Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 58 Issue: 12:2025
DOI: 10.5281/zenodo.18066519

ASSESSING ENVIRONMENTAL AND PUBLIC HEALTH IMPACTS OF UNAUTHORIZED BANNERS AND HOARDINGS IN INDIA: EXPLORING RISKS AND POLICY RECOMMENDATIONS

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Abstract

This study investigates the extensive use of instituting the hoardings, banners and flyers for self-glorification and personal publicity in India. This practice was initially used in metropolitan cities, but now a days it stretches to smaller towns and semi-urban regions. This study critically examines the environmental, public health and economic issues of this widely adopted trend, by putting emphasis on the materials used in these displays, their role in enhancing pollution, and their categorization as public nuisances. Special attention is given to the rising prevalence of Polyvinyl Chloride (PVC) and synthetic polymers, their detrimental effects on air quality—especially through the release of hazardous dioxins, and the regulatory void that has allowed this issue to persist unchecked. The paper proposed a set of policy recommendations and advocates for stringent measures to reduce the environmental risks posed due to unregulated advertising practices.

Keywords: Hoardings, Environmental Pollution, PVC, Public Health, Waste Management.

1. INTRODUCTION

In the country like India the practice of self-glorification and promotion has become firmly ingrained by the widespread usage of hoardings, posters and advertisement banners. This tradition once originated in some metro cities and has now spread to both rural and urban areas across all the country. Hoardings and banners are now frequently used by everyone from individuals on birthday celebrations to political parties during their public meetings and rallies, festival greetings, by and even by the religious leaders for the promotion of their disclosures which overshadowing the visual landscape of cities and

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villages [1, 2]. Even though these advertisements serve as a means to increase the reach and visibility which in turn influence the peoples but their effect on environmental and public health is completely ignored. The toxic materials such as PVC and synthetic polymers used for creating these hoardings and banners play a major role for creating long-term negative effects on the environment.

The open-air burning of such discarded materials further exacerbates environmental pollution and poses significant health risks [3]. Additionally, the consequences of unregulated display of hoardings include public littering problem that causes road accidents. This research study seeks to analyze these effects, examine the existing regulations, and suggest solutions for mitigating the negative consequences of this advertising tactic.

There is an alarming situation of environmental degradation which causes the heavy threats for public health in the metropolitan areas of India, but the state-of-the-art academic research is limited to analyze the risks posed by unlawful placement of hoardings and banners, mainly those that are made from PVC and synthetic polymers. The existing policies are not sufficient and normally overlook the collective impact of such advertising practices on air quality, visual pollution, road safety, and waste management infrastructure. Additionally, there is a significant gap in literature that critically links the practices of self-promotion with environmental and health risks, along with the inefficiency of enforcement laws in Indian cities and towns.

1.1 Major Highlights

The novelty of the proposed study lies in its multidisciplinary approach that combines environmental science, public health risk analysis, socio-cultural evaluation, and review of enforcement laws which offers a comprehensive understanding of the problem and its real-world solutions tailored to the Indian context. The major highlights and contributions that the papers aim to:

a. **Assess** the environmental and public health impacts of unauthorized hoardings and banners, with a focus on PVC-based materials.
b. **Examine** the legal and administrative approaches governing the advertising practices in India.
c. **Analyze** the social, cultural, and political factors influencing the proliferation of such practices.
d. **Propose** sustainable and enforceable policy recommendations to mitigate the associated risks and encourage eco-friendly alternatives.

2. METHODOLOGY

This study utilizes a qualitative and descriptive methodology, incorporating secondary data analysis, literature review, and case-based policy evaluation to examine the environmental and public health impacts of unauthorized hoardings and banners in India.

