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**Kamal Kant Joshi**  
Department of Environmental  
Science, Graphic Era Hill  
University, Dehradun,  
Uttarakhand, India

## **Analytical study on solid waste management and its impact on pollution**

**Kamal Kant Joshi**

### **Abstract**

The issues of waste management and pollution in the environment will be explored in this study. Everything in our immediate vicinity is linked to the natural world in some way. Pollution in the environment is caused by more than just humans; natural disasters also have a role. Pollution has been there since the beginning of existence, but it has only recently become a major danger to humanity. The effects of pollution on our health are now felt by every individual on Earth, in the form of contaminated air, food, and water, as well as exposure to harmful chemicals and radiation. The depletion of natural resources, the loss of animal and plant species, and disruptions in global ecosystems and biochemical processes are all symptoms of environmental degradation. Hypotheses that make sense in light of the research issue Waste management does have far-reaching effects on the natural world.

**Keywords:** Waste, management, environmental, degradation, radiation

### **Introduction**

Most of the most significant human-induced contaminants are solid waste, which produces sweet and hideous conditions in the continually growing cities. Therefore, it is an urgent period for solid waste disposals to lead a qualitative public existence using energy retrieval techniques. In order to rid the soil from bacteria, mosquitoes, rats, flies, and finally to establish a safe environment in the surroundings, a detached analysis must be conducted on waste materials with great analytical expertise. The city's emissions, woodland fires, wood burning, burning of municipal waste, and rag pickers are especially regarded for environmental contamination during municipal cleaning of the town's waste inside the municipal boundary. Included with automobile pollution are the elevated emissions of environmental air contamination from people, tourists and other aquatic communities by half burn diesel and oil vehicles. Different sources of contamination arising from polluted water, land and air attributable to a range of human activities. In the slums, unforeseen movement of staff from rural to urban regions, finding jobs in the next hydropower, tourism, the hotel industry and house buildings. As a consequence, exponentially expanding city development has exceeded the city authorities' willingness to offer sufficient infrastructural facilities to solve the challenges of solid waste and related environmental concerns. However it is ironic that as radioactive waste is disposed of and disposed of from hospitals along with municipal waste, the matter of solid waste gets more severe.

The growing population and consequent anthropogenic interferences is recently considered one of the key reasons why environmental pollution is being loaded day to day, particularly in vast urban hill cities. Nature has the potential to assimilate any harm incurred by the constant development and operation of human beings. However, it has its own limit to replenish this lack of biodiversity by intervention by humans with respect to destruction or waste. The stage comes when nature is exhausted itself, often beyond the threshold of these losses, especially when the contamination caused by mankind stays strong. Different pollute sources are depleted due to the broader degree of human intervention whether a significant volume of contaminants into air, water or other components were discharged which expand beyond carriage ability (Gupta, 2002). The rise in multiple sources of emissions, noticeable solid waste and non-visible air pollution are top targets of environmental protection in spreading Himalayan urban areas. It is clear to even the bare eyes that solid waste is tossed away indiscriminately though air contamination does not attract anyone so it cannot be noticed.

**Correspondence**  
**Kamal Kant Joshi**  
Department of Environmental  
Science, Graphic Era Hill  
University, Dehradun,  
Uttarakhand, India

However, harmful consequences from environmental air contamination can only take place by adverse circumstances in good time, until adverse effects in the form of respirational and respiratory illnesses are encountered in human beings. It is also important for all living things on the surface of the planet to have a safe atmosphere around.

### Literature Review

Hussein I. Abdel-Shafy (2018) The management of solid waste in both developed and developing countries is a stinging and pervasive issue both in urban and rural areas. Collection and recycling of municipal solid waste (MSW), in many countries of the world today, is one of the key urban environmental issues. The strategies of MSW management have to be financially efficient, physically practicable, economically, lawfully and environmentally sustainable. The key problem for local and big cities' authorities is solid waste management. Solid waste management problems. Assessment of organic food waste is one of the main fields of study that is currently ongoing. The classic waste treatment, incineration, composting and handling approaches for solid waste are popular as advanced waste management technologies. Composting and anaerobic digestion are typically the widely used methods for the treatment and regeneration of the organic fraction of MSW (AD). Organic solid waste generation (OSW) is rising worldwide last year. Many OSWs consist of plant waste, food waste from homes, human or animal waste, and so on. Normally they are processed as animal feed, burnt or disposed of at sites of waste. OAW's contain protein, mineral, and sugar rich materials which may be used as substrates or raw materials in other methods.

