

## AN EMPIRICAL STUDY ON LAND DEGRADATION DUE TO DUMPING OF HAZARDOUS WASTES IN CHENNAI

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**Best Citation** – MRS. S P VIDYASSRI, AN EMPIRICAL STUDY ON LAND DEGRADATION DUE TO DUMPING OF HAZARDOUS WASTES IN CHENNAI, *INTERNATIONAL ENVIRONMENTAL LEGAL RESEARCH JOURNAL*, 1 (1) of 2023, Pg. 213-221, ISBN - 978-81-960677-0-0.

### ABSTRACT

*Thousands of old landfills and dumpsites exist in the course of the developing international locations representing a hazard for human health for the next a long time, unless appropriate measures are taken. Landfill mining, involving the excavation, screening and separation of material from landfills into various components including soil, recyclable substances and residues is principal to the sustainable method to lengthen the landfill existence and to remediate contamination from unlined open dumps. The consciousness of this paper is on the idea and software of landfill mining as a key part of sustainable landfill control especially for the rehabilitation of the municipal strong waste dumpsites in growing international locations. The paper could discuss the findings of the research on mining of decomposed substances from the dumpsites at Kodungaiyur and Perungudi, close to Chennai and compare with the outcomes of similar research in Deonar, near Mumbai in India, Europe and USA.*

**KEYWORDS** - Landfill mining, open dumps, sustainable landfill, rehabilitation, involving the excavation.

### INTRODUCTION

Landfill mining, first said in Israel as a system where solid wastes dumped at landfills are excavated, processed and reused, has the targets of conservation of landfill area, discount in landfill footprint, removal of capacity contamination source, rehabilitation of dumpsites, electricity restoration from recovered wastes, reuse of recovered substances and reduction within the fee of publish closure care and monitoring of landfill web sites (Shual and Hillel, 1958; Savage et al., 1993). With a view to achieve one or extra of the above goals six-landfill mining tasks have been accomplished within the USA (Lee and Jones, 1990). Collier County, Florida landfill become mined in 1988 so that it will lessen the capability for floor water contamination, recover and

reuse cowl material and reclaim landfill ability (Lee and Jones, 1990). A complete discipline test evaluation of the Collier county landfill mining gadget revealed that the soil fraction turned into 60% (USEPA, 1997). Lancaster county landfill mining among 1991 and 1993 led to 41% soil recovery and 56% of waste converted into gasoline. A landfill mining challenge in Thomson Connecticut, aimed toward recapturing the landfill volume to increase its existence (Strange, 1998). A few case research at Barre (Massachusetts), Bethlehem (New Hampshire) and Edinburgh (New York) had been additionally stated (Strange, 1998). Burghot landfill (Germany) received the primary mining enjoy in Europe (Hogland et al, 1997). In Italy, the Sardinia landfill site turned into mined in 1994 (Cossu et al, 1995). During the summer time of

1994, a 10 yr. antique part of Filborna landfill in Sweden turned into excavated as a pilot check (Hogland et al 1997).

India as different developing countries follows the exercise of open dumping of stable wastes causing environmental and fitness dangers. The Deonar dumpsite near Mumbai changed into mined in 1989 on pilot scale basis to permit the healing of decomposed waste as compost (Coad, 1997). The outcomes of the mining research finished on the Kodungaiyur and Perungudi dumpsites close to Chennai, India with a view to compare the degradation fame of the stable waste and the feasibility of improving the soil fraction as compost and/ or landfill cowl cloth.

### Site description

Chennai (previously Madras) is one of the 4 metropolitan cities in India with a populace of approximately 5 million. The cutting-edge municipal stable waste generation from the town is ready 3500 t/day. This waste is disposed through open dumping on the Kodungaiyur and Perungudi web sites placed within the densely populated suburbs of Chennai at a distance of about 10 km north and south of Chennai vital (ERM, 1996). Both the sites are in operation on the grounds that 1985. The Kodungaiyur dumping floor (KDG) extends over a hundred and sixty ha marshy lands adjacent to the Kodungaiyur Sewage Treatment Plant on the southern margins of flood inclined alluvial lowlands of Korattalaiyar River. The Perungudi dumping floor (PDG) is low lying and poorly drained being occupied through extensive regions of marshy land permanently wet and seasonally inundated. The general region of this website online is ready 250 ha wherein about 22 ha is used for dumping (ERM, 1996).

