



# RISKS OF BETEL QUID & TOBACCO USE



Betel quid, a combination of areca nut, betel leaf, slaked lime, and often tobacco, is the fourth most commonly consumed psychoactive substance worldwide after alcohol, nicotine, and caffeine.<sup>1</sup>

The use of betel quid alone has several health risks, including oral cancer; however, when this product is combined with tobacco, the user's risk of premature illness and death is significantly increased.<sup>2</sup> This fact sheet describes the history and prevalence of betel quid, public health concerns related to its use, and a few policy considerations and recommendations for addressing this problem in the U.S.<sup>3</sup>





Karen woman smoking a pipe.

## Overview of Betel Quid

Betel quid is believed to be consumed by 10 to 20 percent of the world's population, or approximately 600 million people.<sup>4</sup> Also known as gutka, ghutka, or gutkha when chewed with tobacco,<sup>5</sup> the product is used in a variety of forms throughout the Indian subcontinent (e.g., Bangladesh, India, Pakistan), as well as Asia and the Pacific region (e.g., Cambodia, China, Indonesia, Malaysia, Philippines, Taiwan, Thailand, and Myanmar (Burma)).<sup>6</sup> It enjoys high social acceptance in many societies, is popular among both men and women, and is common among migrant populations in Australia, Europe, South Africa and eastern Africa, and North America.<sup>7</sup>

Betel nuts are fruit of the tropical areca palm (*Areca catechu*), which is indigenous to Asia, the South Pacific, and parts of east Africa, but can also be grown in warm semi-tropical locales such as Florida and California. The powdered or granulated nut is typically consumed with slaked lime (calcium oxide and calcium hydroxide) and wrapped in the betel leaf with other ingredients, such as condiments, sweetening agents (such as coconut or dried dates), spices (such as fennel seed, cardamom, saffron, anise seeds, turmeric, mustard or clove), and tobacco. The tobacco used can be sun dried, fermented, boiled with molasses, perfumed or in a concentrated extract.<sup>8</sup> The constituent essences used in preparing betel quid include mint, rose petals, and (interestingly) menthol.<sup>9</sup> Preferred betel quid ingredients differ by region, country, and ethnicity.<sup>10</sup> In fact, in India alone, one study in the 1960s found 38 different combinations of areca nut and tobacco used.<sup>11</sup> In recent decades, studies have shown that at least 50 percent of betel quid chewers use some form of tobacco, with the key ingredient always areca nut.<sup>12</sup>

To use betel quid, a person tucks a pinch of the mixture (the “quid”) between the cheek and gum, where it remains for an extended time, sometimes overnight. As with many types of smokeless tobacco, such as chew (or dip) tobacco, the user sucks and chews the product and spits out the excess saliva produced. Some addicted users simply swallow the saliva.

After chewing betel quid, the user’s lips, mouth, and teeth are typically stained red and the product causes profuse red saliva as well, which looks startlingly similar to blood.<sup>13</sup> The flood of saliva produced by betel quid results in copious red stains on sidewalks, sides of buildings, hallways, garbage pails, and other areas where betel quid users live and work.

Betel quid is immensely popular across Asia and the Pacific (and among immigrant communities worldwide) for several reasons. Some chew areca nut for its psycho stimulating effects and other purported benefits, such as a sense of relaxation, enhanced alertness and ability to concentrate, improved digestion, and sense of euphoria.<sup>14</sup> Different ethnic groups believe that betel quid chewing is a “miracle cure” for diseases able to relieve pain, reduce fever, strengthen teeth, and prevent indigestion, with added aphrodisiac properties.<sup>15</sup> In some parts of South-east Asia and India, chewing betel quid has religious connotations.<sup>16</sup> Across all socioeconomic strata of Indian society, betel quid is believed to be a harmless “mouth freshener.”<sup>17</sup> Moreover, some populations consider the distinctive red stains on teeth culturally fashionable and a sign of beauty.<sup>18</sup> As discussed later, understanding the cultural beliefs behind the use of betel quid is essential in providing culturally appropriate and effective public health interventions.

