

State of Montana
Department of Environmental Quality
Montana Cannabis Waste Guidance



Materials Management Program
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Introduction

Montana adopted its first medical marijuana law in 2004. In 2020, voters passed two complementary ballot initiatives to legalize, regulate, and tax recreational marijuana. A study released by the University of Montana Bureau of Business and Economic Research (BBER) in September of 2020 estimates the total market size of marijuana to be between 30.4 and 32.8 metric tons of associated products per year.¹ While it is difficult to predict what kind of increase Montana will see from sales of recreational marijuana starting on January 1, 2022, the state of Michigan saw growth of greater than 30% per month in the first two months of legal recreational sales in 2020.² This trend has been seen in other states that have passed recreational legalization laws in the past decade making one thing certain – marijuana is an emergent waste stream destined to grow.

There are several associated wastes in the marijuana industry, each with its own unique management requirements and issues. At the industrial scale, the two largest are organic plant wastes and single-use consumer packaging. The National Cannabis Industry Association (NCIA) estimates that the United States will see an annual increase of about 27,876 Metric Tons CO₂ Equivalent (MTCO₂-E) in the upcoming years from the landfilling of cannabis plant waste – comparable to the emissions of more than 6,000 passenger vehicles per year.³ Additionally, there is also a large amount of hazardous waste generated in the form of solvents, pesticides, herbicides, and mercury-containing lamps.

This document will serve as a guide to the existing best practices in Montana for cannabis-related wastes. Please reach out to the Materials Management Program or the Hazardous Waste Program at the Department of Environmental Quality (DEQ), the Cannabis Control Division at the Department of Revenue, or the State Hemp Program at the Department of Agriculture (MDA) if you have any questions not covered in this guidance document.

How to Use This Document

This document is intended as a best practices guide for cannabis growers, manufacturers, dispensaries, laboratories, and individual users. All these activities 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 include marijuana plant material, marijuana products, pesticides, fertilizers, solvents, wastewater, mercury-containing lighting, and other wastes.

The information in this guide is based on the currently available environmental data concerning marijuana waste handling and disposal. Please keep in mind that the administrative rules of the Department of Revenue, ARM 42.39.310 (see [Appendix B](#)), must be adhered to when considering the disposal of marijuana plant material, marijuana concentrate, marijuana derivatives, marijuana-infused products, and other associated wastes.

¹ Barkey, Patrick M. and Robert Sonora. *An Assessment of the Market and Tax Revenue Potential of Recreational Cannabis in Montana*. Missoula: University of Montana Bureau of Business and Economic Research, 2020

² Burns, Gus. "Michigan recreational marijuana sales increase 34% in February, prices down slightly." MLive. Ann Arbor, 18 March 2020. Online News. 2 December 2020. <https://www.mlive.com/public-interest/2020/03/michigan-recreational-marijuana-sales-increase-34-in-february-prices-down-slightly.html>

³ National Cannabis Industry Association. "Environmental Sustainability in the Cannabis Industry." Industry Report. 2020. Electronic. 2 December 2020.

The purpose of this document is to guide the marijuana industry and cannabis users on how to handle and dispose of these wastes in accordance with relevant state regulations. Please do not rely solely on this document for compliance guidance on all relevant laws and regulations.

Advance Considerations for New Businesses

Before beginning any marijuana-related operations, cultivators should consider the following:

- What quantities of waste will be generated, and what are the different waste streams?
- What licensing and permitting requirements will apply to this operation?
- Is a plan in place for dealing with solid and hazardous wastes generated during operations?
- If the operation is generating [hazardous waste](#), has the cultivator determined what their generator category is and what rules may apply?
 - Conditionally exempt small quantity generator (CESQG).
 - Small-quantity generator (SQG).
 - Large-quantity generator (LQG).
- Is there a waste storage plan addressing storage methods and locations and length of time the waste may be stored?
- Is the waste in a secured receptacle in possession of and under the licensee's control?
- If disposing on-site, what readily available materials could be used to render marijuana plant material and marijuana products unusable and unrecognizable?
- What method will be used to render marijuana products unusable and unrecognizable?
- Where will the waste be sent, and how will it be transported (marijuana waste may not be transported across state lines)?
- Will any composting of marijuana-related waste occur on-site?



Department of Revenue Cannabis Control Division

Requirements

Waste from marijuana facilities in Montana is strictly regulated. Montana’s Department of Revenue has administrative rules include the following provisions:

- Marijuana-related wastes must be stored, managed, and disposed of in accordance with all state and local laws and regulations.
- Marijuana waste must be in a secured waste receptacle in the possession and under the licensee's control. This is often one of the most significant issues that facilities have with their waste – please contact the [Cannabis Control Division](#) for more information on how to secure your waste correctly.
- Marijuana plant waste that must be rendered unusable before disposal includes:
 - Marijuana plant waste, including roots, stalks, leaves, and stems that have not been processed with solvent;
 - Waste solvents used in the manufacturing process;
 - Spent solvents, laboratory waste, and excess marijuana from any quality assurance testing; and
 - Marijuana items that ultimately fail to meet testing requirements (ARM [42.39.307](#)).
- The method allowed to render a marijuana item unusable is by grinding (for solids) and incorporating or absorbing (for liquids) the marijuana item with other ground materials, so the resulting mixture is undesirable, unrecognizable, unfit for human use, and incapable of growth or germination. *For whole marijuana plants, the resulting mixture must be at least 50 percent non-marijuana waste by volume.*
- Non-hazardous marijuana waste shall be disposed of as follows:

