### Centers for Disease Control and Prevention, Office on Smoking and Health Summary of Scientific Evidence: Flavored Tobacco Products, Including Menthol February 2021

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# The Public Health Burden of Tobacco Use

- The burden of disease and death from tobacco use in the United States is overwhelmingly caused by cigarettes and other combustible tobacco products.<sup>1</sup>
  - Every year in the United States, approximately 480,0000 deaths and over \$300 billion in healthcare spending and productivity losses are attributable to cigarette smoking.<sup>2,3</sup>
  - For every person who dies from smoking in the United States, at least 30 people live with a serious smoking-related illness.<sup>4</sup>
  - Worldwide, tobacco use and secondhand smoke exposure causes over 8 million deaths per year.<sup>5</sup>
  - Cigarette smoking causes diseases of almost every organ of the human body, including cancer, stroke, diabetes, and chronic obstructive pulmonary disease (COPD).<sup>6</sup>
  - Smoking causes cancer of the lung, esophagus, larynx, mouth, throat, kidney, bladder, liver, pancreas, stomach, cervix, colon, and rectum.<sup>7,8,9</sup>
  - Even occasional or intermittent cigarette smoking still causes considerable harm.<sup>10</sup>
  - Occasional or intermittent smoking is associated with increased risk for cardiovascular disease, lung and other cancers, and lower respiratory tract infections.<sup>11,12</sup>
- No tobacco product is harmless.
  - Smokeless tobacco use causes cancer of the mouth, esophagus, and pancreas; is associated with diseases of the mouth; and may increase the risk for death from heart disease and stroke.<sup>13,14,15</sup>
  - Additional research is needed regarding the health effects of e-cigarettes and other emerging tobacco products, such as heated tobacco products. However, the current evidence shows that the e-cigarette aerosol that users breathe from the device and exhale can contain harmful and potentially harmful substances, including heavy metals like lead, volatile organic compounds, and cancer-causing agents.<sup>16</sup>
  - Moreover, studies of emissions from heated tobacco products suggest that the products expose both users and bystanders to some of the same chemicals found in cigarette smoke, although at lower levels than cigarette smoke.<sup>17</sup>
- Nicotine is a highly addictive drug found in tobacco products.<sup>18</sup>
  - As with drugs such as cocaine and heroin, nicotine activates the brain's reward circuits and reinforces repeated nicotine exposure.<sup>19</sup>
  - Nicotine also increases the risk of cardiovascular, respiratory, and gastrointestinal disorders, decreases immune response, negatively impacts reproductive health, and has acute toxicity at high-enough doses.<sup>20,21</sup> Nicotine also activates multiple biological pathways through which smoking increases risk for disease development.<sup>22</sup>
- Nicotine is a health danger for pregnant women and their developing babies.<sup>23</sup>



- Youth and young adults are especially vulnerable to the harmful effects of nicotine.<sup>24,25</sup>
  - Nicotine exposure can harm the developing adolescent brain, which continues to develop into the mid-20s. Specifically, using nicotine in adolescence can harm the prefrontal cortex, or the part of the brain that controls attention, learning, mood, and impulse control.<sup>26</sup>
  - Each time a new memory is created or a new skill is learned, stronger connections or synapses – are built between brain cells. Young people's brains build synapses faster than adult brains. Nicotine changes the way these synapses are formed.<sup>27</sup>
  - Using nicotine in adolescence may also increase risk for future addiction to other drugs.<sup>28</sup>

