

## Notes

### NEWMOA Hazardous Waste Conference Call

March 10, 2020

#### Topic: Wastes from Hemp and Marijuana Growers & Processors

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**Participants:** CT DEEP (8 people); ME DEP (3 people); MD Dept. of the Env. (1 person); Mass DEP (7 people); NH DES (9 people); NJ DEP (13 people); NYS DEC (18 people); RI DEM (1 person); VT DEC (7 people); EPA Region 1 (4 people); EPA Region 2 (4 people); EPA Headquarters (3 people); NEWMOA (1 person)

Call leader: Mass DEP

Notes prepared by Paula Hanley-Tagliaferri, NJ DEP

Massachusetts DEP asked the members of the group to address the following questions during the call:

1. If you have licensed cannabis or hemp facilities in your state, have you inspected any? When, how many?
2. What type of facilities were they: cultivator, product manufacturer, retail store, other?
3. What wastes did you observe/learn about and how did they handle them? Hazardous waste, solid waste, recyclable material?
4. Were there any violations?
5. Did/does your state have outreach to this industry?
6. Anything else pertinent to hazardous waste or solid waste management you'd like to share?

## **Introduction by MassDEP**

1. & 2. Recreational marijuana is legal in Massachusetts. There are 24 licensed cultivators/manufacturers, 31 retailers, 3 cultivators, 2 transporters, 1 micro-business, and 1 certified lab. 21 cultivators/manufacturers grow plants inside under lights to the flower stage and process flowers to make their products. Nearly all cultivators are also manufacturers. Two of the cultivators are outdoor cultivators. Product manufacturers extract the oil from the plant using two methods: a liquid ethanol blend or CO<sub>2</sub> gas extractions. With the solvent, they extract the oil, and then boil off the solvent. The extracted oil is the product that is used to make other products. The manufactured products include brownies, cookies, gummies, lotions, tinctures, and others. The operations range in size from 5,000 to 100,000 square feet. They pay an annual licensing fee of \$5,000 to \$25,000 per year. The industry is growing rapidly.

3.& 4. Three facilities have been inspected by MassDEP. These facilities are owned by two companies. Each building holds its own licenses to cultivate and manufacture. The Fitchburg facility is about 65,000 to 70,000 square feet. They cultivate and produce products. They extract oil from the plants, which contains the active ingredient. They use an ethanol blend to process the plants. The solvent soaked plants are managed as hazardous waste at one facility (due to flammability), and the plants are handled as solid waste at the two other facilities. There are questions about the plant waste that contain solvents. Further investigation has revealed that solvent does drip from the plants and accumulate on the bottoms of the containers. Facilities need to do a HW determination on this material. Left over ethanol is used to clean processing equipment. They boil off the ethanol and are left with an oil material called crude, which contains the product and goes on for further production. Plant root balls and stems are solid waste and are sent for composting offsite; some facilities mix other cannabis waste like oils with kitty litter and dispose of it in the garbage.

Another extraction process uses supercritical CO<sub>2</sub>, which forces out the oil and extracts various compounds. CO<sub>2</sub> is reused in the process.

At the larger Fitchburg facility, they generated about 8 55-gallon drums/month of plant waste soaked with ethanol. Solvents are reused until they become too contaminated. They use it as a cleaning compound to clean equipment. Other smaller facilities generate less HW per month.

Violations found at the facilities inspected by DEP include satellite accumulation container of waste solvent not labeled; not properly posted signage in accumulation area; and weekly inspection of central accumulation area not done. Also, failure to do proper HW determination for expired water treatment chemical and maybe solvent-soaked plants handled as solid waste at one facility. Other issues include solvent used is causing VOC emissions and odor issues. One facility in Franklin (not inspected) is using biomass in a roll-off to reduce VOC emissions. Solvent containing rags are laundered offsite. Cardboard and plastic waste collected separately and stored in roll-off containers.

All plants are grown with LED lights.

MassDEP has not visited any hemp growers so has no experience with those operations.

5. & 6. MassDEP has not done any outreach to the industry yet. There is a guidance document on energy and the environment that was developed by the Cannabis Control Commission for the industry. The focus is mostly on energy. They also show waste best management practices and some information on solid waste management, including aerobic digestion and composting. Nothing on hazardous waste. DEP is working on controlling VOC emissions, and working on permitting sites that emit. There are odor issues at facilities, and DEP gets complaints. A facility in Franklin, MA installed a biofilter involving wood chips and film; the air goes through the filter to remove the odors.

