



# TOBACCO PRODUCT WASTE

A Public Health and Environmental Toolkit







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The toolkit was made possible by funds received from Grant Number 19-10229 with the California Department of Public Health, California Tobacco Control Program, and the American Lung Association in California. The Public Health Law Center provides information and legal technical assistance on issues related to public health. The Center does not provide legal representation or advice. This document should not be considered legal advice.

The toolkit was prepared by the Public Health Law Center at Mitchell Hamline School of Law, St. Paul, Minnesota. The Public Health Law Center wishes to thank the following people for their review of this document: Liz Hendrix, Adebayo Akintunde, Kara Waples, Tonia Hagaman, Beth Olagues, Monica Wilkinson, Mayra Miranda, and April Roeseler, all of the California Department of Public Health, California Tobacco Control Program. We also would like to thank Efraim Lopez, Adelita Serena, Ethan Kissock, and Amanda Simpson of the Sierra Club's Environmental Justice in Tobacco Control Project, for providing input and feedback on this document.

Suggested citation: Public Health Law Center, *Tobacco Product Waste: A Public Health and Environmental Toolkit*, Law and Policy Partnership to End the Commercial Tobacco Epidemic (2022).

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#### Introduction

Tobacco product waste — the trash and pollution associated with discarded and used commercial tobacco products — is gaining attention as an environmental justice concern throughout California. As the findings and research outlined in this document explain, tobacco product waste, which includes cigarette filters; e-cigarette components, such as cartridges, batteries, and plastic casings; cigar tips; plastic packaging; and other forms of tobacco trash, is damaging to the environment and is disproportionately concentrated in and around where tobacco products are sold. The plastic from cigarette butts and other tobacco products does not biodegrade, but instead breaks apart into toxic-laden microplastics that find their way into the water that we drink and the food that we eat. This policy toolkit is intended for communities in California that are ready to address tobacco product waste through education, advocacy, and ultimately, policy change. While this document was created for California communities, its lessons are applicable to jurisdictions across the United States that are looking to address the damage and cost of tobacco product waste.





#### How to Use This Resource

This document has five components. The first component is a policy brief that provides an overview of the problems associated with tobacco product waste. Three separate policy components and a robust compilation of findings follow the policy brief. Each proposed policy would reduce the incidence and impact of tobacco product waste by regulating tobacco sales. The proposed polices are intended to enhance a strong tobacco retail licensing scheme by providing other controls to minimize the environmental health harms caused by tobacco product waste.

While the legal concepts behind the sample policies are found throughout California environmental and commercial tobacco laws, these "model" tobacco waste ordinances represent new applications of old doctrines, and strategies within this document should only be implemented in communities working closely with legal counsel. The outlined provisions are intended to be used by communities that already license and regulate the sale of tobacco products, but are also ready to address their significant environmental and environmental justice impacts. The structure of sections below aligns with those in the <u>Comprehensive Tobacco Retailer Licensing ("TRL") Ordinance</u>, updated by the Public Health Law Center in July 2020, and the text generally relies on defined terms in that document.

If your community would like to learn more about the policies in this document, please contact the Public Health Law Center for individualized technical assistance.

#### Tobacco Product Waste: An Overview

Commercial tobacco<sup>1</sup> product waste is a danger to the environment and community health. This document presents options for policies that can be paired with comprehensive commercial tobacco retail licensing to address tobacco product pollution. For more information on the reasoning behind comprehensive policy action on tobacco product waste, please the Public Health Law Center's publication *Tobacco Product Waste: Frequently Asked Questions*.

### **Tobacco Product Waste is a Growing Environmental Threat**

Cigarette butt waste did not become a seemingly insurmountable problem until the 1950s, when cigarette companies began adding a plastic cellulose acetate filter to cigarettes.<sup>2</sup> The tobacco industry called the cigarette butt a "filter," so-named to give the impression that it was filtering out chemicals and thus made a safer cigarette. We now know that "filters" were developed mainly as a marketing ploy,<sup>3</sup> and in fact make cigarettes more dangerous by allowing for easier inhaling, encouraging more frequent puffing, and giving consumers a false sense that





by using these products they are reducing their health risks.<sup>4</sup> Along with this new feature came a new ubiquitous problem: the phenomenal growth of plastic tobacco pollution litter.

Plastic cigarette butts are not biodegradable — they break down into microplastics that remain in natural environments, including rivers, lakes and oceans, and accumulate in marine life.<sup>5</sup> Microplastic accumulation can cause starvation and death in aquatic creatures such as turtles and birds by reducing their urge to eat.<sup>6</sup> Microplastics also make their way into the food and water humans consume, exposing them to chemicals that have been linked to reproductive harm, obesity, organ problems, and developmental delays in children.<sup>7</sup>

Studies show that cigarette butts, which are toxic to marine life in small quantities,<sup>8</sup> are the most littered item found in trash cleanups.<sup>9</sup> Butts also leach harmful chemicals such as nicotine, arsenic, heavy metals, and polycyclic aromatic hydrocarbons into soil and water in amounts sufficient to harm the environment.<sup>10</sup> Smoked and unsmoked cigarette butts are toxic to plants.<sup>11</sup> And littered butts release air pollutants for days after they have been discarded, affecting local air pollution levels.<sup>12</sup> Recognizing their large contribution to the plastics problem, the California Ocean Protection Council has called for the statewide prohibition on all cigarette butts as a core method of addressing plastic pollution in coastal and marine ecosystems.<sup>13</sup>

In the past decades, other tobacco waste in addition to waste from cigarette butts has proliferated and spread. This waste includes plastic packaging for all sorts of tobacco products, such as plastic tips for cigarillos<sup>14</sup> and the mixed plastic, metal, and chemical waste from new products such as discarded cartridges and disposable e-cigarettes.<sup>15</sup> All of these products present different harms to the environment, depending on the toxic materials that were made to manufacture them (or were produced during their use) that linger on in their discarded leftovers and enter the environment.<sup>16</sup>

Even if disposed of correctly, these products would be a danger to the environment. For example, e-cigarettes containing nicotine residue are classified as hazardous waste or household hazardous waste throughout the United States, and California's hazardous waste regulators consider the batteries used in the devices to be electronic waste — hazardous waste that cannot be disposed of as regular trash.<sup>17</sup> The toxic contaminants that accumulate in used cigarette butts do not stop being a problem if they are disposed of in a landfill, as such facilities still pose risks to aquifers and other water resources.<sup>18</sup>

Moreover, recycling is not a viable solution. The waste from tobacco products generally cannot be recycled by municipal recycling programs, and likely cannot be recycled profitably using existing technology. The one company offering a cigarette butt recycling take-back program, funded by the tobacco industry, does not actively collect butts at any location in California,





and no municipal recyclers will accept these contaminated plastics for their programs.<sup>19</sup> Most tobacco product packaging is likely to be unrecyclable in its current form as well, as it often is a combination of metals, paper, and plastic that cannot be easily separated or profitably reclaimed. Further, many e-cigarettes are mixed <u>acute hazardous waste</u> and <u>e-waste</u>,<sup>20</sup> and unless their batteries can be safely removed, recycling them is especially difficult and complicated under applicable California laws designed to keep communities and ecosystems safe.

#### Tobacco Product Waste is an Environmental Justice Concern

Tobacco product retailing, and tobacco product waste, are also <u>environmental justice</u> issues. The tobacco industry has intentionally and aggressively targeted communities of color with their products for decades, <sup>21</sup> meaning that the density of retailers in these communities is higher than in other areas, <sup>22</sup> leading to more tobacco litter together with more tobacco sales locations and users.

In urban areas, tobacco product waste accumulates around where such products are sold and consumed.<sup>23</sup> Research has shown that litter from flavored tobacco products (e-cigarette cartridges and menthol cigarette butts) also accumulates at high schools in different proportions based on the socio-economic demographics of the students.<sup>24</sup> Research from the U.S. Food and Drug Administration shows that vape shops are in closer proximity to schools, and more densely distributed and closer to schools, in school districts with high proportions of Asian, and Black or African American students.<sup>25</sup> Toxic discharges from these businesses and products are likely to disproportionately impact the communities with a high concentration of vape shops and tobacco retailers.

As a result of the targeting of certain communities through higher retailer density and exposure, the tobacco industry also burdens these communities with increased pollution. Importantly, communities of color and low-income communities are also the same communities that bear a disproportionate burden of health effects from pollution from substandard housing,<sup>26</sup> industrial pollution sited in their neighborhoods,<sup>27</sup> air pollution disproportionately caused by the economic activity of wealthy Americans,<sup>28</sup> and air pollution from all sources.<sup>29</sup> Tobacco product waste contributes highly toxic pollution to an already unacceptable baseline.

Much like secondhand smoke's correlation to children's elevated blood lead levels,<sup>30</sup> secondhand tobacco product waste loads certain neighborhoods with a disproportionately high exposure to ambient nicotine, benzene, and heavy metals. People are exposed to this pollution through thirdhand smoke residue,<sup>31</sup> leaching water pollution from e-waste<sup>32</sup> and conventional tobacco product waste,<sup>33</sup> or from lingering emissions off-gassing from used





tobacco products.<sup>34</sup> In addition, the accumulation of trash causes psychological harm to community members, harming the health of residents of industry-targeted communities.<sup>35</sup> These harms impact people regardless of whether they use tobacco products, and they continue to impact people and other forms of life for years after the products have been used.

California state and local agencies are legally required to address environmental justice concerns<sup>36</sup> and to direct resources and funding towards disadvantaged communities (as that term is defined in state law), to ensure equitable access to resources, and to promote health equity.<sup>37</sup> Dealing with disproportionate impacts of tobacco products and their waste serves to advance racial and economic justice that is important to all California communities. We hope this resource serves as a useful tool to California communities in advancing racial and environmental justice and combating the legacy of harm caused by tobacco products.







#### **Endnotes**

- The Public Health Law Center recognizes that traditional and commercial tobacco are different in the ways they are planted, grown, harvested, and used. Traditional tobacco is and has been used in sacred ways by Indigenous communities and tribes for centuries. Comparatively, commercial tobacco is manufactured with chemical additives for recreational use and profit, resulting in disease and death. For more information, visit: <a href="http://www.keepitsacred.itcmi.org">http://www.keepitsacred.itcmi.org</a>. When the word "tobacco" is used throughout this document, a commercial context is implied and intended.
- 2 U.S. Dep't of Health & Hum. Servs., *Risks Associated with Smoking Cigarettes with Low Machine Measured Yields of Tar and Nicotine*, Smoking and Tobacco Control at 1 (2001), <a href="https://cancercontrol.cancer.gov/brp/tcrb/monographs/13/m13\_complete.pdf">https://cancercontrol.cancer.gov/brp/tcrb/monographs/13/m13\_complete.pdf</a>.
- 3 Karen Evans-Reeves, The 'Filter Fraud' Persists: The Tobacco Industry is Still Using Filters to Suggest Lower Health Risks While Destroying the Environment, Tobacco Control (2021), https://doi.org/10.1136/tobaccocontrol-2020-056245.
- 4 Min-Ae Song et al., Cigarette Filter Ventilation and its Relationship to Increasing Rates of Lung Adenocarcinoma, 109

