

# NEW ITEMS IN THE NBMA RESOURCE LIBRARY

## Cannabis

December 2019

### **TITLE: Legal cannabis laws, home cultivation, and use of edible cannabis products: A growing relationship?**

**Author:** Borodovsky, J.T. and A. J. Budney

**Source:** International J. Drug Policy 2017 50:102-110

**Abstract:** *Background:* Over half of U.S. states have enacted legal cannabis laws (LCL). In parallel, edible cannabis products (i.e., edibles) have presented new regulatory challenges. LCL provisions that dictate access to cannabis (e.g., home cultivation (HC) or dispensaries (DSP)) may impact edible production and use. This study examined relationships among HC and DSP provisions, cannabis cultivation, and edible use.

*Methods:* An online cannabis use survey was distributed using Facebook. Data were collected from 1813 cannabis-using adults. U.S. states were classified as states without LCL (Non-LCL) or LCL states that: (1) only permit DSP (LCL DSP-only), (2) only permit HC (LCL HC-only), or (3) permit HC and DSP (LCL HC + DSP). Analyses tested associations among these classifications, cannabis growing, and edible use and procurement.

*Results:* Individuals in LCL HC-only and LCL HC + DSP states were more likely to report currently growing cannabis at home (OR: 3.3, 95% CI: 1.7, 6.2; OR: 3.9, 95% CI: 2.4, 6.3, respectively) and past-month edible use (OR: 2.1, 95% CI: 1.4, 3.4; OR: 2.9, 95% CI: 2.2, 3.9, respectively) than individuals in LCL DSP-only states. Regardless of state, those who had grown cannabis were more likely to have made edibles than those who had never grown cannabis (OR: 2.2, 95% CI: 1.8, 2.6). Individuals in LCL HC-only states were more likely to have made edibles in the past month than individuals from Non-LCL (OR: 2.75, 95% CI: 1.5, 5.3) and DSP-only states (OR: 2.1, 95% CI: 1.0, 4.4). Individuals in LCL HC + DSP states were more likely to have purchased edibles in the past month than individuals from Non-LCL (OR: 3.7, 95% CI: 2.4, 5.6) and DSP-only states (OR: 3.2, 95% CI: 1.8, 5.5).

*Conclusion:* Specific LCL provisions may differentially affect individuals' propensity to grow cannabis and make, buy, and use edible cannabis products. Permitting home cultivation contributes to a greater likelihood of growing cannabis. Those who grow cannabis economize the plant by creating homemade edible cannabis products. Conversely, permitting dispensaries increases the likelihood of purchasing edibles. The psychoactive effects of edibles with unknown and variable cannabinoid content will be unpredictable. Policymakers should carefully consider how specific LCL provisions can affect patterns of cannabis edible product access and quality.

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### **TITLE: The quasi-legal challenge: Assessing and governing the environmental impacts of cannabis cultivation in the North Coastal Basin of California**

**Author:** Short Gianotti, A.G., J. Harrower, G. Baird, S. Sepaniak

**Source:** Land Use Policy 2017 61:126-134

**Abstract:** The liberalization of cannabis policies is rapidly changing the cannabis industry. Though cannabis cultivation has environmental effects, little is known about how drug policy shapes knowledge about and efforts to mitigate those effects. We use a study of cannabis in the North Coastal Basin of California to examine how the legal status of cannabis shapes efforts to study and govern the environmental effects of cultivation. Drawing on interviews, a review of relevant rules and regulations, and existing literature, we review the state of the knowledge regarding the environmental effects of outdoor cannabis cultivation, document the range of governance tools that aim to mitigate those effects, and discuss the unique challenges to researching and governing cannabis cultivation. We argue that the quasi-legal status of cannabis and the mixing of black and medical markets create substantial barriers to the assessment and mitigation of the environmental effects of cannabis cultivation. We discuss the policy implications of these findings and highlight the importance of understanding the linkages between other semi-legal and illicit practices, governance, and the environment. The research shows the broad importance of examining ways that legal status and enforcement regimes surrounding semi-legal activities shape particular human-environment interactions.