### **Connecticut**

1. Recreational marijuana is not legal; however, hemp is legal. Licenses are issued to hemp growers and processors. There are 118 licensed hemp growers and 110 licensed hemp processors in the State. DEEP has not inspected these facilities as of yet. It is legal to retail hemp products (i.e., skin care, herbal supplements, etc.), and these facilities are separately licensed. No waste has been observed due to no inspections being performed. There has been some interaction with hemp growers through the pesticide program due to disputes going on about certain pesticides that can only be used for specific agricultural applications. The pesticides that hemp growers want to use does not align with the regulations of the pesticide program. This has caused issues with pesticide registration, application, and licensing requirements.

2. Connecticut medical marijuana program: All growers in Connecticut are using CO2 extraction method for any plant matter that is being used to create a concentrated oil. Connecticut regulations prohibit the use of solvents. Facilities must test vegetative waste for THC to determine if it is unrecoverable and unusable and if it is, it is discarded through compost.

3. & 4. Not inspected, so no information.

5. No outreach. When more coordination has taken place with the pesticide program and colleagues in the Department of Consumer Protection Drug Control Program, they may do more outreach.

6. None.

Growers are using CO2 extraction methods and not using solvents, which alleviates many problems.

For waste to be rendered unusable, it must be below 0.3 percent THC. It must also be mixed with an organic material that will compost. Kitty litter does not have the correct compatibility with composting and tends to make the waste unable to be composted. All waste being mixed with kitty litter must be placed in the regular trash.

Additional question: Some marijuana and hemp facilities have laboratories for analysis that can create hazardous waste. Does anyone have experience with this?

HPLC machines are used in the laboratory, but they have not yet been inspected.

Two facilities in Massachusetts have labs, and there is likely to be HW generated in these operations. The MassDEP inspectors did not visit the labs during their inspections.

## **Maine**

1. & 2. Recreational marijuana is legal. However, no facilities have been inspected by DEP at this point. Maine has done testing on confiscated marijuana and conducted a series of composting trials. THC content was reduced to less than 0.1 percent detectable through 8 weeks of composting using a mixture of horse manure and waste feed. The plant material is readily compostable, and Maine believes it can work for both marijuana and hemp. Due to being federally regulated, there is an issue with movement of the material. It is best to compost at the facility if there is space. If transport is necessary, there needs to be further discussion on final disposition. If the waste is going to go to a landfill, kitty litter can be used to mix with the waste. Otherwise, they suggest mixing with food residue or animal manure so that it is rendered unusable and transported to a composting facility.

3. & 4. Not inspected, so no information.

5. No outreach.

6. Solid waste: Three facilities have been visited. One conducted CO2 extraction. The other used ethanol, and their vegetative waste held 2 percent ethanol when it was ready for disposal. There is also a laboratory in the State that has a huge amount of marijuana waste that needs to be disposed of. SW program is working with them on a composting project at the facility. Recreational facilities are beginning to become licensed so when the State and municipality create a permit, the program will roll out.

Additional question: Anyone that touches a hazardous substance needs to be a DEA registrant. Is that an issue with off-site composting in Maine?

DEA's perspective is that there are no trafficking issues when the plant material has been mixed with manure or organic material. This eliminates the need for registration. If the facilities choose not to mix the waste with organic material and transports it off-site when it contains more than 0.3 percent THC, the transporter is required to be a DEA registrant. The receiving facility would have to be observed for rendering it unusable before it can be released to them for composting. This is an extra step that would not be necessary if they performed the composting right at the facility.

## **New Hampshire**

1. & 2. There is one laboratory and three alternative treatment centers (ATC's) in the State. The laboratory sends most of the extract to their main facility. This lab was inspected in 2017 as a routine hazardous waste inspection. The cannabis waste streams were ignitable (D001) because of methanol, acetonitrile, and traces of ethanol and isopropyl alcohol. There is also some corrosive waste (hydrochloric and nitric acids) from the metal's digestion and ICPMS. The ATC's are required to perform a CO2 extraction of the oil, but they do use ethanol for washes of the extract, and they use a rotary evaporator or Rotovap to distill off and recollect the ethanol. Most of them do retain the ethanol and reuse it as much as possible because there is a very limited list of chemicals that are allowed on site. DES is unsure of how waste is being disposed of at this time. It is most likely being sent to landfills or incineration. NH is unsure of how many hemp growers there are in the State.