## **Overview of Flavored Tobacco Products**

- The federal 2009 Family Smoking Prevention and Tobacco Control Act prohibits cigarettes from containing characterizing flavors other than tobacco or menthol.<sup>29,30</sup>
- Non-cigarette tobacco products, such as cigars, smokeless tobacco products, hookah, and ecigarettes are available in a variety of fruit, candy, and other kid-friendly flavors, such as berry, cherry, apple, cotton candy, bubble gum, crème, mint, and menthol.<sup>31,32</sup>
- Flavored tobacco products mask the harshness of tobacco, and are particularly appealing to youth.<sup>33,34</sup>
- These products can lead to the establishment of behaviors among new tobacco product users that can lead to long-term addiction, as well as tobacco-related disease and death.<sup>35</sup>
  - $\circ$  Nine out of ten adult cigarette smokers first start smoking before the age of 18.<sup>36</sup>
  - Moreover, youth are more likely than adults to initiate tobacco product use with flavored tobacco products,<sup>37,38,39</sup> and the availability of products in appealing flavors is cited by youth as one of the main reasons for using e-cigarettes.<sup>40</sup>
  - Data show that among first-time tobacco product users, those who initiate with a flavored tobacco product have an increased likelihood of further tobacco product use compared to those who initiate use with an unflavored tobacco product.<sup>41</sup>
  - Although manufacturers have consistently maintained that their flavored tobacco products are intended for adults, data demonstrate that flavors in tobacco products increase the appeal of these products to youth, promote youth initiation, and can contribute to lifelong tobacco use.<sup>42,43</sup>
- Cigarettes have been researched, designed, and manufactured to increase the likelihood that initiation will lead to dependence and decrease the likelihood of cessation due to a number of additives, including menthol.<sup>44</sup>
- Menthol is an organic compound that has cooling, analgesic, and irritative properties, which can change the way the brain registers the sensations of taste and pain.<sup>45</sup>
  - Menthol in cigarettes can make harmful chemicals more easily absorbed in the body.<sup>46</sup>
  - Menthol also facilitates absorption by masking the harshness of, and making it easier to inhale, cigarette smoke.<sup>47</sup>
- Comprehensive scientific reviews on menthol smoking, including a review by the U.S. Food and Drug Administration (FDA) Tobacco Products Scientific Advisory Committee and a subsequent independent review conducted by FDA, have found that:
  - o less established smokers are more likely to smoke menthol cigarettes,
  - the availability of menthol cigarettes likely increases experimentation and progression to regular smoking, and
  - o the availability of menthol increases the likelihood of addiction for youth smokers.<sup>48, 49</sup>

- In addition, menthol has been found to increase nicotine dependence and impede tobacco cessation, especially among African American smokers.<sup>50,51</sup>
  - Smokers of menthol cigarettes make more quit attempts than smokers of nonmenthol cigarettes but have a more difficult time quitting successfully.<sup>52</sup>
- Based on this and other evidence, including menthol's anesthetic properties and marketing, FDA concluded that it is likely that menthol cigarettes pose a public health risk above that seen with nonmenthol cigarettes.<sup>53</sup>

## **Use of Flavored Tobacco Products**

- An analysis of data from 2013-2014 found that the majority of youth who used a tobacco product, even just one time, reported that the first product they had used was flavored, including 81.0% of youth who ever used an e-cigarette.<sup>54</sup>
- Moreover, youth tobacco product users consistently reported product flavoring as a major reason for use across all product types, including e-cigarettes (81.5%), hookahs (78.9%), cigars (73.8%), smokeless tobacco (69.3%), and snus pouches (67.2%).<sup>55</sup>
- E-cigarettes have been the most commonly used tobacco product among U.S. youth since 2014.<sup>56,57</sup>
  - According to CDC's 2020 National Youth Tobacco Survey, 1 in 5 high school students and 1 in 10 middle school students (a total of 3.6 million youth) reported current (past 30day) e-cigarette use.<sup>58</sup>
  - Among youth, e-cigarettes are also the most commonly used tobacco product in combination with other products; about 1 in 3 middle and high school students use two or more tobacco products.<sup>59</sup>
- In 2019, a study among U.S. middle and high school students who currently used tobacco products found that 69.6% (4.3 million) reported using at least one flavored product (including menthol).<sup>60</sup> The proportion of youth who currently used tobacco products who reported flavored product use was:
  - o 68.8% for e-cigarettes,
  - o 48.0% for smokeless tobacco,
  - o 46.7% for cigarettes (which are only available in menthol),
  - o 41.9% for cigars,
  - o 31.4% for pipe tobacco, and
  - o 31.2% for hookah.<sup>61</sup>
- National Youth Tobacco Survey data show that although fewer youth reported current use of ecigarettes in 2020 as compared to 2019, the proportion of youth who reported current use of flavored e-cigarettes increased.<sup>62</sup>
  - In 2020, about 8 in 10 youth who currently use e-cigarettes reported using a flavored product; this is an increase from about 7 in 10 youth who reported this in 2019.<sup>63</sup>
  - Approximately one-third of high school students who currently use e-cigarettes report using menthol flavored products.<sup>64</sup>
  - The study also found although e-cigarette use declined among U.S. middle and high school students during 2019-2020, disposable e-cigarette use increased 1,000% among high school students who use e-cigarettes and by 400% among middle school students who use e-cigarettes.<sup>65</sup>
  - The most commonly used disposable e-cigarettes reported among youth were flavored; among current users of flavored disposable e-cigarettes, the most commonly used flavor types were fruit (82.7%), mint (51.9%), candy, desserts, or other sweets (41.7%), and

