

Indoor Marijuana Production: Colorado State Researchers Estimate Greenhouse Gas Emissions



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A March 8th article in *Nature Sustainability* discusses the carbon footprint associated with indoor marijuana production.

The article is titled:

The Greenhouse Gas Emissions of Indoor Cannabis Production in the United States ("Article")

A discussion of the *Article* is found in a March 8th Colorado State University news release titled:

Insatiable Demand for Cannabis Has Created a Giant Carbon Footprint

The Colorado State University researchers that authored the *Article* include:

- Hailey Summers
- Evan Sproul
- Jason C. Quinn

Important aspects of medical and nonmedical marijuana facilities in states that have authorized these programs are the potential energy, environmental and safety issues. These are arguably particularly true in the case of indoor marijuana cultivation, grow and processing facilities. The potential environmental effects (i.e., water usage/solid/hazardous waste management/wastewater) and energy usage can be significant.

The *Article* focuses on greenhouse gas emissions from commercial indoor marijuana production. The Colorado State University news release describes the *Article* as providing:

... the most detailed accounting to date of the industry's carbon footprint, a sum around which there is only limited understanding. What is clear, though, is that consumer demand for cannabis is insatiable and shows no signs of stopping as more states sign on to legalization.

The researchers are stated to have determined that greenhouse gas emissions from this activity are principally associated with electricity production and natural gas consumption from:

- Indoor environmental controls
- High-intensity grow lights
- Supplies of carbon dioxide

The research is stated to have determined that indoor marijuana cultivation results in life-cycle greenhouse gas emissions of between 2,283 and 5,184 kilograms of carbon dioxide per kilogram of dried

flower. This is contrasted with emissions from electricity use in outdoor/greenhouse marijuana growth which is stated to constitute 22.7 and 326.6 kilograms of carbon dioxide, respectively.

Heating, ventilation and air conditioning systems were identified as the largest consumer of energy in such facilities.

A link to the Colorado State University news release, which in turn provides a link to a summary version of the *Article* can be found [here](#).