

Health Concerns Related to Onsite Marijuana Consumption

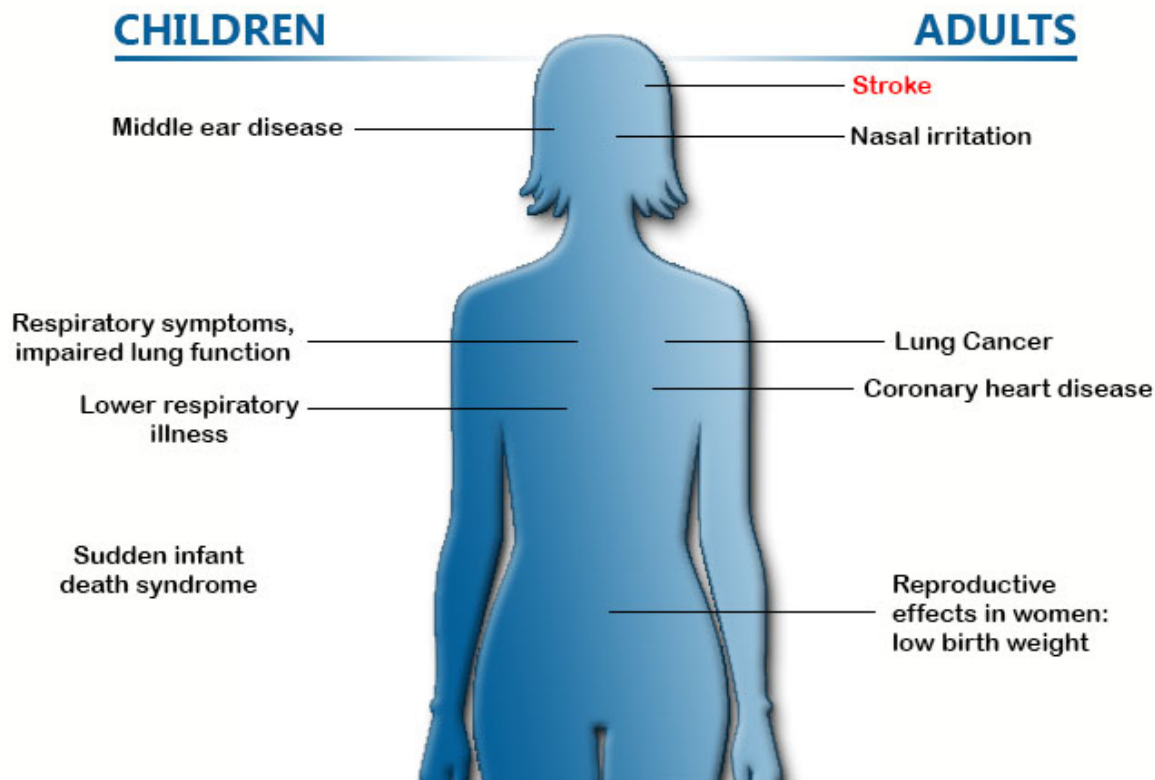
State of Alaska Department of Health & Social Services
Division of Public Health

Marijuana Control Board Meeting
May 15, 2017

Introductions

- Joe McLaughlin, MD, MPH
State Epidemiologist and Section Chief,
State of Alaska Section of Epidemiology
- Eliza Muse, MSc Health Care Policy & Management
Deputy Program Manager
State of Alaska Tobacco Prevention & Control Program
- Katie Reilly, MPH
Injury Prevention Program Manager
State of Alaska Injury Prevention Program

Health Effects of Secondhand Exposure to Tobacco Smoke



Source: U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

Secondhand Marijuana Smoke

- Secondhand MJ smoke contains many of the same cancer-causing toxic chemicals as secondhand tobacco smoke
 - E.g., acetaldehyde, ammonia, aromatic amines, arsenic, benzene, cadmium, chromium, formaldehyde, hydrogen cyanide, isoprene, lead mercury, nickel, N-heterocycles, PAHs
- In 2009, the CA OEH Hazard Assessment added MJ smoke to its Proposition 65 list of carcinogens and reproductive toxins
 - It reported that at least 33 individual constituents present in both marijuana smoke and tobacco smoke are carcinogens

Sources:

Moir D, Rickert WS, Levasseur G, et al. A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. Chem Res Toxicol. 2008; 21(2):494-502

“Evidence on the Carcinogenicity of Marijuana Smoke.” Reproductive and Cancer Hazard Assessment Branch, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. August 2009.