Marijuana Item	Destruction Method	Disposal Method
Marijuana plants	Mix with yard debris, wood chips, sawdust, soil, manure, vegetable-based grease or oils, other wastes	Compost or anaerobic digester, if available; off-site
Usable marijuana	Mix with yard debris, wood chips, sawdust, soil, manure, vegetable-based grease or oils, other wastes	Landfill, transfer station, or incinerator if composting not available or feasible
Liquid concentrate, extracts, or infused products	Absorb in cat litter, slack lime, soil, or similar substance	Landfill, transfer station, or incinerator

Solid concentrate, extracts, or infused products	Mix with soil, slack lime, garbage, or similar substance	Landfill, transfer station, or incinerator
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- Marijuana testing laboratories, marijuana manufacturers, and other licensees that generate hazardous waste must follow all applicable rules and regulations for hazardous waste disposal, including ARM [17.53.113](#). Licensees need to contact the [Department of Environmental Quality's Hazardous Waste Program](#) for assistance.
- A licensee must maintain accurate and comprehensive records regarding waste material in the seed-to-sale tracking system that accounts for, reconciles, and evidences all waste activity related to the disposal of marijuana, including:
 - a) what was disposed of;
 - b) quantity by weight or volume;
 - c) date disposed of;
 - d) video evidence of disposal to be retained for 30 days; and
 - e) reason for the disposal.
- A licensee must provide a minimum of 72 hours' notice in the seed-to-sale tracking system before rendering the marijuana item unusable and disposing of it.

Plant Waste Best Practices

In Montana, there are a few available methods of marijuana plant waste disposal:

- On-site composting
- Off-site composting
- Burning (with local burn restriction compliance); and
- Landfilling

All these methods can have economic and environmental impacts and should be carefully considered by facilities when making their waste management plans.

While burning the waste can be a quick way to dispose of large volumes of dried plant waste, it is often the least environmentally preferable method if performed without any air pollutant prevention or containment system in place.

There are several off-site commercial composting companies across Montana, and this can be a viable choice for many. In the case of whole plant disposal, off-site composting will require that the waste is rendered unusable and mixed with 50% non-marijuana waste by volume.

However, on-site composting of marijuana plant waste is perhaps the most economical and environmentally preferable choice for disposal of this material.

Cannabis stalks and leftover biomass contain a wealth of nitrogen and other nutrients valuable to growers. The difficulty lies in accessing those nutrients, as the fibrous nature of cannabis and its high

concentration of lignin prevents the plant waste from efficiently breaking down. Utilizing a microbial inoculant specifically designed for breaking down cannabis plant matter will help growers repurpose their leftover biomass as a fertilizer, reducing their fertilizer cost and waste removal costs and promoting higher plant yields.

There are many ways for facilities to compost on-site, with some methods being more suitable than others for these plants. It is undoubtedly the best way for growers to leverage the embedded natural capital of leaf, stalk, stem, root, and post-extraction plant materials.

Composting Basics⁴

All organic material will eventually decompose. The speed at which it decomposes depends on these factors:

Carbon to nitrogen ratio:

The ratio should be roughly 30 parts carbon to 1 part nitrogen (30:1) by weight. The composting process slows if there is not enough nitrogen, while too much nitrogen may cause ammonia gas generation, which can create unpleasant odors. Dry leaves, straw, and wood chips are a good source of carbon; fresh grass, manure, and blood meal are good nitrogen sources.

Surface area:

Increasing the surface area of the material to be composted can be done by chopping, shredding, mowing, or breaking up the material.

Decomposition by microorganisms in the compost pile takes place on the particle surfaces. The increased surface area means that the microorganisms multiply more quickly, digest more, and generate more heat.

Aeration:

Efficient decomposition can only occur if sufficient oxygen is present. However, the decomposition process itself depletes available oxygen. Aerating the compost adds oxygen back into the process. Effective methods to add oxygen include using equipment to turn the compost pile or using a blower to force air through the pile. If the compost pile is not aerated properly, the “active” stage will slow down, and objectionable odors may develop.

Moisture:



⁴ Adapted from Vogel, Michael P. *Home Composting*. MontGuide. Bozeman: Montana State University Extension, 2011. December 2020. <<https://stillwater.msueextension.org/fcsmontguides/HomeComposting.pdf>>

The compost pile should have a moisture content of 40-60%. If the moisture content falls below 40%, the microbial activity will slow down or become dormant. When the moisture content exceeds 60%, aeration is hindered, nutrients are leached out, decomposition slows, and odor from anaerobic decomposition is emitted. A pile that is too wet may be “turned” or can be corrected by adding dry materials.

Temperature:

Microorganisms generate heat as they digest organic material. A compost pile with temperatures between 90 – 150°F is composting efficiently. Higher temperatures will kill off some of the beneficial organisms in the pile and can be “turned” to release heat. The process will inevitably slow during the winter months in cold climates but warm up in the spring. Some microorganisms like cool temperatures and will continue the decomposition process in cooler weather, although this happens at a much slower pace.