  JOURNAL OF THE NAT'L CANCER INST. 12 (2017), https://pubmed.ncbi.nlm.nih.gov/28525914/#:~:text=Altered%20puff-ing%20and%20inhalation%20may,to%20and%20including%20a%20ban.
- 5 Dannielle S. Green et al., Cigarette Butts Have Adverse Effects on Initial Growth of Perennial Ryegrass (gramineae: Lolium perenne L.) and White Clover (leguminosae: Trifolium repens L.), 182 Ecotoxicology & Env't Safety 109418 (2019).
- 6 Elizabeth Royte, We Know Plastic Is Harming Marine Life. What About Us?, NAT'L GEOGRAPHIC (June 2018), <a href="https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-health-pollution-waste-microplastics">https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-health-pollution-waste-microplastics</a>.
- 7 Consumer Reps., You're Literally Eating Microplastics. How You Can Cut Down Exposure to Them, WASH. POST (Oct. 7, 2019), <a href="https://www.washingtonpost.com/health/youre-literally-eating-microplastics-how-you-can-cut-down-exposure-to-them/2019/10/04/22ebdfb6-e17a-11e9-8dc8-498eabc129a0\_story.html">https://www.washingtonpost.com/health/youre-literally-eating-microplastics-how-you-can-cut-down-exposure-to-them/2019/10/04/22ebdfb6-e17a-11e9-8dc8-498eabc129a0\_story.html</a>.
- 8 Elli Slaughter et al., *Toxicity of Cigarette Butts, and Their Chemical Components, to Marine and Freshwater Fish*, SAN DIEGO STATE UNIV. (Feb. 4, 2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088407/pdf/tobaccocontrol40170.pdf.
- 9 Truth Initiative, Why Are Cigarette Butts the Most Littered Item on Earth? (Aug. 20, 2018), <a href="https://truthinitiative.org/research-resources/harmful-effects-tobacco/why-are-cigarette-butts-most-littered-item-earth">https://truthinitiative.org/research-resources/harmful-effects-tobacco/why-are-cigarette-butts-most-littered-item-earth</a>.
- 10 Hiroshi Moriwaki et al., Waste on the Roadside, "Poi-sute" Waste: Its Distribution and Elution Potential of Pollutants into Environment, 29 WASTE MGMt. 1192 (2009).
- 11 Green, supra note 5.
- Nat'l Inst. Standards & Tech., Butt Emissions: Study Finds Even Extinguished Cigarettes Give Off Toxins (May 18, 2020), https://www.nist.gov/news-events/news/2020/01/butt-emissions-study-finds-even-extinguished-cigarettes-give-toxins; Dustin Poppendieck et al., Measuring Airborne Emissions from Cigarette Butts: Literature Review and Experimental Plan Final Report to U.S. Food and Drug Administration under Interagency Agreement #244-15-9012, Nat'L Inst. Standards & Tech. (Oct. 2016), https://www.researchgate.net/publication/313967399\_Measuring\_Airborne\_Emissions\_from\_Cigarette\_Butts\_Literature\_Review\_and\_Experimental\_Plan\_Final\_Report\_to\_US\_Food\_and\_Drug\_Administration\_under\_Interagency\_Agreement\_244-15-9012\_Measuring\_Airborne\_Emi ("The emission rates from cigarette butts into air may be minimal for some heavy chemicals (e.g., metals, tobacco-specific nitrosamines), but may be significant for more volatile chemicals (e.g., nicotine, pyridine, benzene)"); Dustin Poppendieck et al., Influence of Temperature, Relative Humidity, and Water Saturation on Airborne Emissions from Cigarette Butts, Sci. Total Env't, Apr. 10, 2020.
- 13 Holly Wyer, Action Item: Discussion and Possible Endorsement of Recommendations to Address Plastic Pollution in California's Coastal and Marine Ecosystems, Ocean Prot. Council (Feb. 16, 2021), <a href="https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\_items/20210216/Item\_4\_Plastic\_Pollution\_Recommendations\_Staff\_Rec\_Revised\_and\_Endorsed\_Fl-NAL\_20210323.pdf">https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\_items/20210216/Item\_4\_Plastic\_Pollution\_Recommendations\_Staff\_Rec\_Revised\_and\_Endorsed\_Fl-NAL\_20210323.pdf</a>.





- 14 Leah Henry, Cigarette Butts and Cigar Tips: Flicked but not Forgotten, NAT'L OCEANIC & ATMOSPHERIC ADMIN. (Jul. 23, 2015), <a href="https://marinedebris.noaa.gov/cigarette-butts-and-cigar-tips-flicked-not-forgotten">https://marinedebris.noaa.gov/cigarette-butts-and-cigar-tips-flicked-not-forgotten</a> ("Plastic cigar tips accounted for 37% of the total trash collected.").
- Jeremiah Mock & Yogi H. Hendlin, Notes from the Field: Environmental Contamination from E-Cigarette, Cigarette, Cigar, and Cannabis Products at 12 High Schools San Francisco Bay Area, 2018–2019, 68 MORBIDITY & MORTALITY WKLY. REP. 897 (Oct. 11, 2019).
- 16 While the ingredients put into commercial tobacco products are themselves toxic, the products of partial combustion from cigarettes and e-cigarettes can be additive and more toxic than the sum of their parts. For more information on thirdhand smoke research and dangers in California, see https://thirdhandsmoke.org.
- 17 Dep't Toxic Substances Control, *Managing Hazardous Waste*, STATE CAI. (Sept. 2016), <a href="https://dtsc.ca.gov/discard-ed-battery-management-fact-sheet">https://dtsc.ca.gov/discard-ed-battery-management-fact-sheet</a>.
- 18 See, e.g., Amlan Ghosh et al. *TCLP Underestimates Leaching of Arsenic from Solid Residuals under Landfill*, 38 Environ. Sci. Technol. 4677-82 (2004), https://pubs.acs.org/doi/10.1021/es030707w.
- 19 See, e.g., Renee Cho, Recycling in the U.S. Is Broken. How Do We Fix It?, COLUMBIA CLIMATE SCHOOL: STATE OF THE PLANET (Mar. 13, 2020), https://news.climate.columbia.edu/2020/03/13/fix-recycling-america.
- 20 "Acute" here means that nicotine is fatal to humans in low doses, according to the EPA. For more information on the legal status of acute hazardous waste and e-waste see the Center's earlier publication: Tobacco Product Waste: Frequently Asked Questions (2020), <a href="https://www.publichealthlawcenter.org/sites/default/files/resources/Tobacco-Product-Waste-CA-FAQ.pdf">https://www.publichealthlawcenter.org/sites/default/files/resources/Tobacco-Product-Waste-CA-FAQ.pdf</a>.
- 21 Valerie B. Yerger et al., Racialized Geography, Corporate Activity, and Health Disparities: Tobacco Industry Targeting of Inner Cities, 18 J. Health Care for Poor & Underserved 10 (2007); Joseph G. Lee et al., A Systematic Review of Neighborhood Disparities in Point-of-Sale Tobacco Marketing, 105 Am. J. Pub. Health 8 (2015); Andrew B Seidenberg et al., Storefront Cigarette Advertising Differs by Community Demographic Profile, 24 Am. J. Health Promotion 26 (2010); Lisa Henriksen et al., Targeted Advertising, Promotion, and Price for Menthol Cigarettes in California High School Neighborhoods, 14 NICOTINE TOBACCO RSCH. 116 (2012); Elissa Resnick et al., Cigarette Pricing Differs by U.S. Neighborhoods A BTG Research Brief, Bridging the Gap (2012), http://www.bridgingthegapresearch.org/\_asset/d49910/btg\_tobacco\_brief\_FINAL\_011113.pdf.
- 22 Danlin Yu et al., *Tobacco Outlet Density and Demographics: Analysing the Relationships with a Spatial Regression Approach*, 124 Pub. Health 412 (2010) ("the spatial regression results indicate that tobacco companies attempt to promote physical availability of tobacco products to geographic areas with disadvantageous socio-economic status. In New Jersey, the percentage of Hispanics seems to be the dominant demographic factor associated with tobacco outlet distribution, followed by median household income and percentage of African Americans."); Daniel Rodriguez et al., *Predictors of Tobacco Outlet Density Nationwide: A Geographic Analysis*, 22 Tobacco Control 349 (2013); Joseph G. L. Lee et al., *Inequalities in Tobacco Outlet Density by Race, Ethnicity, and Socioeconomic Status*, 2012, USA: Results from the *ASPiRE Study*, 71 J. Epidemiol Cmty. Health 487 (2017).
- 23 Maacah Marah & Thomas E. Novotny, *Geographic Patterns of Cigarette Butt Waste in the Urban Environment*, 20 Tobacco Control i42 (2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088466/pdf/tobaccocontrol42424.pdf.
- 24 Mock, supra note 15.
- 25 P. Dilip Venugopal et al., Socioeconomic Disparities in Vape Shop Density and Proximity to Public Schools in the Conterminous United States, 2018, 21 HEALTH PROMOTION PRAC. 9S (2020).
- 26 Shriver Ctr. on Poverty L., *Poisonous Homes: The Fight for Environmental Justice in Federally Assisted Housing*, Earthjustice (June 2020), https://www.povertylaw.org/wp-content/uploads/2020/06/environmental\_justice\_report\_final-rev2.pdf.





- 27 Env't Just. for All, Life at the Fenceline: Understanding Cumulative Health Hazards in Environmental Justice Communities, https://ej4all.org/life-at-the-fenceline (last visited May 27, 2021).
- 28 Christopher W. Tessum et al., *Inequity in Consumption of Goods and Services Adds to Racial-Ethnic Disparities in Air Pollution Exposure*, 116 Procs. Nat'l Acad. Scis. U.S. 6001 (2019) ("Blacks and Hispanics on average bear a 'pollution burden' of 56% and 63% excess exposure, respectively, relative to the exposure caused by their consumption.")
- 29 Ihab Mikati et al., *Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status*, 108 Am. J. Pub. Health 480 (2018) ("For [particulate matter] of 2.5 micrometers in diameter or less, those in poverty had 1.35 times higher burden than did the overall population, and non-Whites had 1.28 times higher burden. Blacks, specifically, had 1.54 times higher burden than did the overall population.").
- 30 Env't L. Pol'y Clinic, *Issue Brief: Smoking & Lead Exposure in NC Children*, Duke Univ. (2019), <a href="https://tobaccoprevention-andcontrol.ncdhhs.gov/shs/Documents/SmokingandLeadIssueBrief-ELPC-061419.pdf">https://tobaccoprevention-andcontrol.ncdhhs.gov/shs/Documents/SmokingandLeadIssueBrief-ELPC-061419.pdf</a>.
- 31 Thomas F. Northrup et al., *Thirdhand Smoke: State of the Science and a Call for Policy Expansion*, 131 Pub. Health Reps. 233 (2016), https://journals.sagepub.com/doi/pdf/10.1177/003335491613100206.
- 32 Daniel Hsing Po Kang et al., Potential Environmental and Human Health Impacts of Rechargeable Lithium Batteries in Electronic Waste, 47 Env't Sci. Tech. 5495 (2013); Hye-Bin Choi et al., The Impact of Anthropogenic Inputs on Lithium Content in River and Tap Water, 10 Nature Commc'ns 5371 (2019), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6890772.
- 33 Moriwaki, supra note 10; Slaughter, supra note 8.
- 34 Nat'l Inst. Standards & Tech., supra note 12.
- 35 Carl A. Latkin & Aaron D. Curry, Stressful Neighborhoods and Depression: A Prospective Study of the Impact of Neighborhood Disorder, 44 J. HEALTH & SOC. BEHAV. 34 (2003); see also Liam Downey & Marieke Van Willigen, Environmental Stressors: The Mental Health Impacts of Living Near Industrial Activity, 46 J. HEALTH & SOC. BEHAV. 289 (2005); see also Tara L. Bennett, Perceived Health Effects of Litter and Trash by Inner City Residents (June 2012) (Undergraduate Honors Thesis, Ohio State University) (https://kb.osu.edu/bitstream/handle/1811/51932/Tara\_Bennett\_Honors\_Thesis.pdf?sequence=1&isAllowed=y).
- 36 See, e.g., CAL. Gov't Code § 65040.12 (2019), http://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?sectionNum=65040.12.&lawCode=GOV; CAL. PUB. RES. Code § 30107.3 (2019), http://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?lawCode=PRC&sectionNum=30107.3; CAL. PUB. RES. Code § 30013 (2016), http://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?lawCode=PRC&sectionNum=30013.
- 37 See, e.g., CAL. HEALTH & SAFETY CODE § 39711 (2014), http://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?sectionNum=39711.&lawCode=HSC; CAL. PUB. RES. CODE ch. 2 (2014), http://leginfo.legislature.ca.gov/faces/codes\_displayText.xhtml?lawCode=PRC&division=44.&title=&part=1.&chapter=2.&article=; CAL. WATER CODE § 79505.5 (2003), http://leginfo.legislature.ca.gov/faces/codes\_displaySection.xhtml?sectionNum=79505.5.&law-Code=WAT.





### Policy Option #1: Sales Restrictions

### **Tobacco Waste and Ending All Commercial Tobacco Product Sales**

The most effective way to address tobacco product waste is to adopt a policy prohibiting the sale of all tobacco products,1 while preserving Indigenous peoples' rights to use sacred tobacco. Eliminating the source of the problem by removing harmful products from the market has the resulting benefit of preventing pollution and health harms and is generally more efficient and effective than allowing harm to occur and remediating it after the fact.