Cardiovascular Disease and Lung Irritation

- Secondhand MJ exposure impairs blood vessel function
 - Even brief exposure to secondhand MJ smoke has been shown to have immediate, adverse effects on the heart
 - Secondhand MJ smoke exposure had a greater and longer-lasting effect on blood vessel function than exposure to secondhand tobacco smoke
 - Secondhand MJ and tobacco smoke are likely to have similar harmful health effects, including atherosclerosis, heart attack, and stroke
- Fine particulates in MJ smoke → lung irritation and increased risk for asthma attacks, respiratory infections, bronchitis, and COPD exacerbations

Sources:

Wang X, et al. One Minute of Marijuana Secondhand Smoke Exposure Substantially Impairs Vascular Endothelial Function. J Am Heart Assoc. 2016;5:e003858

Wang X., et al. Brief Exposure to Marijuana Secondhand Smoke Impairs Vascular Endothelial Function. Circulation. 2014;130:A19538

Ventilation and Air Filtration Insufficient

- “No other engineering approaches, including current and advanced dilution ventilation, ‘air curtains’ or air cleaning technologies, have been demonstrated or should be relied upon to control health risks from ETS exposure in spaces where smoking occurs”
- “The only means of eliminating health risks associated with indoor exposure is to ban all smoking activity”
- In 2006, the US Surgeon General concluded that there is no risk-free level of exposure to secondhand smoke

Sources:

1. American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc ([ASHRAE](http://www.ashrae.org)). Position paper: environmental tobacco smoke. Atlanta, GA: ASHRA; 2005, reaffirmed in 2016. Available at: http://www.ashrae.org/doclib/20058211239_347.pdf)
2. U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.

Precautionary Principle

- Given
 - Well-established causal relationship between secondhand tobacco smoke exposure and serious adverse health outcomes
 - Similarities in MJ and tobacco secondhand smoke composition
 - Ventilation/air filtration do not prevent exposure
- The burden of proof and responsibility
 - Should not be placed on public health to establish a causal link between secondhand MJ smoke and serious adverse health consequences before laws are enacted to prevent occupational exposure
 - Should be placed on anyone in favor of onsite public consumption to prove that secondhand MJ smoke is safe to their employees (and customers) before laws are enacted to allow secondhand MJ smoke exposure in the workplace

Note: Under the Occupational Safety and Health Administration Act, employers have a general duty to provide a safe workplace free of recognized hazards.

Lessons from Tobacco Control

- Smokefree policies have been proven to reduce prevalence and exposure to secondhand smoke
- Marijuana regulations related to smoking should be modeled on tobacco control which has successfully worked to protect workers from harmful exposure to secondhand smoke

Smokefree Policies in AK

- Many local communities have strong local laws protecting Alaskans from exposure to SHS
- These local laws also help people quit tobacco by making it more difficult to use these products
- Therefore, these laws are changing social norms and acceptability of smoking in public

Tobacco Smokefree Policies

Currently the vast majority of Alaskans, including those who smoke, agree with the following:

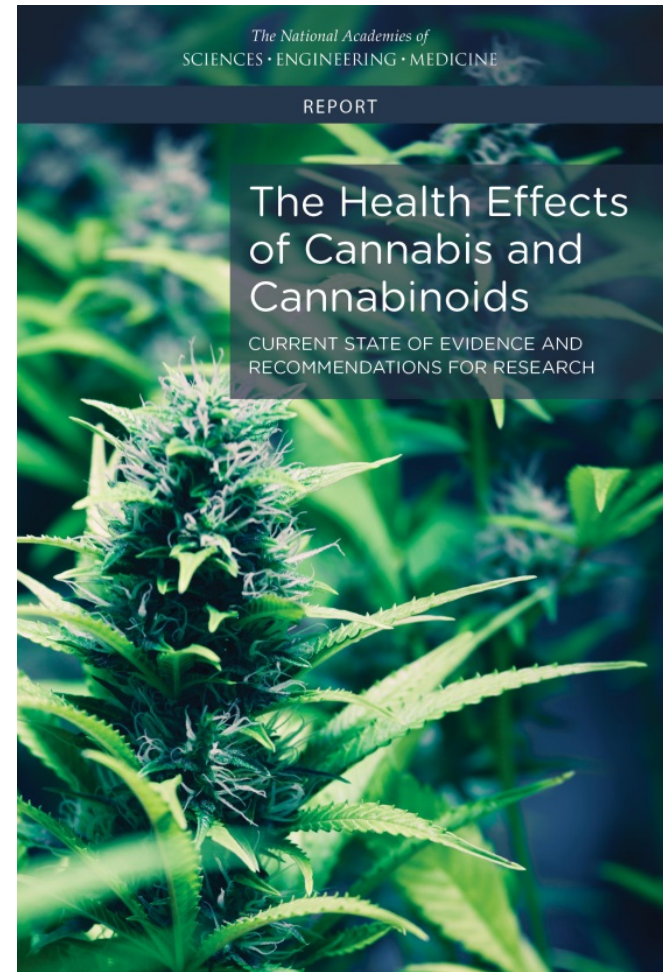
- Secondhand smoke is harmful (93% all adults and 85% smokers)
- ALL indoor work areas should be smokefree (88% and 76%)
- People should be protected from secondhand smoke (90% and 84%)
- Smoking is not allowed anywhere inside the home (91% and 75%)
- Enforcement challenges

How does marijuana affect driving?

- Slows reaction time and decision-making abilities
- Impairs coordination, distorts perception, memory loss, and problem solving difficulty
- Greater risk if MJ and alcohol combined

Source: CDC, What You Need to Know About Marijuana Use and Driving Fact Sheet, 2017
<https://www.cdc.gov/marijuana/pdf/marijuana-driving-508.pdf>

“Substantial evidence of the statistical association between cannabis use and increased risk of motor vehicle crashes”



Source: National Academies of Sciences, Engineering, and Medicine. 2017. *The health effects of cannabis and cannabinoids: Current state of evidence and recommendations for research*. Washington, DC: The National Academies Press.

