CANNABIS AND THE ENVIRONMENT

Frequently Asked Questions (FAQ)

Cannabis cultivation and processing are expanding, as hemp and marijuana products are being legalized across the country. Construction, installation, growing and processing of cannabis is regulated through the Michigan Department of Environment, Great Lakes, and Energy (EGLE)'s water, waste, and air regulations. The marijuana industry is obligated to know and abide by the environmental regulations that apply to them.

Noncompliance with environmental regulations may lead to violations or other escalated enforcement actions. EGLE has created several guidance documents to aid in the understanding of these regulations, how to comply, and where to go for help.

Other federal, state, and local regulations or programs may apply. It is the responsibility of the licensee to comply with all applicable regulations.

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GENERAL

1. What impact does the cannabis industry have on the environment?

Across the cannabis industry, there is the potential for significant adverse environmental impacts. Cultivation of cannabis can result in impacts to water quality, emissions of air pollutants, degradation of soils, and increased water withdrawals. The processing of cannabis into the final consumer products may result in additional impacts to water quality and air quality, and the generation of potentially hazardous waste streams. The electricity demands of many indoor operations, as well as the transportation of cannabis products throughout the industry, can result in additional adverse environmental impacts. Fortunately, many of these adverse impacts can be avoided or reduced by utilizing environmental best management practices. It is the responsibility of the cannabis industry to abide by these best management practices and to operate in compliance with existing environmental regulations to minimize their overall environmental footprint.

AIR

2. What air pollutants are emitted by the cannabis industry?

Volatile organic compounds (VOCs) are emitted during the cultivation and processing of cannabis. Emissions of these compounds naturally occur during plant growth. VOC emissions may also occur during the processing of cannabis plants due to evaporation of solvents or other volatile chemicals used during extraction processes. VOC emissions are of concern due to their potential to react with nitrogen oxides in the atmosphere and form ground-level ozone. For more information on ground-level ozone and its impact on human health and the environment, visit the EGLE Ozone webpage.

3. What can be done to reduce air quality impacts from cannabis operations?

Installing building-wide filtration is recommended to reduce the amount of air pollutants emitted to ambient air. Activate carbon filtration is one of the most used filtration technologies and is effective in reducing VOC emissions and may aid in the reduction of odors. The use of building-wide filtration should be paired with negative building pressure to ensure that air is moving through the control system before leaving the building. For extraction processes, the use of proper chemical management practices and closed loop extraction systems can minimize VOC emissions due to evaporative losses.

4. Do I need an air use permit to grow cannabis?

The Air Quality Division does not require an air use permit, also known as a Permit to Install (PTI), for the growing of cannabis because VOC emission rates from cannabis have not been established. Studies of VOC emissions from cannabis are ongoing. The applicability of Michigan's Air Pollution Control Rules may change as more information becomes available.

Other activities associated with the growing and processing of cannabis may require an air use PTI. For example, a grow facility may need to build a power plant or install emergency generators. Power plants, emergency generators, essential oil extraction, and other equipment may require a PTI. Contact the Environmental Assistance Center to speak with an expert who can assist you in determining if a PTI is required.

5. Do I need an air use permit to extract oils, waxes, terpenes, THC, CBD, etc. from cannabis?

The Air Quality Division issues permits to cannabis companies that use essential oil extraction. If your essential oil extraction process uses volatile chemicals, then you may need an air use permit. If your essential oil extraction process does not use chemicals or heat, then the process may not need an air use permit. For example, the cold-press extraction process uses mechanical pressure to squeeze fluids from plant material. However, if you use heat or solvents to process the cold-press extract, you probably need an air use permit. Contact the EGLE Environmental Assistance Center to speak with an expert who can guide you through the permit application process.

6. Is there guidance on how to calculate emissions from oil extraction?

Yes. If you do processing at your facility and extract oils from your plants, you should complete the Calculating Air Emissions from Processing Operations worksheet. Air permits are required prior to construction or installation of any processing equipment. If you have already installed and are operating your equipment, you may still need an air permit. This guidance will walk you through calculating your emissions and next steps for a permit application.