3. & 4. Not inspected, so no information.

5. No outreach.

6. SW Program has received inquiries about composting at a farm, but the company never followed through to get approval. They are probably disposing of their vegetative waste.

## **New Jersey**

1. & 2. Two growers in NJ for smokable medical marijuana grade products. NJ DEP has not visited these sites. Unsure what is going on with hemp. It may be controlled by the Department of Agriculture, but DEP needs to look into that more.

3. & 4. Not inspected, so no information.

5. No outreach.

6. None.

## **New York**

1. & 2. Has been involved with the Department of Health about medical growers and composting. Currently, NY has about a dozen medical marijuana licenses. DEC has not been to any of the facilities yet. There are also hemp growers, but they have not looked at them yet. There are 12 registrations for medical marijuana. Recreational marijuana might become legalized in April, so they are beginning to look at all aspects of this in order to prepare.

3. & 4. Not inspected, so no information.

5. & 6. Has been trying to get guidance to assist in outreach seeing if the facilities want to do composting on site. Also, looking into the transportation of waste.

## **Rhode Island**

1. & 2. The Department of Business Regulations license the facilities. There are a number of cannabis and hemp facilities. Received 25 applications for hemp, and that is either growers, processors, or a dual license. No inspections conducted because that falls with the Department of Business Regulations. There are three compassion centers, but it is unknown how many medical marijuana facilities there are. These facilities are licensed by either the Department of Business Regulations or the Department of Health.

3. & 4. Not inspected, so no information.

5. No outreach.

6. None.

## **Vermont**

1. 2. 3. & 4. There are 115 licensed processors that are registered through the Department of Agriculture to perform CBD extraction, but it is unknown what method of extraction is being used - CO2 or solvent extraction. The Hazardous Waste Program is aware of two processors that have registered with the Program as generators. VT has visited one of these facilities for a learning experience rather than an inspection. When they observed violations, they did inform them of what they needed to correct. It was a processor that was using ethanol to extract CBD. They were generating approximately one 55-gallon drum of ethanol waste per week, and they were working on redoing their extraction process so they could substantially reduce the waste generated. They were talking about reworking their process so that there would not be any ethanol waste, but this is not something they were currently implementing. They also have a lab where they test their products, and there is waste being generated there from the instrumentation in the lab that they were managing as hazardous waste. The violations that DEC observed there were incorrect generator status, which led to many other deficiencies. They were in VSQG status but were generating SQG amounts, so they did not have the SQG management standards in place. VT is unsure how to advise processors on what to do with their plant waste that has been centrifuged, because they do not have a threshold of ethanol that deems the waste hazardous. Because of this, it is unknown how to inform these processors on how to properly manage their waste. The second registered hemp processor is not currently operating.

6. Solid waste: Don't have experience with marijuana. Asking hemp generators to verify that their waste is not ignitable. If it is not hazardous, it can be handled just like any other organic solid waste and can typically go to composting. There are roughly 940 registered hemp growers and a lot of those are farm based and may be processing their own material on their own farm. Vegetative material can be handled on the farm without any permit or oversight. That handles a large chunk of the hemp processing waste that is being generated in the State. More work needs to be done on the medical marijuana side and what happens to the residual waste from extraction.

Most states agree that environmental officials have work to do in order to fully understand how these facilities will be regulated. It is a very fast-growing area that is challenging to try to keep up with. It may help to discuss these issues with Colorado, where they have much more experience.

Additional Comments:

The Massachusetts Cannabis Commissioner issues the licenses to facilities. They have to renew every year. Their inspections do not cover waste issues.

There are a number of odor and noise issues, including those related to chillers and engines that are impacting nearby neighborhoods and schools. In Fitchburg, the facility has 13 ground source heat pumps that help circulate the air. The circulated ethylene glycol goes to heat exchangers and there is a water heated underground unit.

Additional Questions:

1. Last year, Colorado has DEA issue with waste materials not allowed to be shipped out of state. They have no destruction method for in-state solvents. Anyone know where the solvents are going?

No answer.

2. Any waste at retailers?

Unknown, if generating at retail sites.