### OBJECTIVES

- To study on prevention of hazardous waste.
- To study on waste disposal.

- To study on effects of open dumping of solid wastes.

### REVIEW OF LITERATURE

**NB Pandit, HK Mehta, GP Kartha (2005)** these talks about the need of biomedical waste management systems in hospitals–An emerging issue–a review, Praveen Mathur, Sangeeta Patan, Anand S Shobhawat. Current World Environment 7 (1), 117, 2012. The present review article deals with the basic issues as definition, categories, problems relating to biomedical waste and procedure of handling and disposal method of Biomedical Waste Management. It also intends to create awareness amongst the personnel involved in the health care unit. **Sadia Ilyas, Rajiv Ranjan Srivastava (2020)** this article can be of great significance to the strategy development for preventing/controlling the pandemic of similar episodes in the future. **Veda Hegde, Raghavendra D Kulkarni, GS Ajantha (2007)** Proper handling, treatment and disposal of biomedical wastes are important elements of the health care office infection control programme. **Gayathri V Patil, Kamala Pokhrel (2005)** The objectives of this study were to assess the waste handling and treatment system of hospital biomedical solid waste and its mandatory compliance with Regulatory Notifications for Bio-medical Waste (Management and Handling) Rules. **Anita Pandey, Sanjiv Ahuja (2016)** Bio-medical waste management in a tertiary care hospital: an overview, Anita Pandey, Sanjiv Ahuja. Journal of clinical and diagnostic research: JCDR 10 (11), DC01, 2016. To have an overview of management of BMW in a tertiary care teaching hospital so that effective interventions and implementations can be carried out for better outcomes. **Vanesh Mathur, S Dwivedi (2011)** the objective was to assess knowledge, attitude, and practices of doctors, nurses, laboratory technicians, and sanitary staff regarding biomedical waste management. **Nasima Akter (2000)** Find alternatives and appropriate technologies for developing countries. Need

extensive study on this medical waste and its management aspects as well. **Kristin Elisabeth Solberg (2009)** an investigation into a large outbreak of hepatitis B in India this month has uncovered a deadly trade in used medical equipment, and highlighted corruption and ignorance in the health-care sector. **Nosheen Arshad (2011)**, this is a review paper which is prepared from the surveys of hospitals and research studies. Hospital waste management in the world is a formal discipline and does occupy a critical place in the management of health care sector. **Mustafa Ali, Wenping Wang (2017)** this study summarizes the main issues faced in hospital waste management in developing countries. A review of the existing literature suggests that regulations and legislations focusing on hospital waste management. **Shahida Rasheed, Saira Iqbal(2005)**To evaluate the current practices of segregation approaches, storage arrangements, collection and disposal systems in the teaching hospitals of Karachi. **Magda Magdy Abd El-Salam(2010)**This study investigated the hospital waste management practices used by eight randomly selected hospitals located in Damanhour City of El-Beheira Governorate and determined the total daily generation rate of their wastes. **Peter A Reinhardt, Judith G Gordon(2018)**.This complete guide to infectious and medical waste management is required reading for everyone who handles, treats, transports, disposes of, or is responsible for this waste. **Alex Edward Samuel Green, 1992**, this view is now beginning to take hold in medical waste (MW) incineration as well. **Nema, KS Ganeshprasad (2002)** it is an environment-friendly technology, which converts organic waste into commercially useful by-products. **William A Rutala, C Glen Mayhall (1992)** the rising concerns over medical waste disposal were stimulated by reports of such waste washing up on the beaches. **Erin Walkinshaw(2011)**News provinces also appear to aim their approach at achieving minimum national standards for handling biomedical waste that were

developed by the Canadian Council of Ministers of the Environment in 1992.