Time:

The composting process takes time. Different microorganisms populate the pile at different temperatures:

- During the psychrophilic stage, the bacteria will begin to colonize and generate heat. This process will take a few days.
- Once temperatures increase, the mesophilic bacteria will take over. This will take a few more days depending on the weather, moisture, oxygen level, etc.
- The thermophilic stage may take a few days to several weeks and allows heat-loving bacteria to digest the more resistant fats, cellulose, and proteins.
- Lastly, the compost needs to cure for up to several months.

Many resources are available to help a facility develop a tuned-in method for their specific site needs.

Bokashi Method

Bokashi fermentation remains a largely unknown technology with numerous nuances. Marijuana plant waste can be treated on-site using the Bokashi method, an acidic anaerobic (oxygen-free) fermentation process.

The marijuana waste must be made “unusable and unrecognizable” on the licensed marijuana cultivator’s property by grinding the waste and depositing it into a 55-gallon drum or another similar container capable of becoming air-tight when closed.

Next, Bokashi or a similar compost activator is added along with water. It is essential that the proportions of Bokashi compost activator to organic material be correct, and the pH stays near 3-4. Otherwise, the material will fail to ferment and will rot instead.

Microorganisms contained in the Bokashi compost activator will quickly “pickle” the marijuana and begin breaking down the organic matter. After a two-week anaerobic fermentation period, the resulting liquid, or probiotic tea, may be used as a nutrient-rich fertilizer. The solid organic matter may be used as a soil amendment.

Bokashi fermentation can be done throughout the year and requires a very small footprint. It is easily scalable, produces neither heat nor gases, and eliminates nuisance factors linked to composting sites like odors and vermin. The fermenting container will not attract flies because it is kept sealed.

Anaerobic Digestion

An emerging best practice for managing plant waste on-site is anaerobic digestion. Using on-site micro-anaerobic digestion for plant waste over traditional disposal methods creates a beneficial closed-loop system, providing 100% diversion and reuse. Placing these resources back into the business operation allows the business to capitalize on embedded assets and has the added benefit of reducing waste removal costs.⁵

This method uses plant waste to:

- Generate and capture methane (CH₄) to be used as energy
- Carbon dioxide (CO₂) to be used in extraction or cultivation systems
- Nutrient-rich fertilizer to be integrated back into soils or cultivation

Anaerobic digesters are an emerging technology with many different iterations. Facilities are encouraged to seek out manufacturers that specialize in this process. More information about anaerobic digestion can be found on the [EPA website](#).⁶



Examples of small, homemade anaerobic digesters.



Photo of a 120kW engine generator set combusting recovered biogas, generating electricity for on-farm use⁶

Composting Cannabis⁷

The main types of cannabis residuals used for composting include:

⁵ City of Denver Cannabis Sustainability Working Group. "Cannabis Environmental Best Management Practices Guide." Industry Guide. 2018. December 2020. https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/MJ%20Sustainability/Cannabis_BestManagementPracticesGuide_FINAL.pdf.

⁶ EPA. *How Does Anaerobic Digestion Work?* August 2020. 2020 December. <https://www.epa.gov/agstar/how-does-anaerobic-digestion-work>.

⁷ Calvez, Van. "A Primer On Composting Cannabis Residuals." *Biocycle*. 1 June 2021. 10 May 2022. <https://www.biocycle.net/a-primer-on-composting-cannabis-residuals/>

- **Grow Residuals:** Leaves, stalks, roots/soil, seedlings generated by the growing and harvesting of cannabis plants that are not used to make a commercial product.
- **Process Residuals:** Result from the processing/extraction of cannabis into marketable products.
- **Product Residuals:** Cannabis industry products that have been returned, recalled, or rejected, including lozenges, oil, topicals, or edibles.

Table 1: Grow Residuals Characteristics

Residual Type	Nitrogen Content	Carbon Content	Moisture Content	Porosity*
Fan leaves/Seedlings	High	Low	High	Low
Stems & Stalks	Low	High	Low	High
Growing media/soil & Roots	Low	High	Low	Low
Flower/Bud/Sugar Leaves	High	Low	Low	Low

**After grinding*

Table 1 lines out the nitrogen, carbon, moisture, and porosity characteristics of each type of residual.

Grow Residuals

The major types of grow residuals (by volume of feedstocks) include:

- **Fan leaves:** The easily recognized leaves of cannabis plants are low in cannabinoids and therefore are not a source of marketable product. Fan leaves are often the predominant grow residual by volume.
- **Seeds/seedlings:** Including rejected and immature plants.
- **Stems and stalks:** Fibrous structures of the cannabis plant.
- **Growing media/soil and roots:** Everything below the grow medium level.

Because cannabis plants are predominately leafy and green, (e.g. the fan leaves have a relatively high nitrogen content and a relatively low carbon content), the carbon to nitrogen (C:N) ratio is relatively low at around 15-20:1.