## Health Issues

Over the years, the International Agency for Research on Cancer (IARC), a World Health Organization sponsored group, has convened periodic work groups to review research on betel quid and areca nuts, and has repeatedly found sufficient evidence that the habit of chewing betel quid causes cancer in humans.<sup>19</sup> As a result, the IARC and World Health Organization have classified “betel quid without added tobacco,” “betel quid with added tobacco,” and areca nut as all “carcinogenic to humans.”<sup>20</sup>

Regular chewers of betel leaf and areca nut have a greatly increased risk of developing a range of serious diseases, including oral and esophageal cancer.<sup>21</sup> In India, for example, approximately 30 percent of oral cancers are attributed to the use of smokeless tobacco and areca nut, and an additional 50 percent of oral cancers to the combined use of tobacco/areca nut, and smoking.<sup>22</sup>

According to the National Institutes of Health’s Medline Plus, long-term chewing of areca nut alone has been linked to oral submucosal fibrosis, which is a precancerous lesion that stiffens the soft pink tissue that lines the inside of the mouth and can eventually result in the loss



of jaw movement — an incurable condition.<sup>23</sup> Other health effects of areca nut use include pre-cancerous oral lesions and squamous cell carcinoma, with a higher risk of cancers of the lip, mouth, tongue, pharynx, liver, esophagus, stomach, prostate, cervix, and lung.<sup>24</sup> Use of areca nut can affect blood sugar levels, which in turn can increase the risk of developing type 2 diabetes; the acute effects of betel chewing include asthma exacerbation, hypertension, tachycardia, and chronic kidney disease.<sup>25</sup> Areca nut chewing has also been associated with increased risk of cardiovascular disease<sup>26</sup> and adverse reproductive health outcomes, such as the increased risk of having a low birth-weight infant.<sup>27</sup>

If these risks were not enough, prolonged chewing of betel quid can have harmful effects on dental hard tissues, which include teeth, their supporting periodontium, and the temporomandibular joint (TMJ), as well as dental soft tissues, which make up the mucosa that lines the oral cavity.<sup>28</sup> As a result, habitual betel quid use can cause excessive tooth abrasion and fractured teeth, permanently red or black stained teeth, periodontal disease (including gum irritation and tooth decay), and, as mentioned above, a host of pre-cancerous oral lesions.<sup>29</sup> Unsurprisingly, when betel quid is used with tobacco, either chewed or smoked, health risks are only compounded.

Finally, prolonged use of betel nuts can be addictive. Recent research has found that the nut's active ingredient, arecoline, acts on the same receptor proteins in the brain as nicotine.<sup>30</sup> As with nicotine cessation, withdrawal symptoms include mood swings, anxiety, irritability, reduced concentration, sleep disturbance and craving.<sup>31</sup>

## Betel Quid Use in Migrant Communities

With an increase in the immigration of South Asians, the practice of chewing areca nut and betel quid is rising in many South Asian immigrant communities in the U.S. and elsewhere.<sup>32</sup> In the United Kingdom, for instance, South Asian immigrants are considered at high risk for oral cancer, largely because of their betel quid chewing. The major U.K. migrant groups using betel quid come from Bangladesh, India, Pakistan, and Sri Lanka.<sup>33</sup> As just one example, studies have shown that over 80 percent of male and female adults of Bangladeshi descent in London use betel quid regularly, with tobacco often but not always added.<sup>34</sup> Interestingly, expatriate South Asians in the West tend to be more aware of the risks of smoking than of the risks or signs of oral cancer due to betel quid use.<sup>35</sup>

A 2006 pilot study in New York City, which has been a magnet for immigrants from India and Bangladesh for years, highlighted the ease with which gutka and paan (variants of betel quid) could be purchased in South Asian neighborhoods (approximately two sachets or foil packets for \$1 and one "paan" for \$1).<sup>36</sup> The study identified the need to adopt community-specific



cancer research and interventions in the U.S., even down to the level of sub-groups within the immigrant South Asian community, and concluded that researchers should attempt to partner with the immigrant community “to conduct epidemiological, anthropological and migration studies on paan and gutka [i.e., betel quid] use in the U.S.”<sup>37</sup>

No better example could be found of a U.S. immigrant community where betel quid is predominantly used and where such health partnerships could be of benefit than the Karen population in Minnesota. Awareness of the customs and beliefs surrounding this community’s use of betel quid can give public health experts and policymakers much-needed insight into the best methods to address this harmful practice.

