

**Cigarette Disposal Investigation and Assessment**  
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**University of British Columbia**  
**APSC 262**  
**April 09, 2015**

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# Cigarette Disposal Investigation and Assessment:

APSC 262 – Technology and Society

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2015-04-09

April 10, 2015

Bud Fraser  
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Re: *Cigarette Disposal Investigation and Assessment*

Dear Bud Fraser:

Enclosed is the design report entitled *Cigarette Disposal Investigation and Assessment*. The intent of this report is to provide an investigation and assessment of cigarette butt disposal options for the University of British Columbia.

This report is focused on the research regarding cigarettes and their effects on the environment when they are littered in addition to an investigation of the options for methods of collection and disposal. This report also provides proposals based on the research conducted to highlight multiple collection and disposal options which were then surveyed among the local campus students to be analyzed in conjunction with a triple bottom line assessment to provide UBC Water and Zero Waste viable options to explore.

The conclusion of this report will summarize the recommended proposed initiative and outline the expected results.

Please feel free to contact us if you have any questions regarding the enclosed report.

Sincerely,

Nathaniel Smith  
Amrinder Khangura  
Jack Lawson  
Brandon Johnson

Enclosure: Term Report, *Cigarette Disposal Investigation and Assessment*

## Abstract

This report looks to investigate and assess options for UBC to explore in regards to cigarette butt disposal on campus with respect to sustainable initiatives. Cigarette butts are a serious waste disposal problem that needs to be addressed. Investigative research was carried out on the available collection and disposal option currently used around the world. Additional proposed methods that are not currently being used were also explored. These options were then presented to the UBC student body in survey form to gauge response to initiatives proposals. These surveys in conjunction with a triple bottom line assessment were analyzed for the presentation of the recommended option for the adoption at UBC.

The final combined collection and disposal recommendations for UBC is the adoption of enforced designated smoking areas with available collection receptacles. The collection receptacles facilitate easy collection of localized littering in addition to responsible deposition by smokers utilizing the area. 73.8% of students' survey at UBC support designated smoking areas. Despite a recycling initiative available by TerraCycle, the collected cigarette butts will then be ultimately disposed of in the landfill UBC currently uses for regular waste. Landfills are heavily regulated and have groundwater contamination mitigation measures in place. The recycling initiative TerraCycle promotes the re-normalization of smoking, is subsidized by big tobacco companies, and was not able to be reached for information regarding their emissions and energy consumption.

## Acknowledgements

Sincere appreciation goes out to all of those involved with facilitating production of this term project

Bud Fraser - UBC Water and Zero Waste

TerraCycle

UBC Student Body Survey Respondents

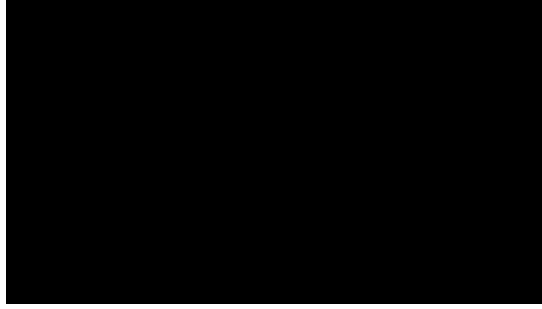
## Group Members

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## Glossary

*Leachates: a solution resulting from leaching, as of soluble constituents from soil, landfill, etc., by downward percolating ground water (Dictionary.com)*

*Cellulose Acetate: any of a group of acetic esters of cellulose, used to make yarns, textiles, nonflammable photographic films, rubber and celluloid substitutes, etc. (Dictionary.com)*

*Triple Bottom Line: a method of evaluating corporate performance by measuring profits as well as environmental sustainability and social responsibility (Dictionary.com)*

*Medaka Embryo: the embryo of a small Japanese Fish, *Oryzias latipes*, common in rice fields, often kept in aquariums (Dictionary.com)*

*Endocrinology: the branch of biology dealing with the endocrine glands and their secretions, especially in relation to their processes or functions (Dictionary.com)*

*Polycyclic aromatic Hydrocarbons: a group of chemicals consisting of numerous carbon atoms joined together to form multiple rings. They are usually the sooty part of smoke or ash. (<https://www.dhs.wisconsin.gov/chemical/pah.htm>)*

*Ethylphenol: any of three isomeric ethyl derivatives of phenol, but especially 4-ethylphenol, which is responsible for a musty smell in some wines.(yourdictionary.com)*

## **List of Abbreviations**

TBL – Triple Bottom Line

EPA – Environmental Protection Agency

US – The United States of America

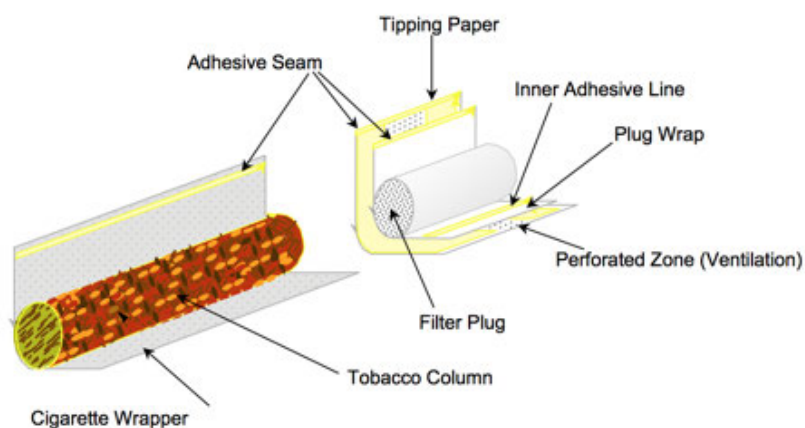
BC – The Province of British Columbia

UBC – The University of British Columbia

## 1.0 Introduction

Every year over 5 trillion cigarettes are smoked in the US. An individual cigarette butt may seem insignificant, but the sheer number of cigarettes smoked has created a substantial waste disposal problem (Novotny, Lum, Smith, Wang & Barnes, 2009). There are three components of a discarded cigarette butt: the unsmoked remnant tobacco, the filter and the paper wrap. Toxic chemicals leach\*<sup>1</sup> from the filters and residue, often entering waterways and polluting aquatic ecosystems (Barnes, 2011).

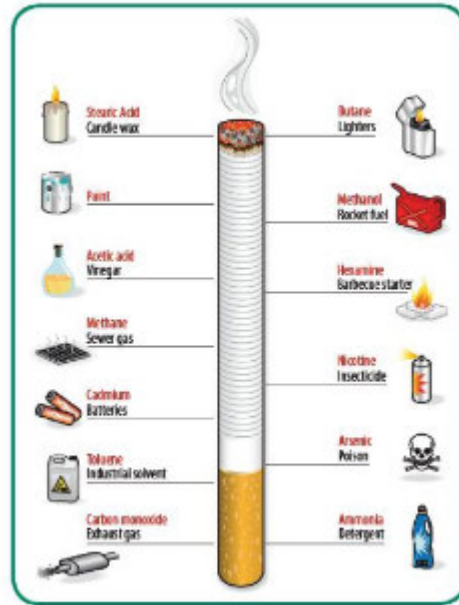
Cigarettes, or more commonly known as smokes, vary in their composition with respect to the presence of manufacturing standards and may consequently vary in the degree of concentration of its components. As seen in Figure 1, most commonly, a cigarette is composed of key components such as the tobacco and additives column, wrappers and papers with adhesives, and the filter (Podraza). With its components masked behind white paper, cigarettes may look harmless, but when it burns, it releases a dangerous cocktail of over 5,000 chemicals (Cancer Research UK, 2014). The components and the manufacturing of a cigarette directly influence the toxicity and effects of cigarette butt litter, and the associated obstacles in recycling butts.



*Figure 1: Construction of Cigarette  
Source: (Podraza)*

<sup>1</sup> Glossary terms are marked with an asterisk (\*)

A discarded cigarette may potentially contain fractions all of its original components such as the wrapper, remnant tobacco and the cellulose acetate\* filter. It is known that cigarette butts leach a number of substances into aquatic environments. These substances include: iron, copper, chromium, cadmium, polycyclic aromatic hydrocarbons\*, nicotine, lead, strontium, manganese aluminum and ethylphenol\* (Lee & Lee). Figure 2 below provides a breakdown of the toxic chemicals in cigarettes.



*Figure 2: Toxic Chemicals of Cigarette and Their Popular Uses*  
 Source: <http://ecdh.org/tobacco-use.php/Clean-Indoor-Air/40/2144/467/1483>

In cities, the cigarette butts are mistaken for food by animals and ingested. More often they enter storm drains or sewage systems, either causing blockages, or they end up entering major waterways and exposing aquatic ecosystems directly to the toxic substances (Lee & Lee, 2015). There is also a significant economic burden being put on communities to clean up cigarette butt litter. In 2009 it is estimated that it cost the city of San Francisco \$11 million to clean up cigarette butt litter (Barnes, 2011).