The recommended starting C:N ratio for hot composting is around 25:1 or 30:1. Therefore, using a carbon-rich bulking agent might be needed to increase porosity in the compost pile. Once shredded, the fibrous stalks and stems can provide the necessary carbon and porosity for the compost process. However, once shredded, stems and stalks are a smaller component than the leaves by volume. Another good source of carbon and porosity are the remaining grow residual feedstocks, including roots, growing media such as coir, peat moss, and various types of fertilizers, (including compost) are all great contributors to the compost recipe.

Growing media often contains inorganics such as soil, vermiculite, and rock wool. These components do not biologically decompose; therefore, they do not directly contribute to the biological composting process. However, they may add or reduce porosity depending upon density, moisture content, and particle size. Small proportions of these inorganics likely will not interfere with the composting process, but if there is a large proportion of these inorganic materials, it might be preferable to add these at the end stage of thermophilic composting.

Process Residuals

Process residuals include sugar leaf and flower/bud residuals. Valuable oils can be extracted from these, leaving a residual that is brittle or powdery, low in moisture content, but with a high nitrogen content. Processing sometimes involves the use of solvents to extract cannabinoids. Contaminated residuals should not be added to a compost recipe; these are typically treated as hazardous wastes and disposed of separately. See the [hazardous waste](#) section of this document for more information.

Product Residuals/Rejects

Effective composting of cannabis products depends chiefly on the type of product residuals/rejects that need to be composted. An example includes cannabis-infused oils that need to be absorbed by some type of material, which could be the flower/bud residual mentioned above, or something with similar characteristics such as sawdust.

Rejected cannabis products will usually be a smaller constituent by volume and weight to the larger composting process. In addition, these products will typically provide high nutrient nitrogen content but lower carbon, moisture, and porosity. Rejected cannabis products will typically be like processing residuals in regard to the overall compost recipe.

Examples of Effective Cannabis Composting Recipes

Building an effective composting recipe for cannabis feedstocks starts with closely examining the nature of the cannabis feedstocks available for composting. Next is to provide complementary feedstocks to balance moisture, porosity, and C:N ratio. Once in the windrow, aerated static pile, or vessel, these cannabis-based recipes should be composted according to best composting management practices to achieve satisfactory results.

Example 1: Grow Residuals that are primarily a mix of leaf and stem with a small amount of growing media:

Feedstocks by volume:

- 3 parts shredded fan leaf
- 1 part shredded stalks/stems
- 2 parts wood chips
- 2 parts grass clippings

The resulting combination will most likely have a C:N ratio of 30:1 and a moisture content of about 63%. Small amounts of grow media added to this recipe should not change the characteristics of the recipe.

Example 2: Process Residuals

Process residuals typically have high nitrogen, low moisture content, low porosity, and the consistency of sawdust. Added feedstocks need to balance the recipe by increasing moisture content, carbon, and porosity.

Dry process residual feedstocks can be hydrophobic and resist the addition of water, much like it can be hard to add water to very dry soil. One strategy is to combine finely ground process residuals with a feedstock that has high integral moisture content, such as food scraps or shredded green waste (e.g., grass clippings). Another method would be to soak wood chips in water prior to blending with the process residuals. This would add the necessary moisture to pile instead of adding the water separately.

Feedstocks by volume:

- 1-2 parts shredded green waste and/or wet (soaked) wood chips
- 1 part process residuals (flower/bud crumble/dust)

The green waste (or wet wood chip) provides the porosity and moisture content needed to balance the fine texture and lower moisture content of the processing residual.⁸

Non-Compliant Hemp Plants

Per USDA Enforcement Discretion – Interim Final Rule, the disposal of hemp crops with a THC level of over 0.3% on a dry weight basis is a controlled substance that must be disposed of on-site according to the disposal methods approved by USDA.

USDA will conduct random audits of licensees to verify hemp is being produced in accordance with the provisions of the rule. Non-compliant hemp should be disked or tilled back into the soil or composted instead of burning. Hemp stems retain extensive amounts of lignin (resistant to microbial decomposition) and should be chipped or mulched into finer particles accessible to the decomposition pathways.

Biomass that is exempt under the Controlled Substance Act (CSAs) guidance, when applied as a standalone amendment or combined with other forms of organic matter, promotes the liberation of macro and micronutrients in the soil. Due to the limited supply of global phosphorus reserves, incorporating these organic materials back into the soil is imperative. It should comply with the operational guidelines outlined in the respective farm's operational planning documents (e.g., Land Use Plans, Nutrient Management Plans, Crop Management Plan, Conservation Soil/Agricultural Practices).⁹

Laboratory Waste

The Department of Health and Human Services' state environmental laboratory and the Department of Revenue's Cannabis Control Program provide dual oversight of marijuana testing laboratories in

⁸ Calvez, Van. "A Primer On Composting Cannabis Residuals." Biocycle. 1 June 2021. 10 May 2022. <https://www.biocycle.net/a-primer-on-composting-cannabis-residuals/>

⁹ National Cannabis Industry Association. "Environmental Sustainability in the Cannabis Industry." Industry Report. 2020. Electronic. 2 December 2020.

Montana. The state environmental laboratory is responsible for endorsements, inspections, and suspension of marijuana testing laboratories under the Montana Marijuana Regulation and Taxation Act.

While the waste streams of other cannabis industry sectors may have a more significant environmental impact overall, marijuana laboratories performing compliance testing produce a considerable amount of plastic and chemical waste due to single-use materials. Many cannabis manufacturers are also building internal labs to test their products, which means the number of labs in the cannabis industry is likely to grow.