## Betel Use in Minnesota's Karen Community

**Karen Population.** The Karen (Ka-REN) are an ethnic group from the mountainous regions of Myanmar (Burma) and Thailand, where they are the second largest ethnic group in each country.<sup>38</sup> Long persecuted by the Burmese government, many Karen have lived for years in refugee camps in Thailand before resettling in the U.S. Although the Southeast Asian country of Burma was renamed Myanmar after the 1989 civil war, many English-speaking countries, as well as the Karen people, still refer to it as Burma.<sup>39</sup> Nevertheless, strong rifts exist between ethnic groups in Burma and the Karen do not identify as Burmese, but as Karen.<sup>40</sup>

Approximately 12,000 Karen live in Minnesota, along with roughly 500 refugees from other ethnic groups in Burma.<sup>41</sup> St. Paul currently has the largest Karen population in the U.S.<sup>42</sup> Other Minnesota communities with fast-growing Karen populations include Albert Lee, Austin, Faribault, Willmar, and Worthington.<sup>43</sup> Significant Karen populations can also be found in Arizona, California, Georgia, Indiana, Michigan, New York, South Carolina, and Texas.<sup>44</sup>

## Karen Practices and Beliefs about Betel Quid

**Imbedded Cultural Custom.** The use of Betel quid is an ancient custom in Burma with deep social acceptance. Many Karen adults have chewed betel quid for most of their lives and believe the practice is far healthier than smoking.<sup>45</sup> Even religious and community leaders who are aware of its negative health effects tend to chew betel quid.<sup>46</sup>

Many Karen use betel quid as a means of socializing, similar to the way in which some people smoke cigarettes or use waterpipe tobacco. People frequently have get-togethers where they share betel quid and visit. As an indication of its casual commonplace use, Karen often serve betel quid as an after-dinner treat.

**Relationship with Tobacco.** In addition to the reasons for use described earlier, the Karen often claim they chew betel quid to reduce stress, much as tobacco users claim they use tobacco. A significantly high number of Karen smokers in the Minnesota community also chew betel quid, and many of these dual users believe that betel quid, when used with tobacco, helps them reduce their smoking or even quit smoking altogether.<sup>47</sup> The idea is that by using a pinch of tobacco in the quid, they may not feel as great an urge to smoke. Unfortunately, the anticipated benefit is lost when they end up chewing more quid with tobacco to compensate.<sup>48</sup>

Moreover, many myths and misperceptions about the health risks of tobacco exist within the Karen community. According to informal surveys among Minnesota Karen residents, Karen farmers in Burma often smoke as a way to repel insects in the field and ostensibly stave off

infectious diseases.<sup>49</sup> Once they immigrate to the U.S., these adults continue to view tobacco benignly, even though second-generation Karen may be more aware of the risks of smoking. Karen elders often dismiss the notion that betel quid can be as harmful as smoking, responding that they never hear about people who chew betel quid going to the hospital, but they do hear about people going to the hospital because of smoking.<sup>50</sup> Another challenge is that, given its deep-rooted social acceptability, many Karen do not consider betel quid a tobacco product, even when it contains tobacco.<sup>51</sup>

**Early Initiation & Youth Access.** Many Karen families live together, often in multi-unit housing, with several generations clustering in one apartment. As a result, children and youth are exposed to the use of betel quid by adults, and typically have ready access to the areca nuts, if not actual betel quid.<sup>52</sup> Because most adults consider the areca nuts harmless, they often allow children to chew them. When children are older, they graduate to betel quid. Because habitual areca nut chewing is addictive, the practice continues until youth are using betel quid, first without tobacco and often later with tobacco. Those who use betel quid with tobacco find it hard to return to betel quid without tobacco, claiming that the quid has lost its flavor. In the words of one chewer: “Using betel quid without tobacco is like cooking without salt.”<sup>53</sup>

**Commercial Availability.** Areca nuts are not a controlled or specially taxed substance in the U.S. and can be found in specialty Asian food stores, including small Karen grocery stores in metro areas, along with other ingredients for betel quid, such as lime paste. Often the areca nut product is sold in tin foil packets for a few dollars each.<sup>54</sup> A heavy betel quid chewer typically consumes 8 to 12 quids a day. Given the frequency with which betel quid is shared with others, a habitual chewer could easily spend \$100 to \$120 a month on betel quid products.<sup>55</sup> Anecdotal evidence exists that some Karen purchase areca nuts in local groceries with SNAP benefits.<sup>56</sup> The products for betel quid can also be readily purchased on the Internet, although the importation of large quantities of dried, ground betel nut may be stopped at the discretion of U.S. Customs agents.<sup>57</sup> Regardless, these products continue to be available in specialty stores in major cities throughout the U.S., with no apparent age restrictions.<sup>58</sup>

## Policy Challenges & Considerations

A deeper understanding of the cultural norms, practices, beliefs, and the complex social history behind the use of betel quid would enable states to provide culturally appropriate training regarding the health risks of betel quid, with and without tobacco, to specific communities. In addition, more research is needed on the extent of betel quid (and areca nut) use in states, both by adults and by minors; the type of betel quid use (with and without tobacco), as well as

dual use (i.e., betel quid and smoking); the means of procurement; and related data. The following comments focus on the Karen community because of the high prevalence of betel quid use there; however, these challenges and considerations could easily apply to other groups where betel quid use is a problem.