Onwughara Innocent Nkwachukwu (2010) [5] The urban solid waste in Nigeria is comprised of all forms of non-sorting waste, like commercial waste, constructing and demolishing waste, waste, electrical waste, etc., which is indiscriminately deposited on roadsides and any open wells accessible for citizens regardless of their medical consequences. The goal is to emphasize numerous options for waste management and reveal the hierarchy of waste management options, the environmental impact of those options studied in terms of health and social effects, and the expanded producers' responsibility legislation, where goods are taken back by manufacturers and reuse accessible.

Singh, S. & Gour, Anunay. (2016) [2] The unwanted and unnecessary persists after a product is used represent solid waste or waste. Since the beginnings of the human race was created waste, but its magnitude was very low and hence the waste developed earlier was discarded without significant environmental effects. In addition, it primarily included renewable products that had been manure. The attributes of solid waste have modified dramatically following the emergence of industrialization and the rapid population increase. In comparison, today's pollution has risen in scale and composition. Environmental health has been held as a prisoner by the usage of factories including polymers, chemicals, pharmaceutical materials, electrical components, medicinal items, building waste, demolition and domestic waste as well. They pollute the land, pollute the surface and freshwater, pollute the environment and contaminate visually. There is no indicator of the effect of solid waste. The paper explores the present situation of urban solid waste disposal in India.

Sintana E. Vergara (2012) [1] Municipal waste represents the culture and its effect on people's wellbeing and the environment. MSW illustrates the culture that creates it. Worldwide, citizens dump increasing volumes of waste, and its structure, as disposable and electronic consumables diffuse, is more complicated than ever before. Around the same moment, the planet is in an unparalleled state of growth. These developments pose a problem for communities that are socially and economically suitable for waste management. Successful waste management techniques rely on the characteristics of local waste, which range from cultural to climatic to socio-economic and administrative variables. Waste management is being regionalized and formalized worldwide. Wastes appear to be publicly regulated at a local or provincial level in developed states, where residents generate much more waste than other citizens. A mixture of structured and informal players control waste in less industrialised countries, where people generate less waste, primarily biogenic. Many waste strategy, infrastructure and behaviour, like climate change mitigation, provide a range of environmental benefits. Main issues in waste management include incorporating the informal waste market in urban development; minimizing input into developed cities; growing and standardizing data collection and processing and productive waste management while preserving humans and the ecosystem.

### Research Methodology

The present study is based on combination of two types of data, primary and secondary. The primary data mainly include the field surveys and experimental studies. However, the secondary data has been collected primarily from topographical sheets, satellite imageries, towns and country maps, and population figures from census records. In order to collect the primary data, the questionnaire-based survey will be conducted in and around the towns to gather information about different socio-economic groups. For primary survey, the selected sites will be divided into different ward wise sections and field measurement will be done with the help of different air quality equipment's.

### Data Analysis

According to Table 1, below, women made up 56.7% of the sample while men made up 43.3% of the sample. There were 36.7% between the ages of 31 and 40, 33.3% between the ages of 21 and 30, 13.3% above the age of 50, and 3.3% under the age of 20. Most responders (40%) had completed at least 12 years of schooling, with 10% having completed just elementary school, 6.7% having completed some college, and 10% having completed graduate or professional school. Twenty percent of respondents in the study region did not have any formal schooling. The findings revealed that those over the age of 60 are more environmentally concerned than those under the age of 20. The elder respondents were more concerned about maintaining a healthy ecosystem than their younger counterparts. Also, due to differences in lifestyle, younger responders consumed twice as much as older ones.