To ensure products are accurately labeled and do not contain harmful contaminants, analysts must use disposable and single-use plastics, including gloves, pipette tips, racks to hold tips, sample bags, and tubes.

The University of Exeter estimated that 280 scientists in its bioscience department produced 267 tons of plastic waste in 2014.¹⁰ Based on this data, a cannabis testing lab with 15 analysts could use 1,500 – 3,000 pairs of disposable gloves in a single month.

Labs can rarely recycle these items, both because many of them are made from a mixture of plastics and because they encounter hazardous materials. Testing performed in cannabis labs can involve hazardous solvents in sample preparation and analysis. The solvents are accumulated and transported by a licensed hazardous waste transporter to a treatment, storage, and disposal facility, sometimes crossing state lines and traveling significant distances. The solvents are either incinerated or treated, and/or disposed of in landfills according to strict EPA regulations. See [Appendix A](#) for more information.

Often, disposable materials offer cost and time benefits at an expense to the environment (i.e., single-use plastics). Labs can strive to employ materials suited for reuse and integrate processes to accommodate material reuse, such as appropriate washing and sterilization.

To reduce the environmental impact of plastic waste, labs can:

- Decrease the amount of plastic they use by switching to glass wherever possible,
- Buy consumables in bulk to avoid surplus packaging
- Strive to use the least number of tubes and pipette tips possible.
- It is difficult to reuse plastics within the lab because of contamination and sterilization requirements. Labs can use washing systems to reuse supplies like pipette tips for tests where complete sterilization of plastics is unnecessary. These devices allow for pipette tips to be reused 25 – 40 times.¹¹
- In instances where sterilization is required, an autoclave can be used if the materials used are appropriate.
- Choose consumable vendors with recycling (take-back) programs or zero waste manufacturing facilities. For example, Kimberly-Clark's RightCycle program allows their customers to send back

¹⁰ Mauricio A. Urbina, Andrew J. R. Watts & Erin E. Reardon. "Labs should cut plastic waste too." *Nature* 528 (2015): 479. December 2020.

¹¹ Howes, Laura. "Can laboratories move away from single-use plastic?" *Chemical & Engineering News* 97.43 (2019). December 2020. <https://cen.acs.org/environment/sustainability/laboratories-move-away-single-use/97/i43>.

hard to recycle gloves and single-use apparel so they can recycle them into eco-responsible consumer goods.¹²

Cannabis labs should consider greener chemistry when designing analytical methods. Testing cannabis products involves a lot of solvent extractions and liquid chromatography – both of which generate significant solvent waste. “Green” chemicals can degrade into non-toxic compounds or be recovered and used again in high efficiency closed-loop solvent recovery systems. Additionally, instituting a Solvent Management Plan (SMP) can identify where actual or potential emissions occur to improve processes or reduce releases to the environment.

Packaging Waste

The second-largest waste stream in the cannabis industry after plant waste is consumer packaging waste. It is estimated that the cannabis industry will have produced 1 billion units of single-use plastic waste annually by 2020. A significant downstream waste source, the problem with this single-use packaging waste is often felt on the consumer end.¹³ A significant portion of these containers are not realistically recyclable for most consumers. Therefore, reducing the amount and frequency of these non-recyclable materials reduces the overall impact and can be attractive to customers.

Cannabis products are sold in various types of packaging, encompassing several different materials, sizes, shapes, and functionalities. Below is an overview of some common types of packaging as well as attributes and uses:



- **Vials:** Typically made from virgin polypropylene (#5) plastic and widely used for packaging flower. Some manufacturers include recycled materials in the containers. Versions with child-resistant caps are available, eliminating the need for an additional exit package. Currently, this material is only accepted in some municipal recycling programs in Montana.
- **Concentrate Containers:** Small, typically screw-top containers can be made from a variety of materials, including polystyrene, acrylic, silicone, glass, or mixed materials such as polystyrene with

¹² RightCycle by Kimberly-Clark Professional. <https://www.kcprofessional.com/umbraco/rightcycle.html>

¹³ National Cannabis Industry Association. "Environmental Sustainability in the Cannabis Industry." Industry Report. 2020. Electronic. 2 December 2020.

a silicone insert. While some materials are technically recyclable, most recycling facilities sort out very small items. The small size of these containers generally means they will end up in the landfill even if placed in a recycling bin.

- Pre-Roll Tubes: Narrow plastic tubes used to sell single joints are typically polypropylene. Similar to concentrate containers, small dimensions make pre-roll tubes challenging to recycle.
- Mylar Bags: Used to package various products, typically concentrate and food products. Mylar, or polyethylene terephthalate (PET) plastic film, generally is only accepted as a separate material in some recycling programs. Resealable versions are preferable because they enable extended use by the customer.
- Exit Bags: Child-resistant bags used as outer packaging when products sold are in non-child-resistant packaging. Often made with mixed materials, such as foil with a polyethylene coating, typically not recyclable. Reusable versions are available.