One study conducted exposed medaka embryos\* to high concentrations of cigarette butt leachates. The study proved that when the medaka embryos were exposed to high concentrations of the leachates listed above the impacts were fatal,

and low concentrations effected their development (Lee & Lee, 2015). Another study exposed 2 fish species to cigarette butts with 1-2cm of remnant tobacco. The study findings are presented in figure 1 below. In summary, 1.1 cigarette butts per liter of water was fatal to both fish species.

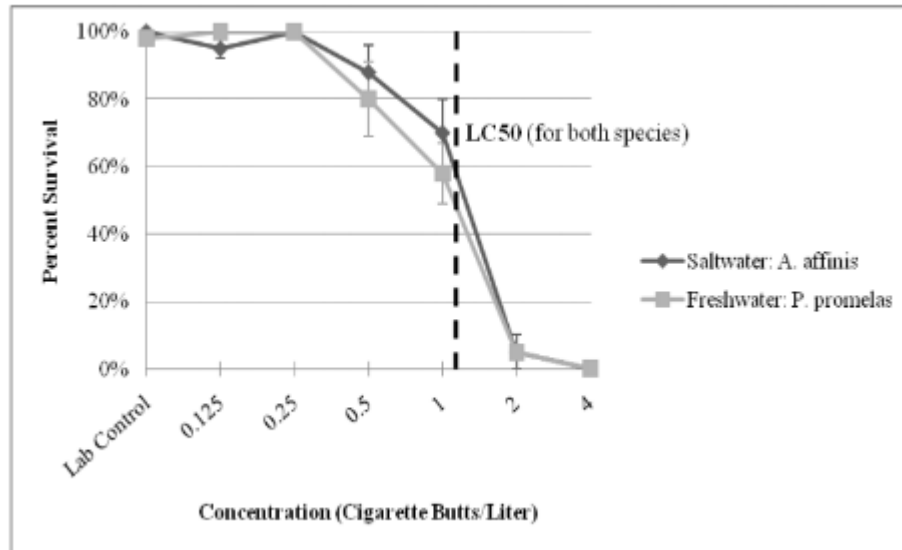


Figure 3. Cigarette butts/Litter of Water vs Percent Survival  
Source: (Novotny, 2011)

It has been proven that cigarette butts are an environmental problem and are creating a financial burden for communities. While more research and studies are needed to quantify the scope of the problem, intervention is needed now solve the problem (Novotny et al, 2009). The first step is raising public awareness around the issue, and the second step is to implement practical cigarette butt disposal programs. Our paper will examine current recycling programs, while also examining proposed collection and disposal initiatives for cigarette butts at UBC.

## **2.0 Disposal of Cigarette Butts in Landfills**

All modern landfills are designed to prevent groundwater contamination and are required to meet the EPA's standards in the US (Teachengineering.org, 2015). Landfill regulations include location restrictions, design parameters, operating codes, constant groundwater monitoring, and closure/post closure monitoring and corrective action. However, even the best engineered landfills can cause water pollution. The most common cause of groundwater contamination is the failure of the landfills liner. Holes can be punctured in the liner during construction, the sheer pressure of the garbage above on the liner can cause the seams to leak, or the liner can deteriorate over time. Once the liner fails, leachates from cigarette butts and other chemicals from our trash can enter waterways. One survey done found that 82% of all landfills in the US leak, and 41% of landfills have a leak area greater than 1 square foot. (Teachengineering.org, 2015).

The exact number of cigarette butts ending up in landfills is unknown, but it is expected to be large. There have been no studies done on cigarette butts in landfills. It takes 10-15 years for a cigarette butt to break down in a landfill, but remnants of the cellulose acetate filters will always remain (Litterfreeplanet.com).

## **3.0 TerraCycle Cigarette Butt Recycling Program**

The TerraCycle cigarette recycling program was introduced in 2012. The program consists of designated receptacle canisters installed at various high smoking areas to collect deposited cigarette butts. These canisters' contents are then collected and the cigarette butts are broken down into their component parts. The paper and leftover tobacco are separated and composted with the remaining cellulose acetate that makes up the filter being concentrated and used for the production of plastic materials including pallets, seat benches and other robust industrial products. The research of this recycling program required approximately six months to develop and is now in widespread use through TerraCycle partnerships around North America. (TerraCycle, 2012)

In 2013, TerraCycle and the city of Vancouver entered into a partnership to launch a cigarette recycling pilot program to help Vancouver meet its goals of the Greenest City 2020 Action plan. The cigarette recycling system implemented by the city of Vancouver would involve the assistance of the EMBERS and United We Can groups in managing the collection and packaging of the disposed cigarette butts from the receptacles. The 110 cigarette butt receptacles would be installed in four of the designated business improvements areas of the city and funded by TerraCycle. (City of Vancouver, 2013)

As of 2014 the City of Vancouver has since scaled back its implementation of the cigarette recycling pilot program. The TerraCycle recycling program initiative was identified to be in part funded by Imperial Tobacco, Canada's largest cigarette producer and as such has received major critical critique as a major public relations initiative in addition to raising ethical concerns about a joint government and tobacco industry partnership. Other Issues raised about the Terracycle program included that it promoted the re-normalization of public smoking and increased second hand smoke by creating "de facto" smoking areas at designated locations. (Mui, 2014) Added to the critiques was that many of these receptacles were also installed within the cities regulated six meter smoke free bylaw zone, violating established protocols that had been initiated by prior anti-smoking initiatives.(Bennett, 2014)

## 4.0 Alternative Options

### 4.1 Return for Deposit

An alternative program proposed by Dr. Stuart H. Kreisman of the UBC department of endocrinology\* follows a deposit based system similar to the first beverage container recovery programs initiated by BC in the 1970's and now widely copied across North America. Kreisman has outlined a deposit program for BC to pioneer once again to curtail cigarette butt littering by creating a return system for purchased cigarettes.

The deposit return system would function as follows: Cigarette purchasers would be required to pay an additional one dollar deposit on a twenty pack of cigarettes. This dollar would translate into five cents per cigarette butt returned with the original package. The return system would tie into established government subsidized Return-It locations throughout the province. The return of cigarette butts without the original packaging would still be accepted, however; they would be refunded at a lower rate. (Kreisman, 2014)

This style of deposit/return system could be introduced quickly and at a cost effective rate. The promotion of the program would discourage current smokers from discarding their city bylaw violation litter by creating an immediate financial penalty. This system would also promote litter clean up by creating an income stream for the cities less fortunate citizens. (Kreisman, 2014)

This style of program would also help to reinforce the de-normalization of public smoking by promoting the elimination of cigarette litter and help decrease the visibility of smoking. This decrease in visibility of smoking would also help promote the cessation of smoking by individuals who have recently quit cigarette consumption by the elimination of "triggers" to remind them. (Bennett, 2014)

It is also notable that this deposit/return style of system was originally claimed to be proposed by Vancouver Green Party Councillor, Adriane Carr; who said that Vision



Vancouver city councillors did a “strike and replace” with the current system established with TerraCycle. (Mui, 2014)

## **4.2 Alternative Recycling Programs**

In terms of alternative recycling programs to the TerraCycle Cigarette Butt recycling program, after some investigation, no alternatives are currently in operation. One company in 2010, namely RippleLife, appears to have provided an alternative to TerraCycle’s cigarette butt recycling program but appears to have since ceased operation as their website has not been updated and they were unavailable for questioning throughout the course of the investigation. Similar conclusions were met by a study completed in 2014 on the city of Richmond. They were “unable to identify any other available recycling processes for cigarette butts” (Stewart, 2014).

## **5.0 Proposed Initiatives**

The investigation on cigarette butt litter will be classified under two categories: the prevention of littering, and the disposal of cigarette butts. The sub-categories for the two categories are explored below.

Preventing litter is a proposed initiative that can be put into action at UBC through employing a ban on smoking, strategically placing collection receptacles, enforcing designated smoking zones, and/or offering a return-for-cash incentive for gathering cigarettes. Creating a ban on smoking can be controversial, but its effectiveness could be the greatest of all in producing concrete results. Creating enforced designated smoking zones falls closely together with strategically placing collecting receptacles, which requires not only an enforcement team, as does a ban on smoking, but will also require a maintenance team to collect cigarettes from receptacles and regularly maintain the areas. These four strategic areas are evaluated in section 8.0 with the Triple Bottom Line\*.

Disposing of accumulated cigarettes is proposed to be either to a traditional landfill or to be put in the hands of a recycling program such as TerraCycle, which is evaluated earlier in this report in sections 2.0 and 3.0, respectively. Both the landfill and TerraCycle options are explained in earlier sections and are evaluated in the following sections.

The proposed initiatives in this report are evaluated, with a total of six combinations, in section 8.0 with the Triple Bottom Line. Furthermore, opinions of UBC students are collected on the matter of cigarette butts, the prevention of littering, and disposal methods associated in section 7.0.

## 6.0 Triple Bottom Line Identifiers

The identifiers used to perform the Triple Bottom Line Assessment are outlined in Table 1.