7. What can be done to mitigate or eliminate cannabis odors?

Odor reduction technologies that may be utilized at cannabis facilities include activated carbon filtration, ozone generation control, as well as misters, foggers, and vaporizers. The most effective odor control option can depend on the activities of the cannabis facility. Generally, activated carbon filtration is recommended due to its known effectiveness in removing volatile organic compounds and other gaseous contaminants from the air stream.

8. Do I need an air use permit to install an odor control system?

There are some odor control technologies that may require a permit to install (PTI) to operate. Odor control systems that inject chemicals through mechanisms such as a spray, mist, or vapor may be required to obtain a PTI. In addition, if your odor control system creates ozone to destroy odors, you may need a permit. On the other hand, if your odor control system removes (rather than destroys) odor-causing chemicals before they leave the building, such as an activated carbon odor control system, you do not need an air use PTI. Contact the EGLE Environmental Assistance Center to speak with an expert who can assist you in determining if a PTI is required.

9. Where can I find more information on air use permits and the permitting process?

The EGLE Air Permits page contains information on the process of applying for and obtaining a permit to install. You may also find additional information on permitting of the cannabis industry at Michigan.gov/EGLECannabis.

10. Who should I contact about cannabis odors from a residential property?

Odors originating from cultivation, processing, or use of cannabis products at residential properties will be handled by the municipality at this time. EGLE is currently in the process of developing guidance for municipalities on handling odor complaints from marijuana facilities.

11. Who should I contact about cannabis odors originating from an industrial facility?

The authority that will handle odors from industrial cannabis sources will vary based on the type of source and whether it is permitted by the EGLE Air Quality Division. Odor complaints from hemp facilities will be managed by the Michigan Department of Agriculture and Rural Development (MDARD) and should be referred to the MDARD Right to Farm Program. Odor complaints originating from industrial-scale cultivation and/or processing of marijuana products that do not have an air use permit will be referred to the municipality. Complaints related to odors originating from sources that do have an air use permit will be handled by EGLE.

12. Where can I find more information on air issues associated with marijuana operations?

The Protecting Air Quality when Growing and Processing Marijuana has information about many air-related issues, including more specific information on air permitting and when an air permit is required.

WASTE

13. Can I mix 50% food waste with my marijuana waste to make it "unusable and unrecognizable?"

Yes. You can mix any solid waste that is not a hazardous waste with marijuana plant waste to make it "unusable and unrecognizable."

14. Can I send my marijuana plant waste to a compost facility?

Yes, but only if the following apply:

1. The compost facility is registered with EGLE.
2. The compost facility has obtained approval from EGLE's Composting Program to take marijuana waste.
3. The marijuana waste has been made "unusable and unrecognizable" with 50% inert organic materials that can be easily composted by the composting facility.
4. There are no residual chemicals from the processing of the marijuana left on or in the marijuana waste (i.e., liquid butane, liquid carbon dioxide, etc.).

15. How can I manage plant debris mixed with extraction chemicals?

Off-gassing ignitable chemicals like butane and ethanol is prohibited. If you have already generated contaminated waste, please contact EGLE to ensure that the solvent recovery is conducted in a manner that meets the hazardous waste generator treatment requirements found under the Part 5 hazardous waste rules. Any ignitable solvent contaminated debris is regulated as

a hazardous waste. Consequently, EGLE encourages extraction be performed to completely remove residual extraction chemicals to avoid generating contaminated plant material that is subject to the hazardous waste regulations. Strict rules apply to managing hazardous waste. It must be managed in closed containers that are label and there are storage time limits that must be met. Facilities that fail to meet the hazardous waste generator accumulation requirements require a hazardous waste storage license.

16. Can I compost my marijuana waste to utilize in my own marijuana growing operation?

Yes, but only if the following apply:

1. There are no residual chemicals present in the marijuana waste.
2. The marijuana waste is completely contained within a composting container, within a building, or under a roof on top of a cement pad.
    a. If composting outside without cover, approval through Marijuana Regulatory Agency (MRA) and EGLE is required before composting begins. Depending on the scale and type of materials being composted, EGLE may require the facility to obtain a Compost Facility Registration through EGLE's Composting Program.
3. All the finished compost product is utilized in the growing operation or is properly disposed of in accordance with MRA rules and regulations.
4. Michigan's MRA has approved the use of the finished material in the growing operation.