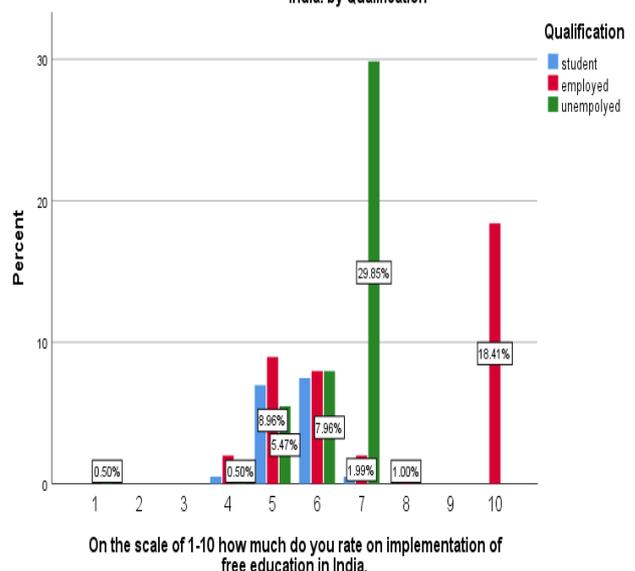
**METHODOLOGY**

The present study is based on primary data collection by the researcher and the secondary data from books, journals, and online sources. The author carried out empirical research by a simple random sampling method. A Total number 200 sample respondents in the age group 18-50 years and even above 50 years are collected. The statistical tools used are graphical representation. The dependant variables are factors agree ability that there is an increasing number of sexual harassment against children these days, the reasons for increasing number of sexual harassment, on what percentage they think that children out of the words are being affected, the effects of sexual harassment on children. The independent variables are age groups, gender, educational qualification, salary scale and marital status of the respondent.

**ANALYSIS**

Figure - 1

Clustered Bar Percent of On the scale of 1-10 how much do you rate on implementation of free education in India. by Qualification



**Legend**

In figure 1 shows that how much you rate on implementation of free education in India.

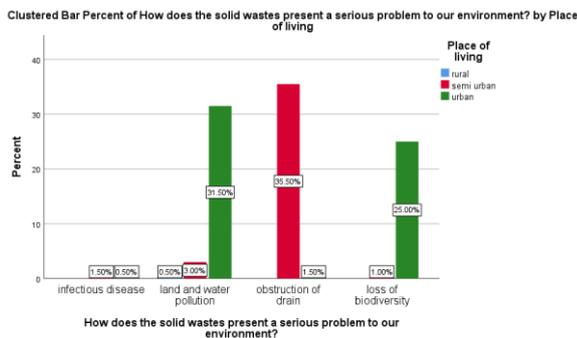
**Result**

In figure 1 majority of the unemployed people have given 7 ratings on how much do you rate on implementation of free education in India.

**Discussion;**

In figure 1 majority of the unemployed people have given 7 ratings because education is important for unemployed and uneducated people to be aware on about environmental precautions.

**Figure 2**



**Legend;**

In figure 2 shows that how do the solid wastes present a serious problem to our environment.

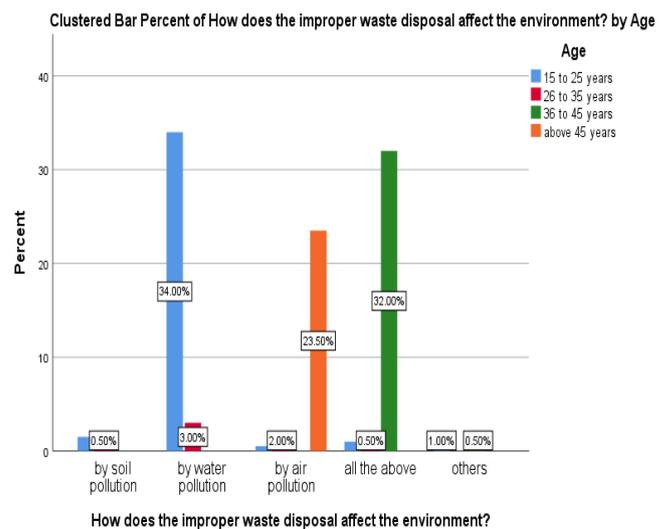
**Result;**

In figure 2 many of semi urban people have said that obstruction of drain is the solid wastes present a serious problem to our environment.

