

Weeding Out Ethical and Environmental Issues in the Budding Cannabis Industry

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**ENVIRONMENTAL ISSUES
IN THE
CULTIVATION OF CANNABIS**

Environment & Energy Section
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Federal Status of Cannabis

Drug Enforcement Agency	Schedule 1 Drug: No beneficial use Listing reconsidered late in Obama administration but left unchanged
Rohrabacher Amendment	No use of Federal funds to enforce against state medical program
Cole Memo / Sessions Memo	Stand back versus active scrutiny
Perspective of US Attorneys	Utah versus Massachusetts

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Nationwide Status:

30 states and DC have some form of legalization

Adult use retail	1 state
Medical/adult use/operating retail	5 states
Medical/ authorized adult use retail	2 states
Medical/personal adult use	DC: 1 state
Medical	21 states

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Regional Outlook

Massachusetts	Medical; implementing retail adult use
Canada	Retail adult use now operating
Vermont	Medical; home grow adult use
New Jersey	Active legislative consideration
Pennsylvania	Active legislative consideration

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New York Status

Medical Compassionate Care Act passed 2014

 Overseen by Narcotics Bureau of the New York State
 Department of Health (NYSDOH)

10 Registered Organizations; 22 dispensaries; more under development

5 RO's operate cultivation facilities; others under development

Medical order required from NYSDOH-registered physician for specified
diagnoses; insurance coverage for doctor visit, but not product

Adult use *Assessment of the Potential Impact of Regulated Marijuana
 in New York State* [NYSDOH July 2018]

Multi-Agency Work Group / 15 Listening Sessions

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Environmental Issues: Pesticide Use

Pesticides are regulated under the Federal Insecticide, Fungicide and
Rodenticide Act ("FIFRA")
7 USC § 136 *et seq*

With limited exceptions every individual pesticide product must be registered
with EPA; products must also be registered in states where distributed.

Under FIFRA a pesticide must be used strictly in accord with its label
directions, including in the case of an agricultural use product, the target
crop(s) on which it may be used.

As a Schedule I Listed substance, cannabis is not allowed to be listed as a
target crop on a registered pesticide label.

Result No registered pesticides are legal to apply to cannabis

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Minimum Risk Pesticides

Exemption from FIFRA registration for products determined by EPA to be of such limited toxicity as to not require registration

Must be composed of EPA-specified active ingredients and inert ingredients

Free of FIFRA prohibition on labeling for use on cannabis but can be of questionable efficacy

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Pest Pressures

Most legal cannabis is cultivated in large commercial greenhouses or warehouses converted to a greenhouse function. [Exception: California]

Face normal pest pressures of insects and disease confronted by commercial greenhouse agriculture.

Insecticides and fungicides are generally required to successfully cultivate a crop.

Massachusetts requires regular use of EPA-registered sanitizers on contact surfaces.

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Integrated Pest Management ("IPM")

Management of pest pressure by comprehensive program of sanitation, physical control, non-toxic control methods and where necessary as a last resort

IPM Approaches

- > Complete cleansing of growing space between crops; disinfect when disease detected
- > Use of beneficial insects, both purchased and raised, to control insects; can eliminate need for insecticides
- > Use of Minimum Risk pesticides where effective
- > Use of biological pesticides

Massachusetts requires employment of "best practices" to minimize pest pressure
935 CMR § 500.120

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State Approaches to Pesticides for Cannabis

Transparent approach

Colorado, Oregon, Washington and other states have published criteria and lists of acceptable products.

Typical criteria include:

- > labeled for use on food products;
- > where smoking of cannabis material is permitted, allowed pesticide products must be labeled for tobacco

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State Approaches to Pesticide Use for Cannabis Cultivation: Limited information approach

NYSDOH requires approval of New York State Department of Environmental Conservation (NYSDEC) for any pesticide to be used

NYSDEC refuses to publish list of products permitted; individual determinations must be sought

More limited criteria than other states

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California Requirements for Minimum Risk Pesticides

For all pesticides that are exempt from registration requirements, licensees shall comply with all pesticide laws and regulations enforced by the Department of Pesticide regulation and with the following pesticide application and storage protocols:

1. Comply with all pesticide label directions;
2. Store chemicals in a secure building or shed to prevent access by wildlife;
3. Contain any chemical leaks and immediately clean up any spills;
4. Apply the minimum amount of product necessary to control the target pest;
5. Prevent off site drift;
6. Do not apply pesticides when pollinators are present;
7. Do not allow drift to flowering plants attractive to pollinators;
8. Do not spray directly to surface water or allow pesticide product to drift to surface water.
9. Do not apply pesticides when they may reach surface water or groundwater; and
10. Only use properly labeled pesticides.