**Addressing Betel Quid in the Karen Community.** Based on usage research and with the collaboration of Karen religious and public service leaders, public health professionals will have the tools and ideally the buy-in from the local community that they need to develop the most effective measures to prevent youth access to this product and to begin to reduce usage throughout the entire population. A proposed end goal would be to provide the Karen community with the culturally responsive treatment and cessation services, counselors, and clinical staff they need to help the Karen address this problem on their own.

Changing social and cultural norms can be extremely challenging, particularly when a custom, like betel quid, is so strongly identified as part of a particular culture, as it is in the Karen population. In addition, other challenges exist:

**Overcoming Language Barriers.** Engaging the Karen community in educational outreach can be difficult because of language issues. Although young and second-generation Karen immigrants may speak English, language can still pose a significant barrier for many first-generation immigrants – the majority of whom use betel quid. Hundreds of different ethnic groups reside in Burma, and even among the Karen population different dialects are spoken, so it can be challenging to create oral health education materials in a language most Karen immigrants understand. (Because of the cultural divide between Karen and ethnic Burmese, some Karen would prefer to be without an interpreter than use a Burmese interpreter.<sup>59</sup>)

If the language barrier results in poor or improper interpretation, Karen individuals can face problems. Obstacles can arise in understanding even simple health care tasks or warnings given by doctors, dentists, or public health professionals.<sup>60</sup> In addition, those with language barriers may struggle to understand written information, schedule appointments, grasp the risks and benefits of procedures, and follow up on treatment plans.<sup>61</sup> To communicate clearly with non-English speaking Karen patients about the health risks of betel quid, public health professionals and clinicians might want to use pictures, drawings, and plain language, limit the amount of information provided at one time, and repeat instructions, ideally to a medical interpreter who speaks the main Karen dialect of Sgaw Karen.

Culturally appropriate resources on the health risks of betel quid (and tobacco), written in Sgaw Karen, could be invaluable. For instance, public health professionals at the Rochester General Health System in Rochester, New York, have created a brochure in Sgaw Karen that

provides basic oral health information.<sup>62</sup> (Betel quid use is a particular concern of dental professionals that serve Karen patients.)<sup>63</sup>

**Limiting Youth Access.** Unlike conventional smokeless tobacco products, such as chewing tobacco and snuff (or snus), betel (areca) nuts are available for sale to minors in the U.S. Until very recently, no age restrictions applied to the sale of these products in any jurisdiction in the U.S. As mentioned earlier, many Karen children are predisposed to chew these nuts (or, at the very least, to try them), since they are readily available in households where adults chew betel quid. Because areca nuts are addictive (like nicotine) and carcinogenic (like tobacco), it would seem a public health priority to adopt policy measures to protect minors from this product.

And recently one government in the U.S. did just that. On September 23, 2016, the Commonwealth of the Northern Mariana Islands, recognizing the “significant health problem” caused by local betel nut chewing, passed what it called the Betel Nut Control Act “to protect our youth from the danger of developing oral cancer.”<sup>64</sup> The Northern Mariana Islands is a commonwealth of the U.S. consisting of fifteen islands in the northwestern Pacific Islands, where the chewing of areca nut, betel leaf, and lime is a thousand-year-old tradition.

Under the new law, retailers are required to obtain licenses to import or to sell betel nuts in their establishments. The law imposes fines and penalties on any person or business entity that sells, offers, gives, or permits to be given or sold any betel nut to an individual under the age of 18, and reserves the power to suspend or revoke retailer licenses as well. The law also requires retailers to post conspicuous signs in their establishments warning that “Betel Nut Sale is Prohibited to Persons Under the Age of 18”; and it prohibits betel nuts in their stores from being displayed openly to the public.<sup>65</sup> As an indication of the seriousness with which the Commonwealth views the problem, the law also goes beyond sales restrictions, retailer warnings, and license requirements, with a provision on use: “No person, parent or legal guardian, shall permit or allow any minor under the age of 18 years, having lawful custody, permanent or temporary, to possess or consume any Areca Nut (Betel Nut) at any given time.”<sup>66</sup>

In passing this law, the Commonwealth of the Northern Marian Islands took a series of measures to address what it saw as an emerging public health crisis of betel nut use. Similar sales and retailer restrictions could also be considered to address the prevalence of betel nut use among the growing U.S. Karen population and, at the very least, to prevent youth access.