**Discussion;**

In figure 2 many of semi urban people have said that obstruction of drain because it causes major diseases to the environment and semi urban people suffered a lot in our country.

**Figure - 3**



**Legend;**

In figure 3 shows that how do the improper waste disposal affect the environment on the basis of age.

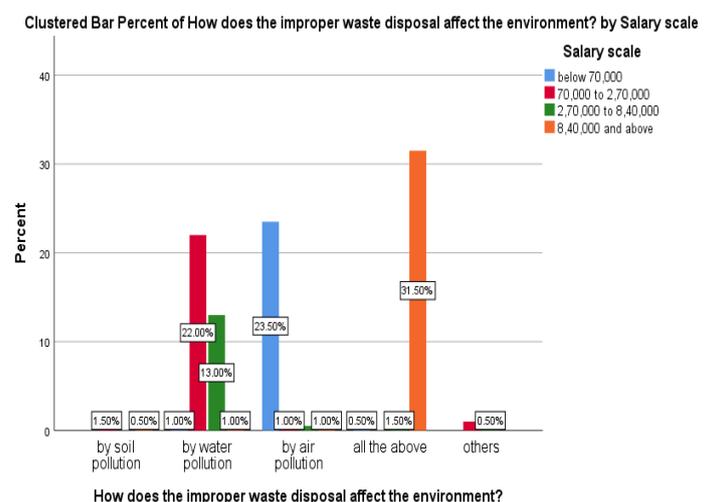
**Result;**

In figure 3 the majority of people in the age of 15 to 25 years have said that water pollution on the basis of age.

**Discussion;**

In figure 3 the majority of people in the age of 15 to 25 years have said that water pollution because the industrial waste does not has a proper sewage system and that's why the waste gets mixed with waters on the basis of age.

**Figure - 4**



Legend;

In figure 4 shows that how do the improper waste disposal affect the environment on the basis salary scale.

Result;

In figure 4 the majority of 8, 40, 000 and above of salary scale people have said all of the above on the basis of salary scale.

Discussion;

In figure 4 the majority of 8, 40, 000 and above of salary scale people have said all of the above because the people may quite aware of it on the basis of salary scale.

Figure - 5



Legend;

In figure 5 shows that are you aware of the impact of dumping waste to land on the basis of educational qualification.

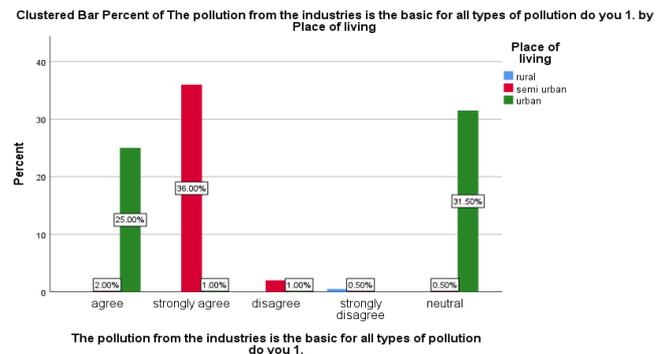
Result;

In figure 5 the majority of PG have said no on are you aware of the impact of dumping waste to land on the basis of educational qualification

Discussion;

In figure 5 the majority of PG have said no on are you aware of the impact of dumping waste to land because many of the people have might not aware about in Chennai on the basis of educational qualification.

Figure - 6



Legend;

In figure 6 shows that the pollution from the industries in the basic for all types of pollution does you agree on the basis of place of living.

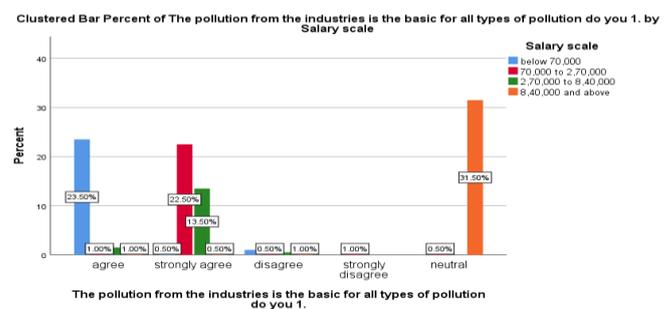
Result;

In figure 6 majority of many of the semi urban have said strongly agree on that the pollution from the industries in the basic for all types of pollution do you agree on the basis of place of living.