**Table 1: Triple Bottom Line Identifiers**

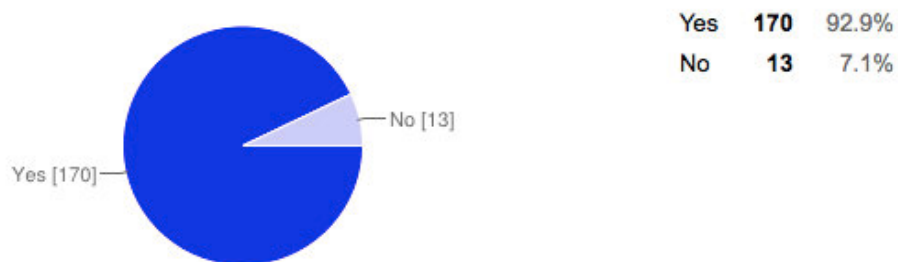
<b>Social</b>	<b>Environmental</b>	<b>Economic</b>
Does it promote smoking?	What is the environmental impact?	Is it feasible?
Is it supported by the student population?	What is the amount of energy consumed?	What is the cost of collection? Is it cheaper than the current cost associated with cleaning up cigarette butt litter?
Does it create jobs?	What are the greenhouse gas emissions?	Who pays for the cost of collection?
How is human health effected?	How is wildlife effected?	If the process is profitable, who benefits?

## 7.0 Social Assessment

In order to properly assess the social impact of smoking and cigarette butts on campus, an online survey was conducted targeting the students of UBC. The survey received a total of 183 responses, reaching the target audience with approximately 93% of the responses coming from UBC students, as seen in Figure 4. A copy of the survey can be found in Appendix I. The survey's purpose was to gauge the students' opinions towards various cigarette butt collection and disposal techniques. The summary and interpretation of the responses are outlined in this section.

Figure 4: Number of UBC Students in Sample Population

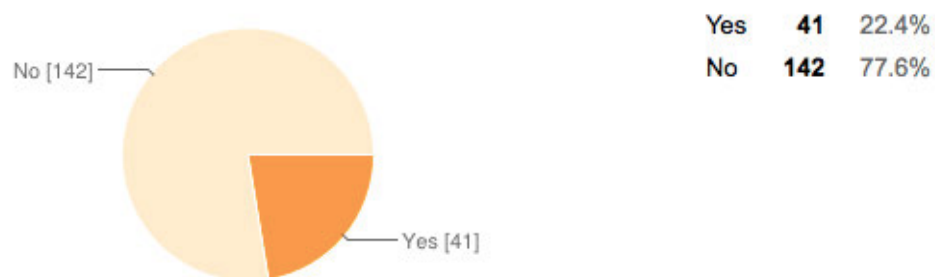
**Are you a UBC student?**



Out of the 183 responses, 142 of the responses indicated that they smoke cigarettes and 41 of the responses indicated that they do not, as seen in Figure 5. In a 2013 study by the Center for Disease Control and Prevention, it was found that approximately 18.7 % of adults aged 18-24 smoke (cdc.gov). This indicates that for our survey, smokers were slightly more inclined to respond to the survey than non-smokers because 22.4% of our responses indicated that they smoke.

Figure 5: Number of Smokers in Sample Population

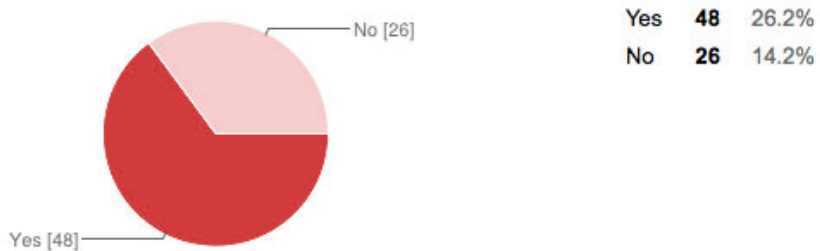
**Do you smoke cigarettes?**



The 74 of the surveyors responded to the question regarding the use of cigarette butt receptacles. 48 of the 74 indicated that they would use a cigarette butt receptacle, indicating that the population desires the use of cigarette butt receptacles, as shown in Figure 6.

Figure 6: Use of Cigarette Butt Receptacles

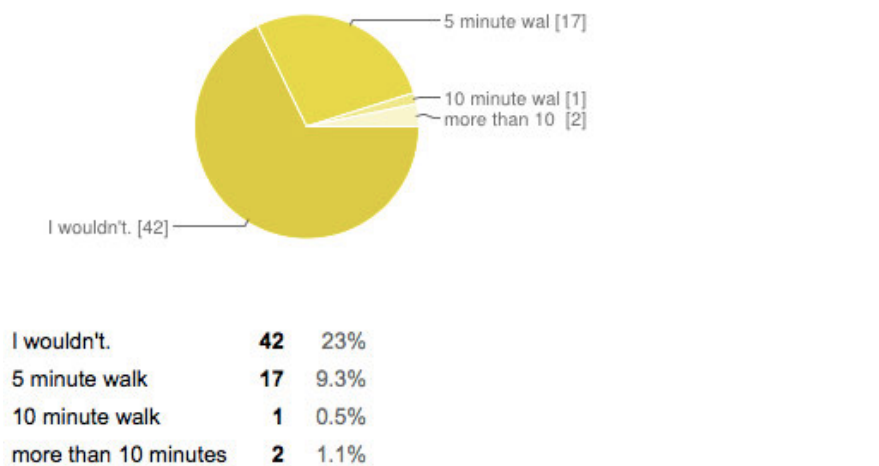
**Would you use a cigarette butt collection receptacle? (A trash can just for cigarette butts)**



In order to gauge how likely the population would use the cigarette butt receptacles, they were then asked to approximate distance they were willing to travel in order to make use of the receptacle over another disposal option. 62 responses were generated by this question, as shown in Figure 7. 42 out of the 62 responses indicated that they would not go out of their way to use a cigarette butt collection receptacle. 17 responses indicated that they would walk 5 minutes in order to make use of a receptacle. 3 responses indicated that they would walk 10 minutes or more to make use of a receptacle. This data indicates that there is a preference in the population for conveniently located cigarette butt receptacles as they are not willing to go out of their way to make use of distant receptacles.

Figure 7: Cigarette Receptacle Usage Distance

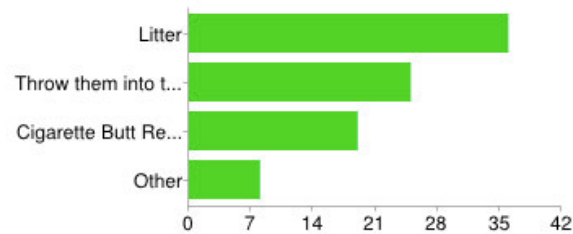
**How far out of your way would you go to use a cigarette butt collection receptacle?**



In order to gauge the current cigarette butt disposal done by the smoking population, they were asked to indicate all of the methods of disposal they currently practice. Of the 41 smokers surveyed, 36 indicated that they throw their cigarettes on the ground as litter, 25 indicated that they dispose of them in garbage receptacles, 19 indicated that they make use of existing cigarette butt receptacles, and 8 indicated that they practice some other method of disposal, as shown in Figure 8. This data indicates a preference for convenience in the disposal of cigarettes by the smoking population.

Figure 8: Disposal Techniques Practiced by Smoking Population

**If you smoke, how do you dispose of the cigarette butts?**

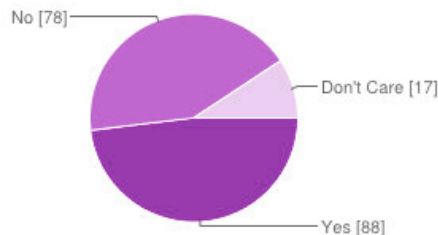


Litter	<b>36</b>	19.7%
Throw them into the trash	<b>25</b>	13.7%
Cigarette Butt Receptacles	<b>19</b>	10.4%
Other	<b>8</b>	4.4%

The survey then measured the response of the sample population to the banning of smoking at UBC. Of the 183 surveys, 88 indicated that they would support the banning of smoking at UBC and 78 indicated that they would not, as shown in Figure 9. This indicates a slight preference for the banning of smoking at UBC but not enough for a recommendation.

Figure 9: The Banning of Smoking on Campus

**Would you support the banning of smoking at UBC?**

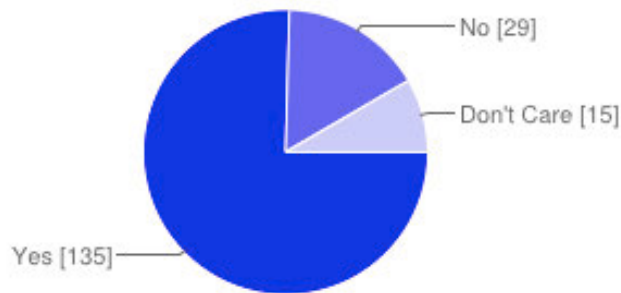


Yes	<b>88</b>	48.1%
No	<b>78</b>	42.6%
Don't Care	<b>17</b>	9.3%

The third cigarette collection/disposal method measured by the survey was designated smoking areas. This section of the survey generated 179 responses. 135 of the responses indicated that they would support designated smoking areas at UBC while 29 responses indicated that they would not. This suggests a strong support for designated smoking areas, as shown in Figure 10.

