



Plastic cigar tips debris: Exploring use and disposal issues for Lake Erie beaches

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ABSTRACT

Great Lakes states are increasingly faced with questions regarding how plastic debris is impacting marine and coastal ecosystems. This is especially evident along the southern beaches of Lake Erie, where high population and industrial development have contributed to the plastics problem. In Ohio, the most common items found are cigarettes and other smoking related materials, including plastic cigar tips. Given the growing awareness of the issue, and the impact of plastics on beaches throughout the Great Lakes, a focus group convened to investigate strategies to help address the problem. The group was comprised of individuals with practical knowledge of plastic cigar tip use and disposal issues, including representatives of government agencies, nongovernmental organizations, community groups, and local academic institutions. This report represents the exploratory results of the focus group, complete with information regarding the *what*, *why*, and *how* of plastic cigar tip debris in the region, guidance on the material and social barriers to sustaining desired behaviors (cessation of use by minors and/or proper disposal), strategies to overcome those barriers, and suggestions for management and policy actions moving forward. Group members suggest that a combination of education and government-supported financial incentives may be the most effective approach, with community-based positive messaging backed by local taxes on smoking items that have plastic tips and rebates or other rewards for properly disposing of debris.

1. Introduction

Great Lakes states are increasingly faced with questions regarding how plastic debris is impacting marine and coastal ecosystems. Roughly 80% of all trash found on beach cleanups along the Great Lakes is plastic (Driedger et al., 2015). None of the Great Lakes have been under more pressure than Lake Erie, which has recorded the highest concentrations of plastic fragments on public beaches among Lakes Huron, St. Clair, and Erie (Zbyszewski et al., 2014), and the greatest amount of pelagic microplastics between Lakes Superior, Huron, and Erie (Eriksen et al., 2013). Of all the U.S. states that border Lake Erie, Ohio has the most coastline, highest residential land use, and greatest amount of industrial activity within the watershed, all of which contribute to high concentrations of plastic debris on recreational beaches.

Cigarettes and other smoking related materials (filters and plastic cigar tips) are the most common litter items found on beach cleanups in Ohio, as reported by the Alliance for the Great Lakes Adopt a Beach program (2017). Such items are thought to come from a combination of recreational beach users, converging surface currents, and urban stormwater runoff (Driedger et al., 2015; Zbyszewski et al., 2014; Eriksen et al., 2013). Nowhere are plastic cigar tips more noticeable

than on beaches found near Ohio's largest coastal city, Cleveland, and its surrounding communities. Given the growing awareness of marine-based plastic pollution (Derraik, 2002; Sheavly and Register, 2007), and the impact of plastic marine debris around Cleveland and throughout the Great Lakes (Driedger et al., 2015; Eriksen et al., 2013; Hoellein et al., 2015; NOAA, 2014; Zbyszewski et al., 2014), there is mounting support for further research that addresses the issue and offers solutions.

The National Oceanic and Atmospheric Administration (NOAA) funded a pilot study in 2016 to better understand the barriers and benefits to proper disposal of three plastic marine debris items in northeast Ohio's Lake Erie basin: plastic shopping bags, water bottles, and cigar tips (Bartolotta and Hardy, 2018). A survey was completed by approximately 1000 individuals in the Cleveland-Elyria-Mentor statistical area, asking questions about consumer habits, policy preferences, and suggestions for supporting positive behaviors regarding the use and proper disposal of the three plastic items. While the results provided important data in support of a municipal social marketing campaign targeting plastic shopping bags and plastic water bottles, only two out of the nearly one thousand survey respondents self-identified as plastic cigar tip smokers. This gap in the data prompted further investigation

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and forms the basis for this research.

In an effort to address the cigar tip issue beyond the survey, a focus group was convened comprising individuals with practical knowledge of plastic cigar tip use and disposal issues in northeast Ohio. Focus groups have been touted for producing insights that come from group interaction, or what Carey (1994) refers to as the “group effect.” This helps to solicit responses from individual members in relation to topics discussed by the group as a whole, and can generate valuable vernacular speech which better relates to localized topics and participants (Tracey, 2013). Such messaging is key to outreach and education campaigns.

This report represents the exploratory results of the focus group, complete with information regarding the what, why, and how of plastic cigar tip debris in the region, guidance on the material and social barriers to sustaining desired behaviors (cessation of use by minors and/or proper disposal), strategies to overcome those barriers, and suggestions for management and policy actions moving forward. In a broader sense, this study introduces an emerging environmental issue within the Great Lakes and bodies of water across the globe. One which is proving to be intractable within current governance arrangements and projected to gain greater saliency in the coming years.

