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Review Article

Tobacco Product Waste and its Impact on Health and Environment

Karandeep Singh Sandhu[1], Ravinder pal[2]

[1]Reader, Department of Public Health Dentistry, Sri Sukhmani Dental College and Hospital, Dera Bassi, Mohali, Punjab;
[2]Ph.D, Senior Lecturer, Department of Biochemistry, Sri Sukhmani Dental College and Hospital, Dera Bassi, Mohali, Punjab

***ABSTRACT*:**
Tobacco Product waste and cigarette butts are the most ubiquitous form of litter globally. TPW contains all the toxins, nicotine, carcinogens found in tobacco products along with the plastic non-biodegradable filter attached to almost all cigarettes. TPW has harmful consequences for environment, animals and human population. Several proposals like litigations against tobacco industry, labelling cigarette filters as non-biodegradable, deposit/return policy have been set forth but none has been fully effective. This article reviews about the harmful effects of Tobacco Product Waste and various initiatives taken by stakeholders to curb Tobacco Product Waste.
Keywords: Tobacco Product Waste, Litter, Cigarette butt, Cellulose Acetate Filter , Litigations.

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Corresponding Author: Dr. Karandeep Singh Sandhu, Reader, Department of Public Health Dentistry, Sri Sukhmani Dental College and Hospital, Dera Bassi, Mohali, Punjab, India

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INTRODUCTION:
Tobacco Product Waste contains all the toxins, nicotine and carcinogens found in tobacco products along with the plastic non-biodegradable filter attached to almost cigarettes sold worldwide. In broader sense, the waste generated during tobacco production, manufacturing of tobacco, and packaging and after consumption comprises TOBACCO PRODUCT WASTE (TPW). It also includes batteries, chemicals, packaging of non-biodegradable materials of Electronic Cigarettes. Polythene pouches used for smokeless tobacco also constitute Tobacco Product Waste. [1-3]

Burden of Tobacco Product Waste:
Cigarette Butts and other tobacco product wastes are the most common items picked up from beaches worldwide. As many as 5.6 trillion cigarettes are discarded as litter each year, comprising upto 770,000 metric tons of waste. Cigarette filters leads to an estimated 1.69 billion pounds of cigarette butts winding up as toxic trash each year. Besides cigarettes, other tobacco products make significant contributions to the prevalence of tobacco-associated litter.[4, 5]
Plastic cigar tips, which are most commonly used with cigarillos and small cigars, are one of the most abundant items of plastic marine debris on beaches around the world, sometimes second in quantity only to cigarette butts.[4,5]
In India, 15,000 tonnes of plastic waste is generated daily from smokeless tobacco products of which only 9,000 tonnes is collected and processed. There are 7000 chemicals contained in cigarettes TPW, and many of them, such as ethyl phenol, heavy metals and nicotine, are themselves toxic. At least 50 are known human carcinogens. [6]

Global Scenario of Tobacco Product Waste:
Cigarette butts are dropped on sidewalks in parks, beaches, and flicked from moving cars. Cigarette butts are the most common debris item collected from

beaches and waterways during the annual International Coastal Cleanups, a status that has been maintained since 1986 (Novotny, 2009). In the United States, an estimated 326.6 billion cigarettes were sold in 2011 (CDC, 2012), and in California, approximately 2 billion cigarettes were sold in that year. It is estimated that 1 in every 3 smoked cigarette are discarded as environmental waste.

Discarded cigarette butts have been linked to wildfires, which result in the destruction of wildlife, vegetation and structures (National Fire Protection Agency, 2010). [6, 7]

Indian Scenario of Tobacco Product Waste:

More than 100 billion cigarette butts are being dumped in India every year. The public discourse in India on the health impacts of tobacco use along with the discussions on its effect on environment has been scanty. Fortunately, India has taken up the legislative strategy of refraining smokeless tobacco manufacturers from using plastic materials in the sachets of gutkha and pan masala under the Plastic Waste Management Rules, 2016. However, until recently cigarette butts escaped any such regulations. Moreover, cigarette/bidi butts has been termed 'biodegradable' by Ministry of Environment and Forests Recognizing the health hazard posed by non-biodegradable cigarette/bidi butts, the environmental experts in the country contended for the stricter implementation of laws on public smoking and an appropriate system in place for the management of TPW. [7]

HARMFUL EFFECTS OF TOBACCO PRODUCT WASTE: [7,8]

Cigarette butts contain all the carcinogens, heavy metals, pesticides, and nicotine that make tobacco use the leading cause of preventable death worldwide (Moerman, 2011, Sheets, 1991, Hoffman, 1997).

