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Office on Smoking and Health
Centers for Disease Control and Prevention
4770 Buford Highway NE, MS F79
Atlanta, GA 30341

Senator Peter A. Micciche
Alaska State Capitol, Rm. 514
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Senator Micciche,

Per your request, I am submitting this statement of the scientific evidence regarding secondhand smoke exposure, as well as currently available scientific information on secondhand exposure to the emissions from electronic nicotine delivery system (ENDS) use and marijuana smoking. For the record, I am not submitting this statement for or against any specific legislative proposal.

The Health Effects of Secondhand Exposure to Tobacco Smoke

Secondhand smoke from burning tobacco products is deadly. In adults, secondhand smoke exposure causes stroke, lung cancer, and coronary heart disease, as well as reproductive effects in women, including low birth weight.[1] Children who are exposed to secondhand 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.[1]

The scientific evidence on the harmful effects of secondhand smoke exposure is well-documented. The Surgeon General first concluded that secondhand smoke causes lung cancer in 1986.[2] 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 smoke exposure.[3] Separating smokers and nonsmokers, using designated smoking areas, cleaning or filtering the air, and using separately ventilated areas do not work.[3] 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.[4] 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.[1,4] In 2014, the 50th Anniversary Surgeon General's Report on *The Health Consequences of Smoking* further affirmed these findings.[1] The report estimates that secondhand smoke exposure increases the risk of stroke by 20 to 30%.[1]

The effects of secondhand smoke exposure on the body are immediate.[3] A 2011 study reported that secondhand smoke exposure can produce adverse inflammatory and respiratory effects within 60 minutes of exposure and that these effects persist for at least three hours after the exposure.[5] These findings are significant; the concern is not just secondhand smoke exposure for guests during a meal at a restaurant, but also the compounded health effects for an employee working an eight-hour shift in a smoke-filled restaurant or bar.[3]

The Burden of Secondhand Exposure to Tobacco Smoke

Secondhand smoke exposure costs nonsmokers—especially vulnerable populations, such as children—their health and wellbeing. These costs are born not just by individuals, but by society: exposure to secondhand smoke costs the United States billions of dollars in lost productivity and medical expenses every year.[1]

As a result of the considerable body of evidence documenting the adverse effects of secondhand smoke, substantial progress has been made toward eliminating nonsmokers' exposure to this preventable health hazard over the last 50 years.[1] Recent assessments of cotinine, a metabolite of nicotine and biomarker of recent secondhand smoke exposure, indicates that about 1 in 4 Americans continue to be exposed to secondhand smoke.[6] In the past 50 years, secondhand smoke exposure is estimated to have caused nearly 2.5 million deaths in nonsmoking Americans.[1] Each year, an estimated 7,330 lung cancer deaths and 33,950 coronary heart disease deaths are attributable to secondhand smoke exposure.[1]

The smoking-attributable economic costs in the United States also include about $5.6 billion in lost productivity every year due to secondhand smoke exposure.[1] Many of these deaths and this lost productivity could be prevented if comprehensive smokefree laws prohibiting smoking in all indoor areas of worksites, restaurants, and bars were implemented nationwide.[1]

Preventing Secondhand Exposure to Tobacco Smoke

We know what works to prevent the harms of secondhand smoke exposure. In 2006, the Surgeon General concluded that eliminating smoking in indoor spaces is the only way to fully protect nonsmokers from secondhand smoke exposure.[3] 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.[7] Furthermore, the 2014 Surgeon General's report delved deeper into the science behind the success of smokefree laws in protecting people's health. Specifically, the report concluded that smokefree laws directly cause reductions in coronary events (especially heart attacks), making comprehensive smokefree laws one of the most effective and cost-effective approaches for reducing heart disease—the leading cause of death—in the country.[1]