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Mandatory Testing for Pesticide Residues

New York: Requires analysis for 66 pesticide active ingredients, none of which are approved for use

California: Prohibits 21 active ingredients; sets residue limits for 45 other active ingredients

Massachusetts: Requires analysis without specifying suspect substances

Oregon testing revealed contamination by unlisted active ingredients in commercial pesticides

Difficulty in finding qualified DEA-approved laboratories within each legalized state, as no interstate transportation allowed

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National Organic Program

Organic Foods Production Act 7 USC § 6501 *et seq*; 7 CFR Part 205

Established the National Organic Program (NOP) administered by USDA

Governs the use of the term **ORGANIC** and the official Organic Seal on agricultural products

NOP identifies eligible and ineligible inputs for agricultural products and processing

3rd party certification is required for NOP participation

Due to the Schedule 1 status, cannabis is ineligible as a crop to qualify for the NOP

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NOP Issues

Federal law conflict: Massachusetts authorizes **ORGANIC** labeling if requirements of the NOP are met; question whether this extends to requiring 3rd party certification

In other states many cultivators claim adherence to NOP standards but no 3rd party certification is employed

Cannabis Organic 3rd Party Certification Organizations

- Certified Kind
- Clean Green Certified
- Compliant Farms Certified
- Demeter Association Biodynamic Certification
- Dragonfly Earth Medicine Pure

Most cannabis certification organizations impose additional sustainability requirements beyond NOP requirements

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Environmental Issue: Energy Generation and Consumption

Massachusetts Cannabis Control Commission: Policies and Procedures for Energy Efficiency and Conservation shall include:

1. Identification of potential energy use reduction opportunities (including but not limited to natural lighting, heat recovery ventilation and energy efficiency measures), and a plan for implementation of such opportunities;
2. Consideration of opportunities for renewable energy generation, including, where applicable, submission of building plans showing where energy generators could be placed on the site, and an explanation of why the identified opportunities were not pursued, if applicable;

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Massachusetts Cannabis Control Commission: Policies and Procedures for Energy Efficiency and Conservation [continued]

3. Strategies to reduce electric demand (such as lighting schedules, active load management and energy storage); and
4. Engagement with energy efficiency programs

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Energy Generation and Consumption

Estimated annual consumption for average grow facility: 275,000 kilowatts / square foot of canopy

Canopy: square footage occupied by mature plants

Massachusetts Consumption Limits: Lighting Power Densities (LPD)

Up to 10,000 square feet of canopy:	50 watts / sq. ft. of canopy
10,000 or greater square feet of canopy:	35 watts / sq. ft. of canopy

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Energy Generation and Consumption

Comparison LPD Standards	manufacturing facilities	1.3
	hospital emergency room	2.7

LED versus High Pressure Sodium

Compared to industry standard 1,000W HPS bulb, 660W LED bulb produced 13% increase in yield with 37% reduction in energy use

Cost per bulb: LED 660W: \$1,280 HPS 1,000W: \$400

Massachusetts standard requires use of LED

Starting in 4 years California will impose greenhouse gas emission limits

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Additional Environmental Issues

Solid waste management All states require shredding of cannabis waste and combination with organic material to make it unrecognizable; nonetheless tracking by disposal event and weight is usually required.

Water Use Most states require indoor cultivation and facilities are usually connected to municipal systems. California allows outdoor cultivation, and under strict controls, surface water withdrawals

Growing Media Sophisticated growing media employed, but must also be analyzed; have been found to contain heavy metals

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Severe Environmental Impacts

Large scale illegal grows in northern California

National Forest land

Pesticides and other toxics used with little knowledge or care

Booby traps set on public lands

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The Future

Wave of state-legalization will continue; November ballot referendum in 3 more states


Major corporate investments:
Scott's Miracle-Gro / Hawthorne Gardening
Constellation Brands - \$5 billion
Coca Cola

Increased focus on diversion from state-authorized programs

Federal standoff also seems likely to continue

Black market likely to continue to exist, at least regionally

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Thank You

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