Prohibiting the sale of all tobacco products, as some California jurisdictions have already done, would greatly reduce tobacco product waste in the relevant community's environment. By keeping new tobacco product waste from being introduced into their communities, jurisdictions could also more easily comply with state requirements to prevent trash from escaping into rivers, lakes, and the ocean.3 Comprehensive policies would thus save governments costs both in terms of public health expenditures<sup>4</sup> and pollution capture technology that may be required in coming years. 5 The following sections define certain types of particularly damaging products, including single-use tobacco products, and propose a comprehensive sales restriction that would cover a wide range of products that include cigarettes with filters, cigar tips, a wide range of packaging, and e-cigarettes that are not refillable. Communities could effectively limit the sale of most products by adopting this provision, or alternatively, they could adopt portions of the proposed language to address the most pernicious products in their communities, such as cigarettes with cellulose acetate filters.

#### Section I. FINDINGS.

Note: See Appendix for sample findings tailored to accompany the policies set forth below. The findings section is part of the ordinance and legislative record, but it usually does not become codified in the municipal code. An ordinance based on this draft should include findings of fact — data, statistics, relevant epidemiological information, for instance — that support the purposes of the ordinance, as well as any legal precedent that directly supports the ordinance. In addition to serving an educational purpose and reflecting community support for the ordinance, the findings can also serve a legal purpose. If challenged in court, the findings are an admissible record of the factual determinations made by the legislative body when considering the ordinance. Courts will generally defer to legislative determinations of factual issues, which often influence legal conclusions. A list of findings supporting this model ordinance appears in the Appendix. Jurisdictions may select findings from that list to include or adjust, along with additional findings on local or regional conditions, outcomes, and issues that help make the case for the policy.



Section II. [ article/section ] of the [ county/city ] Code is hereby amended to read as follows:

**Sec.** [ \_\_\_\_\_ (\*1) ]. **DEFINITIONS.** The following words and phrases, whenever used in this [ article/chapter ], shall have the meanings defined in this section unless the context clearly requires otherwise:

**Note:** The definitions and sections below are meant to supplement those found in the *Comprehensive Tobacco Retailer Licensing ("TRL") Ordinance* and any jurisdiction that does not already have a comprehensive TRL policy with sufficient definitions may want to consult both models to choose which elements of each is appropriate for that community.

(A) "Mixed hazardous waste product" means any tobacco product that contains liquid for use in an electronic smoking device in combination with electronic waste, subject to 22 California Code of Regulations § 66261.9 and related regulations, into a single product that cannot be classified and disposed of only as acute hazardous waste, non-acute hazardous waste, or universal waste alone without disassembly by a waste management entity.

Note: For more information on how nicotine and electronic waste (e-waste) are hazardous waste under California law, please see the Public Health Law Center's publication <u>Tobacco Product Waste: Frequently Asked Questions</u>. For a state agency discussion of e-waste as a specific waste stream, see the California Department of Toxic Substances Control page <u>on e-waste</u>. And for some discussion of why these products are unlikely to be recyclable, please see the Center's commentary on how tobacco product waste likely <u>cannot be mitigated by reformulating products</u>.

(B) "Single-use tobacco product" means any tobacco product incorporating a mouthpiece or filter made of any material, including, but not limited to, plastic, cellulose acetate or other fibrous plastic material, or any organic or biodegradable material. "Single-use tobacco product" includes, but is not limited to, tobacco products generally recognized or labeled as filtered cigarettes, filtered little cigars, filtered cigars, cigarillos, and cigars with tips, snus in oral pouches, and tips, mouthpieces, or filters for tobacco products sold separately. "Single-use tobacco product" also includes electronic smoking devices that are mixed hazardous waste products, including cartridges that are not designed to be refilled. "Single-use tobacco product" does not include tobacco or nicotine products that are used to fill other tobacco products (e.g., loose tobacco or electronic smoking substances sold in containers used to refill electronic smoking devices), pipes used with loose tobacco, hookahs used with shisha, nor does it include cigarettes or cigars without filters or tips.







**Note:** The definition of "single-use tobacco product" above would cover a wide range of tobacco products that are made of plastic and contribute to plastic pollution in the environment. Because the proposed definition includes filters made of biodegradable materials, it also ensures that plastic filters are not simply replaced with other materials that may or may not be truly biodegradable and would still leach toxins and chemicals into the environment.

(C) "Unrecyclable packaging" means any separable and distinct material component made partially or entirely of plastic, including, but not limited to, plastic-coated paper or plastic-coated paperboard, paper or paperboard with plastic added during the manufacturing process, and multilayer flexible packaging containing plastic, foil, or combinations thereof, used for the containment, protection, handling, delivery, or presentation of goods by the producer for the user or consumer, ranging from raw materials to processed goods. "Unrecyclable packaging" does not include packaging that is entirely made of cardboard, paper, or a routinely recycled metal such as aluminum.

Note: This definition draws from the proposed definition of "packaging" contained in <u>Assembly Bill 1080</u>, which would have imposed a comprehensive regulatory scheme on producers, retailers, and wholesalers of single-use packaging, with a focus on plastic single-use products. Although the bill has not been passed, the definition of "packaging" was used as a basis for the definition of "unrecyclable packaging" in this model.

Sec. [ \_\_\_\_\_ (\*3) ]. SALE OF TOBACCO WASTE PRODUCTS PROHIBITED.

- (A) TOBACCO PRODUCT WASTE SALES PROHIBITION. It shall be unlawful for any tobacco retailer to sell any:
  - (1) Single-use tobacco product.





- (2) Tobacco product packaged for retail sale in unrecyclable packaging. This prohibition does not apply to child-resistant packaging.
- (3) Mixed hazardous waste product.

Note: According to federal law, all child-resistant liquid nicotine packaging is likely to be unrecyclable because federal standards require it to be single-use, and the container will have leftover nicotine solution even after it has been used by an end consumer. Without cleaning the container with a method consistent with federal hazardous waste law, these containers remain contaminated and are unlikely to be recyclable. The exception to prohibition (B) above allows for the sale of electronic smoking solution refill containers that comply with federal law, and normally will have to be disposed of as hazardous waste or household hazardous waste. Removing that exception would likely make the sale of all electronic smoking substances such as e-liquids impracticable in the jurisdiction, though retailers could still sell electronic smoking devices without such substances so long as the electronic smoking devices did not fall within the definition of single-use tobacco products.

(B) BURDEN OF PROOF. A tobacco retailer bears the burden of proof to show with clear and convincing evidence that any tobacco product it offers for sale is not prohibited by [subsection (A)]. Statements that a product or packaging is "recyclable" without further proof and detail are not sufficient evidence to make such a showing.

#### **Endnotes**

- Doug Blanke, *The Tobacco End Game: Still A Priority in the Age of COVID-19?*, Public Health Law Center (June 30, 2020), https://www.publichealthlawcenter.org/blogs/2020-06-30/tobacco-end-game-still-priority-age-covid-19.
- 2 Manhattan Beach, Cal., Ordinance 20-0007 (Feb. 18, 2020); Beverly Hills, Cal. Ordinance 19-0-2783 (June 4, 2019).
- 3 Cal. Water Bds., Storm Water Program Trash Implementation Program (May 25, 2021), <a href="https://www.waterboards.ca.gov/water\_issues/programs/stormwater/trash\_implementation.html">https://www.waterboards.ca.gov/water\_issues/programs/stormwater/trash\_implementation.html</a>. The state's Trash Amendments under the Clean Water Act become binding on California localities through their MS4 municipal separate storm sewer system permits by December 2030 at the latest.
- 4 Off. on Smoking & Health, Extinguishing the Tobacco Epidemic in California, CTRS. FOR DISEASE CONTROL & PREVENTION (Mar. 24, 2021), https://www.cdc.gov/tobacco/about/osh/state-fact-sheets/california/index.html; Stanton A. Glantz, California's Tobacco Control Program Generates Huge Health Care Savings, CTR. FOR TOBACCO CONTROL RSCH. & EDUC. (Feb. 13, 2013), https://tobacco.ucsf.edu/california%E2%80%99s-tobacco-control-program-generates-huge-health-care-savings.
- Barbara Healy Stickel et al., Waste in Our Water: The Annual Cost to California Communities of Reducing Litter That Pollutes Our Waterways, NAT'L RES. DEF. COUNCIL (Aug. 2013), https://www.nrdc.org/sites/default/files/oce\_13082701a.pdf.





## ✓ Policy Option #2: Hazardous Waste Regulation

Another potential policy option seeks to enhance existing hazardous waste and tobacco retail licensing schemes with other controls to minimize the environmental health harms caused by tobacco waste. The provisions below provide definitions and outline potential policy approaches that would impose requirements for hazardous waste tracking, handling, and signage that apply to many other hazardous products. Jurisdictions pursuing these types of policies should consult with their local hazardous waste regulators, fire safety authorities, and legal counsel to ensure that the suggested policies accomplish their aims, namely the imposition of stricter requirements on those selling particularly dangerous products in the jurisdiction.

#### Section I. FINDINGS.

Note: See Appendix for sample findings tailored to accompany the policies set forth below. The findings section is part of the ordinance and legislative record, but it usually does not become codified in the municipal code. An ordinance based on this draft should include findings of fact — data, statistics, relevant epidemiological information, for instance — that support the purposes of the ordinance, as well as any legal precedent that directly supports the ordinance. In addition to serving an educational purpose and reflecting community support for the ordinance, the findings can also serve a legal purpose. If challenged in court, the findings are an admissible record of the factual determinations made by the legislative body when considering the ordinance. Courts will generally defer to legislative determinations of factual issues, which often influence legal conclusions. A list of findings supporting this model ordinance appears in the Appendix. Jurisdictions may select findings from that list to include or adjust, along with additional findings on local or regional conditions, outcomes, and issues that help make the case for the policy.

Section II. [ article/section ] of the [ county/city ] Code is hereby amended to read as follows:

**Sec.** [ \_\_\_\_\_ (\*1) ]. **DEFINITIONS.** The following words and phrases, whenever used in this [ article/chapter ], shall have the meanings defined in this section unless the context clearly requires otherwise:

**Note:** The definitions and sections below are meant to supplement those found in the *Comprehensive Tobacco Retailer Licensing ("TRL") Ordinance* and any jurisdiction that does not already have a comprehensive TRL policy with sufficient definitions may want to consult both models to choose which elements of each is appropriate for that community.





- (A) "Electronic smoking substance container" means any receptacle holding a substance that may be aerosolized or vaporized by an electronic smoking device, whether or not the substance contains nicotine.
- (B) "Mixed hazardous waste product" means any tobacco product that contains liquid for use in an electronic smoking device in combination with electronic waste, subject to 22 California Code of Regulations § 66261.9 and related regulations, into a single product that cannot be classified and disposed of only as acute hazardous waste, non-acute hazardous waste, or universal waste alone without disassembly by a waste management entity.

Note: For more information on how nicotine and electronic waste (e-waste) are hazardous waste under California law, please see the Center's publication <u>Tobacco Product Waste: Frequently</u> <u>Asked Questions</u>. For a state agency discussion of e-waste as a specific waste stream, see the California Department of Toxic Substances Control page <u>on e-waste</u>. And for some discussion of why these products are unlikely to be recyclable, please see the Center's commentary on how tobacco product waste likely cannot be mitigated by reformulating products.

#### Sec. [ \_\_\_\_\_ (\*2) ]. GENERAL REQUIREMENTS AND PROHIBITIONS.

- (A) HAZARDOUS WASTE COMPLIANCE AND TRAINING. No tobacco retailer may sell any electronic smoking device without first:
  - (1) registering with the California Environmental Reporting System (CERS);
  - (2) obtaining an EPA identification number as a hazardous waste generator under applicable federal and state law; and
  - (3) completing a training program from the [city/county] Certified Unified Program Agency (CUPA) that details the tobacco retailer's duties in storing, handling, and disposing of hazardous waste tobacco products
    - Tobacco retailers shall pay all costs for obtaining and maintaining the necessary CERS registration, EPA identification number, and any periodic mandated trainings or other requirements.