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2.1 Literature and Policy Review

A comprehensive literature review was conducted using peer reviewed indexed journals, environmental policy documents, government reports, and public health studies. Key sources included publications from the World Health Organization (WHO), the Ministry of Environment, Forest and Climate Change (MoEFCC), the Municipal Solid Waste Management Rules (2016), the Plastic Waste Management Rules, and other guidelines issued by local municipal corporations such as BBMP (Bengaluru) and NDMC (Delhi). Peer-reviewed articles indexed in Scopus, Web of Science, JSTOR, and Google Scholar were also reviewed to understand the effects of PVC materials and dioxins on human health.

2.2 Secondary Data Collection

The secondary data was collected from publicly available government reports, including:

Plastic Waste Generation Reports (CPCB Annual Reports, 2020–2021) [4].

Road Accident Statistics (MoRTH – Transport Research Wing, 2022) [5].

Pollution-related health impact data (Environmental Health Perspectives) [6]. This data was used to draw correlations between plastic waste generation (especially PVC materials) and associated risks such as air pollution, road safety, and public health hazards.

2.3 Visual Documentation and Content Analysis

The study analyzed publicly available images of unauthorized hoardings to identify the patterns of visual pollution and unsafe placement practices [7]. Figures and tables in the paper are created based on data from official government sources, visual surveys from urban areas, and environmental NGO reports. Additionally, media coverage and administrative policies related to illegal placement of hoardings were evaluated to explore gaps and socio-political effects.

2.4 Thematic Categorization and Risk Assessment

The content was categorized thematically into key dimensions such as material hazards, visual pollution, public safety, and regulatory deficiencies [8]. A qualitative risk assessment framework was applied to evaluate the short-term and long-term consequences of continued use of unauthorized hoardings. Emphasis was placed on the health implications of dioxin exposure, waste management infrastructure, and policy enforcement gaps.

3. THE DEVELOPMENT OF BANNERS AND HOARDINGS AS A CUSTOM

The practice of promoting the individual achievements and blessing of festivals through hoardings and posters was initiated in the southern states of India, specifically in the state of Tamil Nadu, where the political leaders extensively use the hoardings to promote their freebies, the face of their popular leader, promote their political agenda, set narratives and attract public confirmation. Over the years, this practice has proliferated to various

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regions, particularly in especially metro cities of the country and emerged as a widely used means of self-promotion for individuals and groups beyond the realm of politics [9].

Placing a number of large size posters and banners to enhance their visibility and to reach to a wider audience has now becomes a race and competitions among different political parties. Now a days, anybody who wants to extend birthday wishes, share greetings on festivals, promote personal achievements, or run a political campaign, everyone has started extensively using hoardings and banners for publicity. This practice has now moved from metros to semi-urban centers and even villages, shows its wide-scale adoption across India [10]. However, we pay a lot in terms of environmental degradation, but the study of this loss remains largely unaddressed. When the elections end, the country or state must reckon not only with who will be the next Chief Minister or Prime Minister but also with the polyvinyl chloride (PVC)-based hoardings used by candidates to display their policies, political agendas, and strategies for social and election engineering. Many powerful individuals and spiritual leaders also use these hoarding boards for self-glorification. The major problem here is not their usage but rather the overuse of this material and its poor disposal.

4. THE ENVIRONMENTAL CONSEQUENCES OF HOARDINGS AND BANNERS

4.1 Utilization of PVC and Synthetic Materials

The main material used in hoardings and banners is Polyvinyl Chloride (PVC), a plastic polymer that is widely used because of its affordability and durability. PVC is a major environmental pollutant. Dioxins are one of the dangerous compounds linked to cancer, impairment of the immune system and reproductive disorders, released by PVC during production and disposal [11].

Specifically, when PVC-based hoardings are burned, either on purpose or by accident (during the acts of arson following a candidate's defeat in election or deliberately burning waste hoardings in winter to stay warm), they release dioxins into the atmosphere. In turn, this leads to air pollution, which has detrimental effects on public health and local ecosystems. Studies have shown that PVC is accountable for almost 80% of dioxin pollution in the world, and the emission of carbon from these materials further exacerbates the problem of global warming [12]. As per the World Health Organization (WHO), the dioxins can be bioaccumulate in our food chain which leads to severe ecological and health issues.