Under the [packaging waste rules in Montana](#), reusable containers are allowed as long as the packaging protects the product from contamination, does not impart any toxic or harmful substance to the product, is labeled per MCA [16-12-215](#) and [16-12-208](#), and comes in child-resistant packaging under ARM [42.39.102](#). To comply with the rules in Montana, these containers would need to be sanitized between uses, especially when used for edible products that require food-safe containers. This could cause logistical issues for the retail facilities. However, allowing reusable take-back programs could significantly reduce the amount of single-use plastic containers in the consumer waste stream.

Other states have implemented packaging take-back programs for consumers to bring recyclable packaging waste back to the retail location for increased bulk recycling, but this also has associated challenges in storage, bailing, or special pick-ups logistics. Reducing the number of single-use plastics in the waste stream would be environmentally preferable as most of these materials are destined for the landfill.



Sustainable Packaging

“Packaging is strongly influenced by social desires, political preferences, and regulatory and economic effects. In addition, packaging is not only a product—a package—but a system...”¹⁴

¹⁴ Pongrácz, Eva. "The Environmental Impacts of Packaging." Kutz, Myer. *Environmentally Conscious Materials and Chemicals Processing*. Hoboken: John Wiley & Sons, Inc., 2007. 237-278.

https://www.researchgate.net/publication/229796182_The_Environmental_Impacts_of_Packaging.

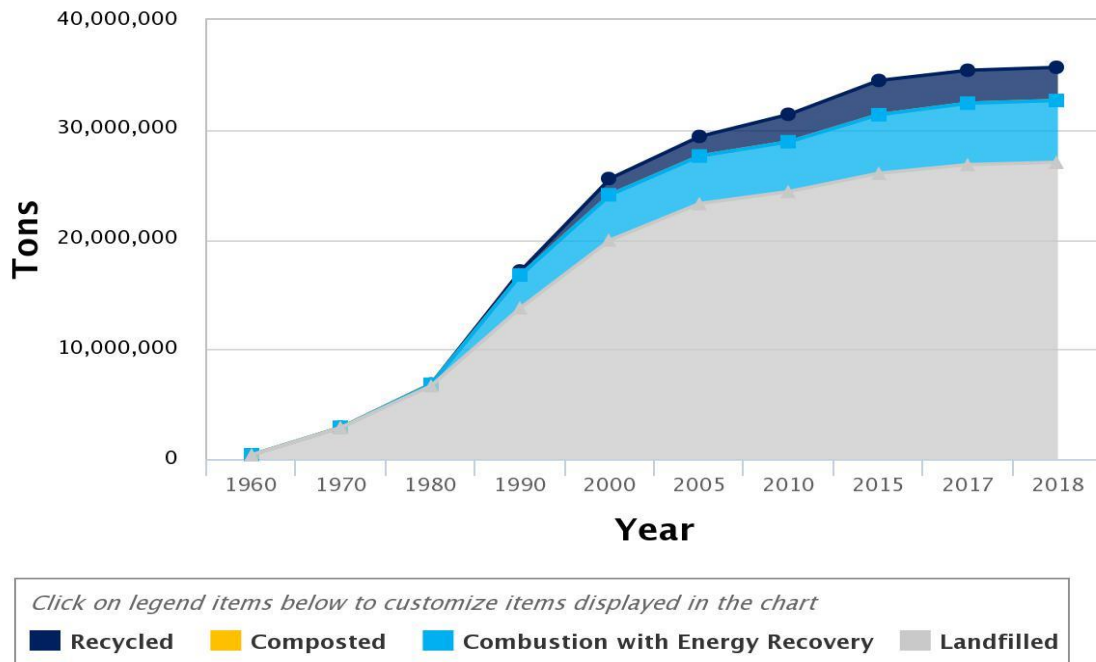
When choosing one of the many types of packaging available on the market today, facilities should consider – among the numerous other considerations – the disposal methods available to their customers. For example, compostable plastic packaging is only environmentally preferable if there is a nearby commercial composting facility that can take that material; otherwise, the high environmental impact from the production of those materials means that this product is no better, and is sometimes worse, than traditional plastics.

Best Practices for packaging include:

- Institute a reusable container program – small glass containers are ideally suited to this task in the cannabis industry since they are endlessly reusable, and their non-reactive nature makes them very easy to sanitize.
- Utilize child-resistant packaging to eliminate the need for an additional exit package. If exit packaging is necessary, facilities should offer a reusable type.
- Encourage customers to return reusable packaging to the store – the model used in coffee shops that offer a small discount/deposit is incredibly effective.
- Implement a packaging return program at the point of sale. Some customers may not have a recycling service at home, so returning to the store may be the only recycling option.
- Discuss with packaging suppliers or manufacturers the possibility of a take-back program. Manufacturers may be able to accept used packaging and reuse it or reform it into new packaging, creating a closed-loop system for that product.
- Whenever possible, select packaging that is made from recycled content and is recyclable, such as recycled PET plastics, recycled high-density polyethylene (HDPE), or cardboard.
- Currently, PET (#1) and HDPE (#2) are the only plastics easily recycled in Montana. Facilities are encouraged to seek these out first.
- Choose lightweight packaging that requires less fuel to ship, reducing the associated environmental and economic costs.
- Check with your local recycling companies and organizations to ensure they'll accept plastic packaging from cannabis projects.