menthol (23.3%).66

- Youth and young adults are more likely to use flavored tobacco products than adults.
  - A study of adult use of non-cigarette flavored tobacco products found that 61.1% of adults who use non-cigarette tobacco products reported using at least one type of flavored tobacco product during 2013-2014.<sup>67</sup>
  - This study found the proportion of flavored product use was highest among adult hookah smokers (82.3%; 6.1 million adults), followed by e-cigarettes (68.2%; 10.2 million adults), smokeless tobacco (50.6%; 4.0 million adults), cigars (36.2%; 4.1 million adults) and pipes (25.8%; 0.3 million adults).<sup>68</sup>
- As noted above, the only type of flavored cigarettes that can be sold in the United States are tobacco and menthol cigarettes.
- Even though cigarette smoking has been declining steadily over the past several decades, the percentage of people who smoke menthol cigarettes is declining more slowly than among people who smoke non-menthol cigarettes.<sup>69,70</sup>
- Moreover, disparities in menthol cigarette smoking exist; young people and African Americans are more likely to smoke menthol cigarettes.<sup>71,72</sup>
  - The majority of African Americans who smoke use menthol cigarettes.<sup>73</sup>
  - Seven out of ten African American youth ages 12-17 who smoke use menthol cigarettes.<sup>74</sup>
  - A higher percentage of black adults who smoke started by using menthol cigarettes (93%) than white adults who smoke (44%).<sup>75</sup>
  - Non-Hispanic black adults who smoke cigarettes have the highest percentage of menthol cigarette use compared to other racial and ethnic groups.<sup>76</sup> In 2014-2015, 76.8% of non-Hispanic black adults who smoked usually used menthol cigarettes, compared to 34.7% of Hispanic adults and 24.6% of non-Hispanic white adults.<sup>77</sup>
- Menthol cigarette smoking also affects other groups of people.
  - For instance, women who smoke are more likely to use menthol cigarettes than men who smoke.<sup>78,79</sup>
  - A 2009-2010 study showed lesbian, gay, bisexual, and transgender (LGBT) persons who smoke are more likely to smoke menthol cigarettes than heterosexual people who smoke, and that disparities in use were even greater among LGBT women versus heterosexual women.<sup>80</sup>
  - Additionally, people with low levels of income or education are more likely to smoke menthol cigarettes than other cigarettes.<sup>81</sup>
  - Adults who smoke and have mental health conditions also are more likely to use menthol cigarettes than those who smoke and do not have mental health conditions.<sup>82</sup>