Figure 10: Designated Smoking Areas at UBC

**Would you support designated smoking areas at UBC?**

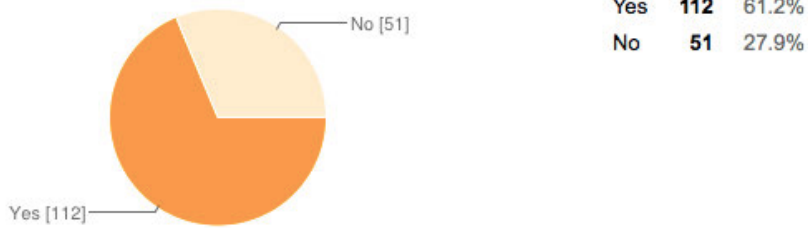


Yes	<b>135</b>	73.8%
No	<b>29</b>	15.8%
Don't Care	<b>15</b>	8.2%

The survey then asked participants to indicate their level of support for issuing fines to enforce the use of designated smoking areas. 112 out of the 163 responses indicated that they would support the use of fines to enforce designated smoking areas while 51 indicated they would not, as shown in Figure 11.

Figure 11: Enforcing Designated Smoking Areas

**Would you support enforcing the designated smoking areas? In other words, issuing fines to people caught smoking outside of the designated area?**



The fourth cigarette collection/disposal method measured by the survey was a return for cash incentive\*. This section of the survey generated 180 responses. 145 of the responses indicated that they would support increased tuition at UBC for a return for cash program while 35 responses indicated that they would not, as shown in Figure 12. This suggests a strong opposition for increased tuition due to financial reasons and to the return for cash program, as shown in Figure 13.

Figure 12: Return for Cash Incentive

**Would you support increased tuition costs to pay for a "return for cash incentive" cigarette butt collection program?**

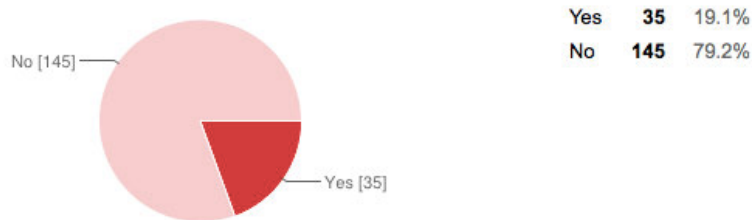
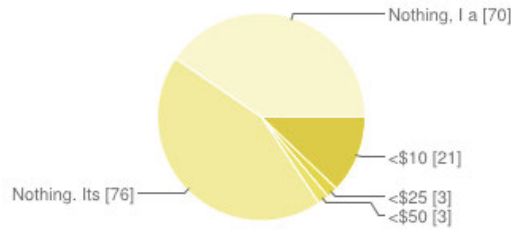




Figure 13: Increased Tuition Fees for Cash Incentive

**Would you be willing to pay increased tuition fees for a cash incentive program? If so how much?**



<\$10	<b>21</b>	11.5%
<\$25	<b>3</b>	1.6%
<\$50	<b>3</b>	1.6%
Nothing. Its just a bad idea	<b>76</b>	41.5%
Nothing, I am a poor student	<b>70</b>	38.3%

## 8.0 Triple Bottom Line Assessments

### 8.1 Landfill Disposal

#### Social

Landfills provide jobs, but it is difficult to classify the jobs as an economic benefit because even if all cigarette butts were recycled, those jobs would still be there. The only significant social impact arises from health concerns. If leachates do enter waterways, wildlife will be directly exposed to chemicals, indirectly exposing humans to the toxins.

#### Environmental

Landfills have extensive measures in place to prevent the contamination of groundwater. Even those these measures are not 100% effective at preventing groundwater contamination, they are effective at greatly reducing groundwater contamination. It is far better for a cigarette butt to be disposed of in a landfill instead of being littered. There is also the environmental impact of transporting the butts to landfills.

#### Economic

Two costs were identified: the cost of transporting the butts to landfills, and the cost of ensuring the measures are in place at landfills to prevent contamination of groundwater. There is a cost associated with the prevention measures at landfills, but it even if all cigarette butts were recycled these programs would still be in place. The only significant cost is collecting all the butts and transporting them to landfills. In conclusion, once cigarette butts are disposed of in a landfill they have a very limited economic impact.

## 8.2 TerraCycle Recycling Program

### Social

This program could unintentionally promote the re-normalization smoking and promote tobacco industries by helping create de-facto smoking areas and effectively renege on current gains in the reduction of smoking on campus if implemented in various identified areas.

### Environmental

The direct environmental impact of the TerraCycle recycling program was unavailable because it is not a public company. Therefore a direct analysis of the GHG emissions, energy consumption and effluent byproducts could not be completed.

### Economic

There are no direct economic benefits for UBC to bring this program online. TerraCycle is responsible for the installation, management and collection of cigarette butt waste from the installed receptacles. All proceeds from the sale of recycled goods are reserved for TerraCycle. The program is subsidized by large Tabaco companies due to the programs un-profitability.

## 8.3 Return for Cash Incentive Program

### Social

The implementation of a return for cash incentive program could create security concerns for the well-being of student by incentivizing individuals with less socially fortunate situations to come and explore the campus for cash refundable opportunities.

### Environmental

This incentive program would have a direct and lasting effect on the presence of cigarette litter due to the economic incentives to collect and return. This style of collection program would effectively negate all environmental concerns of cigarette butts being present in unmanaged environments.

## **Economic**

Due to this program not being implemented provincially or federally, this program would require revamped budget management or tuition fee increases to fund the program. This program would also be open to abuse to the availability of bringing off campus cigarette butt litter in for return.

## **8.4 Enforced Smoking Zones with Receptacles**

### **Social**

Enforced Smoking zones are a proposed initiative for creating a collective area for smoking. Although this initiative may be successful in collecting litter, it forces a feeling of social detachment upon smokers. With smoking becoming acceptable only in certain areas, individuals will be required to escape into these areas in order to smoke, away from their social interaction areas or events.

Receptacles can be a large factor in promoting smoking while they are intended for the purposes of lowering the amount of butt littering. As stated in a City of Richmond report on a Cigarette Butt Recycling Program, “the presence of recycling containers may create de-facto smoking areas which could increase exposure to second-hand smoke, and could make smoking more socially acceptable” (Stewart, 2014).

### **Environmental**

Smoking zones can be effective in creating a collective area of cigarette litter, but it is dependent on the general population for utilizing the provided zones and receptacles. In a recent Public Works report for the City of Richmond, the report stated that if receptacles were in place “that 25% of smokers will use these designated butt disposal containers” which may not be an effective number to combat the economics of installing receptacles and creating smoking zones (Stewart, 2014).

The receptacles designed by TerraCycle may contribute to producing leachates. A report conducted by the Public Works and Transportation Committee for the City of

Richmond stated the result that “the [TerraCycle] container design also permits some rainwater entry, which makes emptying the containers more difficult” as well as produces toxic leachates. Such toxic leachates would then leach into water collection areas and be harmful for not only the local environments but to any other parties that may use that water as well.

### **Economic**

In order to design effective receptacles, the maintenance costs must be taken into account on top of designing and implementing costs. “Estimated cost impacts would include the provision of durable/vandalism-resistant containers, program coordination, and for maintenance and servicing (depending on the scale of the program/number of containers installed)” (Stewart, 2014). Cost and resource implications can also arise from “maintenance challenges [which] are further compounded by vandalism from those who are trying to break into the bins to obtain the butts” (Stewart, 2014). In assessing the costs associated with maintain receptacles, the Public Works and Transportation organizers estimate that it “takes 1-2 employees between 5-9 hours to empty all 110 canisters”, which can be used to calculate the amount of canisters a single employee can empty in one hour. Meanwhile, smoking zones can be very costly in designing and implementing due to the need to ensure all areas are in locations, which comply with smoking bylaw requirements. All such costs are compounded and effect the overall weighing of if receptacles and smoking zones are the most effective method of collecting cigarette butts.

## **8.5 Banning of Smoking**

### **Social**

As seen in the survey conducted targeting UBC students, only a slight preference for the banning of smoking was found. This was also followed by a number of passionate comments regarding this topic. One participant expressed that “[s]moking on campus should be banned and fined across campus” and it “should be a fully smoke free environment” and another participant voiced that it “ would be great if smoking was

banned here because I get second hand smoke most places on campus”. Contrary to these comments, another participant indicated that “[s]moking de-stresses people” and “I wouldn't want to take that choice away from those who choose to smoke, as long as they are not affecting anyone around them”.

### **Environmental**

The main environmental impact attributed to the banning of smoking is it would minimize the amount of new butt addition to the environment, thereby decreasing the environmental impact of cigarette butts in general as outlined in section 1.0 (Introduction) (Arnett, 2014).