Finally, beyond reducing exposure to secondhand smoke, smokefree laws also lower smoking rates as a whole, especially among vulnerable youth and young adults.[1] Both the Surgeon General and the U.S. Guide to Community Preventive Services conclude that smokefree laws in workplaces and communities help smokers quit and reduce tobacco use.[1,8] In addition, smokefree workplaces and communities make youth and young adults less likely to start smoking due to a number of factors, including lower visibility of people who smoke, fewer opportunities to smoke alone or with others, and reduced social acceptability for smoking.[1] The implementation of smokefree laws also increase the adoption of voluntary smokefree rules in homes, which can further protect nonsmokers—especially the most vulnerable that are exposed to secondhand smoke in the home, such as children.[1]

CDC defines a comprehensive smokefree law as one that prohibits smoking at all times, in all indoor areas of all workplaces and public places, including restaurants and bars. If a law allows exemptions for designated or ventilated smoking areas in workplaces, restaurants or bars, the state or community is not considered to have a comprehensive smokefree law.

Smokefree policies in hospitality venues such as restaurants, bars, and casinos protect employees and patrons from the adverse health effects of secondhand smoke. These policies are associated with improved indoor air quality and with reduced secondhand smoke exposure, reduced sensory and respiratory symptoms, and improved lung function in nonsmoking employees.[2,9,10]

Comprehensive smokefree laws are also associated with rapid reductions in hospitalizations due to heart attacks and strokes.[11] For instance, in Colorado, following the implementation of a comprehensive smokefree law in 2006, the state saw a 23 percent drop in ambulance calls from these venues.[12] However, there was no change in ambulance calls from casinos until the law was expanded in 2008 to include casinos—after which, ambulance calls from casinos dropped nearly 20 percent.[12] This illustrates that these health improvements are lifesaving and nearly immediate.

Evidence Shows that Smokefree Policies do not Adversely Impact Business

The evidence concerning the economic impact of smokefree laws is well-documented. In 2006, the Surgeon General concluded that "evidence from peer-reviewed studies shows that smokefree policies and regulations do not have an adverse economic impact on the hospitality industry."[3]

These findings have been replicated numerous times at the international, state, and local levels.[1,3,7] In 2009, the International Agency for Research on Cancer conducted a comprehensive review of 97 studies from eight countries on the economic impact of smokefree policies and found that studies consistently conclude that smokefree policies do not harm business.[7]

At the state and local level, studies consistently reiterate these conclusions. The largest analysis of the impact of smokefree ordinances, which examined local ordinances in eight states (Alabama, Indiana, Kentucky, Mississippi, Missouri, South Carolina, Texas, and West Virginia) and a state ordinance in one state (North Carolina), found that smokefree laws do not have a negative impact on either employment or sales in restaurants and bars.[13] A study of El Paso, Texas's smoke-free policy found that the law had no effect on restaurant and bar revenue.[14] Furthermore, a 2007 study on the economic impact of a smokefree law in Lexingon-Fayette County, Kentucky found that "no important economic harm stemmed from the smoke-free legislation…despite the fact that Lexington is located in a tobacco-producing state with higher-than-average smoking rates."[15]

Further reviews of the literature have also found that, in some cases, a smokefree policy produces positive effects for local businesses.[16,17,18] For instance, an in-depth analysis of tax revenue data in California after the state implemented their smokefree restaurant law (in 1995) and bar law (in 1998) found that the smokefree restaurant law was associated with an increase in restaurant revenues, and the smokefree bar law was associated with an increase in bar revenues.[19] Additionally, just one year after implementation of the New York City smokefree law, an evaluation found that restaurant and bar revenues in New York City increased by 8.7% from April 2003 through January 2004.[20]

Smokefree Policies and ENDS

Science on the issue of ENDS, including e-cigarettes, continues to emerge. However, there is sufficient scientific evidence to support the implementation of precautionary approaches to protect the public from risks associated with exposure to the emissions from these products. For example, in the 2016 Report from the U.S. Surgeon General on e-cigarette use among youth and young adults, "e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine."[21] The report notes that exposure to the aerosol from these products can be particularly dangerous for youth; specifically, the report concludes that "nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain." [21] ENDS use has the potential to involuntarily expose children and adolescents, pregnant women, and non-users to aerosolized nicotine and, if the products are altered, to other psychoactive substances. [21] Therefore, clean air—free of both smoke and ENDS aerosol—remains the standard to protect health.