Fast Facts

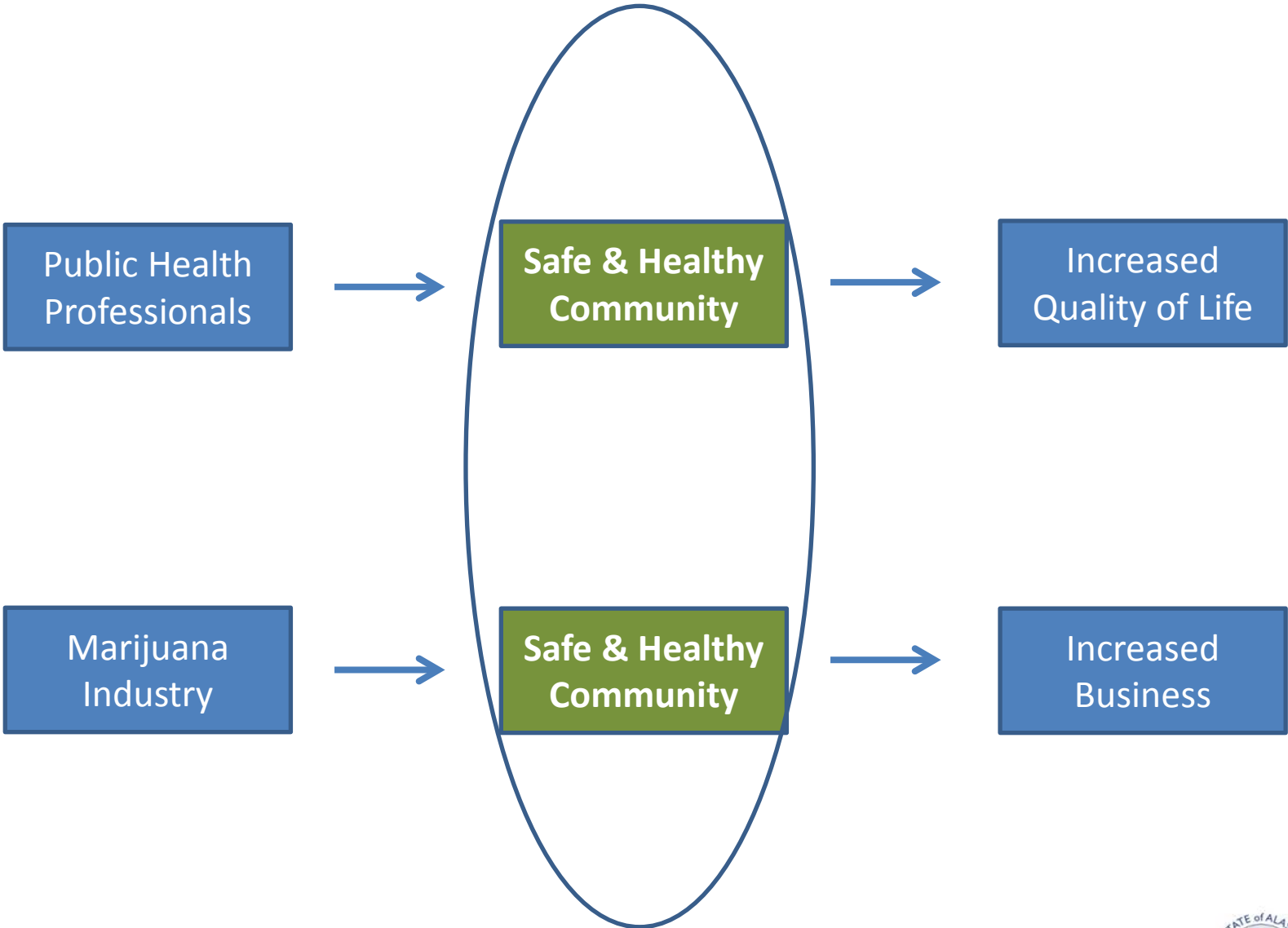
- The number of self-reported marijuana users is increasing. In 2014, there were 7,000 new users of marijuana per day.⁴
- 13% of nighttime, weekend drivers have marijuana in their system; this is up from 9% in 2007.⁵
- After alcohol, marijuana is the drug most often linked to drugged driving.⁶



Source: CDC, What You Need to Know About Marijuana Use and Driving Fact Sheet, 2017
<https://www.cdc.gov/marijuana/pdf/marijuana-driving-508.pdf>

Driving Under the Influence of Cannabis

- Marijuana impairs skills needed to drive safely
→ increase the risk for motor vehicle crashes
- The National Roadside Survey reported an increase of drivers with marijuana in their system during 2007–2014



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March 30, 2017

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Centers for Disease Control and Prevention
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Katie Reilly
State of Alaska Division of Public Health
3601 C Street, Suite 756
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Ms. Reilly,

Per your request, I am submitting this statement of the scientific evidence regarding currently available scientific information on secondhand exposure and marijuana smoking. For the record, I am not submitting this statement for or against any specific legislative proposal.

Health Effects of Secondhand Exposure to Marijuana Smoke

The long-term health effects of secondhand exposure to marijuana smoke have not been extensively studied, and research in this area is ongoing. Generally, there are health risks associated with combustion and subsequent inhalation of its emissions. Whether from burning tobacco or marijuana, toxins and carcinogens are released from the combustion of these materials. Inhaled smoke from marijuana contains many of the same toxins, irritants and carcinogens as tobacco smoke.^{1,2} Further, secondhand smoke from combusted marijuana has been found to contain the same toxins and carcinogens found in inhaled marijuana smoke.^{3,4,5}

There are recent findings that breathing secondhand marijuana smoke could damage heart and blood vessels as much as secondhand tobacco smoke.⁶ Further, emerging research indicates that even brief exposure to secondhand marijuana smoke has been shown to have immediate, adverse effects on the heart.⁷