### **Economic**

The main economic impact attributed to the banning of smoking is its decrease cost to UBC waste management (Proctor, 2013) by decreasing the frequency at which cigarette butts must be cleaned up around campus.

## **8.6 Comparison of Proposed Initiatives**

In order to compare all of the proposed initiatives, a 1-3 ranking system is used for each TBL category: Social, Environmental, and Economic Impacts. The TBL identifiers listed in section 6.0 were used determine each initiatives impact. A “1” represents that the initiative has a positive impact, or it is supported by the student body (more than 70% supported). A “2” represents an impact that is both positive and negative, negligible, or semi-supported by the student population (50-70% supported). A “3” represents a negative impact, or it is not supported by the student population (less than 50% supported). The final score of each initiative is used to determine the best collection and disposal methods. The results of the ranking are summarized in table 2 and table 3 below.

Table 2. Comparison of Collection Methods

	Banning of Smoking	Enforced Smoking Zones with Receptacles	Return for Cash Incentive Programs
Environmental	1	1	1
Social	3	1	2
Economic	1	2	3
Total Score	5	4	5

The Banning of smoking and enforced smoking areas both have strong TBL assessment scores. Due to the challenges and resistance from the UBC student body that would result from trying to ban smoking, we believe that enforced smoking zones with receptacles is a better method of collection for UBC.

Table 3. Comparison of Disposal Methods

	Landfills	TerraCycle
Social	2	3
Environmental	2	1/2
Economic	2	2
Total Score	6	6/7

TerraCycle received a score of 1/2 for its environmental impact because the required information to do a complete environmental impact analysis was not made available by TerraCycle. Landfills and TerraCycle received similar TBL assessment scores. Due to concerns over TerraCycle promoting the re-normalization of smoking and the need for TerraCycle to be subsidized by big tobacco companies we believe landfills are the best disposal method.

## 9.0 Conclusions and Recommendations

It is important for UBC to take a proactive approach to cigarette butt waste collection and disposal. We recommend that UBC adopts an enforced designated smoking area policy and uses landfills for disposal. Our recommendations are based on extensive research, and a TBL assessment that includes a survey completed by UBC students on cigarette butt waste disposal initiatives.

Designated smoking areas would be supported by the majority of UBCs student body and have significant environmental benefits. Of the 193 UBC students we surveyed, 73.8% would support designated smoking areas. Aside from banning smoking altogether on campus, designated smoking areas are the best way to combat cigarette butt littering and promote easy collection for UBC waste management services. The TBL assessment of designated smoking areas supports our recommendation and suggests that designated smoking would be successful at UBC.

Landfills and TerraCycle's recycling program are currently the only two disposal options for cigarette butts. In order for UBC to adopt TerraCycles program, TerraCycle would need to be more transparent about their emissions and the environmental impact of recycling cigarette butts. It is very concerning that the City of Vancouver recently dropped TerraCycles program and that TerraCycle needs to be subsidized by big tobacco companies. It is also important that the program UBC adopts does not promote the re-normalization of smoking. We are recommending landfills in part due to these concerns, but also because Landfills have extensive ground water mitigation measures in place to prevent cigarette butt leachates from harming the environment.

Our findings suggest that a cigarette butt deposit program is a very practical option that would be very successful at reducing littering. However, we chose to further research programs could be implemented at UBC. A deposit program would need to be implemented on a much larger scale (such as nation or province wide) in order to be successful.



As a green university, it is important that UBC implements sustainable programs. Right now, a sustainable program is needed to combat the cigarette butt waste disposal problem. If UBC adopted a policy for enforced designated smoking areas and landfill disposal, the results would include: less littering, cleaner UBC streets, less second hand smoke, and a significantly reduced amount of groundwater contamination.

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## **APPENDIX I**

Please find the attached document outlining the survey conducted.

# Cigarette Butt Collection and Disposal Initiatives at UBC

\* Required

**Are you a UBC student? \***

- Yes
- No

**Do you smoke cigarettes? \***

- Yes
- No

**Would you use a cigarette butt collection receptacle? (A trash can just for cigarette butts)**

answer only if you smoke

- Yes
- No

**How far out of your way would you go to use a cigarette butt collection receptacle?**

answer only if you smoke

- I wouldn't.
- 5 minute walk
- 10 minute walk
- more than 10 minutes

**If you smoke, how do you dispose of the cigarette butts?**

Check all that apply

- Litter
- Throw them into the trash
- Cigarette Butt Receptacles
- Other

**Would you support the banning of smoking at UBC? \***

- Yes
- No
- Dont Care

**Would you support designated smoking areas at UBC?**

- Yes
- No
- Dont Care

**Would you support enforcing the designated smoking areas? In other words, issuing fines to people caught smoking outside of the designated area?**

Only answer if you support designated smoking areas

- Yes
- No

**Would you support increased tuition costs to pay for a "return for cash incentive" cigarette butt collection program? \***

- Yes
- No

**Would you be willing to pay increased tuition fees for a cash incentive program? If so how much? \***

- <\$10
- <\$25
- <\$50
- Nothing. Its just a bad idea
- Nothing, I am a poor student

**Would you support a recycling program that is funded by big tobacco companies? \***

- Yes
- No

**Please feel free to add any comments**

**Submit**

*Never submit passwords through Google Forms.*

## APPENDIX II

### List of Comments from Survey:

“It would be great if smoking was banned here because I get second hand smoke most places on campus, or at least ENFORCED smoking zones. However I don't think I should have an increase in my tuition fees if I don't smoke.”

“Smoking de-stresses people. I wouldn't want to take that choice away from those who choose to smoke, as long as they are not affecting anyone around them”

“Why would I want to pay smokers to throw their [stuff] in the garbage? Add another tax to their cigarettes and fund it that way, it is not my job to pay them to do what they should be doing in the first place.”

“I am not a fan of paying smokers anything. Smoking is disgusting and should just be made illegal.”

“I don't think penalizing smokers will necessarily change their behaviour... but at the same rate I'm sensitive to cigarette smoke and can't stand it when people smoke close to building vents. I think a dialogue is needed to have more of a conversation around smoking, instead of blindly enforcing a ban and stigmatizing it.”

“I would support smoking in designated smoking areas, however these areas should be encouraged and socially enforced. No fines or anything like that. These areas would have the recycling program mentioned.”

“I want to quit smoking like many others but [sic] its too addictive however if UBC has [sic] some thing for fines and other stuff for smoking that will give me an incentive to quit I am not sure I understand the return for cash incentive or the point of recycling cigarettes”

“I don't think it would be fair to make non smokers pay for a recycling incentive. I literally have only 50 dollars in my bank account right now and would much rather eat with that money than pay smokers to do something that they should be smart enough to figure out themselves. If you really want a recycling program please find another way to fund it because charging students who don't smoke is not right. But honestly I would say that the state of the campus is not so bad and that there are probably other concerns that take priority to a recycling program for cigarette butts”

“I support freedom of choice for all individuals, whether it be with drugs, tobacco or alcohol. In the case of smoking, however, it is never just the individual being affected; even with designated smoking areas, the general non-smoking community still suffers from the spread of smoke.”

“Anything funded by big tobacco companies is, out of their own research and self interest, by default not going to benefit the greater good.”

"I would only support this idea if it was offered free to students, and sponsored by some kind of advertiser. Taxing all students for the actions of a few is illogical, and instead the university should focus on simply implementing smoking poles"

"People [sic] shouldn't get cash for [sic] responsibly disposing of their cigarette butts, they should just learn to respect the community and environment they live/work/study in."

"I think offering a cash reward for cigarette butts found on the ground would be an incentive for more non-students to come to campus in order to create some income, similar to those who come here just to get bottles out of our trash cans. Not that they're not welcome on campus, it just changes the atmosphere."

"I think designated smoking areas are a terrible idea. The province does not even enforce it, why should UBC? We're all adults here. I totally understand that everyone has rights to unpolluted air but it is also our rights to decide what we put in our bodies. There is no need to discriminate against the smokers and put them in "cages". A civilized society is not born through unanimous decision, it is formed by tolerance and respecting each other's rights."

"I wouldn't want to pay anything since I don't smoke."

"What makes tossing a [sic] cigarette butt in the ground any different than any other piece of garbage it is down right disgusting. up to \$2000 fine for littering in BC"

"Banning smoking or trying to hand out fines would never work. from my experience people are gonna smoke [sic] where ever they please no matter what you do. Getting funding from the big smoking companies to keep campus clean [sic] isn't a bad idea. I don't think it will convince university students to start smoking!"

"It would be great if there were less butts in the sheltered areas within or beyond 5 m of doors and such. If the answer is providing a litter bin then they should probably pay for it, or maybe UBC will fine them until the school can pay for an extra trash can."

"Smoking on campus should be banned and fined across campus. It should be a fully smoke free environment."



## **APPENDIX III**

Please find the attached City of Richmond “Cigarette Butt Recycling Program” report.