In the 2016 Surgeon General's Report, the Call to Action states that "State, local, tribal and territorial governments should implement population-level strategies to reduce e-cigarette use among youth and young adults, such as including e-cigarette in smokefree indoor air policies…" (Goal 4, Strategy 4A). [21] The report notes that most smokefree indoor air policies were put in place before the rise in e-cigarette use. Because of that, these policies may not cover e-cigarettes or exposure to the aerosol these produce. [21] Therefore, the Call to Action states that "smokefree indoor air policies should be updated to prohibit the use of both conventional cigarettes and e-cigarettes, thereby preserving standards for clean indoor air. Efforts to include e-cigarettes in smokefree laws should also uphold or strengthen, not weaken, existing protections against exposure to secondhand smoke." [21]

As noted in the 2016 Surgeon General's report, including e-cigarettes in smokefree indoor air policies can: eliminate health risks from exposure to secondhand aerosol from e-cigarettes; discourage people from using both combustible and electronic tobacco products (dual use); simplify compliance with and enforcement of existing smokefree laws; help to reduce the use of e-cigarettes among youth and young adults; and maintain tobacco-free norms.[21]

The majority of e-cigarette users also smoke cigarettes.**Error! Bookmark not defined.** Permitting ENDS use in public places could perpetuate combusted tobacco use and, therefore, tobacco-related morbidity and mortality. For example, ENDS use in public places could make it easier for smokers to sustain their nicotine addiction in public places, without switching completely away from combusted tobacco use.[22] There is no evidence to support any claim that policies that allow ENDS use in public places result in smokers switching to ENDS completely. Additionally, because some e-cigarettes are designed to mimic smoking, allowing ENDS use in places where smoking is prohibited could complicate enforcement of smokefree policies and renormalize tobacco use.[23]

Health Effects of Secondhand Exposure to Marijuana Smoke

Generally, there are health risks associated with the 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.[24,25] Further, secondhand smoke from combusted marijuana has been found to contain the same toxins and carcinogens found in inhaled marijuana smoke.[26,27,28]

There are recent findings that breathing secondhand marijuana smoke could damage heart and blood vessels as much as secondhand tobacco smoke.[29] Further, emerging research indicates that even brief exposure to marijuana smoke has been shown to have immediate, adverse effects on the heart.[30] The long-term health effects of secondhand exposure to marijuana smoke have not been extensively studied, and research in this area is ongoing.

What States and Communities Have Done

As of December 2016, CDC has determined that 27 states, Puerto Rico, the District of Columbia, and over 800 other communities in the United States have comprehensive smokefree laws in effect that prohibit smoking tobacco in private worksites, restaurants, and bars.[31,32]

Of these 27 states that have implemented comprehensive smokefree laws, eight states (California, Delaware, Hawaii, New Jersey, North Dakota, Oregon, Utah, and Vermont) have also prohibited the use of ENDS where smoking is prohibited, as well as hundreds of local communities.[32]

The most effective tobacco control policies have most often originated at the local level.[1,33,34] This is especially true in the area of smokefree policies.[1,33]

Conclusion

Evidence shows that secondhand smoke causes considerable death and disease, costing the United States billions every year in direct health care costs and lost productivity. And unlike many other health hazards, these harms are completely preventable. Further, secondhand aerosol emitted from ENDS, including e-cigarettes, is not harmless. The diversification of the tobacco product landscape – specifically the increase in ENDS use – is important to consider in the development of public health interventions to protect the public from involuntary exposure to known health risks. Clean air—free of both smoke and ENDS aerosol—remains the standard to protect health.

Thank you.

Sincerely,

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