicity data were not gathered instrumentally.

10. Recommendations

- Biomining: Legacy waste is sent to the East Kolkata dump-yard, also known as the Dhapa dumping ground, where biomining is conducted to treat the waste. The rate at which the biomining is done has to be increased in order to ensure that fresh waste does not get piled up as more and more legacy waste is removed.
- Zero liquid discharge (ZLD) method must be adopted: An expert respondent had mentioned that all waste-water must be treated before it is released. This will ensure limited release of pollutants into the atmosphere and hydrosphere.
- The dump-yard must be covered: At various different spaces on the covered dump yard, long chimneys can be constructed that would release the smoke in the upper layers of the atmosphere. This would ensure limited inhalation of toxic gas by the people that are residing. in close proximity to the dump-yard.
- Creation of buffer zone and relocation of cremation facility: A barren zone must be created around the dumping ground where people will be prohibited from residing to ensure that they do not inhale toxic air or consume tainted groundwater. Shifting of the cremation center would also add on to the improved quality of air around the dump-yard.

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