

2019 ASTSWMO Joint Hazardous Waste and Materials Management Training

Cannabis Waste Management in Colorado

Current practices & emerging issues

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Waste streams associated with the cannabis industry

- Many...
 - Cultivation sector: failed crops, “hot hemp”
 - Manufacturing sector: product spec not met, post-extraction flower
 - Distribution/Retailer sector: returned items, open product for samples, expired products
 - Lab sector: spent solvents, samples
- Some may be solid waste, some may be haz waste, some are exempt...



Cannabis Environmental Impacts

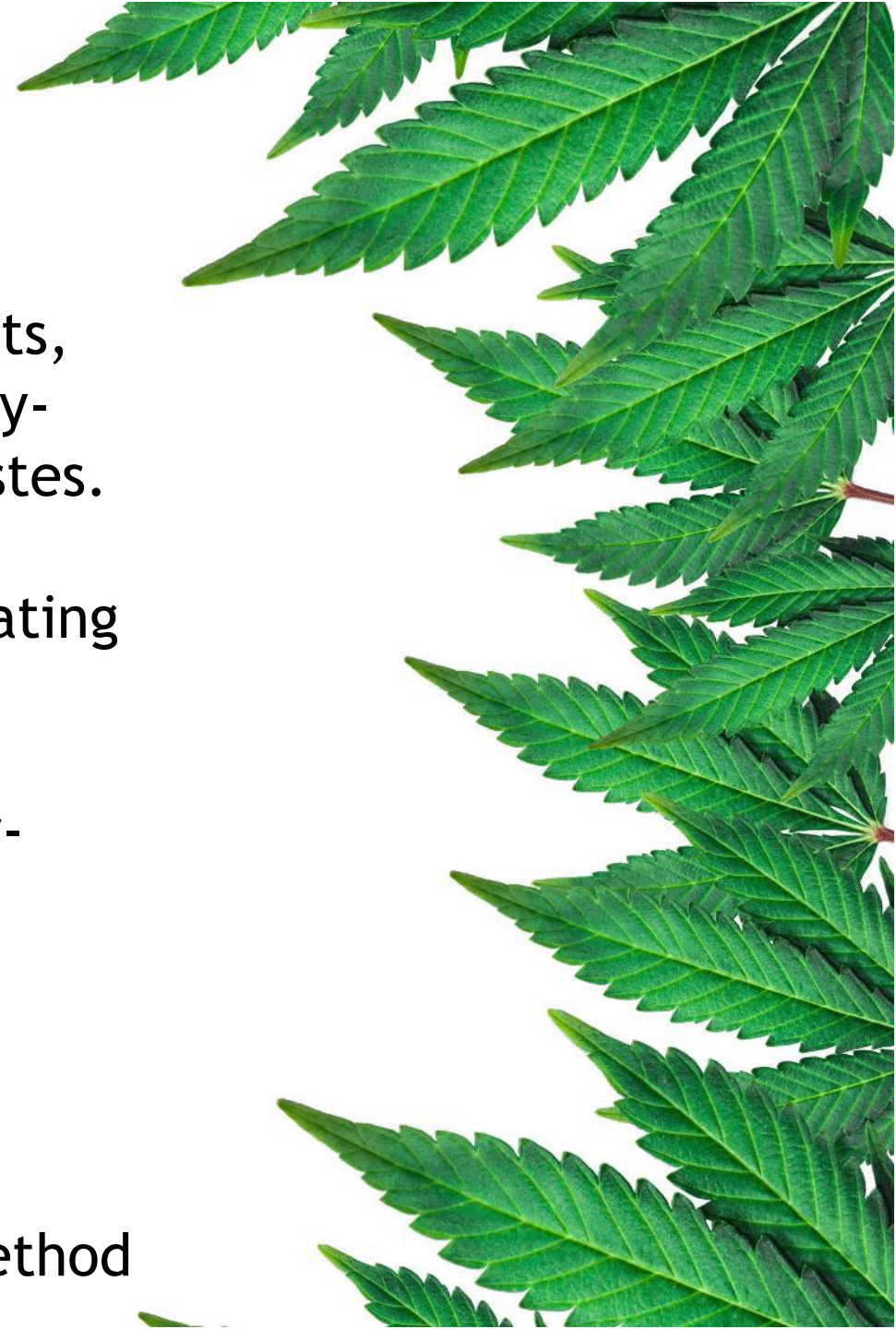
Waste - Solid and hazardous wastes may include marijuana plant material, marijuana-infused products, pesticides, fertilizers, solvents, wastewater, mercury-containing lighting, compressed gases and other wastes.

Air - VOCs emitted from growing cannabis & evaporating solvents during extraction processes.

