

Testimony given to Senate Health and Welfare Committee

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Health Risks of Cannabis Use

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Thank you for the opportunity to speak to you today. I understand that this is a complicated issue and you may be a little surprised to hear that I am not here to tell you how to vote on this bill. Rather, I see my role here as someone to help you sort through *why* you might vote the way you do. In a nutshell, if you are considering voting for retail cannabis because you hope that this will result in a safer and healthier Vermont, we believe you are going to feel disappointed and misled.

I base that view on my appraisal, and the consensus appraisal from the Vermont Medical Society, of the scientific literature, including what I think is a very nice summary that was just recently prepared and recently updated by our own Health Department (document submitted). At times this document gets a little technical but I really hope that you will get a chance to read it because it lays out in a fairly concise way what is currently known about the health risks associated with cannabis use, and there are many. I thought I'd just quote a few passages where the evidence is strongest.

Psychosis: "Of particular concern is the robust relationship between early use and the development of psychotic symptoms especially among those who consume very high potency marijuana."

Brain changes: "So, to be clear, almost all studies and reviews of the literature in this area conclude that early and persistent use of marijuana can adversely affect brain structure and function. It is also clear that higher THC potency levels and more frequent use have greater negative impacts in a shorter period of time. What is unclear is whether any, some, or all of these adverse consequences are reversible with prolonged abstinence of use."

Overall Risks: "Since August 2016, there have been over 180 peer reviewed papers published on the health effects of marijuana. Nearly all of these studies found adverse health effects in a dose-dependent manner at varying levels of marijuana use (infrequent to daily use)."

Conclusion: Even if the number of adolescent marijuana users did not increase (which is unlikely in an expanding market), the effects of more potent marijuana may pose a serious long-term public health issue that could have considerable adverse health

effects and burden both the physical and mental health systems of care in the United States in years to come.

I don't want to spend too much time on this document because you can read it yourself and I want to make the best use of your time. I do, however, want to make a couple comments about this report and the state of the literature overall. Perhaps most importantly, I want to stress that the level of evidence that cannabis use carries significant health risks is overwhelming, like global warming, vaccines are a good idea, level overwhelming, and many of us find it very disappointing that people are still trying to convince you otherwise. Frankly, a lot of current science has moved well beyond the question of *if* cannabis is harmful to *how* these harms occur.

One example (study submitted) of this is a very recent study published in Biological Psychiatry. I bring it up today it because it is one of those efforts that helps people connect the dots across many areas of research. In this study, some adolescent rats with a known genetic mutation that in humans increases the risk for schizophrenia were administered THC and others weren't. The rats given THC were found to struggle later with some memory tasks. When their brains were examined, they found that the deficits could be traced to helper cells in the brain called astrocytes in an area called the hippocampus. Furthermore, it looked like the problem involved THC inducing inflammation.

One last study (study submitted) I'd like to mention that is also very recent studied human adolescents. One of its strengths was that both cannabis use and cognitive function were measured at multiple time points which enabled them to test for different models for how cannabis and cognitive problem might be associated with each other. They found evidence both for something called "common underlying vulnerability" but also a direct negative effect of cannabis for working memory and inhibitory control. "Findings were also consistent with a lasting, or neurotoxic, effect of cannabis on two domains of cognition: inhibitory control and working memory."

I'll close by stating that I'm grateful that in hearings like today we have the chance to have a serious and honest discussion of the implications of this bill. Many of us in health care and in public policy are frustrated and tired of trying to voice our concern about cannabis use only to have people plug the ears and shout "reefer madness!" or "prohibitionist!" This isn't blasphemy, it is science that is speaking with a loud and unified voice, and it won't go away just because some find it inconvenient.