**Note:** This first substantive portion of the draft tobacco product waste policy uses the defined term "electronic smoking device" found in the <u>Comprehensive Tobacco Retailer Licensing</u>

<u>Ordinance</u>, and a hazardous waste compliance and training policy should be coupled with a definition such as the one available in that document to assure comprehensiveness and clarity.





By stocking products, retailers will have them on hand and will need to dispose of them at times. Tobacco retailers that dispose of e-cigarettes or other electronic tobacco products, such as <a href="https://example.com/heat-electronic">heat-electronic</a> tobacco products, such as <a href="https://example.com/heat-electronic">heat-electronic</a> tobacco products, such as <a href="https://example.com/heat-electronic">heat-electronic</a> tobacco products waste laws. Obtaining an EPA identification number is the first step in compliance with the requirements of both federal and state law. When a tobacco retailer disposes of tobacco products that qualify as hazardous waste, the retailer is a "hazardous waste generator" under applicable laws and must store, handle, and transport the hazardous waste consistent with federal and state standards. The applicable rules are often complicated and compelling retailers to know their duties and undergo government training could help improve compliance rates. Because creating and administering a training program will burden CUPA staff, it is a reasonable cost-allocation policy to require retailers to bear the costs for this additional regulatory burden.

- (B) HAZARDOUS MATERIALS COMPLIANCE. No tobacco retailer may store any electronic smoking substance container, bulk nicotine, or other chemicals used in manufacturing or preparing electronic smoking device substances without first:
  - (1) certifying to the [city/county] that it is in compliance with this subsection and the requirements of California Health and Safety Code Chapter 6.95 applicable to any hazardous materials, regardless of the amount of nicotine on premises and regardless of whether the nicotine is contained in consumer products or not; and
  - (2) completing a training program from the [ city/county cupa/fire department/responsible agency ] that details the tobacco retailer's duties in placarding, storing, planning, and preparing for emergencies consistent with hazardous materials requirements.
    - Consistent with the California Health and Safety Code, the [city/county] requires tobacco retailers selling electronic smoking devices and products containing nicotine to comply with all placarding, storing, planning and emergency preparation standards in Health and Safety Code Chapter 6.95 regardless of the amount of nicotine on premises and regardless of whether it is contained in consumer products or not. Tobacco retailers shall pay all costs of compliance and periodic mandated trainings.

**Note:** California law sets minimum standards for hazardous materials release response plans and inventory. In addition, the law explicitly does not preempt stronger standards at the local level, stating: "the Legislature does not intend to preempt any local actions, ordinances, or regulations that impose additional or more stringent requirements on businesses that handle hazardous materials." See California Health and Safety Code § 25500(b). As a result, local governments may go further than state law and treat nicotine-containing products as hazardous materials even in small quantities and even if they are classified as consumer products. Treating







these products as hazardous materials is consistent with federal regulations established by agencies such as the <u>Pipeline and Hazardous Materials Safety Administration</u>, and would help to prevent dangerous conditions should a tobacco retailer have an emergency such as a fire, potentially exposing first responders to toxic releases of nicotine and bulk chemicals.

(C) HAZARDOUS WASTE SIGNAGE. No tobacco retailer may sell electronic smoking devices without first posting a sign, visible to customers, provided by the Department, that states:

E-liquid is a deadly poison and e-cigarettes can explode and catch fire. E-cigarettes and nicotine e-liquid are hazardous waste under California law and should not be disposed of in the regular trash. These products must be disposed of as household hazardous waste at [ name of household hazardous waste facility in jurisdiction ].





**Note:** Jurisdictions may require businesses to disclose factual and uncontroversial information in order to correct misunderstandings consumers may have about a product. Since e-cigarette companies have told their customers that their products are regular trash when they are actually either hazardous waste or household hazardous waste under California law, it is within a local jurisdiction's authority to require a truthful statement correcting the misunderstanding. It is best to ground any signage requirements in factual statements that do not advocate for the government's position but only provide noncontroversial information.

The Public Health Law Center would be happy to provide individualized technical assistance and feedback on drafting language other than this sample if there are additional/different factual issues that need to be highlighted. Note that requiring certain statements at tobacco retailers can run afoul of both First Amendment precedents as well as federal <u>statutory preemption</u>, so it is important to consult with an attorney before finalizing any language for a required disclosure. For more information on this topic, please consult this <u>flowchart</u> and <u>webinar</u>. Any statement that can be viewed as advocating for users to seek help quitting may be more likely to elicit First Amendment legal challenges, and all warning signs should be reviewed by local legal counsel before being adopted.



# Policy Option #3: Incorporating Environmental Justice Principles

The environmental justice movement arose in response to a clear statistical reality: African American, Latino, Asian and Pacific Islander, and American Indian/Alaska Native people disproportionately live, work, and play in the areas that shoulder the highest burden of pollution and exposure to environmental toxins. In fact, a 1987 report by the United Church of Christ's Commission for Racial Justice entitled, "Toxic Wastes and Race in the United States," showed that race, more than any other factor, corresponded with the location of hazardous waste facilities. That reality continues to this day, and holds true when considering exposure to tobacco retailers and tobacco product waste.

In the case of Tobacco Retail Licensing (TRL), environmental injustice also occurs as a result of the disproportionate retailer density in communities of color and low-income communities—the same communities that already experience a disproportionate amount of pollution from other sources. Studies have shown that tobacco product waste clusters where tobacco products are sold and consumed, so neighborhoods with high retail density are also subject to high exposure to toxic tobacco waste. The model language provided below addresses this disproportionate retailer density in two ways. First, it does so on a basis that prohibits further retailer siting in communities that already have a higher retailer density than others. California law already recognizes and attempts to remedy disproportionate exposure to pollution,<sup>2</sup> and the provisions below draw from existing definitions. Second, the provisions below attempt to address disproportionate retailer density by setting a density cap on the number of retailers that can be located in a specific geographic subset of a particular jurisdiction.

Note that the Public Health Law Center's <u>Comprehensive Tobacco Retailer Licensing ("TRL")</u>
<u>Ordinance</u> contains provisions that would limit the density of tobacco retailers in a variety of ways, but the provisions below go further by addressing disproportionate retailer density within smaller geographic areas within a jurisdiction, rather than jurisdiction wide. The proposed language draws from a policy enacted in 2015 in San Francisco, which is covered more extensively in this case study.

#### Section I. FINDINGS.

**Note:** See <u>Appendix</u> for sample findings tailored to accompany the policies set forth below. The findings section is part of the ordinance and legislative record, but it usually does not become codified in the municipal code. An ordinance based on this draft should include findings of fact — data, statistics, relevant epidemiological information, for instance — that support the purposes of the ordinance, as well as any legal precedent that directly supports the ordinance.





In addition to serving an educational purpose and reflecting community support for the ordinance, the findings can also serve a legal purpose. If challenged in court, the findings are an admissible record of the factual determinations made by the legislative body when considering the ordinance. Courts will generally defer to legislative determinations of factual issues, which often influence legal conclusions. A list of findings supporting this model ordinance appears in the <u>Appendix</u>. Jurisdictions may select findings from that list to include or adjust, along with additional findings on local or regional conditions, outcomes, and issues that help make the case for the policy.

Section II. [ article/section ] of the [ county/city ] Code is hereby amended to read as follows:

**Sec.** [ \_\_\_\_\_\_ (\*1) ]. **DEFINITIONS.** The following words and phrases, whenever used in this [ article/chapter ], shall have the meanings defined in this section unless the context clearly requires otherwise:

**Note:** The definitions and sections below are meant to supplement those found in the Public Health Law Center's <u>Comprehensive Tobacco Retailer Licensing Ordinance</u> and any jurisdiction that does not already have a comprehensive TRL policy with sufficient definitions may want to consult both models to choose which elements of each are appropriate for that community.

- (A) "Disadvantaged communities" means any of the following:
  - (a) Any census tract with a Pollution Burden Percentile over 50, as indicated in the CalEnviroScreen 4.0 Mapping tool;
  - (b) Geographic areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation;
  - (c) Geographic areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment;
  - (d) Geographic areas with an annual median household income that is less than 80 percent of the statewide annual median household income; or
  - (e) Geographic areas that were historically redlined, or experienced intentional, systematic discriminatory disinvestment due to the population's racial or ethnic makeup.







Note: This definition of disadvantaged communities integrates the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment's (OEHHA) mapping tool that helps communities identify areas that experience a disproportionate share of the state's pollution burdens.<sup>3</sup> While the CalEnviroScreen mapping tool does not currently include tobacco product waste as a specific source of pollution, it does take into account population characteristics such as asthma, cardiovascular disease, and low-birth-weight infants, which are all associated with commercial tobacco use. The definition is also based on definitions in California Health and Safety Code § 39711 and Water Code § 79505.5 (and similar to Govt. Code § 65302, which governs local land use planning). Together, these laws and tools help local governments identify areas that have experienced inter-generational barriers to wealth and power, in order to better allocate government aid and resources to them. The "disadvantaged communities" designation (and similar definition in the planning statute) helps guide local governments in their periodic planning and, within a tobacco retail licensing ordinance, can also be used to combat decades of tobacco industry targeting by preventing continued siting of tobacco retailers in communities that already experience disproportionate burdens of pollution from all sources.

(B) "District" means [ the electoral districts in the [ city/county ] ] [ subsets of [ city/county ] ] that are roughly equal in population.

**Note:** This definition of "district" draws on San Francisco's <u>retailer density law</u>, which uses electoral districts to set caps on a district-by-district basis, rather than on a City-wide basis.





Larger jurisdictions may already have electoral districts within their boundaries, and those districts could be used as a basis for setting density caps as provided below. Other geographic breakdowns can take the form of voting precincts, which could similarly be used to set geographic boundaries.

### Sec. [ \_\_\_\_\_ (\*5) ]. LIMITS ON ELIGIBILITY FOR A TOBACCO RETAILER LICENSE.

(A) DISADVANTAGED COMMUNITIES. No license may be issued, and no existing license may be renewed, to authorize tobacco retailing within a disadvantaged community. If any person submits evidence suggesting a license was or will be issued within a disadvantaged community, the license will be suspended until the tobacco retailer has demonstrated by clear and convincing evidence that the area does not meet the definition of disadvantaged community, and the [city council/board of supervisors] solicits and considers oral and written public comment regarding the tobacco retailer's submission before taking final action. A tobacco retailer who has made a sufficient showing under this section shall not be required to make another showing on this issue for 12 months, or until its next permit application, whichever comes first.

**Note:** Local governments in California are already required to identify and plan for policies to reduce the unique and compounded health harms, including pollution exposure, to disadvantaged communities as defined by state law (see California Government Code § 65302).

One significant problem for health equity and environmental justice is that the most-polluting industries tend to concentrate in low-income communities with fewer resources to reject the establishment of such facilities. The above prohibition on tobacco retailers within disadvantaged communities would directly address this issue by capping the number of retailers in such neighborhoods at zero. Studies show that tobacco product waste clusters where tobacco products are sold and consumed. Thus, by eliminating retail outlets in low-income neighborhoods, a jurisdiction can decrease tobacco pollution in these neighborhoods while also pushing back on the tobacco industry's systemic targeting of low-income people to recruit new users. If a jurisdiction wanted to phase in this type of policy more slowly, it could add a "hardship waiver" system (or a limited number of license renewals) to allow existing retailers in these neighborhoods to continue retailing only for the time necessary to recover reasonable sunk costs and transition to another type of business or different location.

sec.	. [( ) ]. POPULATI	ON AND DENSIT I.
(A)	DENSITY CAP. No license	may issue, and no existing license may be renewed, in any
	district that has [	] or more tobacco retailers.

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(B) CITY COUNCIL REVIEW. The Department shall assess the density cap set in subparagraph (A) every two years to evaluate whether to recommend to the [ city council/county board of supervisors ] an amendment to this [ chapter/article ] to reduce the number of permitted tobacco retailers reasonably necessary to advance the public health purposes this [ chapter/article ] seeks to achieve.