2. Plastic cigar debris

Plastic cigar tips are generally made of low-density polyethylene (LDPE) or #4 plastic (Alibaba, 2018). They contain no filter agent and attach directly to the smoking product with which they are being used. They are most commonly used with cigarillos and small cigars (that do not contain a filter) and will float when deposited in water because they have a density of less than 1 g/ml (British Plastics Federation, 2018). However, when they break down into micro-fragments through the process of photo-degradation the plastic has a higher likelihood of sinking. Another reason some of these plastics sink is because of fouling of the plastic from other particles or organisms in the water. As these particles or organisms bind to the plastic fragments they become denser, causing the fragments to sink and reside in sediment.

Smokers use cigar tips for practical and aesthetic reasons. Plastic cigar tips serve as a barrier between the cigar or cigarillo and the user's mouth and teeth, which can help prevent staining or discoloration. Since cigarettes have an internal filter, plastic tips are not used as commonly, and serve primarily as a fashion accessory rather than a functional apparatus. Despite the absence of an external plastic filter, it is important to note that improper disposal of cigarettes is also cause for plastic pollution because filters are made of cellulose acetate, a plastic made from cellulose (Novotny et al., 2009; Harris, 2011).

In Ohio, 27% of all debris collected during Adopt-a-Beach cleanups is related to smoking activities, with plastic cigar tips comprising 11% of smoking litter compared to 15% for cigarettes/cigarette filters (Alliance for the Great Lakes, 2017). This accounts for a much greater percentage of smoking litter than in other Great Lakes states, where cigar tips have been found to make up only 3% of the litter profile compared to 18% for cigarettes/cigarette filters. When viewed from a regional perspective, Ohio is responsible for 33% of the total cigar tips in the Great Lakes, but only 8.5% of the cigarettes/cigarette filters. Thus Ohio ranks highest among Great Lakes states in terms of the amount of cigar tips on beaches and 4th for cigarettes/cigarette filters (Alliance for the Great Lakes, 2017).

3. Methods

On November 10, 2016 from 10:00 am–12:00 pm a focus group was convened in a private conference room at the Watershed Stewardship Center in the Cleveland Metroparks West Creek Reservation. The focus group (from here on referred to as ‘the group’) followed established social science protocols, including development of an interview guide, participant recruitment, recording and transcription of the group

interview, and moderation of the group discussion by a trained facilitator (Creighton, 2005; Bryman, 2012; Yin, 2014).

Recruitment took place via snowball sampling with the goal of a small, socio-demographically stratified group of stakeholders. The number of participants was purposively capped at eight in an effort to highlight personal accounts and allow the conversation to breathe. Group participants made up a diverse demographic profile, including variety among gender, race/ethnicity, age, and representation. Five of the participants were female and three male. Five were white and three were black/African American. Ages ranged from 20s–60s. Group members represented institutions of higher learning in the region, government and nongovernmental organizations that manage land in coastal locations where cigar tips are commonly found, and neighborhood representatives from the City of Cleveland where stormwater often contributes to combined sewer overflows that can carry cigar tips from city streets to Lake Erie.

A professionally trained moderator facilitated the focus group and all responses were recorded on video and audio, as well as written on large flip charts. The entire group interview was transcribed and coded to reveal trends and themes among responses. Interview questions were developed by the research team and a script was followed to steer discussion among group members. Interview questions can be found in Appendix A.

Constant comparison, transcript-based analysis was used to analyze the data. First, open coding was used to divide all responses into units with similar content. Next, similar codes were arranged into broad categories for further analysis (axial coding). Finally, the categories were combined into a series of themes that help to describe the main outputs of the session (selective coding) (Strauss and Corbin, 1998; Saldana, 2013). Results are organized around the themes and reported in detail in the Results section below.

4. Results

4.1. What, why, and how

The first questions for group discussion centered on the WHAT, WHY, and HOW of plastic marine debris. When asked *what* local residents think about the issue, all agreed that people in Cleveland are well aware and concerned about the abundance of cigar tips found along Lake Erie's shore. When asked *why* this matters, group members suggested that it affects the benefits of living in a community, like neighborhood pride and public health, as well as the social, environmental, and financial viability of local neighborhoods.