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**To:** Public Works and Transportation Committee

**Date:** June 25, 2014

**From:** Tom Stewart, AScT.  
Director, Public Works

**File:** 10-6370-01/2014-Vol  
01

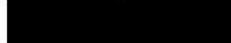
**Re:** **Cigarette Butt Recycling Program**

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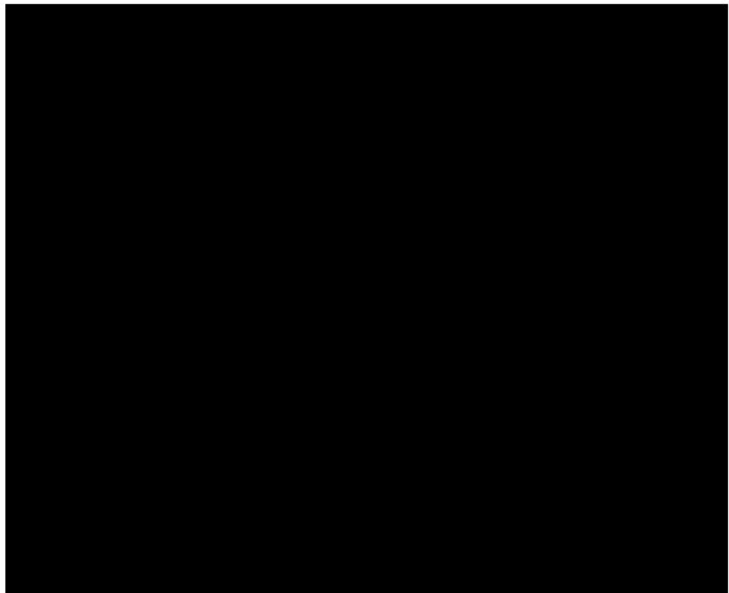
**Staff Recommendation**

1. That the report titled "Cigarette Butt Recycling Program", from the Director, Public Works, dated June 25, 2014, be received for information.
2. That staff work with Vancouver Coastal Health Authority on strategies to reduce cigarette butt litter at the locations identified in this report.

Tom Stewart, AScT.  
Director, Public Works



Att. 2



## Staff Report

### Origin

At their November 20, 2013 meeting, the Public Works and Transportation Committee referred the issue of cigarette butt recycling to staff, as follows:

*That Cigarette Butt Recycling Program be referred to staff to examine:*

- i) Whether the City has a cigarette butt problem,*
- ii) The details of the City of Vancouver's program, and*
- iii) If there are cigarette butt recycling programs other than that launched by the City of Vancouver.*

This report responds to this referral and recommends engaging with Vancouver Coastal Health on strategies to reduce cigarette butt litter.

### Analysis

Cigarette butts are generally considered the single highest item of discarded litter. According to the Great Canadian Shoreline Cleanup website, over 217,000 cigarette butts were removed through their 2012 clean up programs in British Columbia. Food wrappers and containers were the next highest at over 41,000 items.

In Richmond, there are isolated locations where larger quantities of butts may accumulate; however, the problem is not substantive on a large scale. Locations where larger quantities of cigarette butts will accumulate include:

- the Skytrain stations (Brighthouse, Lansdowne, Aberdeen)
- the Richmond Centre bus stop
- the Chatham Street bus stop (south side, between 2<sup>nd</sup> Avenue and 3<sup>rd</sup> Avenue)
- northeast corner of No. 1 Road and Bayview Street

These are typical locations where larger groups of people congregate for somewhat longer periods of time. Currently, the City has installed cigarette butt disposal containers at the Skytrain stations (four at Brighthouse, two at Lansdowne and one at Aberdeen). Staff are currently working to identify more durable containers as replacements due to vandalism issues. It is estimated that 25% of smokers will use these designated butt disposal containers.

Staff's current approach to address cigarette butt litter is on a site-specific basis, however, in a measured manner as part of discouraging the practice of smoking overall. In addition, identifying suitable locations for containers can be challenging given the need to balance City bylaw requirements with those locations where people will typically smoke and how far they will reasonably walk to dispose of their cigarette butts. City Public Health Protection Bylaw 6989 regulates where individuals may smoke, which includes restrictions within 6 metres of building openings or public transit, and 25 meters of any outdoor sport facility or playground (Attachment

1). Operational considerations include selecting a style of cigarette butt disposal container that will minimize vandalism (those attempting to gain access to the butts in the containers), and ensuring containers will minimize rainwater entry to make servicing containers easier.

### Vancouver Program for Cigarette Butt Recycling

In November 2013, the City of Vancouver launched a pilot cigarette butt recycling program with TerraCycle. Through this program, TerraCycle provided 110 aluminum canisters and contracted Embers (a charity organization, which helps people living on low incomes to become economically self-sufficient) to assemble and install the canisters. TerraCycle owns the containers and is responsible for their maintenance, although there appear to be some challenges with how the maintenance aspect is being addressed due to a number of broken canisters, etc. The container design also permits some rainwater entry, which makes emptying the containers more difficult. Maintenance challenges are further compounded by vandalism from those who are trying to break into the bins to obtain the butts. These types of issues can present cost and resource implications.

In Vancouver, canisters are emptied by United We Can, a not-for-profit Vancouver-based agency which hires individuals from the downtown east side exclusively. United We Can is responsible for servicing the containers, and attempt to use plunger-type equipment to get all ashes out, use a strainer to drain water, and pick out any garbage, which has been placed in the canisters. This requires dedicated resource effort to service, empty and wipe down containers every two weeks (takes 1-2 employees between 5-9 hours to empty all 110 canisters). Butts must then be packaged and shipped to TerraCycle who pay United We Can an amount per pound (traditionally \$1/lb of cigarette butts), plus \$5/lb is donated to their organization by TerraCycle. As with container maintenance, the cost and resource implications of servicing canisters would need to be evaluated.

Collected cigarette butts are shipped to TerraCycle's head office in Toronto. TerraCycle has indicated that they aggregate and then ship the butts to processors in Pennsylvania or New Jersey for recycling. TerraCycle advises that the cigarette butts are mechanically shredded and separated into paper, tobacco and plastics. The tobacco, paper and ash are composted, and plastics are blended and recycled into plastic items such as plastic pallets, plastic decking and plastic lumber. They gamma radiate the plastics to kill contaminants before being recycled. This recycling process is as described by TerraCycle and has not been verified by staff through cross-party checks, etc.

Some challenges with the program include:

- The need to ensure canisters are in locations which comply with smoking bylaw requirements;
- The marginal effects the canisters have had on cigarette butt litter as noted in media reports;
- Vancouver Coastal Health concerns regarding potential negative public health consequences (e.g. increased second hand smoke exposure, etc.). Vancouver Coastal

Health has advised that the City of Vancouver is scaling down deployment of cigarette butt canisters.

- Staff have been unable to identify any other available recycling processes for cigarette butts. While the recycling process used by TerraCycle has not yet been verified, it is suggested practice to ensure broader access to alternative recycling markets before embarking on any recycling initiative to ensure a fallback approach is available in the event the intended market ceases to exist.

In consultations with Vancouver Coastal Health, they have indicated potential concerns that the presence of recycling containers may create de-facto smoking areas which could increase exposure to second-hand smoke, and could make smoking more socially acceptable. They also have concerns that a partnership with TerraCycle could lend unintended positive exposure and support to the tobacco industry overall, given they are the funding partner for TerraCycle's cigarette butt recycling program. While supportive of initiatives to remove cigarette butts from the environment, Vancouver Coastal Health wants to ensure the focus remains at actions designed to discourage smoking. They have provided the attached letter, Attachment 2, which includes their comments and recommendations on this issue.

### Summary Comments

Staff do not recommend implementing a cigarette butt recycling program. It is not clear how effective this program has been overall in reducing cigarette butt litter, and there are important considerations relating to Vancouver Coastal Health concerns respecting unintended consequences such a program could potentially cause, i.e. potential back-peddling on the gains made to reduce smoking and exposure to second-hand smoke.

A collaborative approach with Vancouver Coastal Health which helps to formulate strategies to reduce cigarette butt litter, while at the same time ensuring continued focus on efforts designed to reduce smoking rates overall, may result in greater overall benefit and longer term gains.

### **Financial Impact**

None.

If a similar initiative were implemented in Richmond, estimated cost impacts would include the provision of durable/vandalism-resistant containers, program coordination, and for maintenance and servicing (depending on the scale of the program/number of containers installed).

### **Conclusion**

There are some isolated areas in Richmond where larger quantities of cigarette butts will accumulate; however, the problem is not significant on a broader city-wide scale. The current strategy is to evaluate the level of cigarette butt litter and install designated disposal containers, where required, on a selective basis. This approach helps to reduce cigarette butt litter yet maintain balance with environmental health considerations.

While Vancouver has initiated a cigarette butt recycling program, it is not clear the program has been successful in addressing the issue of cigarette butt litter. In addition, Vancouver Coastal Health has concerns that these types of programs could have unintended consequences in creating greater social acceptance of smoking and negatively impact the significant gains made in the region on smoking reduction programs.