**Note:** The two provisions above, which set a cap on the number of tobacco retailers in any one district and prohibit licenses to retailers in a district where that cap has been exceeded, are based on San Francisco's retailer density law. That law similarly sets a cap on the number of retailers in any one supervisorial district at 45 retailers per district, which was slightly above the lowest number of retailers that existed in any one supervisorial district at the time of policy enactment. Jurisdictions could choose to follow San Francisco's lead by setting a cap that corresponds to the fewest number of retailers in any one district. Alternatively, jurisdictions could choose to set a number that takes into account other density-related concepts. For example, a jurisdiction could set a cap that would ensure that in even in the most densely populated areas, retailers are not located adjacent to one another or near schools or youth-populated areas. See the Public Health Law Center's *Comprehensive Tobacco Retailer Licensing* ("TRL") Ordinance for more ideas on density and proximity-related concepts.

#### **Endnotes**

- 1 United Church of Christ Commission for Racial Justice, *Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites* (1987), <a href="https://www.nrc.gov/docs/ML1310/ML13109A339.pdf">https://www.nrc.gov/docs/ML1310/ML13109A339.pdf</a>.
- 2 See, e.g., California Health and Safety Code § 39711; California Water Code § 79505.5, and California Govt. Code § 65302.
- 3 The CalEnvrioScreen mapping tool is available at the California Office of Environmental Health Hazard Assessment's CalEnviroScreen website: https://oehha.ca.gov/calenviroscreen.



# Appendix: Research Findings for Tobacco Product Waste Policy Options

#### Section I. FINDINGS.

Whereas, the [city council/board of supervisors] finds that tobacco products and tobacco product waste are a significant and growing source of toxic pollution, causing negative environmental and social impacts, as evidenced by the following:

#### Harms Resulting from Tobacco Product Waste

Whereas, the discarded waste of cigarette butts is an urgent environmental and public health issue, as evidenced by the following:

- In the United States, more than 249 billion cigarettes were consumed in 2017;<sup>1</sup>
- Of the 34.1 million current smokers as of 2019,<sup>2</sup> nearly 75 percent of smokers reported having littered cigarette butts in the past and even tobacco industry research has found that an estimated 65 percent of cigarettes ended up as litter;<sup>3</sup>
- In addition to cigarette butts, plastic packaging, plastic tips for cigars and cigarillos, disposable electronic cigarettes (e-cigarettes) and their cartridges, and lithium batteries are also commonly littered;<sup>4</sup>
- Data shows that in 2017, nearly 2.5 million cigarette butts were removed from coastlines worldwide, with over 200,000 cigarette butts removed in California alone;<sup>5</sup>
- Cigarette butts account for nearly 38 percent of all collected litter from U.S. roadways<sup>6</sup> and are also the most collected litter item in retail areas, storm drains, and parks and playgrounds;<sup>7</sup>
- For 34 years, cigarette butts were the most common littered item found during Ocean Conservancy's annual International Coastal Cleanup;<sup>8</sup>
- Whereas, cigarette butts account for 34 percent of the total litter collected in California;<sup>9</sup>

Whereas, cigarette butts continue to pollute soil, water, and air for days to years after they are littered, as evidenced by research showing that:

 Cigarette ash and cigarette butts are sources of concentrated toxic metal that readily leaches into rainwater,<sup>10</sup> causing millions of tons of toxic metal pollution in the environment annually;<sup>11</sup>





- U.S. Food and Drug Administration (FDA) researchers concluded "Environmental impacts from [ cigarette butt ] litter could occur due to the leaching of toxic chemicals, and aquatic systems and organisms may be the most vulnerable to these potential impacts";12
- The same FDA study showed that "of the 98 identified [ cigarette butt ] leachate chemicals, one-third were very toxic and 10 percent were toxic to aquatic organisms due to acute and chronic toxicity.... [and among the 98] 25 are included in FDA's list of harmful or potentially harmful constituents in tobacco products and tobacco smoke";<sup>13</sup>
- While cigarette butts are most ecotoxic immediately after smoking and discard, the butts continue to be highly toxic to the environment causing soil pollution for years after use and littering;<sup>14</sup>
- If cigarette butts do not leach toxic chemicals to surface waters, they can still offgas dangerous pollutants for weeks after they have been smoked, with emissions rates of furfural, styrene, ethylbenzene, 2-methyl-2-cyclopenten-1-one, limonene, naphthalene, triacetin, and nicotine increasing with increased ambient temperature;<sup>15</sup>
- Even 24 hours after being littered, used cigarette butts continue to release up to 14 percent of the nicotine that comes off of a burning cigarette;<sup>16</sup>
- Cigarette filters are made of non-biodegradable plastic that breaks down into microplastics in the environment.<sup>17</sup>
- Marine microplastics can be ingested by organisms, including organisms consumed by humans, and may accumulate up the food chain.<sup>18</sup>

Whereas, tobacco product waste is a significant source of plastic pollution in the environment, as evidenced by the following:

- 98 percent of cigarette butts are made of cellulose acetate, a type of plastic, and are not biodegradable, and thus persist in natural environments;<sup>19</sup>
- A used cigarette butt can shed more than 100 plastic microfibers per day and eventually breaks apart into 15,000 plastic microfibers, releasing toxic compounds and posing an additional risk to life beyond the chemicals from cigarette butt leachate;<sup>20</sup>
- Research has demonstrated plastic microfibers are the most prevalent plastic waste found in the stomachs of sea turtles,<sup>21</sup> and sea turtle mortality rises with the amount of plastic they consume;<sup>22</sup>





Whereas the California State Legislature has recognized microplastic water pollution and ocean plastics are urgent issues that call for both statewide and local action, as evidenced by the following:

- In 2018 California lawmakers adopted a new drinking water standard, requiring the California Water Resources Control Board to establish the world's first health guidelines for microplastics in drinking water;<sup>23</sup>
- As part of the legislature's plan, local governments will have to test for microplastics in drinking water for at least four years, and the state will provide guidance on testing and how microplastics are defined;<sup>24</sup>
- California lawmakers have required the Ocean Protection Council to create a Statewide Microplastics Strategy and report to the legislature on the strategy and progress made in both 2021 and 2025;<sup>25</sup>
- The California Ocean Protection Council has identified cigarette butts as a core method of addressing plastic pollution in coastal and marine ecosystems, and are investigating the efficacy of a statewide prohibition on the sale of cigarette butts to address this problem.<sup>26</sup>
- The California Ocean Protection Council and Ocean Science Trust produced a report on microplastics that found: "True source reduction of plastic materials may be the most effective precautionary strategy to reduce and prevent microplastic pollution, given lack of feasible microplastic cleanup strategies."<sup>27</sup>
- Whereas, leading international legal and environmental justice organizations also have similarly determined: "The most effective recommendation is simple: immediately reduce the production and use of plastic. Stopping the expansion of petrochemical and plastic production and keeping fossil fuels in the ground is a critical element to address the climate crisis."

Whereas, tobacco product waste is also a source of toxic chemicals and metals that harm ecosystem health, as evidenced by the following:

- A study found that cigarette butts can be a source for the contamination of heavy metals in water, potentially leaching into marine life and disrupting the food chain;<sup>29</sup>
- FDA researchers have studied the issue of cigarette butts as they harm the environment and found that butts "pose a major litter and hazardous waste problem that raises concerns about their potential environmental, public health, social and economic impacts;"30





Whereas, cheap disposable tobacco products have the potential to cause the most waste by volume and toxicity, as evidenced by the following:

- Under federal law, the liquid nicotine found in e-cigarettes is an acute hazardous waste product,<sup>31</sup> the electronics and battery inside are hazardous e-waste under state and federal law,<sup>32</sup> and disposing of these hazardous wastes legally is an expensive and costly burden imposed on local governments and schools by the tobacco industry;<sup>33</sup>
- Disposable e-cigarettes pose a greater environmental threat than refillable e-cigarettes because they can only be used for about 400 puffs before the entire e-cigarette must be replaced;<sup>34</sup>
- E-cigarettes may qualify as both e-waste and biohazard waste (if there is residual nicotine), and it is estimated that users discard 99 billion pounds of e-waste globally each year;<sup>35</sup>
- In 2015, over 58 million e-cigarettes and refills were sold in the United States in grocery and convenience stores (excluding vape shops and online); 19.2 million of those were single-use e-cigarettes;<sup>36</sup>
- As the lithium-ion batteries in e-cigarettes degrade, they release toxic heavy metals that can leak into soil and water;<sup>37</sup>
- Lithium-ion batteries are at high risk for thermal runaway, fire, and explosion;<sup>38</sup>
- The U.S. Fire Administration has studied e-cigarette fires and explosions and determined that:
  - "The shape and construction of electronic cigarettes can make them (more likely than other products with lithium-ion batteries) behave like 'flaming rockets' when a battery fails;"<sup>39</sup> and
  - "As long as lithium-ion batteries continue to be used in e-cigarettes, severe injuries will
    continue to occur. As the number of e-cigarettes in use increases, the number of severe
    injuries from lithium-ion battery explosions and fires will likely continue to increase."

Whereas, e-cigarette products are rarely discarded properly, harming the environment, as evidenced by the following:

- In one poll, 51 percent of young e-cigarette users reported disposing of pods or empty e-cigarettes in the trash, 17 percent in a regular recycling bin not designed for e-waste, and 10 percent just throwing them on the ground;<sup>41</sup>
- E-cigarette waste will not biodegrade, even under severe conditions, instead, e-cigarettes will eventually break down into microplastics, toxic metals, and chemicals;<sup>42</sup>





- E-cigarette maker JUUL Labs Inc. has been sued by the state of California for, among other things, misleading consumers by instructing them to throw their products "in a regular trash can"<sup>43</sup> when they are actually hazardous wastes that cannot be disposed of as regular trash in California;
- Other e-cigarette companies also do not give directions on how to properly and safely dispose of their products;<sup>44</sup>
- When polled on how they dispose of these devices, only 15 percent of young people who used them reported proper recycling of e-cigarettes;<sup>45</sup>
- Improperly-disposed-of e-cigarettes are a leading cause of fires in the waste management system, putting staff and facilities in grave danger;<sup>46</sup>

Whereas, nicotine and cigarette butts can have sublethal effects on wildlife that nonetheless harm overall survival, as evidenced by the following:

- House finches that use littered cigarette butts in their nest are able to kill off parasites with the toxic nicotine, but scientists also observed the butts caused genotoxicity in baby birds and breeding pairs that may impact long-term survival;<sup>47</sup>
- Low-level nicotine toxicity found in nature is shown to make mice less able to defend themselves against predators, demonstrating neurotoxic damage that reduces survival;<sup>48</sup>





- Exposure to cigarette butt leachate caused mice to have significantly reduced body weight and damaged lung tissue;<sup>49</sup>
- The European Chemicals Agency has determined that nicotine significantly reduces the growth and fecundity of aquatic invertebrates at nominal environmental concentrations, harming their long-term survival;<sup>50</sup>

Whereas, tobacco product waste contaminates water supplies and human food sources, as evidenced by the following:

- Toxins from cigarette butts have been shown to bioaccumulate in species eaten by humans, such as rainbow trout;<sup>51</sup>
- Toxins from cigarette butts also bioaccumulate in commodity crops, thereby causing nicotine contamination in these crops;<sup>52</sup>
- Plastic particles from sources like degraded cigarette butts are found in cultured oysters;<sup>53</sup>
- Nicotine metabolites are detectable in 51 percent of U.S. drinking water sources,<sup>54</sup>

#### Fire Risk Posed by Tobacco Products

Whereas, smoking and smoldering cigarette butts remain a leading cause of structure fires and fire deaths and disasters, and lowering smoking levels has a salutary impact on the number of fires in the U.S.;<sup>55</sup>

Whereas, between 2012 and 2017, an average of 47 wildfires in California each year were traced back to smoking;<sup>56</sup>

Whereas, the July 2020 Clay Fire, which burned 730 acres and required the efforts of eight fire departments and numerous agencies and power companies to manage, was ignited by a cigarette butt;<sup>57</sup>

Whereas, these significant fire impacts happen even though California adopted fire safety standards for cigarettes beginning in 2007;<sup>58</sup>

#### Harms Caused by Nicotine Ingestion

Whereas, research indicates that children playing in parks or playgrounds are more likely to ingest cigarettes if they are littered and accessible, and human and pet exposures to cigarette butts are frequent due to the ubiquitous nature of this litter;<sup>59</sup>