17. What does a composting site need to do to be approved to take marijuana waste materials?

Any Registered Composting Facility may seek approval to accept this waste by providing detailed answers to the questions in Compost Plan for Marijuana Waste (**Attachment 2**) and submitting them to Aaron Hiday, Compost Program Coordinator, at HidayA@Michigan.gov.

18. Can I compost my own marijuana waste or the marijuana waste of others to sell the finished compost?

Yes, but you must obtain a Compost Facility Registration and be approved to compost marijuana waste through EGLE's Composting Program. The marijuana waste will still be required to be mixed with 50% inert organic materials to make it "unusable and unrecognizable."

19. Where can I find more information on waste issues associated with marijuana operations?

The Solid Waste and Hazardous Waste Regulations for Growing and Processing Marijuana has information about many waste-related issues, including definitions for particular wastes and what can be done with those wastes. More information is available on the Composting Marijuana Waste Website.

WATER

20. What is wastewater and what are examples of wastewater generated from cannabis cultivation and cannabis processing facilities?

Wastewater is defined as liquid waste generated by industrial, commercial, or municipal processes that is discharged (disposed of) directly or indirectly into waters of the state (wetlands, streams, lakes) or to the ground surface or sub-surface (groundwater).

For cannabis cultivation facilities, wastewater may include, but is not limited to: irrigation runoff, reverse osmosis (RO) backwash and concentrate, dehumidification condensate, water softener backwash, and floor drain collection wastewater.

For cannabis processing facilities, wastewater may include, but is not limited to: excess water from solventless extraction processes such as bubble hash.

Additional wastewater generated from cultivation and/or processing facilities may include sanitary sewage and fire suppression test water.

All forms of wastewater need to be accounted for, and any discharges of wastewater to the ground or a water of the state require a discharge permit. See below for more details.

21. What are ways I can get rid of my wastewater?

Wastewater may be discharged to the ground. This requires a **groundwater discharge permit** from EGLE. There are many methods of discharge, such as spray irrigation, rapid infiltration basins, and subsurface disposal (i.e., drainfield). To qualify for a groundwater discharge permit, the wastewater must be sampled and must meet groundwater quality standards for groundwater and drinking water protection.

Wastewater may be discharged to surface water. This requires a **National Pollutant Discharge Elimination System (NPDES)** permit. To qualify for an NPDES permit, the wastewater must meet surface water quality standards.

Wastewater may be discharged to a wastewater treatment plant (WWTP) via sewer connection or via pump and haul *if and only if* the WWTP has the capacity to accept and treat the wastewater and has agreed to accept it. Discharging to a WWTP requires notification to the owner (typically the local municipality). If you are having the wastewater pumped and hauled to a WWTP, it must be hauled by a licensed liquid industrial-by product waste hauler. The WWTP will require wastewater samples and can shut off service to a facility for any violations, including changes to the wastewater or addition of wastewater not authorized by the WWTP.

22. Can wastewater generated from solvent-based processing be discharged to the ground/groundwater or surface water?

No. Cannabis processing wastewater that contains solvents is considered hazardous waste and requires disposal according to **hazardous waste regulations**.

23. Do I need to sample my wastewater?

Yes, you will need to sample your wastewater for any of the discharge options listed above. This is to assess the contents of the wastewater. This information can be used to identify treatment needs for the chosen discharge type.

It is the responsibility of the applicant, preferably with the assistance of an environmental consultant, to propose an adequate treatment and discharge plan that meets the requirements for the chosen discharge method.

Samples must be representative of the discharge. For example, if a facility wants to collect and discharge reverse osmosis backwash, dehumidification condensate, and irrigation runoff, a sample should be taken of those three waste streams combined.

The wastewater must be tested for all parameters (non-metals and metals) in the "Part 22 Wastewater Testing Parameters for Wastewater Characterization" document (Attachment 1). Please note that samples must be tested according to the EPA Analytical Method, or SW-846 method listed for each parameter.

24. Does the sanitary sewage generated from bathrooms and sinks in my facility need to be separated?

It is not required, but it is recommended that the wastewater from sinks and bathrooms (sanitary sewage) be plumbed separately from the cannabis wastewater.