4.2 Risks to Health from Exposure to Dioxin

Dioxins emitted during the burning of PVC-based banners and hoardings are not simply environmental pollutants, but they pose significant health risks. Dioxins are known to be extremely toxic and linked to cancer, impairment of reproductive and developmental problems, and damage to the immune system. Burning these hoardings in public areas adds to air pollution, which can cause respiratory illnesses, especially in susceptible groups like the elderly and children. The substances emitted during the burning of the PVC waste are shown in Figure 1.

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Figure 1: Substances emitted during the burning of PVC waste

Furthermore, the disposal of these materials is also very difficult. Discarded banners and hoardings composed of PVC and synthetic polymers add to landfill debris even when they are not burned since they do not break down readily. Over time, this causes the leaks of harmful chemicals into the soil and water, affecting local biodiversity and poisoning groundwater sources. PVC contains various additives, including phthalates, a major substance responsible for environmental toxicity. A study published in *international journal of hygiene and environmental health* has linked high levels of phthalates to developmental and reproductive problems [13]. The recent study published by the British Journal of Industrial Medicine highlighted the increased rate of respiratory issues among workers in PVC manufacturing [14]. Table-1 shows the causes of hazardous elements which are emitted during the burning of PVC, along with their consequences on human health and air pollutants [15].

Table 1: Hazardous Elements Emitted When PVC Burns

Hazardous Element (Substance Emitted)	Consequences on Human Health	Air Pollutants
Chlorine (Hydrogen Chloride)	Causes respiratory distress, eye discomfort, and throat irritation.	Acidic gas plays a significant contribution in the formation of acid rain.
Carbon (Carbon Monoxide)	Slow down the oxygen transport to essential organs, causing dizziness, potentially resulting in fatal outcomes.	A hazardous gas that is significantly responsible for air pollution.

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Toxic Heavy Metals (Lead compounds)	Causes neurotoxic effects, particularly in children, impairing cognitive function of brain.	Pollutes both soil and water.
Volatile Organic Compounds (Benzene, Toluene, and Xylene)	Causes headaches, respiratory issues, and dizziness, with prolonged exposure linked to cancer.	Key component in the formation of ground-level ozone
Plastic Particles (Fine Particulate Matter: PM2.5 and PM10)	Cause respiratory and cardiovascular disorders.	Contribute to smog formation.
Phthalates (Polycyclic Aromatic Hydrocarbons)	Upset endocrine functions may lead to reproductive disorders.	Remains in the environment, threat to ecosystems.
Dioxins and Furans (Dioxins)	Extremely toxic: linked to cancer, impairment of the immune system and reproductive disorders.	Long-lasting organic contaminants known as Persistent organic pollutants (POPs).

5. THE ISSUE OF PUBLIC IRRITATION

5.1 Visual and Material Pollution

The excessively displayed hoarding in public areas becomes a major source of visual pollution. As seen in Figure 2, advertisements frequently overtake public spaces including parks, market areas, and roadside areas, resulting in an untidy and disorderly scene. This type of visual pollution diminishes the natural beauty of the landscape and lowers the esthetic value of both urban and rural places [16].

Figure 2: Hoardings Installed at Roadside

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In addition to visual clutter, hoarding frequently results in material pollution. When banners are left to decay without properly disposed of, they contribute to littering. In most cases, these materials wind up in open garbage landfills, where they worsen the problem of waste management. Since synthetic materials like non-biodegradable PVC take hundreds of years to break down, their presence in these landfills poses additional problems for environmental sustainability.