The Health Effects of Secondhand Exposure to Tobacco Smoke

While the research on the health effects of secondhand marijuana smoke is ongoing, the existing evidence on secondhand tobacco smoke is well documented. In adults, secondhand tobacco smoke exposure causes stroke, lung cancer, and coronary heart disease, as well as reproductive effects in women, including low birth weight.⁸ Children who are exposed to secondhand tobacco smoke are at an increased risk for sudden infant death syndrome (SIDS), acute respiratory infections such as pneumonia and bronchitis, middle ear disease, more frequent and severe asthma, respiratory symptoms, and slowed lung growth.⁸

In 2006, the Surgeon General's Report on *The Health Consequences of Involuntary Exposure to Tobacco Smoke* concluded that there is no risk-free level of secondhand tobacco smoke exposure.⁹ Separating smokers and nonsmokers, using designated smoking areas, cleaning or filtering the air, and using separately ventilated areas do not work.⁹ Furthermore, in 2010, the Surgeon General's Report on *How Tobacco Smoke Causes Disease* reaffirmed the conclusion that there is no risk-free level of exposure to tobacco smoke.¹⁰ The report and subsequent findings also documented how the complex mix of chemicals in tobacco smoke causes disease, including finding that cigarette smoke contains 7,000 chemicals, 250 of which are toxic and nearly 70 of which cause cancer.¹⁰

Preventing Secondhand Exposure

We know what works to prevent the harms of secondhand smoke exposure, based on the evidence from tobacco. In 2006, the Surgeon General concluded that eliminating tobacco smoking in indoor spaces is the only way to fully protect nonsmokers from secondhand smoke exposure.⁹ In 2009, the World Health Organization's International Agency for Research on Cancer reiterated these findings, concluding that smokefree policies lead to substantial declines in secondhand smoke exposure, citing air quality improvements of up to 90% in high-risk settings, such as bars.¹¹

Conclusion

The existing evidence on the health effects of secondhand smoke exposure to marijuana is limited, and research is ongoing in this area. Recent studies demonstrate that exposure to secondhand marijuana smoke exposure can have adverse health effects on the heart. Additionally, we know that secondhand marijuana smoke contains the same toxins and carcinogens found in inhaled smoke from marijuana. As states and communities consider public health interventions to protect the public from involuntary exposure to known health risks, clean air free from smoke from any source remains the standard to protect health.

Sincerely,

Brian A. King, PhD, MPH
Deputy Director for Research Translation
Office on Smoking and Health
Centers for Disease Control and Prevention

¹ Tashkin DP. Effects of marijuana smoking on the lung. *Ann Am Thorac Soc*. 2013;10 (3):239-247.

² Moir D, Rickert WS, Levasseur G, et al. A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. *Chem Res Toxicol*. 2008; 21(2):494-502. doi:10.1021/tx700275p

³ Moore, C., et al. Cannabinoids in oral fluid following passive exposure to marijuana smoke. *Forensic Sci Int*, 2011. 212(1-3): p. 227-30.

⁴ Cone, EJ, et al. Non-smoker exposure to secondhand cannabis smoke. I. Urine screening and confirmation results. *J Anal Toxicol*, 2015. 39(1): p. 1-12.

⁵ Zarfin, Y, et al. Infant with altered consciousness after cannabis passive inhalation. *Child Abuse Negl*, 2012. 36(2): p. 81-3.

⁶ Wang X., et al. Brief Exposure to Marijuana Secondhand Smoke Impairs Vascular Endothelial Function. *Circulation*. 2014;130:A19538

⁷ Wang X, et al. One Minute of Marijuana Secondhand Smoke Exposure Substantially Impairs Vascular Endothelial Function. *J Am Heart Assoc*. 2016;5:e003858

⁸ U.S. Department of Health and Human Services. *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

⁹ U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.

¹⁰ U.S. Department of Health and Human Services. *How Tobacco Smoke Causes Disease: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010.

¹¹ International Agency for Research on Cancer. *Handbook of Cancer Prevention: Evaluating the Effectiveness of Smoke-free Policies*. Geneva, Switzerland: International Agency for Research on Cancer, World Health Organization, 2009.