- If considering compostable materials, always check to see if they are approved by organizations like the [Biodegradable Products Institute \(BPI\)](#) or [Cedar Grove](#). Some product manufacturers will “greenwash” their products – deceptively use green credentials such as “compostable” or “biodegradable” to persuade consumers that their products are environmentally preferable when they are not.

Plastics Waste Management: 1960–2018



Source: EPA 2020 <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data>

Recycling and composting of cannabis-related packaging may be available in different communities. Encourage your customers to contact their local recycling program, composting company, or recycling company to see if this is an option. If purchasers need guidance on what materials best suit their community, they are encouraged to reach out to the [DEQ Materials Management Program](#).

Vape Waste

Disposable Vape Pens

Disposable vape pens are a growing waste stream in the cannabis industry. They have disposal issues like other cannabis packaging wastes. However, the most significant problem is that there is not yet an efficient way to thoroughly remove cannabis residue from vape cartridges and other concentrate containers. This dramatically limits how these items can be managed or recycled.

Whenever possible, facilities should seek out vape pens with more robust materials, ideally medical grade plastics, for the primary body of the devices. Additionally, they should seek cartridges and pods that accommodate opening and cleaning. These can be more easily reused or recycled than most other plastics.

Facilities should check with the manufacturers of their vape pens to see if they offer a take-back system for their products to create loop systems that recover vape waste for reuse or recycling. Vape recycling programs can be supported using a deposit system where consumers will get a discount/deposit at the dispensary for bringing in a used device for recycling.

To have a functional dispensary based vape recycling program, commonly called “dispensary take-back recycling,” three things are needed in Montana facilities:

1. Vape products designed for reuse
2. A recycler with the capability to process vape pen components/batteries
3. Viable end markets for the materials



Vape Pen Batteries

A special consideration for vape pen waste is their batteries. These components may fall into the category of hazardous or universal wastes under state and federal law due to the presence of heavy metals, such as lithium-ion batteries. See [hazardous and universal waste](#) for information on these waste streams.

Most notably, these items should not be sent to municipal landfills. With respect to vape pen batteries, the onus falls on the consumer to properly dispose of them, but consumers are seldom made aware that the batteries have a finite life and should be disposed of in a certain way. Facilities should educate their customers on these issues and consider offering take-back programs that can group these items for easier recycling to divert these items from landfills.

Hazardous and Universal Waste

Hazardous waste must be disposed of in a manner consistent with federal, state, and local laws, regulations, rules, or other requirements. This waste category may include but is not limited to spent organic solvents, refining chemicals, used reactants, compressed gases or aerosols, bulk or residual fertilizers, cleaning solutions, and universal wastes (mercury-containing lighting, ballasts, batteries, etc.).

You must determine which regulations apply to the waste before you dispose of it, including making a hazardous waste determination. Hazardous wastes must be disposed of properly by a registered hazardous waste transporter shipping to a hazardous waste treatment, storage, and disposal facility (TSDF).

Liquid waste that is a hazardous waste must be disposed of properly. Cannabis operations must partner with a hazardous waste transporter to ship hazardous waste to a licensed disposal facility.

If you generate regulated hazardous wastes, you may need to notify the [Montana Department of Environment Quality Hazardous Waste Program](#) at 406-444-5300.

EPA form 8700-12 is required to get an EPA ID number for your facility. That form can be found [here](#).

Resource Conservation and Recovery Act (RCRA):

The Resource Conservation and Recovery Act is a federal law that regulates solid and hazardous waste with respect to generation, transportation, treatment, storage, and disposal, and is often referred to as giving environmental agencies control over waste from “cradle to grave.” While RCRA is a federal law, all fifty states have been granted authority to implement the initial RCRA program. In Montana, hazardous waste is regulated through the Montana Hazardous Waste Act.

Facilities generating, transporting, disposing of, treating, or storing hazardous wastes are assigned identification numbers by the United States Environmental Protection Agency (USEPA). The numbers are used on Uniform Hazardous Waste Manifests, which must accompany hazardous waste shipments. Reducing and managing these wastes can reduce risks to employees and the environment and is essential for maintaining compliance. Source reduction and substitution represent the best opportunities for reducing risk and saving money on hazardous waste management and disposal.

Hazardous Waste Generator Types

There are three main types of hazardous waste generators:

Conditional Exempt Small Quantity Generators (CESQG)

These generators produce less than 220 pounds of non-acute hazardous waste in any calendar month or no more than 2.2 pounds of acute hazardous waste in any month. If a CESQG accumulates more than 2,200 pounds of hazardous waste, all hazardous waste on-site becomes subject to regulation as if generated by a small quantity generator.

Small Quantity Generators (SQG)

These generators produce between 220 pounds and 2,200 pounds of non-acute hazardous waste in any calendar month. If a SQG generates more than 2.2 pounds of acute hazardous waste in any month, all hazardous waste on-site becomes subject to regulation as if generated by a large generator. SQG’s may accumulate up to 13,228 pounds of hazardous waste on-site. A SQG may accumulate waste for up to 180 days. If the waste must be transported 200 miles or more for offsite treatment, storage, or disposal, the accumulation period extends to 270 days.

Large Quantity Generator (LQG)

These generators produce more than 2,200 pounds of non-acute hazardous waste in any calendar month or more than 2.2 pounds of acute hazardous waste in any month. Montana businesses in the cannabis industry are unlikely to meet this threshold currently.