Some of the harmful effects of TPW are summarized as

Agricultural Chemicals

The harmful chemicals in tobacco leaf are transferred to cigarette smoke, they are retained by the cigarette filters and tobacco remnants in cigarette butts which have the tendency to bioaccumulate in the human food chain.

Effect on marine/aquatic life

Numerous chemicals from tobacco leaf such as heavy metals, nicotine and ethylphenol get into water and contaminate aquatic environments.

The toxic exposure can poison fish, as well as animals who eat cigarette butts.

Effect on animals

Animals indiscriminate eaters, and ingested plastic trash, including cigarette butts, can choke an animal or poison it with toxins and leads subsequent under-nutrition.

Effect due to nicotine presence

These may represent a wide variety of symptoms including nausea, vomiting, salivation and with severe poisoning, there may be convulsions, bradycardia with hypotension, cardiac arrhythmias and respiratory depression.

Effect on birds

Curious birds ingests cigarette butts left in household ashtrays and this ingestion can cause excessive salivation, excitement, tremors, vomiting, lack of coordination, weakness, convulsions, respiratory failure and even death.

Figure 1: Harmful Effects of Tobacco Product Waste

Initiatives taken by Various Stakeholders to curb Tobacco Product Waste [9, 10]

1. Swachh Association
Swachh Association, an NGO in Nagpur, India started in December 2019, as an innovative project of collecting and recycling the cigarette butts. About 150 kg of cigarette butts have in been collected per month in the past three months as a part of this campaign

2. CODE- A recycling company
A company named 'CODE' was started by two entrepreneurs Naman Gupta and Vishal Kanet in Noida, India which offers a one-time recycling solution to TPW. The company provides user collection units called V Bins to the customers in which the cigarette waste is segregated. After every 15 days the company's garbage collector collects the waste from the generator's location. The company pays Rs. 700 for every kilogram and Rs. 80 for every 100 grams of cigarette waste collected.

3. Anti-Littering Campaign
To mark World Cleanup Day 2019, over 3,900 people from 31 countries took part and picked up 83 tons of waste, including 827,000 cigarette butts. These cleanups had a powerful impact on the communities where they took place, and that is why it has been included as a part of the "Reduce Litter from the Ground" anti-littering strategy.

4. 'The only butt' campaign
The 'only butt campaign' has been successfully used by businesses, government departments and since 2004 in Australia to educate smokers about the problem of cigarette butt litter – with sensational results.
When combined with an appropriate photo, 'the only butt' campaign encourages smokers to consider their cigarette butt litter in the context of the organisation's specific situation. To maximize their smokers interest in their organisation's efforts to reduce cigarette butt litter many of our clients actually run intra-corporate competitions amongst their staff and employees for them to submit their own 'butt' photos.

5. Let's Do It India (LDII) Campaign
'Let's Do It India', a Delhi based NGO is working towards educating people on this kind of waste and also encourages people to collect and donate their cigarette butts to the organization for recycle purposes The NGO targets to collect about 1 crore cigarette-butts (3 tonnesapprox) until the end of 2021. The campaign aims to stir awareness around the severe environmental impact of cigarette butts while shifting behaviours to regulate butt litte

6. Fill the Bottle Campaign
'Fill the Bottle Campaign' launched in August 2019 by a group of French teenagers to clean the cigarette butts flicked into drains, mashed under foot or dropped in parks .The campaign has inspired thousands to clean up what is thought to be the most common form of litter around the globe.

7. Bin the Butt Campaign
The 'Bin the Butt' campaigns being developed in UK for local authorities, to help stamp out the smoking related litter issue and aims to raise awareness amongst smokers and highlight the link between the cigarette butt they drop on the street or down the drain and the impact it has on the marine environment.

RECOMMENDATIONS: [11, 12,13]
The imperishable nature of TPW renders it a potential hazard for the environment and therefore requires appropriate policy interventions.
Following models have been proposed by the stakeholders for possible action on TPW:
Labeling: There is enough evidence stating the effectiveness of package warning on tobacco products. Additional labels on the toxicity of the cigarette butts on the environment should be considered.
Deposit/Return: Several US states have implemented depositreturn schemes on glass and metal beverage containers wherein a consumer-paid monetary deposit is imposed, which is reimbursed on return of these items. This system has proven effective in reducing the litter and increasing the recycle of goods. A similar system could be put into place for the management of TPW.
Litigations: Litigations can be filed by the state or local authorities against the tobacco industry; holding them responsible for cleanup and nuisance costs associated with tobacco products.
Fines: Fines can be levied against the tobacco users and the manufacturers by the government authorities for public littering of TPW.
Product changes: States could consider banning the sale of filtered cigarettes if these were to be considered an environmental hazard and nuisance burden. All tobacco product packaging should be environment friendly and made of bio-degradable materials e.g. paper, other natural fibers or metals such as tin.
Consumer education and responsibility: It is an accepted notion in health behavior science that human behavior changes only if there are costs, benefits, and social norms to support these changes. Tobacco control enthusiasts and environmentalists should join hands for educating the public on the hazardous impact of TPW on the environment.
Cost recovery/Waste tax: Tobacco litter abatement costs to cities are substantial. One solution to reducing toxic

waste from computers, telephones, and televisions is a consumer-funded

Advanced Recycling Fee (ARF) which is assessed at the time of purchase for these products and it is meant to pay for the costs of recycling and disposing properly of any non-recyclable material.