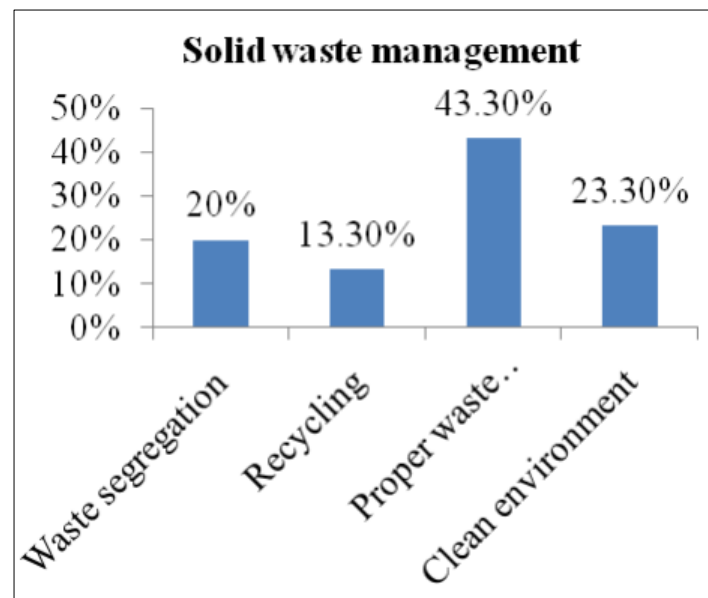
Respondents said that privately held businesses collected 70% of the solid garbage, while registered youth organizations collected 6.7%. The study did not provide an explanation for the remaining fraction. Trucks and donkey carts were used to haul the garbage to dumpsites distant

from the research area. Because of the lack of government oversight, this kind of employment makes me nervous. Inadequate solid waste collection and disposal are frequent

issues in developing cities, according to a research by Awomeso *et al.*, 2010.

**Table 1:** Socio-demographic characteristics of the respondents

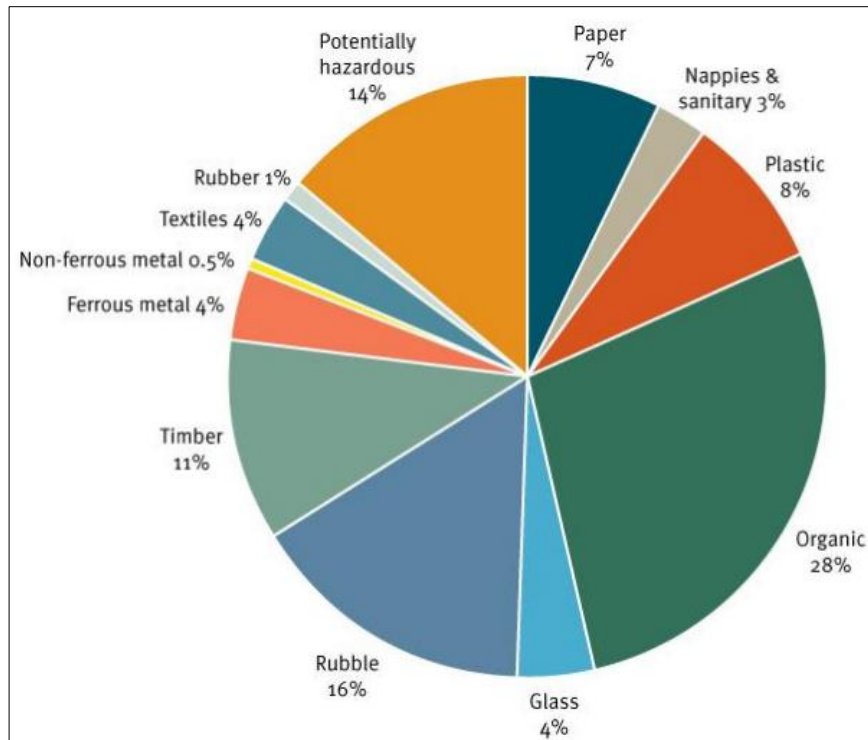
Variable	Frequency	Percentage (%)
<b>1. Gender</b>		
Female	17	56.7
Male	13	43.3
<b>Total</b>	<b>30</b>	<b>100</b>
<b>2. Age</b>		
< 20 years	1	3.3
21-30 years	10	33.3
31-40 years	11	36.7
41-50 years	3	10.0
> 50 years	4	13.3
<b>Total</b>	<b>29</b>	<b>96.7</b>
<b>3. Education</b>		
None	6	20.0
Primary	3	10.0
Secondary	12	40.0
Post-secondary	2	6.7
Graduate	3	10.0
<b>Total</b>	<b>26</b>	<b>86.7</b>
<b>4. Occupation</b>		
Unemployed	15	50.0
Employed	11	36.7
Self-employed	4	13.3