Whereas, researchers determined "From 2013 to 2017, an estimated 4745 poisoning cases related to e-liquids among children under age five were treated in US hospital emergency departments," and in 2018 alone, 885 children under 5 were admitted to hospitals for poisoning from nicotine e-liquids; for

Whereas, tobacco products containing nicotine are responsible for more than 10,000 telephone calls to poison control centers in the United States each year, and data also shows:

- Over 80 percent of tobacco-related poison exposures involved young children;<sup>62</sup>
- The vast majority of calls involving children 5 and younger were related to conventional cigarettes (as opposed to chewing tobacco, e-cigarettes, snuff, cigarette butts, etc.);<sup>63</sup>

#### Social and Environmental Justice Harms

Whereas, tobacco product waste distribution mirrors the industry targeting of specific demographic groups, unduly burdening specific communities as evidenced by the following:

- In a 2019 study conducted of San Francisco area high schools, cigarette butts, little cigar
  plastic wrappers, and mouthpiece litter were most likely to be found at schools with larger
  low-income student populations;<sup>64</sup>
- Data shows a higher density of tobacco retailers and marketing of tobacco products in predominantly African American neighborhoods,<sup>65</sup> leading to increased tobacco product waste in these areas;<sup>66</sup>
- Analysis from U.S. Food and Drug Administration scientists shows that vape shops are
  more densely distributed, and nearer to schools, in school districts with higher proportions
  of Asian and Black or African American populations,<sup>67</sup> meaning that these communities are
  more exposed to nicotine products, tobacco product advertising, and the environmental
  exposure to wastes from these products and businesses;

Whereas, nicotine and e-cigarette products confiscated or collected by schools are a hazard to staff health, and these products are hazardous waste when discarded by schools;

Whereas, the costs of hazardous waste management and disposal are a significant burden on schools caused by the tobacco industry's targeting of new replacement users;

Whereas, the distribution of littered tobacco product waste is inequitable and harms the most vulnerable populations:







- Researchers in San Diego found that cigarette butts clustered where the products were bought and used, with the highest concentrations around bars and convenience stores;<sup>68</sup>
- Researchers in the Bay Area found that flavored tobacco products accumulated in different high school parking lots and discarded products correlated with the socioeconomic status of the school population, with more e-cigarette waste found on the grounds of schools with a higher-income student population and more flavored little cigar and menthol cigarette waste at schools with low-income populations;<sup>69</sup>

Whereas, LGBTQ+ communities have a higher prevalence of adult tobacco use and youth tobacco use than the general population. This is at least partially due to tobacco ads targeted specifically at LGBTQ+ people;<sup>70</sup>

Whereas, there is also a higher density of tobacco retailers in communities with people who identify as members of the LGBTQ+ community;<sup>71</sup>





Whereas, overall, waste-related environmental exposure is stronger in disadvantaged population subgroups in the US,<sup>72</sup> and disposing of tobacco products at hazardous waste sites will continue to disproportionately harm environmental justice communities as evidenced by the following:

- Studies show that hazardous waste facilities are disproportionately located near and in communities and neighborhoods with greater populations of racial and ethnic minorities;<sup>73</sup>
- Hazardous waste sites and landfills are most commonly found in or near African American/Black communities and neighborhoods;<sup>74</sup>

### Tobacco Product Production and Upstream Harm to the Natural and Human Environments

Whereas, the deforestation related to the tobacco industry's farming of the tobacco causes significant harm to the environment as evidenced by the following:

- Land clearance for cultivation and the burning of wood and charcoal for curing tobacco as well as the paper needed for cigarette wrapping, packaging matches and print advertisements, are major contributors to deforestation;<sup>75</sup>
- Curing of the tobacco leaf is dependent on the burning of trees—one tree's worth of wood is
  used to cure an estimated 300 cigarettes, resulting in the annual loss of billions of trees;<sup>76</sup>
- The significant deforestation and burning of trees result in large quantities of CO2 being released into the atmosphere contributing to global climate change;<sup>77</sup>
- Deforestation has a negative effect on land quality and biodiversity it promotes soil degradation which may not then be used to support the growth of other crops or vegetation, and industrial agriculture depends on overuse of agricultural chemicals;<sup>78</sup>

Whereas, tobacco is often grown without rotation of other crops making it more vulnerable to pests and diseases, and as a result tobacco growers use large amounts of chemical pesticides and fertilizers,<sup>79</sup>

Whereas, industrial tobacco production causes significant harm to human health and the environment as evidenced by the following:

Human Rights Watch found that children who work in the U.S. tobacco fields reported that
pesticides sprayed into adjacent fields drifted onto them and caused vomiting and other
serious poisoning symptoms;<sup>80</sup>





- Children in the U.S., Indonesia, and Zimbabwe working in the tobacco fields described symptoms indicative of acute nicotine poisoning from dermal exposure;<sup>81</sup>
- Tobacco production predominantly occurs in countries with few environmental or occupational regulations causing workers to be at risk for pesticide poisoning;<sup>82</sup>
- Chemicals such as DDT, which are banned in the U.S. are commonly used in other tobacco producing countries;<sup>83</sup>

Whereas, in 2018, 948,327 pounds of toxic chemicals were released from U.S. tobacco facilities:84

#### The Burden on and Responsibility of Local Government

Whereas, picking up tobacco product waste is expensive for local governments, as evidenced by the following:

- Researchers estimate that, annually, mid-sized cities can spend up to \$6 million per city related to cigarette waste clean-up;<sup>85</sup>
- Researchers determined that the 30 biggest cities in the U.S. would be paying between \$4.7 and \$90 million per year to clean up all the cigarette butt waste littered in their communities;<sup>86</sup>
- In California, the annual costs of cleaning up cigarette butts in large cities are estimated (mean estimates) to be:
  - \$4,195,867 for San Francisco;
  - \$3,908,981 for San Jose;
  - \$7,066,021 for San Diego;

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\$19,703,611 for Los Angeles;<sup>87</sup>

Whereas, the costs of cigarette butts go beyond direct cleanup costs, and San Francisco's own estimate of \$7,487,916 of direct costs for cleanup do not include the additional costs borne because of environmental and tourism damage from cigarette butt waste prevalence;<sup>88</sup>

Whereas, FDA analysis and numerous state-authority guidance documents confirm how schools throughout the country have a legal duty to comply with hazardous waste law when discarding confiscated and collected nicotine and e-cigarette products due to their status as hazardous waste;<sup>89</sup>





Whereas, California municipalities and counties have duties to uphold and enforce the state's strong environmental laws:

- Under the 2015 Trash Amendments, when fully implemented, jurisdictions in California
  with municipal stormwater permits will be required by California's Clean Water Act
  standards to prevent or capture all trash before it is diverted to rivers, lakes, or the ocean;<sup>90</sup>
- Stormwater trash collection technology, though available, is more expensive and complicated than eliminating or controlling solid waste before it is littered and washed into the stormwater system;<sup>91</sup>
- California counties and cities that are designated Certified Unified Program Agencies and Participating Agencies share responsibility with the state over enforcement of hazardous waste standards and oversight of waste generators;<sup>92</sup>

#### Public support for policy intervention

Whereas, California adults recognize the environmental threat caused by tobacco product waste and support policy intervention, as evidenced by the following:

- 90.3 percent of adults in CA agree that cigarette butts damage the environment,<sup>93</sup>
- 90.3 percent of adults in CA agree that cigarette butts are poisonous to children, pets, and wildlife;<sup>94</sup>
- 57.4 percent of California adults support a government policy to ban the sale of filtered cigarettes;<sup>95</sup>
- 67.9 percent of California adults support a government policy to ban single-use tobacco products in order to reduce litter waste;<sup>96</sup>
- 75.8 percent of adults in California agree that the tobacco industry should be held responsible for the negative impact of tobacco product waste on the environment;<sup>97</sup>

#### Evidence supporting the need for policy intervention

Whereas, upstream approaches that influence product use and demand are necessary to meaningfully impact the accumulation of tobacco product waste, as evidenced by the fact that even when appropriate waste receptacles are available, people who smoke still discard their tobacco product waste into the environment;<sup>98</sup>

Whereas, deposit and return systems have the potential to increase the number of toxic or electronic devices that are collected by responsible businesses for legal disposal as e-waste;<sup>99</sup>



Whereas, California has take-back systems for both rechargeable batteries and mobile telephones, and requiring e-cigarette retailers to take back and legally dispose of their hazardous wastes is consistent with the values of [ name of jurisdiction ];<sup>100</sup>

Whereas, [local school district] has incurred hazardous waste disposal costs from e-cigarettes and other nicotine wastes in the amount of [insert amount, if available] over the past [time period];

Whereas, [local household hazardous waste facility] has disposed of [quantity] of e-cigarette waste in the past [time period] at a cost to the [household hazardous waste operator] of [amount];

Whereas, sales prohibitions of the tobacco products and tobacco product packaging that causes the worst impacts to the environment will reduce the costs of cleanup of littered and hazardous waste incurred by the [city/county] in the future;

Whereas, the [city/county] must comply with state standards for capture of trash before it flows to state waters, and limiting the sources of littered pollution is a cost-effective way of managing the problem with limited costs in infrastructure and government staff time spent on trash cleanup;

Whereas, tobacco retailers whose products pollute neighborhoods targeted by the tobacco industry have no right to perpetuate a tobacco product waste nuisance on communities targeted by the tobacco industry;

NOW THEREFORE, it is the intent of the [city council/board of supervisors], in enacting this ordinance, to recognize and declare tobacco product waste a public health and environmental threat to the residents of the [city/county], to advance policies that reduce or eliminate toxic tobacco product waste in the community, to encourage responsible tobacco retailing and discourage violations of hazardous waste laws, and to encourage the reduction of social and environmental injustices resulting from tobacco retailing.

#### **Endnotes**

- 1 Ctrs. for Disease Control & Prevention, Consumption of Combustible and Smokeless Tobacco United States, 2000–2015 (2016).
- 2 See Ctrs. for Disease Control & Prevention, *Current Cigarette Smoking Among Adults in the United States*, <a href="https://www.cdc.gov/tobacco/data\_statistics/fact\_sheets/adult\_data/cig\_smoking/index.htm#:~:text=In%202019%2C%20near-ly%2014%20of,with%20a%20smoking%2Drelated%20disease (Dec. 10, 2020).">https://www.cdc.gov/tobacco/data\_statistics/fact\_sheets/adult\_data/cig\_smoking/index.htm#:~:text=In%202019%2C%20near-ly%2014%20of,with%20a%20smoking%2Drelated%20disease (Dec. 10, 2020).</a>
- 3 Keep Am. Beautiful, *Littering Behavior in America: Results of a National Study* (2009), <a href="https://kab.org/wp-content/up-loads/2019/10/NewsInfo\_Research\_LitteringBehaviorinAmerica\_2009Report\_Final.pdf">https://kab.org/wp-content/up-loads/2019/10/NewsInfo\_Research\_LitteringBehaviorinAmerica\_2009Report\_Final.pdf</a>.