San Francisco has implemented this intervention by raising the price by approximately $0.20–$0.40 per pack. Such a price hike would also result in reduced consumption.

Mitigation Fees: Some governments impose mitigation fees to offset costs they incur to deal with improperly disposed cigarette butts. These costs cover services such as litter collection and disposal, public education, signage, and administration of the self-funding program. A mitigation fee is also likely to result indirectly in an increase in cigarette prices.

Deposit and Refund Programs: A deposit and refund program requires that consumers pay an extra fee when purchasing cigarettes. Consumers then recoup the fee by returning used filters to the manufacturer or place of purchase. Unreimbursed deposits can be used to fund cigarette butt waste cleanups, public education programs about the negative consequences of smoking and butt flicking.

Biodegradable Filters or Unfiltered Cigarettes: Some companies have developed biodegradable and compostable cigarette filters using natural fibers like hemp, cotton, and food-grade starch. These alternative filters are intended to help reduce environmental pollution from cigarette butts, since they decompose more quickly in the environment, as well as in smokers' lungs.

Product Stewardship: The product stewardship approach requires that a manufacturing industry assume responsibility for the entire lifecycle of its products.

Filter Recycling: Several programs and processes have been developed to recycle used filters into useful materials, such as sealants or adhesives, with the goal of keeping cigarette butts out of landfills and off streets and beaches.

CONCLUSION:

There is enough evidence pointing towards the ubiquitous nature of Tobacco Product Waste and its toxic impact on environment. Tobacco users should be conscious that they are patronizing an industry that will not only kill them but also causing damage to our nature endangering all living species and polluting air, water and soil. A strong partnership between environmental and tobacco control groups is needed for more innovative policy solutions to manage Tobacco Product waste effectively.

REFERENCES:

1. Novotny TE, Bialous SA, Burt L, Curtis C, da Costa VL, Iqtidar SU, et al. Impacts environnementaux et sanitaires de la culture du tabac, de la fabrication de cigarettes et de leur consummation. Bull World Health Organ 2015;93(12):877–80.
2. Novotny TE, Slaughter E. Tobacco Product Waste: An Environmental Approach to Reduce Tobacco Consumption. Curr. Environ. Heal. reports2014;1(3):208–16.
3. Tobacco and its environmental impact: an overview.
4. Healton CG, Michael Cummings K, O'Connor RJ, Novotny TE. Butt really? The environmental impact of cigarettes [Internet]. Tob. Control2011 [cited 2021 Jan 2];20(1 SUPPL):1. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088438/
5. Smith EA, Novotny TE. Whose butt is it? Tobacco industry research about smokers and cigarette butt waste. Tob Control [Internet] 2011 [cited 2021 Jan 2];20(1 SUPPL):2–9. Available from: https://pubmed.ncbi.nlm.nih.gov/21504919/
6. Cigarette Butt and Packaging Waste By Tonne | Tobacco Atlas [Internet]. [cited 2021 Jan 2];Available from: https://tobaccoatlas.org/data-visualization/cigarette-butt-andpackaging-waste-by-tonne/
7. Truth Initiative. 5 ways cigarette litter impacts the environment [Internet]. [cited 2021 Jan 2];Available from: https://truthinitiative.org/research-resources/harmful-effectstobacco/5-ways-cigarette-litter-impacts-environment
8. Novotny TE, Slaughter E. Tobacco Product Waste: An Environmental Approach to Reduce Tobacco Consumption [Internet]. Curr. Environ. Heal. reports2014 [cited 2021 Jan 2];1(3):208–16. Available from: /pmc/articles/PMC4129234/?report=abstract
9. Tobacco Product Waste Reduction Toolkit. 2013.
10. Waste War: It's Time To Recycle India's Most Littered Item. (n.d.). SwachIndia NDTV .
11. (Policy Tools for Minimizing Public Health and Environmental Effects of Cigarette Waste)
12. (Smokeless Tobacco Control in India)
13. (Centre, Tobacco Product Waste: Freuently asked Questions)