Energy - High electricity demand to run lighting, air-conditioning and dehumidifiers.

Water - Very water intensive but usage varies dramatically by whether it is indoor vs outdoor, hydroponic or soil, condensate recapture?, etc.

- Irrigation efficiency differs dramatically by method



Compliance Bulletin

- Available on the Hazardous Materials & Waste Management Division's website:
 - Solid waste guidance and policy page
 - Waste mgmt. and recycling page under the "What's New?" section
 - Hazardous waste mgmt. guidance and policy page under the section "Applicable to all generators"



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Compliance Bulletin

Solid and Hazardous Waste

Marijuana and Marijuana-Related Waste Disposal

Updated January 2019

The medical and recreational marijuana industry in Colorado encompasses a wide array of businesses including grow operations, product manufacturers, dispensaries and more. Article XVIII, Section 16 of the Colorado Constitution defines a “Marijuana Establishment” as a marijuana cultivation facility, marijuana testing facility, marijuana product manufacturing facility or a retail marijuana store. All of these businesses generate wastes that must be handled appropriately to avoid endangering public health and the environment. These wastes may be regulated as solid or hazardous wastes and may



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Who might benefit from this bulletin?

- “Marijuana Establishments”
 - Includes any cultivation facilities, testing facilities, product manufacturing facilities, or retail stores that handle marijuana
- Home growers
- Care givers
- Anyone else that may handle marijuana and/or marijuana-related products
- Anyone that generates solid and/or hazardous wastes related to the cultivation, testing, manufacture, or distribution of marijuana and/or marijuana-related products



Proper disposal: marijuana plant material and marijuana-infused products

- Secure receptacle
- Rendered “unusable and unrecognizable”
 - Grind or compact the marijuana waste
 - Blend with paper waste, plastic waste, cardboard waste, food waste, grease or other compostable oil waste, bokashi, or other compost activators, soil, sawdust, or other wastes if approved by DOR
 - Resulting mixture = at least 50% non-marijuana waste and such that the resulting mixture cannot be easily sorted and separated



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Then what...?

- 1. Landfill with a CD
- 2. Compost facility with a CD
- 3. Composted on-site if mixed with other compostable materials



Proper disposal: potentially hazardous marijuana-related wastes

- May include certain pesticides, herbicides, solvents, mercury-containing lighting, marijuana soaked in solvent for extraction purposes, etc.
- Hazardous waste determination
 - Link to guidance on hazardous wastes found at end of compliance bulletin
 - Is it a listed hazardous waste?
 - Is it a characteristic hazardous waste? Ignitable, Corrosive, Reactive, Toxic
 - Unsure? Call our Customer Technical Assistance line (303)692-3320



Non-hazardous liquids disposal

- Wastewater treatment plant
 - Via sanitary sewer if receiving plant deems it acceptable
 - Via wastewater hauler
- Landfill solidification basin
- Other options may be available
 - Reuse?
 - Land application?



Mercury-containing lighting

- Fluorescents and compact fluorescents (CFLs)
- High-intensity discharge (HID) - metal halide, high-pressure sodium, mercury vapor...
- Regulated hazardous waste but may be managed as universal waste
 - Find a recycler
- See link for mercury-containing lighting at end of bulletin



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Household hazardous waste (HHW)

- Generated by growing marijuana in home for personal use in small quantities
- Excluded from regulation as hazardous waste
- Can be taken to HHW collection facility, if available
- Some areas offer HHW collection events
- Contact your local public health department for best option in your area
- For marijuana plant material and marijuana-infused products, please follow the guidance on rendering it “unusable and unrecognizable”



Hemp

- Must be <0.3%THC content, dry-weight basis
- Not subject to “unusable and unrecognizable” criteria
- Still need to make hazardous waste determination on post-extraction hemp
- If “hot hemp” (>0.3%THC) then CDA will oversee crop destruction



Up & coming...

- Fiber recovery exemption from 50/50 rule for stalks, stems, root balls SB18-187
- Allowing for irrigation of hemp with reclaimed water SB18-038
- Allowing for recycling programs at facilities for packaging waste SB 19-224
- Allowing for e-waste recycling of vape cartridges SB 19-224





<http://www.vaping360.com>



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Emerging issues

- Difficult for some facilities to meet “unusable and unrecognizable” criteria
 - Lack of enough other waste for 50/50 mix
 - Using bleach, ammonia, etc. to render unusable
- Disposal of solvent with $>0.3\%$ THC content?
 - Can't cross state lines; no incinerator in CO



Thanks!

For further information contact us at:

Hazardous Materials & Waste Management Division Customer
Technical Assistance Line: 303-692-3320

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