Staff suggest working with Vancouver Coastal Health on strategies to address the cigarette butt litter concerns at the locations noted in this report, and in a manner which continues to support reduced smoking rates and second-hand smoke exposure.



Suzanne Bycraft  
Manager, Fleet & Environmental Programs

- Att. 1: Bylaw 6989, Part 6.1 – Areas of Smoking Prohibition
- 2: Letter from Vancouver Coastal Health Authority dated June 10, 2014

Bylaw No. 6989

9.

- 5.1.3.2 In the event the order given under the authority of subsection 5.1.3.1 is not complied with, the **Medical Health Officer** is further authorized to enter the property in order to carry out terms of the order to control **rodents** or **mosquitoes**, and in the event the costs are not paid within 30 days after being invoiced, the amount outstanding may be added to and form part of the taxes payable on the property as taxes in arrears."

## SUBDIVISION SIX: SMOKING CONTROL AND REGULATION

### PART 6.1: AREAS OF SMOKING PROHIBITION

#### 6.1.1 A person must not smoke:

- (a) in a **building**, other than:
  - (i) a **dwelling unit**;
  - (ii) a hotel or motel room or suite designated for **smoking** by an **operator**; or
  - (iii) enclosed **premises**:
    - A. that are not open to the public; and
    - B. where the only occupants of the **building** are the owner or owners of the **business** carried on in the **building**;
- (b) in a **vehicle for hire**, other than in Class J (rental vehicles) and Class M (tow trucks);
- (c) in a **vehicle** when any other occupant of the **vehicle** is under the age of nineteen (19) years of age;
- (d) in, or within three (3) metres of, an enclosed or partially enclosed shelter where persons wait to board a **vehicle for hire** or public transit;
- (e) within six (6) metres of a sign post or sign indicating where persons wait to board a **vehicle for hire** or public transit;
- (f) within six (6) metres measured on the ground from a point directly below any point of any opening into any **building** including any door or window that opens or any air intake;
- (g) in a **customer service area**; or
- (h) within six (6) metres of the perimeter of a **customer service area**.

3482053

February 27, 2012

**6.1.2** Except as permitted in section 6.1.1, a **responsible person** for any of the following:

- (a) a **business** which occupies a **building** or **premises**;
  - (b) a hospital or health clinic;
  - (c) a **place of public assembly**;
  - (d) a **customer service area**;
  - (e) the **common area** of a **building**;
  - (f) a **building, premises** or facility that is owned or leased by the **City**, other than a rented one-family dwelling or **dwelling unit**; or
  - (g) a **vehicle for hire**, other than Class J (rental vehicles) and Class M (tow trucks)
- must not permit, suffer or allow a person to **smoke** while the person is:
- (h) within any such **building, premises, place, common area, customer service area** or **vehicle for hire**; or
  - (i) within any area described in subsections 6.1.1 (e) and 6.1.1 (g), except to the extent that all or part of such area is not part of the parcel on which the **building** or **customer service area** is situated and is not an area over which the **responsible person** has possession or control; and

in accordance with Part 6.2, must post and maintain a sign indicating that **smoking** is prohibited within that **building, premises, place, common area, customer service area** or **vehicle for hire**.

**PART 6.2: SIGN REQUIREMENTS**

**6.2.1** A person who is required to post and maintain a sign under this Subdivision must ensure that each required sign:

- (a) is **prominently** displayed and maintained at the location where the sign is required;
- (b) carries the text "No Smoking", in either capital or lower case letters or a combination of both;
- (c) consists of two contrasting colours, or if the lettering is to be applied directly to a surface or to be mounted on a clear panel, the lettering must contrast with the background colour;



**Attachment 2**



**Office of the Medical Health Officer**  
Vancouver Coastal Health – Richmond  
9th Floor - 8100 Granville Ave.  
Richmond, BC V6Y 3T6

June 11, 2014

Ms. Suzanne Bycraft  
Manager, Fleet and Environmental Programs  
City of Richmond  
6911 No. 3 Road  
Richmond, BC V6Y 2C1

Dear Ms. Bycraft,

Re: Cigarette Butt Recycling

Thank you very much for contacting VCH Public Health regarding cigarette waste. We understand that the City is exploring options to reduce cigarette butt litter in public spaces. We also understand that one of the options the City is considering is a project similar to TerraCycle's Cigarette Waste Brigade<sup>i</sup>. We offer the following comments as the City's public health agency.

While we do recognize the need to reduce cigarette litter, Vancouver Coastal Health does not support the TerraCycle Cigarette Waste Brigade program or anything similar. Cigarette butt receptacles often become unofficial designated smoking areas and create a higher concentration of secondhand smoke wherever they are placed<sup>ii</sup>. Moreover, TerraCycle's Cigarette Waste Brigade is funded by Imperial Tobacco<sup>iii iv</sup>, the largest tobacco company in Canada, a company whose product will kill up to 50% of long-term users<sup>v</sup>.

With less than 8% of the residents currently smoke (Healthy Richmond Survey 2012), the City of Richmond has one of the lowest smoking rates in BC, an achievement that I am sure the City would like to see sustained. However, installing cigarette waste receptacles throughout the City is an unproven method<sup>vi</sup> with potential unintended negative public health consequences<sup>vii</sup>.

In communities where they have been installed, these receptacles are often placed within designated no-smoking zones in front of doors, windows and air intakes. This kind of a placement has the potential to undermine the City of Richmond's Public Health Protection bylaw, skirt efforts to de-normalize public smoking, and contribute to an increased concentration of toxic secondhand smoke in the area when tobacco users congregate around the waste receptacle<sup>viii</sup>. As the City Staff Report indicates, 75% of the smokers simply choose to ignore the receptacle; therefore installation of receptacles is inadequate in addressing the cigarette butt litter issue.

The Cigarette Waste Brigade, while seeming well intentioned, is a tobacco industry funded initiative. A review of the tobacco industry documents released through court order demonstrated that "the tobacco industry's cigarette butt litter programs had three goals: (1) to 'prevent' cigarette litter from

## Attachment 2 (Cont'd)

impacting the social acceptability of smoking ; (2) to 'remove' cigarette litter as an issue leading to bans/restrictions and (3) to ensure that the tobacco industry was not held practically or financially responsible for cigarette litter (the industry argues that 'the responsibility for proper disposal lies with the user of the product).'<sup>ix</sup> The World Health Organization considers such programs as tobacco industry interference with tobacco control activities<sup>x</sup>. Cigarette butts currently being made in Canada are non-biodegradable and are the number one littered item in our country<sup>xi</sup> and the world<sup>xii</sup>. Programs such as TerraCycle's Cigarette Waste Brigade gives the false impression to environmentally conscious consumers and members of the public that the solution to cigarette litter is cigarette butt recycling rather decreasing tobacco consumption<sup>xiii</sup>.

There are solutions for addressing cigarette butt litter that align with positive public health outcomes. A comprehensive solution developed in partnership with Vancouver Coastal Health could include social marketing strategies to shift public attitudes on littering, litter clean up strategies including a deposit return program, fines for littering, strengthen existing city bylaws to further reduce smoking in public places, and implementation of a waste tax to fund these efforts. An example of a successful program is the City of Edmonton's Capital Cleanup Program which could serve as a model<sup>xiv</sup>. Another example is a cigarette waste tax that has been implemented in municipal jurisdictions such as San Francisco to fund cigarette litter clean-up programs.

In finding a solution to cigarette waste, we encourage the City to be wary of being unwittingly co-opted into being part of the tobacco industry's marketing strategy. The City of Vancouver unfortunately made the decision to engage TerraCycle Cigarette Waste Brigade last year without Vancouver Coastal Health's prior knowledge. Vancouver is currently scaling down the deployment of the TerraCycle receptacles. The City of North Vancouver recently decided not to engage the TerraCycle Cigarette Waste Brigade after **being made aware of the link** to the tobacco industry. Vancouver Coastal Health would be **more than happy to work with the City to develop a comprehensive approach to decreasing cigarette butt litter** in Richmond.

Yours truly,



Dr. James Lu MD, MHSc  
Medical Health Officer, Richmond  
Vancouver Coastal Health

CC Claudia Kurzac, Manager Health Protection Richmond, VCH  
Dalton Cross, Senior Environmental Health Officer, VCH

## Attachment 2 (Cont'd)



**Office of the Medical Health Officer**  
 Vancouver Coastal Health – Richmond  
 9th Floor - 8100 Granville Ave.  
 Richmond, BC V6Y 3T6

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## **APPENDIX IV**

Please find attached the Deposit Return documentation created by Physicians for a Smoke-Free Canada.

# A Provincial Deposit – Return Program for Cigarettes

A well structured program can protect the environment and overcome the deficiencies of public ashtray programs.

Cigarette butts are the leading source of litter, both by number and weight, both in Canada and worldwide, where billions are littered daily. They are unsightly, non-biodegradable and toxic to the environment. They are increasingly getting the attention that they deserve as an environmental concern.