- 4 Leah Henry, Cigarette Butts and Cigar Tips: Flicked but not Forgotten, Nat'l Oceanic & Atmospheric Admin. (Jul. 23, 2015), https://marinedebris.noaa.gov/cigarette-butts-and-cigar-tips-flicked-not-forgotten.
- 5 See Tara Leonard, *Tobacco Butts Pack a Poisonous Punch for People and the Ocean*, Ocean Conservancy (Aug. 31, 2018), https://oceanconservancy.org/blog/2018/08/31/tobacco-butts-pack-poisonous-punch-people-ocean/.
- 6 Keep Am. Beautiful, 2009 National Visible Litter Survey and Litter Cost Study (Sept. 18, 2020), <a href="https://kab.org/wp-content/uploads/2019/08/News-Info\_Research\_2009\_NationalVisibleLitterSurveyandCostStudy\_Final.pdf">https://kab.org/wp-content/uploads/2019/08/News-Info\_Research\_2009\_NationalVisibleLitterSurveyandCostStudy\_Final.pdf</a>.
- 7 Id.
- 8 Laura Parker, *Plastic Food Packaging Now Outpaces Cigarette Butts as Most Abundant Beach Trash*, Nat'l Geographic (Sept. 7, 2020), <a href="https://www.nationalgeographic.com/science/article/plastic-food-packaging-outpaces-cigarette-butts-most-abundant-beach-trash">https://www.nationalgeographic.com/science/article/plastic-food-packaging-outpaces-cigarette-butts-most-abundant-beach-trash</a>.
- 9 Californians Against Waste, Cigarette Litter, https://www.cawrecycles.org/cigarette-litter.
- 10 Nafiseh Mansouri et al., Genotoxicity and Phytotoxicity Comparison of Cigarette Butt with Cigarette Ash, 27 Env't Sci. & Pollution Research 40383 (2020), https://link.springer.com/article/10.1007/s11356-020-10080-z.
- 11 Quentin Chevalier et al., Nano-Litter from Cigarette Butts: Environmental Implications and Urgent Consideration, 194 Che-MOSPHERE 125-30 (2017), https://hal-insu.archives-ouvertes.fr/insu-01652616/file/chevalier-chemosphere-2017.pdf.
- Dilip P. Venugopal et al., No Butts on the Beach: Aquatic Toxicity of Cigarette Butt Leachate Chemicals, 7 Tobacco Regul. Sci. Grp. 17-30 (2021), https://www.ingentaconnect.com/content/trsg/trs/2021/00000007/00000001/art00002.
- 13 Id.
- 14 Giuliano Bonanomi et al., *The Fate of Cigarette Butts in Different Environments: Decay Rate, Chemical Changes and Ecotoxicity Revealed by a 5-years Decomposition Experiment*, 712 ENV'T POLLUTION 114108 (2020), <a href="https://www.re-searchgate.net/profile/Alessandro-Piccolo/publication/338957329\_The\_fate\_of\_cigarette\_butts\_in\_different\_environments\_Decay\_rate\_chemical\_changes\_and\_ecotoxicity\_revealed\_by\_a\_5-years\_decomposition\_experiment/links/5f460d0b299bf13404f7e7f1/The-fate-of-cigarette-butts-in-different-environments-Decay-rate-chemical-changes-and-ecotoxicity\_revealed-by-a-5-years-decomposition-experiment.pdf.
- Dustin Poppendieck et al., Influence of Temperature, Relative Humidity, and Water Saturation on Airborne Emissions from Cigarette Butts, 712 Sci. Total Env't 136422 (2020), https://www.sciencedirect.com/science/article/abs/pii/S0048969719364186?via%3Dihub.
- 16 Nat'l Institute Standards & Tech., *Butt Emissions: Study Finds Even Extinguished Cigarettes Give Off Toxins* (May 18, 2020), https://www.nist.gov/news-events/news/2020/01/butt-emissions-study-finds-even-extinguished-cigarettes-give-toxins.
- 17 Tik Root, Cigarette Butts Are Toxic Pollution, Nat'L Geographic (Aug. 9, 2019), <a href="https://www.nationalgeographic.com/">https://www.nationalgeographic.com/</a> environment/article/cigarettes-story-of-plastic.
- 18 Cal. Ocean Prot. Council & Nat'l Oceanic & Atmospheric Admin. Marine Debris Program, *California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea* (June 2018), <a href="https://opc.ca.gov/webmaster/\_media\_library/2018/06/2018\_CA\_OceanLitterStrategy.pdf">https://opc.ca.gov/webmaster/\_media\_library/2018/06/2018\_CA\_OceanLitterStrategy.pdf</a>.
- 19 Clifton Curtis et al., *Tobacco Industry Responsibility for Butts: A Model Tobacco Waste Act*, 26 Tobacco Control 113-7 (2016), https://tobaccocontrol.bmj.com/content/26/1/113.full.
- 20 Francisco Belzagui et al., Cigarette Butts as a Source of Microfibers to the Environment, in Proceedings of the 2ND International Conference on Microplastic Pollution in the Mediterranean Sea (2020), https://link.springer.com/chapter/10.1007/978-3-030-45909-3\_42; Maocai Shen et al., Smoked Cigarette Butts: Unignorable Source for Environmental Microplastic, 791 Journal of the Total Environment 148384 (2021), https://doi.org/10.1016/j.scitotenv.2021.148384.





- 21 Emily M. Duncan et al., *Microplastic Ingestion Ubiquitous in Marine Turtles*, GLOB. CHANGE BIOLOGY (Dec. 4, 2018), https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14519.
- 22 Chris Wilcox et al., A Quantitative Analysis Linking Sea Turtle Mortality and Plastic Debris Ingestion, 8 Sci. Reps. 12536 (2018), https://www.nature.com/articles/s41598-018-30038-z.
- 23 Rachel Becker, *Premature or Precautionary? California Is First to Tackle Microplastics in Drinking Water*, CAL MATTERS (Mar. 15, 2021), https://calmatters.org/environment/2021/03/california-microplastics-drinking-water.
- 24 S.B. 1422, 2018 Leg., Reg. Sess. (Cal. 2018).
- 25 S.B. 1263, 2018 Leg., Reg. Sess. (Cal. 2018).
- 26 Holly Wyer, Action Item: Discussion and Possible Endorsement of Recommendations to Address Plastic Pollution in California's Coastal and Marine Ecosystems, Ocean Prot. Council (Feb. 16, 2021), <a href="https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\_items/20210216/Item\_4\_Plastic\_Pollution\_Recommendations\_Staff\_Rec\_Revised\_and\_Endorsed\_Fl-NAL\_20210323.pdf">https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\_items/20210216/Item\_4\_Plastic\_Pollution\_Recommendations\_Staff\_Rec\_Revised\_and\_Endorsed\_Fl-NAL\_20210323.pdf</a>.
- 27 Cal. Ocean Sci. Tr., *Microplastic Pollution in California* (Apr. 2021), <a href="https://www.oceansciencetrust.org/wp-content/up-loads/2021/05/OST-Microplastics-Report-2pager.pdf">https://www.oceansciencetrust.org/wp-content/up-loads/2021/05/OST-Microplastics-Report-2pager.pdf</a>.
- 28 Lisa Anne Hamilton et al., *Plastic & Climate: The Hidden Costs of a Plastic Planet*, CTR. FOR INT'L ENV'T L. (May 2019), https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf.
- 29 Sina Dobaradaran et al., Association of Metals (Cd, Fe, As, Ni, Cu, Zn and Mn) with Cigarette Butts in Northern Part of the Persian Gulf, 26 Tobacco Control 461 (2016), https://tobaccocontrol.bmj.com/content/26/4/461.info.
- 30 Venugopal, supra note 12.
- 31 Env't Prot. Agency, Frequent Questions about the Management Standards for Hazardous Waste Pharmaceuticals and Amendment to the P075 Listing for Nicotine Final Rule, <a href="https://www.epa.gov/hwgenerators/frequent-questions-about-management-standards-hazardous-waste-pharmaceuticals-and#nicotine">https://www.epa.gov/hwgenerators/frequent-questions-about-management-standards-hazardous-waste-pharmaceuticals-and#nicotine</a> (last visited May 4, 2021).
- 32 Public Health Law Center, *Tobacco Product Waste: Frequently Asked Questions* (2021), <a href="https://www.publichealthlawcenter.org/sites/default/files/resources/Tobacco-Product-Waste-CA-FAQ.pdf">https://www.publichealthlawcenter.org/sites/default/files/resources/Tobacco-Product-Waste-CA-FAQ.pdf</a>.
- 33 Public Health Law Center, *Disposing of E-Cigarette Waste: FAQ for Schools and Others* (2019), <a href="https://www.publichealth-lawcenter.org/sites/default/files/resources/Disposing-of-E-Cigarette-Waste.pdf">https://www.publichealth-lawcenter.org/sites/default/files/resources/Disposing-of-E-Cigarette-Waste.pdf</a>.
- 34 Yogi Hale Hendlin, *Alert: Public Health Implications of Electronic Cigarette Waste*, 108 Am. J. Pub. Health 1489 (2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6187764.
- 35 Id.
- 36 Id.
- 37 *Id.*; see also Hye-Bin Choi et al., *The Impact of Anthropogenic Inputs on Lithium Content in River and Tap Water*, 10 NATURE COMMC'NS 5371 (2019), <a href="https://www.nature.com/articles/s41467-019-13376-y">https://www.nature.com/articles/s41467-019-13376-y</a>; see also Max Krause & Timothy Townsend, *Hazardous Waste Status of Discarded Electronic Cigarettes*, 39 WASTE MGMT. 57 (2015), <a href="https://europepmc.org/article/MED/25746178">https://europepmc.org/article/MED/25746178</a>.
- 38 Michael R. Timpane, *Lithium Ion Batteries in the Solid Waste System*, Env'T Prot. Agency (Mar. 2018), <a href="https://www.epa.gov/sites/production/files/2018-03/documents/timpane\_epa\_li\_slides312\_ll\_1.pdf">https://www.epa.gov/sites/production/files/2018-03/documents/timpane\_epa\_li\_slides312\_ll\_1.pdf</a>.
- 39 Lawrence A. McKenna Jr., *Electronic Cigarette Fires and Explosions in the United States* 2009–2016, U.S. FIRE ADMIN. (July 2017), https://www.usfa.fema.gov/downloads/pdf/publications/electronic\_cigarettes.pdf.
- 40 Id.





- 41 Truth Initiative, A Toxic, Plastic Problem: E-cigarette Waste and the Environment (Mar. 2021), <a href="https://truthinitiative.org/research-resources/harmful-effects-tobacco/toxic-plastic-problem-e-cigarette-waste-and-environment">https://truthinitiative.org/research-resources/harmful-effects-tobacco/toxic-plastic-problem-e-cigarette-waste-and-environment</a>.
- 42 Id.
- 43 See Complaint for Permanent Injunction, Abatement, Civil Penalties, and Other Equitable Relief at 69, *California v. Juul Labs, Inc.* (2009), https://oag.ca.gov/system/files/attachments/press-docs/91186258.pdf.
- 44 Truth Initiative, supra note 41.
- 45 Id.
- 46 See Katie Pyzyk, Calls for E-Cigarette Legislation Increase Amid Growing Fire Hazard to Waste and Recycling Industry, WASTE DIVE (Sept. 22, 2020), https://www.wastedive.com/news/ecigarette-vape-lithium-battery-hazard-waste-recycling/585094.
- 47 See Monserrat Suárez-Rodríguez & Constantino Macías Garcia, There Is No Such Thing as a Free Cigarette; Lining Nests with Discarded Butts Brings Short-Term Benefits, But Causes Toxic Damage, 27 J. EVOLUTIONARY BIOLOGY 2719 (2014), <a href="https://onlinelibrary.wiley.com/doi/pdf/10.1111/jeb.12531">https://onlinelibrary.wiley.com/doi/pdf/10.1111/jeb.12531</a>; see also Monserrat Suárez-Rodríguez et al., Anthropogenic Nest Materials May Increase Breeding Costs for Urban Birds, FRONTIERS ECOLOGY & EVOLUTION (Feb. 3, 2017), <a href="https://www.frontiersin.org/articles/10.3389/fevo.2017.00004/full">https://www.frontiersin.org/articles/10.3389/fevo.2017.00004/full</a>.
- 48 Letícia Silva Cardoso et al., *The Exposure to Water with Cigarette Residue Changes the Anti-Predator Response in Female Swiss Albino Mice*, 25 ENV'T SCI. & POLLUTION RESEARCH 8592-607 (2018), <a href="https://link.springer.com/article/10.1007/s11356-017-1150-4">https://link.springer.com/article/10.1007/s11356-017-1150-4</a>.
- 49 Tigist Tefera Bekele & Frank O. Ashall, Investigation on Toxicity of Leachate of Cigarette Butts Collected from Addis Ababa on Swiss Albino Mice, 3 NIGERIAN. J. HEALTH & BIOMEDICAL SCIENCES 21-30 (2019), <a href="http://ejol.ethernet.edu.et/index.php/EAJHBS/article/view/1357/1033">http://ejol.ethernet.edu.et/index.php/EAJHBS/article/view/1357/1033</a>.
- 50 Eur. Chems. Agency, *Long-Term Toxicity to Aquatic Invertebrates* (Oct. 2, 2012), <a href="https://www.echa.europa.eu/web/guest/registration-dossier/-/registered-dossier/15857/6/2/5">https://www.echa.europa.eu/web/guest/registration-dossier/-/registered-dossier/15857/6/2/5</a>.
- 51 Lenard Jason Yabes, *Bioaccumulation of Organic Compounds from Smoked Cigarette Litter in the Freshwater Rainbow Trout, Oncorhynchus mykiss* (2018) (M.P.H. thesis, San Diego State University) (ProQuest).
- 52 Dirk Selmar, Uptake of Nicotine from Discarded Cigarette Butts A So Far Unconsidered Path of Contamination of Plant-Derived Commodities, 238 ENV'T POLLUTION 972-76 (2018), <a href="https://www.researchgate.net/profile/Hassan-El-Ramady/publication/323187505\_Uptake\_of\_nicotine\_from\_discarded\_cigarette\_butts\_-\_A\_so\_far\_unconsidered\_path\_of\_contamination\_of\_plant-derived\_commodities/links/5a85706faca272c99ac4230b/Uptake-of-nicotine-from-discarded-cigarette-butts-A-so-far-unconsidered-path-of-contamination-of-plant-derived-commodities.pdf.
- 53 Lisbeth Van Cauwenberghe & Colin R. Janssen, *Microplastics in Bivalves Cultured for Human Consumption*, 193 Env'T POLLUTION 65-70 (2014), <a href="http://www.expeditionmed.eu/fr/wp-content/uploads/sites/6/2015/02/Van-Cauwenberghe-2014-microplastics-in-cultured-shellfish1.pdf">http://www.expeditionmed.eu/fr/wp-content/uploads/sites/6/2015/02/Van-Cauwenberghe-2014-microplastics-in-cultured-shellfish1.pdf</a>.
- 54 Michael J. Focazio et al., A National Reconnaissance for Pharmaceuticals and Other Organic Wastewater Contaminants in the United States, 402 Sci. Total Env't 192-200 (2008), https://pubmed.ncbi.nlm.nih.gov/18433838.
- 55 Bruce N. Leistikow et al., *Fire Injuries, Disasters, and Costs from Cigarettes and Cigarette Lights: A Global Overview*, 31 Preventative Med. 91-9 (2000), http://leistikow.ucdavis.edu/SMOKINGFIRES.PDF.
- Patrick McGreevy, *California Wildfires Fuel a New Push to Ban Smoking at State Parks and Beaches*, L.A. Times (Aug. 30, 2018), https://www.latimes.com/politics/la-pol-ca-smoking-ban-beaches-20180830-story.html.
- 57 Cal Fire, Clay Fire (July 30, 2020), https://www.fire.ca.gov/incidents/2020/7/29/clay-fire.
- 58 Cal. Health & Safety Code Div. 12 (2005), <a href="https://leginfo.legislature.ca.gov/faces/codes\_displayText.xhtml?division=12.&part=8.&lawCode=HSC">https://leginfo.legislature.ca.gov/faces/codes\_displayText.xhtml?division=12.&part=8.&lawCode=HSC</a>.