Discussion;

In figure 6 majority of many of the semi urban have said strongly agree on that the pollution from the industries in the basic for all types of pollution because they might be aware on them on the basis of place of living.

Figure - 7



Legend;

In figure 7 shows that the pollution from the industries is the basic for all types of pollution do you agree.

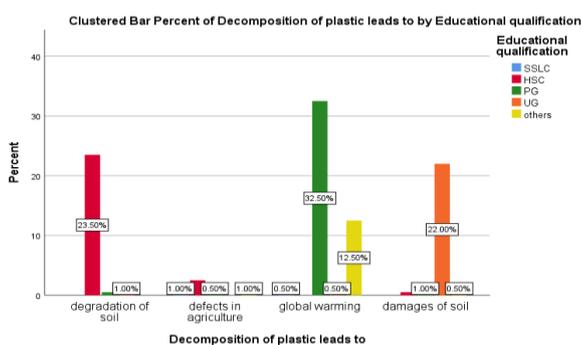
Result;

In figure 7 the majority of the income of 8, 40,000 of people have said neutral on how the pollution from the industries is the basic for all types of pollution do you agree on the basis salary scale.

Discussion;

In figure 7 the majority of the income of 8, 40,000 of people have said neutral because some of them might aware on it and some one of the not aware of it on how the pollution from the industries is the basic for all types of pollution do you agree on the basis salary scale.

Figure - 8



Legend;

In figure 8 shows that the decomposition of plastics leads to what on the basis of educational qualification.

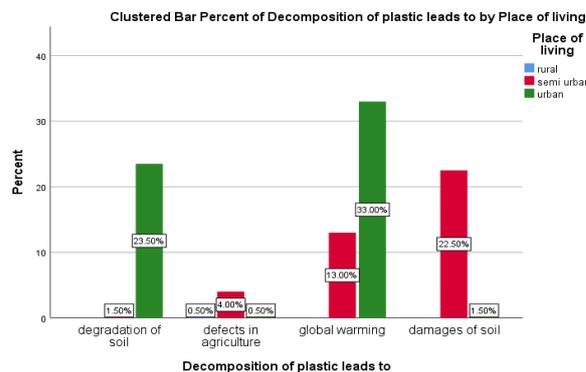
Result;

In figure 8 the majority of PG students have said decomposition of plastics leads to global warming and soil pollution on the basis of educational qualification.

Discussion;

In figure 8 the majority of PG students have said decomposition of plastics leads to global warming and soil pollution because plastic is the most hazardous particle which causes major environmental pollution on the basis of educational qualification.

Figure - 9



Legend;

In figure 9 shows that decomposition of plastic leads to what on the basis place of living.

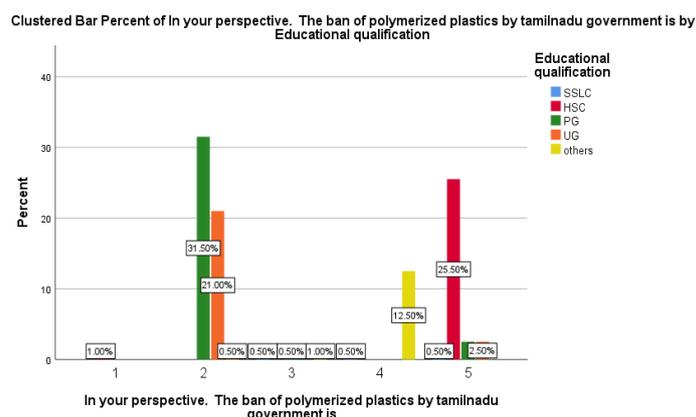
Result;

In figure 9 the many of the urban people has said global warming and degradation of soil on the basis of place of living.

Discussion;

In figure 9 the many of the urban people has said global warming and degradation of soil because it's leads to major disaster in the environmental surroundings on the place of living.

Figure 10



Legend;

In figure 10 shows that in your perspective the ban of polymerised by Tamilnadu government on what on the basis of educational qualification.