Community benefits were cited as the biggest reason why this issue matters. Group members felt that addressing the problem with cigar tips would enhance the perception of, and appreciation for, community, family, and personal health. This was suggested to relate to an increased feeling of community and rejuvenated sense of pride in Cleveland.

Social benefits were also thought to be important. Reduction of plastic cigar tips was seen as a way to attract more people to Cleveland. ‘The more beautiful the community, the more people would want to visit or live.’ The group also felt cleaner communities could equate to safer communities (e.g., street trees and other vegetation have been linked to reduced crime in some studies (Kuo and Sullivan, 2001; Donovan and Prestemon, 2012)).

Environmental benefits of reducing cigar tips were also mentioned, and include drinking water improvements, wildlife habitat improvements, cleaner natural spaces, more efficient stormwater management, and safer and healthier fish consumption. Lastly, financial benefits were suggested as a potential outcome. For example, if a cigar tip tax or fee was levied on cigar tip purchases the increase in tax dollars could go back into the community.

This leads to the *how* of the matter. How can decision makers successfully combat the growing problem of plastic cigar tips? The group

sought to identify barriers to sustainable behavior in terms of convenience of disposal options, social norms for use and disposal of cigar tips, and lack of knowledge of the issue. For this report barriers are broken down into two themes: MATERIAL barriers and SOCIAL barriers.

4.1.1. Material barriers

The most cited material barrier to sustainable disposal of cigar tips was lack of access to smoking receptacles and overall amount of smoking receptacles located in the City. Another potential problem focuses on the type of receptacles - cigarette and cigar tip receptacles are not coupled together, creating a divide between cigarette disposal options and cigar tip disposal options. There are currently no receptacles specifically designed for cigar tips (with targeted outreach messages). An ideal scenario suggested by the group would be increased numbers of smoking receptacles with trash cans specific to cigar tips. The geographical distribution of smoking receptacles was also seen as a problem. Some locations have more receptacles than others. In the words of a focus group participant:

“You put a recycle can next to a regular can and you put the Black & Mild canister right on the same post. Everything has to be together to make it work.”

4.1.2. Social barriers

Social barriers to sustainable behavior were thought by the group to be more formidable – ‘long-term user habits are more difficult to change than infrastructure.’ Furthermore, it’s difficult to reach the young population (under 21) with social marketing because smoking is illegal for that group. They attempt to hide or be inconspicuous about behavior.

Another social barrier raised by the group is that youth and minorities do not always respond to technical language (e.g., “marine debris” does not resonate with everyone), although this represents the target user group. Many cigar tip smokers also identify as “ex-smokers” or “social smokers” and use tipped cigars as justification for quitting cigarettes, or only smoke as a group activity with others. As two members of the group noted:

“You could try different types of receptacles with different types of messaging. That’s what I find, is some of the messaging, especially water quality and watershed words, you’ve got to really simplify and use really basic words that people understand when you’re talking watersheds.”

“It’s interesting because there’s this concept of smoker and how people perceive themselves but it’s just that people no longer think of themselves as smokers because they’re smoking cigars. They’re not really a smoker because they’re not smoking cigarettes. So there’s a group that’s kind of [wrong] because of that thinking it’s safer even though it’s not. Um, but there’s also a larger portion of smokers who are using both cigars and cigarettes and there’s also the potential for educating on both products.”

4.2. Strategies for behavior change

One of the goals of the focus group was to inform strategies for overcoming the barriers to sustainable behavior for plastic cigar tips (cessation of use by minors and/or proper disposal). Both MATERIAL and SOCIAL approaches were identified by the group that correlates to the barriers described above.

4.2.1. Material strategies

Strategies recommended to overcome the lack of disposal receptacles in the City were predictable - create more designated smoking areas with visually appealing and clearly marked disposal bins for cigar tips (*attached to trash cans/recycle bins). Group members also

suggested education and outreach via billboards and public signage. Location is seen as extremely important for such messaging. Identified locations include bus stops or on busses, stores that sell tipped cigars, fast food restaurants, and parks.

Group participants also recommended organizing fundraising opportunities and cleanup events to raise awareness. This could include the creation of visually attractive education pieces (e.g. art installations, storm drain stenciling, and signage for disposal bins). According to one group member:

“I do think there’s an interesting opportunity right now to work with the retailers and do some retailer education to promote appropriate disposal and some of the other work that we’re doing. We’re working with retailers and small servers and advertisers at least about a lot of these things. They are pretty receptive to educational opportunity and to sharing information with their audience or their customers. So they have an opportunity, particularly in combination with the tobacco 21 policy change [in April] and the education that’s happened through that, they’ve been fairly receptive so maybe something present like that as a more effective way to reach folks.”