**Document#:** BIC.CANABIS.5.2

### **TITLE: The carbon footprint of indoor Cannabis production**

**Author:** Mills, E.

**Source:** J. Environ. Qual. 2003. 32:100-108

**Abstract** The emergent industry of indoor Cannabis production – legal in some jurisdictions and illicit in others – utilizes highly energy intensive processes to control environmental conditions during cultivation. This article estimates the energy consumption for this practice in the United States at 1% of national electricity use, or \$6 billion each year. One average kilogram of final product is associated with 4600 kg of carbon dioxide emissions to the atmosphere, or that of 3 million average U.S. cars when aggregated across all national production. The practice of indoor cultivation is driven by criminalization, pursuit of security, pest and disease management, and the desire for greater process control and yields. Energy analysts and policymakers have not previously addressed this use of energy. The unchecked growth of electricity demand in this sector confounds energy forecasts and obscures savings from energy efficiency programs and policies. While criminalization has contributed to the substantial energy intensity, legalization would not change the

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situation materially without ancillary efforts to manage energy use, provide consumer information via labeling, and other measures. Were product prices to fall as a result of legalization, indoor production using current practices could rapidly become non-viable.

**Document#:** BIC.CANABIS.5.3

### **TITLE: The Benefits of Growing Cannabis with Compost**

**Author:** Samuelson, P

**Source:** Cannabistraininguniversity.com 2019 <https://cannabistraininguniversity.com/the-benefits-of-growing-cannabis-with-compost/>

**Abstract:** As cannabis consumers grow more familiar with the plant and gain familiarity with a higher number of strains, most of them develop personal favorites and enjoy the unique flavors and effects. Like consumers of produce and other natural foods, cannabis enthusiasts want to use products from natural, healthy sources – and compost may just be the best choice for purely organic cultivation.

Organic fruits and vegetables and grass-fed beef are now readily available and continuing to gain popularity. These foods taste better and are healthier for those who eat them. People want their food to be as natural as possible, with humanely raised animal protein free of growth hormones and dyes. Because of this understandable preference, it should come as no surprise that many people would prefer organic cannabis as well.

The flavors of organic cannabis are superior to its counterpart grown with synthetic fertilizers and soil additives. Some cannabis connoisseurs can taste the tell-tale flavors of synthetic fertilizers that sometimes linger in cured dried flower, especially if it wasn't properly flushed prior to harvest.

**Document#:** BIC.CANABIS.5.4

### **TITLE: The Genesis of a Critical Environmental Concern: Cannabinoids in Our Water Systems**

**Author:** Saleh, N.B., O. Apul, T. Karanfil

**Source:** Environ. Sci. Tech. 2019 53:1746-1747

**Abstract:** Approximately 192 million people worldwide aged 15–64 (i.e., 3.9% of the global population, per 2016 estimates) regularly use Cannabis, more commonly known as marijuana. The estimated market share of this widely used drug will surpass \$22 billion by 2022. On June 28, 2018, the United States Food and Drug Administration approved Epidiolex, a cannabinoid-based drug developed for the treatment of a rare form of epilepsy. . . . Unfortunately, despite their widespread availability, un- certainty-in-point and mass production projections, adverse effects on the nervous system and increased pharmaceutical use, cannabinoids remain the most understudied class of ECs within aquatic systems. The transformation of these products, which are often more toxic than the parent compounds, encourages understanding the reaction processes that cause their development.<sup>3</sup> Indeed, new organic contaminants or ECs that are created by the transformation processes in water and wastewater systems have been detected in waste and surface waters, which means that treatment processes must evolve accordingly.<sup>4</sup> Halogenated methanesulfonic acid (HMAs), a new class of organic micropollutant produced from an approved drug, is now prevalent in the water cycle and is one of the latest addition to the EC list. As with HMAs, cannabinoids will likely introduce similar compounds during their passage through engineered treatment systems.

**Document#:** BIC.CANABIS.5.5