THE STATE
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January 13, 2017

Sara Chambers, Acting Director
Alcoholic Beverage Control Board
550 W 7th Ave, Suite 1600
Anchorage, AK 99501

Dear Ms. Chambers:

On behalf of the Alaska Division of Public Health, we respectfully submit comments on proposed regulation 3 AAC 306.365 for onsite consumption of marijuana at licensed retail stores. **This proposed regulation raises concern for Alaskans' health and safety; therefore, we oppose the public consumption of smoked, dabbed, vaped or aerosolized marijuana and edible marijuana products because of the potential health harms to users and non-users.**

Public consumption of marijuana was intended to remain illegal. The language in Ballot Measure 2, voted on by the public and now enacted in AS 17.38.040, does not allow for public consumption of marijuana and includes a \$100 fine for this activity. Regulations—first adopted by the Board in February 2015 to define the term “public”—support this restriction. Sec 17.38.020 of the initiative stated: “...nothing in this chapter shall permit the consumption of marijuana in public.”

Marijuana is known to impair reaction time, hand-eye coordination, and perception of time and distance, all of which increase the risk of being involved with motor vehicle crashes. Marijuana affects people differently. The high from smoking marijuana can often be felt right away. However, the effects of marijuana can take longer to develop and last longer when eating or consuming marijuana. It is known that marijuana can make it unsafe to drive, bike, and do other activities and the effects of marijuana edibles can last longer than users think. A person may feel safe to drive after a few hours; however, impairment can last much longer.

In a recent report released by the National Academies of Science, Engineering and Medicine's Health and Medical Division, “substantial evidence of the statistical association between cannabis use and increased risk of motor vehicle crashes” was identified as one of the primary conclusions. Our concern with this proposal is that an increase in public consumption of marijuana may lead to increased driving under the influence, a significant public health area of concern.

January 13, 2017

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Exposing others to secondhand smoke (SHS) is a public health hazard. In 2006 the Surgeon General concluded that there is no safe level of secondhand smoke. Since marijuana is illegal under federal law, there have been a limited number of studies examining health risks associated with marijuana use and exposure in the United States. However, peer-reviewed and published studies do indicate that exposure to secondhand marijuana smoke may pose health risks for the public, especially due to its similar composition to secondhand tobacco smoke. According to Moir, et al, (2008): "Secondhand marijuana smoke contains many of the same cancer-causing substances and toxic chemicals as secondhand smoke. Some of the known carcinogens or toxins present in marijuana smoke include: acetaldehyde, ammonia, arsenic, benzene, cadmium, chromium, formaldehyde, hydrogen cyanide, isoprene, lead, mercury, nickel, and quinolone. Moir, et al. also found significant amounts of mercury, cadmium, nickel, lead, and chromium in marijuana smoke. Comparing it to tobacco smoke, there was 20 times the amount of ammonia and 3-5 times more hydrogen cyanide in marijuana smoke."

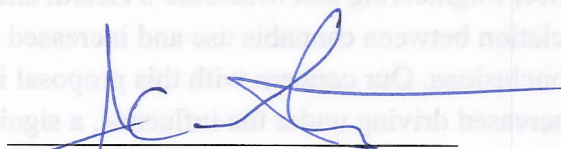
Additionally, a recent study published in the Journal of the American Heart Association concluded that "...SHS can exert similar adverse cardiovascular effects regardless of whether it is from tobacco or marijuana." (Wang, et al; 2016)

No type of ventilation system will protect the public from the effects of secondhand smoke, vapor or aerosol. Under this proposal, the licensee would be required to provide a ventilation plan to address byproducts of using marijuana onsite. Ventilation may reduce odors, but will not protect the public's health from marijuana smoke. This is supported by the 2006 U.S. Surgeon General report entitled "The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General." The report stated that the scientific evidence now supports the following major conclusion:

"Eliminating smoking in indoor spaces fully protects nonsmokers from exposure to secondhand smoke. Separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate exposures of nonsmokers to secondhand smoke."

Based on these concerns for the health and safety of Alaskans, we recommend the Board not allow smoked, dabbed, vaporized, aerosolized or edible marijuana consumption in public. Thank you for your time and consideration in supporting the health and safety of all Alaskans.

Sincerely,



Jay C. Butler, MD

Chief Medical Officer and Director of the Division of Public Health