**Prohibiting the Public Spitting of Betel Quid.** In a 2015 article entitled “Betel Quid: Southeast Asia’s Dreadful Addiction,” a Pakistani reporter describes the sidewalks of Chicago, as well as the cobbled streets of Europe and the souks of the Middle East as all “splattered by paan and gutka spittle” (betel nut saliva).<sup>67</sup> He writes that in England, several local councils launched



education campaigns on the risks of using these products, and imposed fines on anyone caught spitting betel nut spittle in a public space.<sup>68</sup> Evidently, a local authority disclosed that “even special teams equipped with high powered water jets [were] unable to remove the stains from the pavements” and that it cost over 20,000 pounds a year to clean the mess.<sup>69</sup>

Many legal sanctions against spitting, found in state and local littering and nuisance laws, appear to cover the spitting of betel quid. St. Paul’s City Ordinance, Sec. 207.0, for example, expressly catalogs all manner of saliva. “No person shall spit, or expectorate, or deposit, or place any sputum, spittle, saliva, phlegm, mucus, or tobacco juice upon any part of any sidewalk; nor upon any part of the floors of theatres, churches, concert halls, or other public places; nor upon the floor, steps, gates, or seats of any bus or other public conveyance.”<sup>70</sup>

Landlords and public housing authorities, concerned about tenants whose betel quid use results in noticeable red stains and odors on the premises, could develop housing policies prohibiting betel quid spitting to ensure their property's "warranty of habitability."<sup>71</sup> Such policies would have to be crafted carefully, since betel quid (like smokeless tobacco) is a legal product, and unlike combustible tobacco products, its use does not expose others to the type of health risk caused by secondhand smoke.

**Engaging Community Support.** The Karen community tends to be close-knit and a majority of the Karen in the U.S. are Christian. Outreach to this population about betel quid use could include Karen pastors and other religious and community leaders, as well as public health professionals, clinicians, dentists, and teachers. In addition, several local organizations provide support to Minnesota Karen immigrants, and could offer invaluable assistance in providing culturally appropriate training and educational resources:

- WellShare International, which offers a Karen Tobacco-Free Program, adult classes (in community facilities); and after-school programs for youth, in addition to outreach programs
- Karen Community of Minnesota
- Minnesota American Karen Society
- Karen Culture Organization

Other organizations that provide more general support and social services to immigrants and refugees could also be of assistance in outreach efforts and in tailoring resources or events for members of the Karen population. These organizations include Catholic Charities, International Institute of Minnesota, Lutheran Social Services, Minnesota Council of Churches, and the Council on Asian-Pacific Minnesotans.

## Conclusion

Given that a preponderance of scientific evidence has found that the areca nut, and the practice of betel quid chewing (with or without tobacco), is a dangerous addictive practice that leads to an increased risk of developing a range of serious diseases, including oral cancer; that a disproportionate number of members of the Karen and other Southeast Asian communities chew betel quid; and that youth in the Karen population in particular are typically exposed to, and often use, areca nuts at an early age, stricter regulation of this areca nut product would seem to merit the attention of the public health community. Public health programs on the harmful effects of areca nut use, as well as coordination with medical, dental, social service, educational, and faith com-

munities, and policymakers, can help increase awareness of the risks of this practice.<sup>72</sup> Above all, collaboration with immigrant communities, such as the Karen population, and a willingness to address the issue from within, will be key to reducing the health disparities caused by the use of betel quid and protecting future generations from the harm caused by this century-old practice.