If sanitary sewage is comingled with the cannabis wastewater, additional regulations and requirements may apply.

If the sanitary sewage is kept separate, a permit from the local health department would be required to cover the sanitary sewage discharge for discharges under 6,000 gallons per day. If the sanitary sewage wastewater is over 6,000 gallons per day, both a local health department permit and a groundwater discharge permit would be required.

Cannabis wastewater cannot be discharged to a septic system designed for sanitary sewage under any circumstance.

25. I have floor drains in my facility. Is that considered wastewater? Can that be connected to my septic system?

Yes, liquid waste collected by floor drains in any area of the facility (except for bathrooms, break rooms, and in some cases, kitchens) is considered wastewater and requires a discharge permit. These floor drains must have a collection system and cannot be plumbed or put into the septic system.

Floor drains in bathrooms, break rooms, and/or kitchens can be connected to the septic system if approved by the local health department, but no wastewater (i.e., irrigation runoff, dehumidification condensate, RO backwash, etc.) can be discharged to these drains.

26. Where do I go to apply for a permit if I have chosen to pursue a groundwater or surface water discharge?

All wastewater permit applications are on the MiEnviro database. You will need to create an account in MiEnviro and set up a site. You will then select Start a New Form on the left-hand side of the page.

For groundwater discharges, you will search for and select the application titled "Groundwater Discharge Permit Application Site Specific Authorization: Rule 323.2210(y)."

For surface water discharges, you will search for and select the application titled "National Pollutant Discharge Elimination System (NPDES) Industrial/Commercial Application Form."

27. For groundwater discharges, what do I need to consider when choosing between sub-surface disposal (i.e., drainfield), rapid infiltration, and land-surface application for the discharge method?

You will need to consider the specific conditions of your site. This includes the soil type(s) present. Web Soil Survey is a good source to start with to determine the soil type(s) expected on site.

Sub-surface and rapid infiltration discharge methods require the wastewater to meet the Part 22 limits at "end of pipe" prior to discharge. In other words, the wastewater may require treatment before it is suitable for discharge. Land-surface application methods, such as spray irrigation, account for crop uptake (based on the crop and soil type(s) present) and may have a greater allowance for nutrients such as phosphorus and total inorganic nitrogen.

Ideal soils for sub-surface disposal are well-drained soils. Whereas ideal soils for land-surface application are soils that are not well-drained (typically non-sandy soils). This allows for the wastewater to be held in the rooting zone of actively growing plants so that the plants can uptake nutrients and grant treatment credit for the wastewater disposal. These sites should have a well-established vegetative cover that consists of perennial vegetation, and the vegetation should be managed in a way that keeps the plants in the growth stage of their reproductive cycle.

Both sub-surface and land-surface application sites should be sites that do not have a high or seasonally high-water table (within the first five feet of the soil surface). The Web Soil Survey can help determine this as well. High water tables can create direct conduits to the underlying aquifer depending on the volume of wastewater that is being discharged.

Selected sites should also be adequately separated from surface water bodies, including lakes, rivers, and wetlands.

28. Do I need to notify anyone besides the receiving facility and/or licensed hauler about wastewater that is being pumped and hauled from my facility?

Yes. EGLE will conduct a site inspection to assure the holding tank is watertight and there is no outlet. This covers non-sanitary sewage wastewater only. A contract must be shared with a liquid industrial by-product hauler and this letter will be shared with the Cannabis Regulatory Agency. The groundwater program will issue a pump and haul letter that includes requirements if changes are made to the facility's operation or wastewater that would require a permit.