# **Tobacco Industry Promotion of Flavored Products**

- The tobacco industry actively promotes flavored tobacco products.<sup>83</sup>
  - In 2012, the U.S. Surgeon General found that, to remain profitable over the long-term, the tobacco companies designed their products to appeal to youth, including using menthol and other flavoring agents.<sup>84</sup>
  - Even after tobacco manufacturers agreed as part of the 1998 Master Settlement Agreement to discontinue any marketing that might appeal to adolescents, the industry introduced a wide range of candy- and fruit-flavored cigarettes.<sup>85,86</sup>

- In particular, researchers have found that the persistent use of menthol cigarettes by youth, even as the use of cigarettes has declined, has likely been perpetuated by the sale and marketing of menthol cigarettes.<sup>87</sup>
- Menthol products are not only marketed to young people, but as the U.S. Surgeon General found in 2014, the use of menthol cigarettes "greatly expanded in the 1950s when aggressive marketing to African Americans began."<sup>88</sup>
  - The tobacco industry advertised menthol through "Black-owned publications and jazz concerts through civil rights groups, to massive billboards throughout the Black community."<sup>89,90</sup>
  - In addition, the tobacco industry has targeted African American communities through advertising campaigns that use urban culture, targeted direct-mail promotions, and hiphop bar nights with samples of specialty menthol cigarettes.<sup>91,92</sup>
- The tobacco industry has also used youth-appealing flavors in non-cigarette products.
  - For example, the Surgeon General also found: "Much of the growing popularity of small cigars and smokeless tobacco is among younger adult consumers (aged <30 years) and appears to be linked to the marketing of flavored tobacco products that, like cigarettes, might be expected to be attractive to youth."<sup>93</sup>
  - The Surgeon General further noted that some youth who use cigars may not consider these products to be cigars, and that some flavored cigar brands, "such as Dutch Masters, White Owl, and Phillies, are particularly known for their use as blunts" (hollowed-out cigars filled with marijuana). This practice suggests that the popularity of such flavored cigar brands may be associated with marijuana use.<sup>94</sup>
  - Also, a major conclusion of the 2016 Surgeon General's report found, "E-cigarettes are marketed by promoting flavors and using a wide variety of media channels and approaches that have been used in the past for marketing conventional tobacco products to youth and young adults."<sup>95</sup>
  - The report notes that these activities include extensive marketing on the Internet and advertising in mainstream media, including popular magazines, retailer point-of-sale ads, and through direct mail, direct email, and social media.<sup>96</sup>
- Furthermore, the industry has repackaged certain flavored tobacco products and avoided the federal statute prohibiting the sale of flavored cigarettes.<sup>97</sup> Specifically, the tobacco industry has sold "little cigars" that are comparable to cigarettes with regard to shape, size, filters, and packaging, and the industry has promoted these little cigars as a lower-cost alternative to cigarettes.<sup>98,99</sup>
  - The Surgeon General noted, after the prohibition on flavored cigarettes, "some products subsequently became flavored cigars. For example, Djarum clove cigarettes re-emerged in the market as clove flavored cigars, and Sweet Dreams flavored cigarettes re-emerged as Sweet Dreams flavored cigars."<sup>100,101</sup>
  - In addition, these nearly identical products are also sold without meeting the minimum pack size requirement for cigarettes (20 cigarettes) or the paying the level of excise taxes imposed on cigarettes.<sup>102</sup> For example, "little cigars" are commonly sold as a single stick for about \$1.00—adding additional appeal for youth and young adults that are experimenting with tobacco.<sup>103</sup>
  - Furthermore, marketing strategies and design characteristics have made it more difficult to differentiate between cigarettes and little cigars.<sup>104</sup>