**Fig 1:** Understanding of solid waste management

One of the most crucial aspects of good management is organizing how trash will be disposed of. The research found that in the Wadajir area, practically all solid trash created in houses is disposed of collectively, without any distinction between organic and inorganic garbage. Massive amounts of organic materials are transported from the

countryside to the cities, robbing the soil of its nutrients in the process. Once these materials have been consumed, there is no way for them to be returned to the source to build the soil, so they are instead lost and cause problems to human health and the environment in the city.



**Fig 2:** Percentage distribution of various solid waste management

According to the findings of this research, citizens' perceptions of the dangers posed by littering need to be altered immediately. Living habits, household income, family size, educational attainment, religious and cultural views, and social and public attitudes have all been shown to significantly impact garbage production and disposal, according to previous research. The population's health, with its organic defenses still in a formative and creative state, is negatively impacted by the presence of solid waste disposal sites located on the outskirts of urban areas and becoming the child sources of contamination due to the incubation and proliferation of flies, mosquitoes, and rodents. Several different types of infectious illnesses, including those that affect the digestive tract, skin, respiratory system, and genes, are caused by the aforementioned condition. As a result, governments, industry, and households have not yet evaluated the astronomical cost that dumping sites have on public health services. The population in places without an appropriate waste disposal procedure, notably the pre-school children, garbage employees, and workers in facilities generating poisonous, and infectious material are all at danger from the improper disposal of solid waste. Those who live in close proximity to a landfill or whose drinking water has been tainted as a result of garbage dumping or landfill leaks also face a significant risk. The probability of becoming hurt or infected is raised when trash piles up.

### Conclusion

The analysis of solid waste and air contamination is now directly connected to live beings and their climate. The elements of the present research contribute directly to the mountains. The market and utility practices of most people are thus very distinct in form, structure and quantity from the rural area. At each location, there was no scientific management strategy for the disposal of solid waste. The authorities are unwilling to fix the issue. Just about 60% - 80% of the total waste produced by the selected cities and

villages could be collected from municipalities and towns panchayat. The roads and inter-link roads are linked to all the cities. However, because this topography is hilly undulating, there are tiny patches of towns where waste is manually lifted. Under or outside the cities of research in Himachal Pradesh, organic composting plants are in very bad shape. To manage these plants efficiently, they require adequate technological advice and financial help. The design mechanism and usage of bio-composting systems all have certain scientific disadvantages. Bio-composting pits in these sites require some guidance dependent on environmental factors for bacteria and microbes in particular in hilly topographies during winter months at very low temperature (December-March). Both sanitary workers need sufficient training with technical instruments to better extract waste with the establishment of appropriate infrastructural facilities. They must be well educated in the segregation of garbage and manure. At all the sample sites in the summer season, the composition of the RBW was maximum and the lowest RBW was located at all the test sites in the autumn season. In the autumn season BW and NBW were the highest composition, while in the Summer BW noticed owest during the moonsoon season.

Two significant causes of air emissions are the ongoing rise of anthropogenic practices in metropolitan regions, the combustion of solid waste. However, owing to car traffic, wood burning and forest fires in the vast metropolitan climate, air quality has also risen. The management bodies will partly fix waste and air emission issues in the absence of sufficient and functional facilities. More and more infrastructural infrastructure, sanitation personnel for their storage, distribution, and disposal are required for the growing load of residential, commercial and utility waste. Rejected waste releases harmful gasses and fine particles in open sky if burned or discarded. True solid waste management is therefore one of the air quality reduction initiatives.

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