5.2 Road Safety Risks

The placement of large banners and hoardings near crossroads or roadside results in a serious threat to road safety. The desire to make advertisements as large and eye-catching as possible often results in obstructed views for drivers, contributing to traffic accidents. They typically focus on locations with high traffic density, prominent visibility, and significant pedestrian movement. Additionally, hoardings can pose a serious risk of accidents during high winds if they are not installed properly. Hoardings that were poorly installed or weather-damaged by the elements have occasionally collapsed, injuring or fatalities. Under the updated advertisement policy of the Bruhat Bengaluru Mahanagara Palika (BBMP), unauthorized installation of hoardings and advertisements in unclassified regions of the city may lead to penal action, including imprisonment. Likewise, in National Capital Region of Delhi the Environment Pollution (Prevention and Control) Authority has implemented a new policy prohibiting advertisements that could distract road users by featuring content related to nudity, racism, drug promotion, cruelty to animals, or any form of violence.

The increasing use of plastic and PVC-based hoardings and roadside advertisements has become a serious road safety risk across several states of India. As per the Central Pollution Control Board (CPCB) Annual Report 2020–21 the states such as Telangana, Tamil Nadu, Maharashtra, and Uttar Pradesh reported high level of plastic waste generation and usage of non-biodegradable PVC flex materials for outdoor displays. These displays create major visual distractions for drivers, especially on busy highways and urban passages. The MoRTH Road Accidents in India 2022 report shows that these same states continue to rank among the highest in total road accidents and fatalities, demonstrating a probable link between visual pollution from advertisements boards and increased driver distraction. PVC hoardings often hinder sightlines, cover traffic signage, and glare under sunlight or headlights at night, which severely compromises a driver's reaction time and situational awareness.

Figure 3. shows the relationship between plastic/PVC waste generation and the number of road accidents as per the CPCB Annual Report 2020–21 and MoRTH Road Accidents in India 2022 across major states. Figure 3. clearly shows that states with higher plastic/PVC material generation significantly West Bengal, Telangana, Tamil Nadu, Uttar Pradesh and Maharashtra also reported higher number of road accidents. This trend strengthens our assessment that prevalent use of PVC based hoardings, displays contributes deeply to plastic waste a directly correlates with increased visual and physical obstructions which increase the accident risks on major roads and highways.

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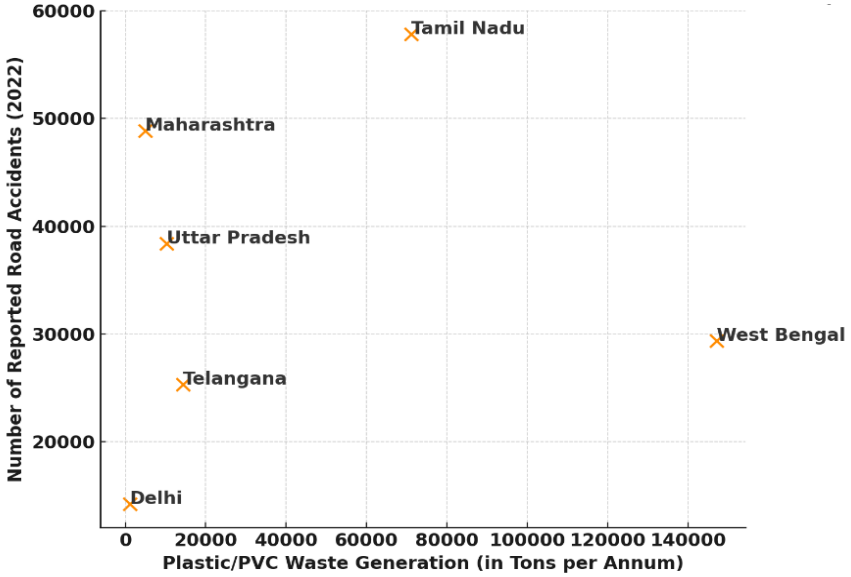

Figure 3: Relationship between Plastic/PVC Waste Generation and Road accidents (2022)

6. REGULATORY STRUCTURE AND ENFORCEMENT DEFICIENCIES

6.1 Established Laws and Regulations

A variety of laws and regulation policies are in-place in various Indian states to control the placement of ads in public areas. A set of rules to regulate the installation and erection of hoardings and banners have been set by different Nagar Nigam authorities in cities like Chennai, Delhi, and Mumbai. These regulations include requirements for permissions, size restrictions, and location restrictions. Nevertheless, there is still a lack of enforcement of these rules [17].