## What Communities Have Done to Address Flavored Tobacco Products

- As noted above, federal law prohibits cigarettes from containing characterizing flavors other than tobacco or menthol.<sup>105,106</sup>
  - However, non-cigarette tobacco products, such as cigars, smokeless tobacco products, hookah, and e-cigarettes remain available in a variety of fruit, candy, and other kidfriendly flavors.<sup>107,108</sup>
  - Research indicates that the federal prohibition on flavored cigarettes reduced youth use, but the impact of this policy likely was diminished due to the continued availability of menthol cigarettes and other flavored tobacco products.<sup>109</sup>
  - Recent research similarly suggests that federal policies targeting some, but not all, flavored e-cigarettes may be insufficient to address youth use of e-cigarettes.<sup>110</sup>
- To address the public health problems posed by flavored tobacco products, several states and hundreds of communities have restricted the sale of flavored tobacco products.
  - The first restrictions were passed in New York City and Providence, Rhode Island, in 2009 and 2012, respectively; however, these restrictions did not apply to all product or flavors.<sup>111</sup>
  - When adopted, New York City's law applied to all flavored products except e-cigarettes and menthol cigarettes;<sup>112,113</sup> however, New York City's law has since been amended to prohibit the sale of flavored e-cigarettes.<sup>114</sup>
  - Providence's law applies to all flavored products, except menthol cigarettes.<sup>115</sup>
  - Both of these laws were challenged, and two different federal courts found that the Family Smoking Prevention and Tobacco Control Act does not limit communities' authority to prohibit the sale of flavored tobacco products.<sup>116,117,118</sup>
- As of December 21, 2020, at least 300 local communities in the U.S. currently prohibit the sale of flavored tobacco products, at least 110 of which prohibit the sale of menthol cigarettes in addition to other flavored products.<sup>119</sup>
- In 2019, Massachusetts became the first state to restrict the sale of all flavored tobacco products, including e-cigarettes and menthol cigarettes.<sup>120</sup>
  - In 2020, New Jersey, New York, and Rhode Island passed laws prohibiting the sale of flavored e-cigarettes.<sup>121</sup>
  - Also in 2020, California became the second state to prohibit the sale of flavored ecigarettes and menthol cigarettes.<sup>122</sup>
- Early evaluation studies of the local policies have shown that flavored product sales restrictions reduce the availability of flavored tobacco products,<sup>123,124</sup> and may reduce youth access to and use of tobacco products.<sup>125,126</sup> For example, an evaluation of the New York City ordinance found that sales of flavored tobacco products decreased after implementation.<sup>127</sup>
- Research has also found that laws that do not include menthol cigarettes, or that do not apply to all tobacco retailers, may reinforce health disparities.<sup>128,129,130,131,132,133</sup>
- While longer-term evaluation data on the impact of these laws are underway in the United States, the FDA Tobacco Products Scientific Advisory Committee and other researchers who have studied the impact of removing menthol cigarettes from the marketplace have concluded that there is presently sufficient evidence to justify removal of menthol cigarettes from the marketplace, and that such an action would result in a substantial public health benefit.<sup>134,135</sup>
- Evidence also exists from other countries to support the public health benefits of removing menthol cigarettes from the marketplace. For example, studies from Canada have shown substantial increases in the number of people who tried to quit smoking following removal of

menthol cigarettes from the market in 2017, and that daily menthol smokers may be particularly successful in staying tobacco-free.<sup>136,137</sup>

#### **Conclusion**

- Federal law prohibits cigarettes from containing characterizing flavors other than tobacco or menthol.
- However, non-cigarette tobacco products, such as cigars, smokeless tobacco products, hookah, and e-cigarettes remain available in a variety of fruit, candy, and other youth-appealing flavors.
- Flavored tobacco products mask the harshness of tobacco and are particularly appealing to youth.
- The tobacco industry actively promotes flavored tobacco products, and the evidence shows that flavored tobacco products, including menthol cigarettes increase the risk of youth initiation, hinder cessation, and contribute to health disparities.
- The public health community should consider the evidence on flavored tobacco products to inform public health policy, planning, and practice.
  - To address the public health problems posed by flavored tobacco products, several states and hundreds of communities have restricted the sale of flavored tobacco products.
  - Federal courts have found that federal law does not limit the authority of these jurisdictions to prohibit the sale of tobacco products in accordance with the Family Smoking Prevention and Tobacco Control Act.

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