Awareness and enforcement campaigns are ineffective and/or impractical, therefore recently public ashtray-equivalent-based programs have been proposed. This tactic is supported by the tobacco industry and clean-up groups, who often do not see any problem in partnering with them.

A pilot program of such is currently underway in Vancouver, yet is not succeeding (estimated 3% to 6% efficacy) with multiple butts seen not only meters away from the “receptacles”, but even directly below them. A properly designed deposit-return program will likely be much more effective as it relies only on personal financial self-interest, and not any plea to “do the right thing”.

## Ashtray programs are bad for public health.

**1** By nature, these programs counter a principal public health tenet - the denormalization of tobacco use. Government programs should aim to lessen the visibility and acceptability of the tobacco industry and smoking. The widespread presence of ashtrays (Vancouver’s ultimate plan was for 2000 of them) imply tacit government consent, acceptance and even approval of widespread smoking in public. They strengthen the impression that smoking is common, and create smoking zones in public places. Such re-normalization of smoking is directly aligned with the strongest interests of the tobacco industry.

**2** Many of these ashtrays are placed within no-smoking buffer zones around doorways etc.. This ridicules and encourages violations of, hard-fought for, City Health Bylaws.

**3** These programs often involve partnering with the tobacco industry (as initially was the case in Vancouver, albeit indirectly). This is inappropriate and runs counter to government obligations under Canada’s participation in the WHO Framework Convention on Tobacco Control .

## Deposit-Return Programs can support public health objectives.

**1** Tobacco litter serves as free, albeit perverse, advertising for the tobacco industry, possibly just the sort that appeals to rebellious teenagers, the highest risk group for starting.

**2** Tobacco litter serves as withdrawal triggers/reminders to all smokers, and especially those trying to quit.

**3** Tobacco litter in places where smoking is prohibited (eg: building entrances, park benches) is used as an excuse by the next potential smoker to break the bylaw as well, knowing that so many others have previously ignored it.

**4** Although (in this proposal) fully refundable, the increased up-front cost of purchasing a pack, as well of the inconvenience of needing to return it to a depot, will likely dissuade some smokers/potential smokers from the purchase.

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**Physicians *for a* Smoke-Free Canada**

134 Caroline Avenue ♦ Ottawa ♦ Ontario ♦ K1Y 0S9  
Tel: 613 600 5794 ♦ [www.smoke-free.ca](http://www.smoke-free.ca) ♦ [psc@smoke-free.ca](mailto:psc@smoke-free.ca)

# DESIGN PRINCIPLES:

**Deposit:** this must be large enough to dissuade most smokers from actually littering. We would suggest \$1 per package or \$0.05 per cigarette butt.

**Fully Refundable:** on return of the pack with all 20 used (or preferably unused!) filters. It is important to be able to state that this is not an additional tobacco tax in order to help foster public consent for the program.

**Return:** this should be done at central depots. This will decrease the visibility of smoking and of tobacco litter, thereby furthering the public health mandate of denormalizing the tobacco industry.

(In British Columbia, Encorp Pacific, <http://www.return-it.ca> is a federally incorporated, not-for-profit, product stewardship corporation with beverage container management as their core business, who are also charged with collecting multiple other products. They have 172 locations across the province and would seem an obvious fit. It is likely that individuals will spontaneously design business arrangements whereby they collect and return multiple packs from other smokers for a small percentage of the return; we see no reason to discourage such.)

**Recycleability:** it should be recognized that being able to recycle the butts is an added bonus, and not necessary to the usefulness of the program. Even if all the butts were to end up being placed en-masse in a landfill, this would be infinitely better than billions entering sensitive areas of the environment individually.

(Currently, to our knowledge, TerraCycle is the only company recycling cigarette butts, and they do so in open partnership with the tobacco industry. We recommend that the government either develop their own recycling facility, or consider partnering only with private companies willing to forgo all ties with the tobacco industry. Whether TerraCycle would have the capacity to handle the considerably increased volumes that would be generated via a deposit-return program is unknown.)

**Portable ashtrays:** these cost very little, and their use can be encouraged as a means to extinguish and transport the butts before placing them in the packs. In reality a few seconds care in extinguishing the butt and a plastic baggie is all that is required. Alternately the packs could easily be redesigned with a foil pocket in order to serve as their own portable ashtrays from the beginning.

**Marking of packs eligible for return:** cigarette packs are already marked by provincial origin and multiple options are available to enhance such including stamps, bar codes, and other electronic means. This will lead to the packs themselves as the functional holders of most of the deposit value, and therefore any littered packs will become quite valuable, as they could be filled up with any 20 littered butts for a full refund (such is not a problem as ultimately the same end will result).

**Return of “orphaned” littered butts:** these should also be considered for refund, however at a much lower rate, We suggest 1¢/butt. This should be done in bulk by dry weight.

A pilot project run by WestEnd Cleanup June 18, 2013 proved that this will work, and gathered widespread media attention and approval (as proof of principle for a deposit-return program and a call for such), collecting 60 000 butts in several hours by paying \$20/ pound of butts, calculated to be 1¢ each.

**Including this component will virtually guarantee that almost all cigarette litter will rapidly disappear one way or the other.** This also provides a small source of income for many disadvantaged individuals, although such should not be viewed as the principal goal of the program (having the butts not be littered in the first place is). The lower rate of return is necessary in order to prevent a degree of inevitable cheating from bankrupting the system, as we see no way to prevent such cheating (both attempts to mix in non-cigarette litter, and the return of non-eligible butts from other sources).

There should also be a maximum weekly return of these, such as 7lbs/wk/individual, and names/addresses should be recorded in order to discourage organized cheating. We would also suggest that the roll-out of this aspect of the program occur only following a 3-6 month delay for two reasons: Firstly, so that the percentage of marked packs being returned can be assessed; if it is very high (~95%?) then there would be less need for this component, and also both a tendency for a greater percentage of cheating, and less available funds to cover such. Secondly there should be time for an attempt to clean up butts pre-existing from before the deposit program was initiated as, of course, all such butts will not have been covered by any deposit.

**Funding:** with the above details the program would be ahead 4¢/ littered butt, this should be enough to both cover cheating (even if an unimaginable 50% by weight, the program would still be ahead 3¢/ littered butt), and administration costs. Therefore, after start-up, the program should be self-funding. There also will be some income from the temporary holding of funds. Should the above calculations fail, the program could be modified to claw back a small percentage of the deposit. Current efforts to clean up tobacco litter are quite expensive—estimated at over \$7 million/yr by the City of San Francisco.

**Anticipated Volumes:** according to Propel's Tobacco Use in Canada<sup>1</sup> British Columbia has 515,000 smokers, who smoke an average of 12.9 cigarettes per day, suggesting a daily consumption in this province of 6.6 million cigarettes or 330,000 packages.

The following calculations obviously make multiple assumptions, but should serve as a useful guide:

- If all eligible and returned in full packs, the above would translate to \$330,000 in deposit funds collected daily, or \$120 million in a year.
- If there were 172 depots, each would be expected to handle on average 1,900 packages per day, providing \$1,900 in refunds.
- Most customers could be assumed to batch packs and return them on an infrequent (say monthly) basis, resulting in about 65 transactions per depot per day.

#### **The tobacco industry should not be involved:**

other recycling programs do involve the source industry, via the notion of Extended Producer Responsibility.

However as a pariah industry which has repeatedly shown that its intentions are not in-line with the good of society, and the sole to be affixed the relationship status of “denormalization” by the government, the tobacco industry should be allowed no role in this program. Deposit funds awaiting return should be held either by the government, the collecting corporation, or one of their proxies.

The industry's views on this program are not known at this time. Given that it would lessen the visibility of their product, their opposition could be anticipated.

**Pilot projects are not advisable:** The feasibility of a deposit-return model has already been demonstrated by the success of B.C.'s beverage container recovery system. Additionally any smaller pilot jurisdiction would face challenges that would be less daunting province-wide, including the incentive for smokers to just buy their packs outside the region and the marking of packs eligible for deposit-return.

However if a pilot project is viewed as politically expedient, we believe that if designed properly such could be successful. It would be most feasible in isolated communities such as islands (Haida Gwaii?) or up north (or if larger is desired an entire health region could be considered, such as Island Health or Northern Health) where the closest tobacco vendor outside the region would be quite far, and hopefully local leaders would sign on and help instil a sense of pride in the community at being pioneers in this fully refundable environmental/health initiative. We advise against including any return for "orphaned" littered butts in such a pilot as there would be too great a potential for butts being brought in from elsewhere.

***British Columbia's beverage container recovery system, enacted in 1970, is the oldest legislated deposit-return system in North America, and has been highly successful, and widely copied.***

***British Columbia can again take the environmental lead with a bold and innovative approach to fighting cigarette litter.***

***It must do so in a manner that is consistent with public health objectives.***

**Dr. Stuart H. Kreisman**

Physicians for a Smoke-free Canada  
British Columbia  
June, 2014

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<sup>1</sup> *Propel Centre for Population Health Impact. Tobacco Use in Canada. Patterns and Trends – 2014 edition.*