Result;

In figure 10 majority of PG students have given 2 percent on the basis of educational qualification.

Discussion;

In figure 10 majority of PG students have given 2 percent on the perspective of ban of polymerised plastics by Tamilnadu government on the basis of educational qualification.

## RESULT

In **figure 1** majority of the unemployed people have given 7 ratings on how much do you rate on implementation of free education in India. In **figure 2** many of semi urban people have said that obstruction of drain is the solid wastes present a serious problem to our environment. In **figure 3** the majority of people in the age of 15 to 25 years have said that water pollution on the basis of age. In **figure 4** the majority of 8, 40,000 and above of salary scale people have said all of the above on the basis of salary scale. In **figure 5** the majority of PG has said no on are you aware of the impact of dumping waste to land on the basis of educational qualification. In **figure 6** majority of many of the semi urban have said strongly agree on that the pollution from the industries in the basic for all types of pollution do you agree on the basis of place of living. In **figure 7** the majority of the income of 8, 40,000 of people have said neutral on how the pollution from the industries is the basic for all types of pollution do you agree on the basis salary scale. In **figure 8** the majority of PG students have said decomposition of plastics leads to global warming and soil pollution on the basis of educational qualification. In **figure 9** the many of the urban people has said global warming and degradation of soil on the basis of place of living. In **figure 10** majority of PG students have given 2 percent on the basis of educational qualification.

## DISCUSSION

In **figure 1** majority of the unemployed people have given 7 ratings because education is

important for unemployed and uneducated people to be aware on about environmental precautions. In **figure 2** many of semi urban people have said that obstruction of drain because it causes major diseases to the environment and semi urban people suffered a lot in our country. In **figure 3** the majority of people in the age of 15 to 25 years have said that water pollution because the industrial waste does not has a proper sewage system and that's why the waste gets mixed with waters on the basis of age. In **figure 4** the majority of 8, 40,000 and above of salary scale people have said all of the above because the people may quite aware of it on the basis of salary scale. In **figure 5** the majority of PG have said no on are you aware of the impact of dumping waste to land because many of the people have might not aware about in Chennai on the basis of educational qualification. In **figure 6** majority of many of the semi urban have said strongly agree on that the pollution from the industries in the basic for all types of pollution because they might be aware on them on the basis of place of living. In **figure 7** the majority of the income of 8, 40,000 of people have said neutral because some of them might aware on it and some one of the not aware of it on how the pollution from the industries is the basic for all types of pollution do you agree on the basis salary scale. In **figure 8** the majority of PG students have said decomposition of plastics leads to global warming and soil pollution because plastic is the most hazardous particle which causes major environmental pollution on the basis of educational qualification. In **figure 9** the many of the urban people has said global warming and degradation of soil because it's leads to major disaster in the environmental surroundings on the place of living. In **figure 10** majority of PG students have given 2 percent on the perspective of ban of polymerised plastics by Tamilnadu government on the basis of educational qualification.

## LIMITATION

One of the major limitations of the study in the sample frame. There is a major constraint in the sample frame as it is limited to a small area. Thus, it proves to be difficult to extrapolate it to a larger population. Another limitation is the sample size of 200 which cannot be used to assume the thinking of the entire population in a particular country, state, or city. The physical factors have a larger impact, thus, limiting the study.

## CONCLUSION AND SUGGESTION

Thousands of old landfills and dumpsites exist in the course of the developing international locations representing a hazard for human health for the next a long time, unless appropriate measures are taken. Landfill mining, involving the excavation, screening and separation of material from landfills into various components including soil, recyclable substances and residues is principal to the sustainable method to lengthen the landfill existence and to remediate contamination from unlined open dumps. Landfill mining, first said in Israel as a system where solid wastes dumped at landfills are excavated, processed and reused, has the targets of conservation of landfill area, discount in landfill footprint, removal of capacity contamination source, rehabilitation of dumpsites, electricity restoration from recovered wastes, reuse of recovered substances and reduction within the fee of publish closure care and monitoring of landfill. So as we compared from the analysis we come to know that some members are aware about land degradation many PG students are aware about it and some high level incomes are aware of it.

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