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## Endnotes

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- 47 *Id.*; see also Tha Dah Loo Interview, *supra* note 39.
- 48 *Id.*; see also Tha Dah Loo Interview, *supra* note 39.
- 49 See Tha Dah Loo Interview, *supra* note 39.
- 50 See Tha Dah Loo Interview, *supra* note 39; see also Susan Furber et al., *A Qualitative Study on Tobacco Smoking and Betel Quid Use Among Burmese Refugees in Australia*, 15 J. OF IMMIGRANT AND MINORITY HEALTH 1133-36 (2013), <http://ro.uow.edu.au/cgi/viewcontent.cgi?article=2206&context=smhpapers>.
- 51 *Id.*; see also Tha Dah Loo Interview, *supra* note 39.
- 52 See Tha Dah Loo Interview, *supra* note 39.
- 53 *Id.*
- 54 See, e.g., Malcolm T Nicholson, *Searching for the "Grey Market" Foods of New York City*, HOPES & FEARS (last accessed June 23, 2017) (where for six dollars a reporter bought three packages of "paan" (betel nut) at "an unassuming bodega in Kips Bay, New York City"), <http://www.hopesandfears.com/hopes/city/food/216541-searching-for-the-grey-market-foods-of-nyc>.
- 55 See *Betel Quid Use in the Karen Community of Minnesota*, *supra* note 45.
- 56 See Tha Dah Loo Interview, *supra* note 39; see also Cameron Miculka, *Woman Ordered to Repay \$400K for Food-stamp Fraud*, USA Today Network, Oct. 5, 2015 (describing a fraud where, according to court documents, stores reportedly allowed federal benefits recipients to purchase ineligible items with their electronic benefit transfer cards, such as diapers, cigarettes and *betel nuts*), <https://www.usatoday.com/story/news/nation-now/2015/10/05/food-stamp-fraud-sentencing-guam/73402454>.



57 See, e.g., S. Van McCrary, *The Betel Nut: An Emerging Public Health Threat?* HEALTH LAW & POLICY INSTITUTE (last accessed June 23, 2017), <https://www.law.uh.edu/healthlaw/perspectives/HealthPolicy/980908Betel.html>. Also, a Google search of “betel nut,” “areca nut,” “paan,” “gutka,” etc. will bring up many sites where betel quid ingredients can be purchased. For example, betel nut can be purchased from Micronesia on Ebay and Amazon and shipped to a U.S. address.

58 *Id.*

59 See Karen in Minnesota, *supra* note 40.

60 David Power & Rebekah Pratt, *Karen Refugees from Burma: Focus Group Analysis*, 8 INT’L J. OF MIGRATION, HEALTH AND SOCIAL CARE 156-66 (2012).

61 See Nancy Mann, *supra* note 39.

62 *Id.*

63 According to Loo, many Karen elders resist going to the dentist because their teeth so often need deep cleaning and other uncomfortable procedures, and the dentists invariably advise them not to chew betel quid.

64 Commonwealth of Northern Mariana Islands, P.L. No. 19-66 (2016) (“To Prohibit the Sale, Offer, or Giving of Areca Nut (Betel Nut) to any Person who is Under the Age of 18 (Minors); and for Other Purposes”), [http://www.cnmilaw.org/pdf/public\\_laws/19/pl19-66.pdf](http://www.cnmilaw.org/pdf/public_laws/19/pl19-66.pdf).

65 *Id.*

66 *Id.* at Sec. 2. §103 (d).

67 Rabia Ahmed, *Betel Quid: Southeast Asia’s Dreadful Addiction*, PIQUE (PAKISTAN), June 30, 2015.

68 *Id.*

69 *Id.*

70 Minneapolis’s general spitting law, which was similar to St. Paul’s, was repealed in 2015. *But see* Mpls., Minn. Code of Ordinances Sec. PB2-14: “No persons shall spit upon the floor or furnishings of any boat, canoe, building, or walk in any park or parkway.” See also MINN. STAT. 561.01. “Anything which is ... indecent or offensive to the senses so as to interfere with the comfortable enjoyment of life or property, is a nuisance.” and MINN. STAT. 169.42, subd. 1. “No person shall throw, deposit, place, or dump ... upon any street or highway or upon any public or privately owned land adjacent thereto ... any ... trash or rubbish or any other form of offensive matter.”

71 See Smoke-free Housing resources on the Public Health Law Center website, <http://www.publichealthlawcenter.org/topics/tobacco-control/smoke-free-tobacco-free-places/housing>, which describe legal responsibilities of landlords and tenants in the context of secondhand smoke. Likewise, the presence of unsanitary betel quid saliva and its distinctive odors on property premises would likely be considered offensive and a public nuisance.

72 See, e.g., Samantha Aritga et al., *Health Coverage and Care for Immigrants*, Kaiser Family Foundation (2016), <http://kff.org/report-section/health-coverage-and-care-for-immigrants-issue-brief>.