4.2.2. Social strategies

Similar to the material strategies, the following social strategies were recommended in response to the social barriers listed above. The most important strategy outlined by the group deals with targeting the correct audience. Group members suggested all messaging focus on 14–25 year old black/African Americans and should be distributed via a variety of media. It was noted that social media in particular should include Instagram and Snapchat, not Facebook or Twitter. This concept is a reflection of the age groups who frequent each platform.

Continuous education on how to dispose of cigar tips was also seen as essential (e.g., training manuals for offices, stores, and restaurants that purchase or request disposal units). Group members suggested that outreach should focus on solutions (how/where to properly dispose), rather than the hazards. For all messaging, there needs to be a community-based approach to communicating impacts (positive and negative). One group member summed it up this way:

“I think whatever messaging comes around this has to be really targeted for young people in a way that they’re going to hear it because that’s predominantly who in the city of Cleveland and Cuyahoga County is smoking these products.”

4.2.3. The message

Focus group members spoke about the importance of the message. More than anything else, they encouraged decision makers to enhance the connection between swimming and drinking water (i.e. not just a beach issue; this impacts everyone’s health). The group also suggested coupling public health and environmental health issues. One idea posits tying outreach to city beautification or Cleveland pride, rather than more traditional tobacco messaging such as slogans that say, “Stop smoking!” Another says that a pop-culture “synergy” would be helpful to recruit celebrity support. In one group member’s words:

“I can definitely see, I mean in terms of outreach again, in order to also deal with the environment right, we’re talking about, you know, yes the people who continue to buy them, you know, we want to stop that and we talked about public health as well and the environment and propagating that the more that if you buy them, the more debris is going into Lake Erie and the more it affects public health. I mean, that’s just one example of a message to deliver that would help the environment and public health.”

4.3. Cross-cutting strategies

At the end of the session, members of the group offered a few cross-

cutting strategies for dealing with the issue of plastic cigar tips. One concrete suggestion was to offer positive incentives, like a reward program for returning used cigar tips, or mail-in monetary rewards. Another idea was to implement a tax increase or a deposit program. Some group members felt it would be helpful to involve the United States Food and Drug Administration (FDA) in the environmental/public health aspect of plastic cigar tips in our waterways. Finally, a few group members agreed that it is important to restrict sales of plastic-tipped cigars to tobacco retailers instead of all stores. One group member explained it this way:

“We have a ratio on tobacco in our tax structure but cigarettes are actually taxed much higher than the non-cigarette tobacco products. I think that would be a good rationalization for increasing the tax at least on the tipped products and gear more from that tax for the work to reduce the trash...”

5. Discussion

The problem of plastic cigar tip debris accumulating on recreational beaches is not new to the scientific community. Researchers from across the globe have begun to consider the issue, often as part of larger projects dealing with plastic marine debris in general. Recent examples can be seen from studies on the types of marine debris found in coastal wetlands in Northwest Africa (Alshawafi et al., 2017), to the abundance and composition of marine litter on beaches along the Mediterranean Sea (Valavanidis and Vlachogianni, 2011), to sources of plastic debris on beaches in coastal regions of the Far East (Jang et al., 2014).

In the Great Lakes, researchers have analyzed plastic marine debris through a broad lens (Driedger et al., 2015). Specific projects have sought to better understand microplastic pollution in surface waters (Eriksen et al., 2013), abundance and environmental drivers of anthropogenic litter (Hoellein et al., 2015); and distribution patterns and composition of plastic debris (Zbyszewski et al., 2014), but no studies to date have specifically explored barriers to sustainable behaviors for plastic cigar tip use and disposal in the region.

A focus group comprised of experts in plastic cigar tip disposal and management convened for more than 2 h, discussed the causes and complexities of the issue, and came up with a set of recommendations for helping to reduce plastic cigar tip litter in northeast Ohio. Some suggestions were obvious, like ‘creating more designated smoking areas with proper disposal receptacles’ and ‘developing education and outreach on public signage.’ Others were more nuanced, like ‘reward programs and mail in rebates, tax increases, deposit programs, and strict age enforcement by vendors.’ Overall, the group’s findings and recommendations were consistent with other research on the topic.