The rules set up by the Municipal Solid Waste Management-2016 have generally proved to be ineffective because there have been very few instances where an individual or a group violating these rules was punished or penalized. Even though Section 268 of the Indian Penal Code provides guidelines to deal with the problem of unregulated waste and PVC hoardings, the continuous increase in the use of hoardings for advertisements and self-glorification indicates that these rules are either not implemented efficiently or are insufficient to limit such activities.

6.2 Barriers to Enforcement

One of the major barriers to regulating illegal advertising boards and hoardings is the lack of political and administrative will. Due to the frequent use of these hoardings by most political parties and powerful individuals for their publicity and promotions, officials of municipal corporations have often hesitated to take action against them.

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Furthermore, since PVC hoardings can be procured at a very low cost and there is little chance of any significant consequences for their unlawful display, they are overused.

Additionally, there is a lack of public awareness campaigns by the local administration to educate people about their impact on health and the environment. The widespread use of hoardings for publicity has continuously expanded, and unless the community itself criticizes illegal advertisements or advocates for stronger regulations, the issue will persist.

7. CULTURAL AND SOCIAL FACTORS BEHIND THE TREND

The desire for public recognition and self-glorification has been deeply embedded in Indian traditions since the era of kings and nawabs. Evidence of this can be seen in the Ashokan pillars, which glorify the Maurya king Ashoka through inscriptions.

Hoardings and banners serve as widely recognized tools for publicity, granting individuals visibility and status. The display of names and images on these banners not only enhances social recognition but also reflects a person's social and economic influence.

The procurement cost of PVC hoardings starts from Rs. 12 per sq. feet. Due to their cheap cost, they are overused (not only to print advertisements that covers the drivers view over highways but also to announce the birthday of a local figure) to the point of becoming a vital item in the custom of public service. Originally, banners were primarily used by political parties and prominent personalities to promote themselves and shape public narratives.

However, in recent years, their usage has expanded to include common individuals who celebrate personal milestones such as birthdays and wedding ceremonies. Religious leaders, too, frequently employ these practices to promote their activities.

While regulations play a crucial role in curbing this trend, a more effective approach would be to implement modern strategies aimed at eliminating these detrimental customs. Recycling PVC banners is one of the simplest solutions; some companies currently offer this service. The use of PVC hoardings should also be prohibited, as Bengaluru has done.

8. ENVIRONMENTALLY SUSTAINABLE ALTERNATIVES AND POLICY RECOMMENDATIONS

8.1 Encouraging Eco-Friendly Advertising

One of the most efficient approaches to address the environmental impact of hoardings is to promote green advertising initiatives which is an eco-friendly alternative. The materials that are broken down by microorganisms over time without damaging the environment, such as paper or cotton fabric, can serve as a substitute of synthetic polymers and PVC [18].

The municipal corporations and Nagar Nigam's should promote these practices by offering incentives for the use of eco-friendly alternatives of PVC's by giving subsidies or reduction in fees for advertisement boards installation to companies that implement.

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8.2 Imposing Fees and Penalties

One option to regulate and restrict the habit of displaying unauthorized hoardings and banners is to devise a system of fines and penalties. Municipal corporations should encourage the use of biodegradable or recyclable materials and increase the taxes for the use of PVC based materials. Individuals or businesses who engage in unlawful hoardings should be fined, and those who break advertising laws more than once should face severe punishments as the continuous use of these materials contradicts establishments charted in the Environment (Protection) Act and the Plastic Waste Management Rules.