MORE INFORMATION

EGLE Cannabis Web Site: Michigan.gov/EGLECannabis

Attachment 1

Part 22 Effluent and Groundwater Characterization Requirements Environmental Reporting Limits for EGLE Laboratory

Metals	Chemical Abstract Service Number	Water Reporting Limits (ug/L)	EPA Analytical Method or SW-846	R323.2222 Discharge Standard (ug/L)
Aluminum	7429905	5	200.8/6020A	25
Antimony	7440360	1	200.8/6020A	3
Arsenic	7440382	1	200.8/6020A	5
Barium	7740393	5	200.8/6020A	1000
Beryllium	7440417	1	200.8/6020A	2
Boron	7740428	20	200.7/6010C	250
Cadmium	7740439	0.2	200.8/6020A	2.5
Calcium	8047594	1000	200.7/6010C	
Chromium	7740473	1	200.8/6020A	50
Cobalt	7740484	5	200.8/6020A	20
Copper	7740508	1	200.8/6020A	500
Iron	7439896	20	200.7/6010C	300
Lead	7439921	1	200.8/6020A	2
Lithium	7439932	10	200.7/6010C	85
Magnesium	7439954	500	200.7/6010C	200,000
Manganese	7439965	5	200.8/6020A	50
Mercury	7439976	0.2	245.1/7470A, 7471A	1
Molybdenum	7439987	5	200.8/6020A	36.5
Nickel	7440020	2	200.8/6020A	50
Potassium	7440097	200	200.7/6010C	
Selenium	7782492	1	200.8/6020A	25
Silver	7440224	0.2	200.8/6020A	17
Sodium	17341252	1000	200.7/6010C	230,000
Strontium	7740246	5	200.8/6020A	2300
Thallium	7740280	2	200.8/6020A	1
Titanium	7440326	5	200.8/6020A	
Vanadium	7740622	2	200.8/6020A	2.2
Zinc	7740666	5	200.8/6020A	1200

Non-Metals	Chemical Abstract Service Number	Water Reporting Limits (ug/L)	EPA Analytical Method or SW-846	R323.2222 Discharge Standard (ug/L)
Alkalinity, Bicarbonate		10,000	2320B	
Ammonia	7664417	10	350.1	5000 (TIN)
Chloride	168870006	1000	325.2/4500CL-E	250,000
Cyanide, Total	57125	5	ASTM/D7284	100
Hardness (Ca_2CO_3)		1000	2340B	
Nitrate	14797558	10	353.2	5000 (TIN)
Nitrite	14797650	10	353.2	500 (TIN)
pH		0.1 s.u.	4500-H /9045/150.1	6.5 - 9.0 s.u.
Phosphorus, Total	7723140	10	365.4/365.1	1000
Residue (TDS)		20,000	2540C	
Sulfate	14808798	5000	375.2	250,000

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

COMPOST PLAN FOR MARIJUANA WASTE

Registered Composting Facilities must submit a complete and thorough Compost Plan for Marijuana Waste for approval to accept this waste. Submit the plan to Aaron Hiday, the Michigan Department of Environment, Great Lakes, and Energy's Compost Program Coordinator, at HidayA@Michigan.gov.

1. **How will your facility document the amount of mixed marijuana waste received on-site?**

2. **Will accepting marijuana waste dramatically increase organics on-site?**

3. **How will your facility document that all marijuana waste arriving on-site has been made unusable and unrecognizable?**

   NOTE: EGLE recommends that you request a list of materials and methods used to mix the marijuana waste from any facilities you receive that waste from as part of your documentation.

4. **Are materials being mixed with the marijuana waste safe for your composting operation?**

   ☐ **Yes** ☐ **No** **Explain:**

5. **Your facility must be able to handle the planned increased amounts of organics at your compost facility. What equipment does your facility use to create finished compost?**

6. **Marijuana waste that comes from a facility that conducts oil extraction may contain chemical residues. These residues may negatively impact your composting activities. How will your facility ensure the marijuana waste does not contain chemical residuals?**

7. **Marijuana production is a year-round process in the State of Michigan. A single test of finished compost containing marijuana waste is not adequate to ensure the final product in not compromised. What type of test and how often will your facility test finished compost? Include test plan, if available.**

8. **Due to the higher possible risks of accepting marijuana waste materials, a basic soil test on finished products will no longer be adequate. What parameters will your facility test for in the finished compost produced on-site?**

   NOTE: Visit Michigan.gov/EGLECompost for basic recommended testing parameters.

9. **Please describe how your composting facility physically prevents the public from accessing areas where marijuana waste may be stored.**

Please submit an updated sitemap(s) displaying property boundaries and any security measures in place at your composting facility. The site map(s) should also meet all requirements listed in the Compost Registration Form.