For example, when asked why addressing plastic cigar tip debris matters, group members suggested that it affects the benefits of living in a community, like neighborhood pride and public health, as well as the social, environmental, and financial viability of local neighborhoods. This echoes findings from the NOAA Marine Debris Program regarding welfare losses imposed by litter on citizens who use beaches for recreation. That study found that marine debris has a considerable economic impact on residents, and that littered beaches costs local residents millions of dollars each year (Leggett et al., 2014). Others have suggested that plastic debris on beaches will detract tourists from visiting (Jeftic et al., 2009; Kumar et al., 2016), which directly impacts local communities and economies.

Strategies suggested by the focus group for mitigating cigar tip litter have also been proposed by others. One prominent study indicates that successfully addressing the marine debris issue will necessitate a combination of education and government intervention (Sheavly and Register, 2007). For cigar tips debris in northeast Ohio, group members said education is key and should take the form of advertisements on billboards at strategic locations such as bus stops, community events like neighborhood beatification fundraisers, and social media prompts.

Governments could contribute by installing more disposal receptacles and offering a series of financial incentives to support desired behaviors.

Group members further indicated that proper messaging may be the most important consideration to overcoming barriers to sustainable behaviors regarding plastic cigar tip debris. Part of the problem starts with the term “marine debris,” which Driedger et al. (2015) say is ambiguous and may cause confusion when referring to lentic environments. Another problem is that the target audience identified by the group (14–25 year old black/African Americans) may not respond to traditional anti-tobacco messaging, such as “Stop smoking” campaigns, or highly technical language often used by the scientific community.

The group’s focus on minority youth is corroborated by the Prevention Research Center for Healthy Neighborhoods at Case Western Reserve University, which found that as many 22% of black/African Americans age 18–29 in Cleveland smoke little cigars, compared to 5.7% age 30+, or only 2.9% of white residents in the same age group. In addition, the study suggests that education level may contribute to a language barrier among smokers: “little cigar use in adults is significantly more common among those lacking a high school diploma or GED (Bruckman et al., 2013).” Group members sought to address the barrier by educating people about the connection between swimming and drinking water, along with other public health issues, instead of using potentially confusing jargon when talking about “marine debris” or “watershed management.” This turns the problem from a technical one to a social one, and emphasizes the role of community in mitigation strategies.

6. Conclusion

This project introduces an emerging environmental issue in the Great Lakes region, complete with expert opinions regarding its causes and effects on local communities, and suggestions for mitigation strategies for practitioners and policymakers. A combination of education and government-supported financial incentives may be the most effective approach, with community-based positive messaging backed by local taxes on smoking items that have plastic tips and rebates or other rewards for properly disposing of debris.

Given the exploratory nature of the study, there are several limitations that are important to note. The most obvious is the small sample size. Data for this report comes from one focus group held with eight individuals. The results would be more impactful if taken from multiple focus groups in different locations, or triangulated with other forms of data collection. Furthermore, only two focus group members self-identified as smokers. It would be interesting to hear directly from cigar-tip smokers, ideally those who do not properly dispose of their used plastic tips. Unfortunately, legal and logistical questions make engaging with this population challenging.

Ultimately, this project is a pilot study and would be enhanced by additional research on plastic cigar tip use and disposal in the region. Future studies should seek responses from a larger number of stakeholders, in different locations, and via different methods. It would be ideal if some of those respondents represented the target audience for which this project is focused – plastic cigar tip smokers.

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Appendix A. Focus group questionnaire

1. Did you know that litter in the City of Cleveland is comprised of a large amount of tobacco-related products?
2. Would you be surprised to learn that beach cleanups find a large amount of tobacco-related products along the shore?
3. What are some ideas you might have about how to encourage smokers to dispose of their products in the trash?
4. Do you find existing trash disposal options in the City of Cleveland convenient? If not, what would make it more convenient?
5. Do you anticipate that some people would be harder to convince to properly dispose of cigar tips than others? If so, which ones? Why?
6. How would improved efforts to reduce plastic cigar tip debris personally benefit you?
7. What do you feel is the most effective way for the City of Cleveland to encourage people to properly dispose of their plastic cigar tips? In general, how do you get your information (TV, radio, social media)?
8. What, if anything, would make it easier to properly dispose of cigar tips?
9. Do you have any additional comments that you would like to share?

Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.marpolbul.2018.10.020>.

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