8.3 Fortifying Waste Management Infrastructure

Municipal authorities should invest in better trash management systems to handle the proper disposal of banners and hoardings. To process these materials, recycling centers should be set up and awareness campaigns should be started to teach the public about the significance of appropriate disposal and the risks of open burning [19].

As per the Construction and Demolition Waste Management Rules, 2016 enforced by Ministry of Environment, Forest and Climate Change (MoEFCC) every waste generator shall presumptively be responsible for collection and demolition of waste generated and ensure that other waste does not get mixed with this waste. The Municipal authorities are also responsible for compliance with these rules [20].

8.4 Community Education Campaigns

Community education is critical to changing behaviors and reducing the demand for environmentally harmful advertisements. Awareness campaigns highlighting the health and environmental risks associated with PVC and synthetic materials-based posters, cutouts, hoardings, banners, and advertisements should be promoted through media channels, schools, and community organizations.

To effectively address health risks associated with festivals, healthcare providers must be well-informed about potential concerns. Health authorities should implement targeted health education programs and awareness campaigns before each event, offering clear guidance and preventive measures to help attendees mitigate potential hazards [21].

8.5 Set Expectations for Political Parties and Public Figures

Above all, the elections are supposed to be a chance to hold our political parties to set higher standards, such as cleaning up after themselves. The Election Commission should notify the responsibility of the local area party president under the model code of conduct that the party members will remove the political advertisements hoardings and banners before the announcement of election results and set should set proper guidelines and take necessary action to make sure the code will be followed by. The Election Commission of India (ECI) set moral responsibility of all political parties to implement eco-friendly alternatives in the elections by stopping the practice of single-use PVC advertisement boards in their campaigns. The goal of such recommendation is to safeguard both public health and the environment [22-23].

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9. CONCLUSION AND FUTURE RESEARCH DIRECTIONS

The use of hoardings and banners for social recognition and self-glorification is deeply rooted in the culture of India, while its negatives consequences on environment and public heath were completely ignored. The synthetic and PVC based material normally used for creation of hoardings is a major source of air pollution and releases very high number of dioxins and toxic heavy metals.

The released materials are linked to cancer, impairment of the immune system, reproductive and even a cause of impairing cognitive function of brain disorders. The placement of illegal hoardings is also responsible for road accidents, public nuisance and create visual pollution. To address the adverse effects of this tradition, an effective strategy supported by both the government and the public is required. Governments must strengthen existing restrictions and take necessary steps to enforce them, encourage the implementation of environment friendly alternatives, and impose severe penalties for unauthorized displays.

Public awareness and education campaigns will also play an important role in shifting public attitudes toward this type of advertising. By implementing these actions, India will free from the problem facing by the public and reach the goal of promoting sustainable environmental practices.

Future research can be directed toward conducting region-specific studies that can be designed to track the ecological footprint of synthetic advertising waste across Indian cities during election seasons and religious festivals. Another promising direction involves the development and testing of biodegradable materials for public advertisements and evaluating their acceptance, cost-effectiveness, and environmental impact compared to presently used PVC based practices. Beside this, the behavioral studies exploring the public awareness, political motivations, and socioeconomic factors influencing the widespread use of unauthorized banners can inform more targeted policy interventions and awareness campaigns. Collaborations between researchers, urban planners, policymakers, and environmental NGOs would significantly enrich the understanding and resolution of this multifaceted issue.

Acknowledgement

This work is supported by Moradabad Institute of Technology, Moradabad under its Faculty Research Promotion Scheme. The authors are thankful to the anonymous professors and environmental activists for their contribution in understanding the environmental and public health impacts of unauthorized hoardings.

Declaration of Competing Interest

There is no Conflict of Interest.

Credit Authorship Contribution Statement

Shweta Agarwal: Methodology, Resources, Writing original draft.
Himanshu Agarwal: Conceptualization, Writing - Review & Editing.
Nitin Kumar Agrawal: Data curation, Validation.
Animesh Agarwal: Investigation.
Manish Saxena: Data Analysis, Policies Recommendations.

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