- Thomas Novotny et al., *Tobacco and Cigarette Butt Consumption in Humans and Animals*, 20 Tobacco Control i17-i20 (2011), https://tobaccocontrol.bmj.com/content/tobaccocontrol/20/Suppl\_1/i17.full.pdf.
- 60 Joanne T. Chang et al., *National Estimates of Poisoning Events Related to Liquid Nicotine in Young Children Treated in US Hospital Emergency Departments*, 2013-2017, 6 INJURY EPIDEMIOLOGY 10 (2019), <a href="https://link.springer.com/content/pdf/10.1186/s40621-019-0188-9.pdf">https://link.springer.com/content/pdf/10.1186/s40621-019-0188-9.pdf</a>.
- 51 Joanne T. Chang & Brian L. Rostron, *Electronic Nicotine Delivery System (ENDS) Liquid Nicotine Exposure in Young Children Presenting to US Emergency Departments*, 2018, 6 INJURY EPIDEMIOLOGY 43 (2019), <a href="https://link.springer.com/article/10.1186/s40621-019-0219-6">https://link.springer.com/article/10.1186/s40621-019-0219-6</a>.
- 62 Baoguang Wang & Brian Rostron, *Tobacco-Related Poison Events Involving Young Children in the US, 2001–2016*, 3 Tobacco Regul. Sci. 525 (2017), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6190721.
- 63 Id.
- 64 Jeremiah Mock & Yogi H. Hendlin, Notes from the Field: Environmental Contamination from E-Cigarette, Cigarette, Cigar, and Cannabis Products at 12 High Schools San Francisco Bay Area, 2018–2019, 68 MORBIDITY & MORTALITY WKLY RPT 897-99 (2019), https://www.cdc.gov/mmwr/volumes/68/wr/mm6840a4.htm.
- 65 Kurt M. Ribisl et al., Disparities in Tobacco Marketing and Product Availability at the Point of Sale: Results of a National Study, 105 PREVENTIVE MED. 381-88 (Dec. 2017), https://doi.org/10.1016/j.ypmed.2017.04.010.
- Maacah Marah & Thomas E. Novotny, *Geographic Patterns of Cigarette Butt Waste in the Urban Environment*, 20 Tobacco Control i42-i44 (2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088466/pdf/tobaccocontrol42424.pdf.
- 67 P. Dilip Venugopal et al., Socioeconomic Disparities in Vape Shop Density and Proximity to Public Schools in the Conterminous United States, 2018, 21 HEALTH PROMOTION PRAC.9S-17S (2020), <a href="https://journals.sagepub.com/doi/pdf/10.1177/1524839919887738">https://journals.sagepub.com/doi/pdf/10.1177/1524839919887738</a>.
- 68 Maacah & Novotny, supra note 66.
- 69 Mock, supra note 64.
- 70 Tobacco Free CA, The Story of LGBTQ (Oct. 27, 2020), https://tobaccofreeca.com/story-of-inequity/lgbtq.
- 71 *Id.*
- 72 Marco Martuzzi et al., *Inequalities, Inequities, Environmental Justice in Waste Management and Health*, 20 Eur. J. Pub. HEALTH 21-6 (2010), https://academic.oup.com/eurpub/article/20/1/21/611240.
- 73 Commission for Racial Justice, *Toxic Wastes and Race in the United States*, UNITED CHURCH OF CHRIST (1987), <a href="https://www.nrc.gov/docs/ML1310/ML13109A339.pdf">https://www.nrc.gov/docs/ML1310/ML13109A339.pdf</a>.
- 74 Robert D. Bullard et al., *Toxic Waste and Race at Twenty 1987–2007*, UNITED CHURCH OF CHRIST (Mar. 2007), <a href="http://d3n8a8pro7vhmx.cloudfront.net/unitedchurchofchrist/legacy\_url/7987/toxic-wastes-and-race-at-twen-ty-1987-2007.pdf?1418432785">http://d3n8a8pro7vhmx.cloudfront.net/unitedchurchofchrist/legacy\_url/7987/toxic-wastes-and-race-at-twen-ty-1987-2007.pdf?1418432785</a>.
- 75 World Health Org., *Tobacco and Its Environmental Impact: An Overview* (2017), <a href="https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf?sequence=1">https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf?sequence=1</a>.
- 76 Mike Muller, Tobacco and the Third World: Tomorrow's Epidemic?: War on Want Investigation into the Production, Promotion, and Use of Tobacco in the Developing Countries 61 (1978).
- 77 G. THOMAS FARMER, MODERN CLIMATE CHANGE SCIENCE: AN OVERVIEW OF TODAY'S CLIMATE CHANGE SCIENCE 38 (2015).
- 78 See Anélia Marais et al., Effects of Monoculture, Crop Rotation, and Soil Moisture Content on Selected Soil Physicochemical and Microbial Parameters in Wheat Fields, Applied & Env't. Soil Sci. 593623 (2012), <a href="https://core.ac.uk/download/pdf/188793614.pdf">https://core.ac.uk/download/pdf/188793614.pdf</a>; see also Tobacco Atlas, Environment, <a href="https://tobaccoatlas.org/topic">https://topic</a> environment.





- 79 See Anélia Marais et al., supra note 124.
- 80 Human Rights Watch, *US: Child Workers in Danger on Tobacco Farms* (May 14, 2014), <a href="https://www.hrw.org/news/2014/05/14/us-child-workers-danger-tobacco-farms">https://www.hrw.org/news/2014/05/14/us-child-workers-danger-tobacco-farms</a>.
- 81 Margaret Wurth, *Historic Commitment to End Worst Forms of Child Labor*, Human Rights Watch (Aug. 5, 2020, 10:09 AM), https://www.hrw.org/news/2020/08/05/historic-commitment-end-worst-forms-child-labor.
- 82 World Health Org., *Tobacco and Its Environmental Impact: An Overview* (2017), <a href="https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf?sequence=1">https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf?sequence=1</a>.
- 83 Id.
- 84 Truth Initiative, *Tobacco and the Environment* (Mar. 2021), <a href="https://truthinitiative.org/sites/default/files/media/files/2021/03/Truth\_Environment%20FactSheet%20Update%202021\_final\_030821.pdf">https://truthinitiative.org/sites/default/files/media/files/2021/03/Truth\_Environment%20FactSheet%20Update%202021\_final\_030821.pdf</a>.
- 85 John E. Schneider et al., Tobacco Litter Costs and Public Policy: A Framework and Methodology for Considering the Use of Fees to Offset Abatement Costs, 20 Tobacco Control Supp. 1 (Apr. 18, 2011), <a href="https://tobaccocontrol.bmj.com/content/20/Suppl\_1/i36">https://tobaccocontrol.bmj.com/content/20/Suppl\_1/i36</a>.
- John E. Schneider et al., Online Simulation Model to Estimate the Total Costs of Tobacco Product Waste in Large U.S. Cities, 17 INT'L J. ENV'T RSCH. & PUB. HEALTH 4705 (2020), https://www.mdpi.com/1660-4601/17/13/4705/htm.
- 87 Id.
- 88 John E. Schneider et al., Estimates of the Costs of Tobacco Litter in San Francisco and Calculations of Maximum Permissible Per-Pack Fees, HEALTH ECON. CONSULTING GRP. LLC (2009), <a href="https://sfpublicworks.org/sites/default/files/tobacco\_litter\_study\_hecg\_062209%5B1%5D.pdf">https://sfpublicworks.org/sites/default/files/tobacco\_litter\_study\_hecg\_062209%5B1%5D.pdf</a>.
- 89 FDA Ctr. Tobacco Prods., *Tips for Safe Disposal of E-Cigarettes and Nicotine Waste* (Apr. 2020), <a href="https://digitalmedia.hhs.gov/tobacco/hosted/Tips-ECig-Disposal-508.pdf">https://digitalmedia.hhs.gov/tobacco/hosted/Tips-ECig-Disposal-508.pdf</a>.
- 90 Maacah & Novotny, supra note 66.
- 91 Barbara Healy Stickel et al., Waste in Our Water: The Annual Cost to California Communities of Reducing Litter That Pollutes Our Waterways, NAT'L RES. DEF. COUNCIL (Aug. 2013), https://www.nrdc.org/sites/default/files/oce\_13082701a.pdf.
- 92 See Dep't. Toxic Substances Control, <a href="https://dtsc.ca.gov/certified-unified-program-agencies-cupa/">https://dtsc.ca.gov/certified-unified-program-agencies-cupa/</a> (last visited May 4, 2021).
- 93 California Department of Public Health, California Adult Tobacco Survey (CATS) 2020 (Feb. 2021).
- 94 California Department of Public Health, California Adult Tobacco Survey (CATS) 2020 (Feb. 2021).
- 95 Id.
- 96 Id.
- 97 Online California Adult Tobacco Survey. Online CATS 2020. Sacramento, CA: California Department of Public Health; February 2021.
- 98 World Health Org., *Tobacco and Its Environmental Impact: An Overview* (2017), <a href="https://apps.who.int/iris/bitstream/han-dle/10665/255574/9789241512497-eng.pdf?sequence=1">https://apps.who.int/iris/bitstream/han-dle/10665/255574/9789241512497-eng.pdf?sequence=1</a>.
- 99 CalRecycle, Electronic Waste Management (last updated Apr. 2020), https://www.calrecycle.ca.gov/electronics.
- 100 Id.; CalRecycle, Batteries (last updated Mar. 2020), https://www.calrecycle.ca.gov/reducewaste/batteries.