Universal Waste and Mercury-containing lighting waste

Most lighting used for growing marijuana contains mercury. Although this waste is a regulated hazardous waste when disposed of, it can be managed as a universal waste with an alternate set of management standards. If you decide to manage your lighting wastes as universal wastes, you should identify a recycler that is permitted to accept these wastes for processing or disposal. Materials managed as universal wastes can be stored for up to a year and are not required to be shipped with a hazardous waste manifest and have relaxed storage requirements.

Please visit the webpage for the Montana Department of Environmental Quality, Hazardous Waste Program for a complete list of rules and regulations: <https://deq.mt.gov/Land/hazwaste>.

Other Lighting Considerations



Indoor cultivation produces organic wastes like an outdoor setting. But it also generates significant volumes of difficult to process waste like LED lights, High-Intensity Discharge (HID) Grow Lights, and Compact Fluorescent Lights (CFLs). The obvious best management practice for cultivators is to grow outside, climate permitting, or in a greenhouse where free passive solar energy as sunlight is available. Outdoor cultivation tends to have a smaller “waste footprint” when compared to indoor (non-greenhouse) cultivation practices.

When growing indoors, operators should select grow mediums that can be reused or composted and lights that can be recycled. It is not possible to recycle rockwool, but it may be possible to include it in commercial compost, depending on the facility’s unique policies. Producers must first consult with their local commercial composter for guidance and approval.

Non-Hazardous Liquid Wastes

Non-hazardous liquid waste may be transported to a wastewater treatment plant by a licensed wastewater hauler or via sanitary sewer pipes, so long as the treatment plant knows about the waste and deems it acceptable. Alternatively, liquid waste may be solidified by mixing with soil or other absorbent material to be sent to a landfill. Contact the receiving landfill to confirm the resulting mixture can meet its waste acceptance criteria before disposal at the landfill.

Personal-Use Marijuana Household Hazardous Waste

“Household hazardous waste” is a special category of waste that includes, but is not limited to, pesticides, herbicides, fertilizers, solvents, mercury-containing lights, and other materials related to marijuana cultivation. If they come from a home in quantities commonly generated by households, these types of wastes are excluded from regulation as hazardous waste. This kind of household hazardous waste may be disposed of at household hazardous waste collection events. Contact your county health department for the options available in your area.

If you are generating quantities of household hazardous waste that exceed the quantities commonly generated by a household and appear to be associated with commercial activities conducted in the home, then they are no longer household hazardous waste and need to be disposed of following the guidance above regarding [hazardous waste](#). Selling marijuana and/or marijuana-infused products is a commercial activity and any marijuana-related waste generated from that activity is not subject to the household hazardous waste exclusion. Check with your local jurisdiction to determine how many plants may be grown per person or per household. If the marijuana-related waste generated from the home is above the allowable amount, then the home may be generating hazardous waste that does not qualify for the household hazardous waste exclusion.

The best way to dispose of marijuana plant material and marijuana-infused products is to compost the waste at the residence. If that is not possible, please follow the guidance [above](#) to render it unusable and unrecognizable and then dispose of it in your household trash, commercial composter, or at your nearest landfill. Check with your nearest landfill and/or waste hauler to be sure they can take such material. If they cannot, the waste will need to be taken to a location that can accept it.

Appendix A – Resources

Cannabis Industry Sustainability

<https://thecannabisindustry.org/wp-content/uploads/2020/11/NCIA-Environmental-Policy-BMP-October-17-final.pdf>

https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/MJ%20Sustainability/Cannabis_BestManagementPracticesGuide_FINAL.pdf

<https://cdphe.colorado.gov/prevention-and-wellness/marijuana/greening-the-cannabis-industry>

Montana Department of Revenue (DOR)

<https://mtrevenue.gov/cannabis/>

EPA

https://www.epa.gov/sites/default/files/2016-09/documents/version_2_-_solvent_guidance_final_508_compliant_090116.pdf

Montana Department of Environmental Quality (DEQ)

Hazardous Waste

<http://deq.mt.gov/Land/hazwaste>

<https://deq.mt.gov/Portals/112/Land/Hazwaste/Documents/Forms/8700-12.pdf?ver=2018-01-18-145303-217>

https://www.ecfr.gov/cgi-bin/text-idx?SID=cc14f41ad2b9bfe6ead267b06991b9af&mc=true&tpl=/ecfrbrowse/Title40/40cfrv28_02.tpl#0

https://www.ecfr.gov/cgi-bin/text-idx?SID=cc14f41ad2b9bfe6ead267b06991b9af&mc=true&tpl=/ecfrbrowse/Title40/40cfrv29_02.tpl#0

https://leg.mt.gov/bills/mca_toc/75_10_4.htm

<http://deq.mt.gov/DEQAdmin/dir/legal/Chapters/Ch53-toc>

http://www-ehs.ucsd.edu/hazwaste/Blink_Haz_Waste_list.htm

http://deq.mt.gov/Land/Recycle/Real_Question#MT%20CFL

Materials Management/Solid Waste

<https://deq.mt.gov/Land/solidwaste/contacts>

<http://deq.mt.gov/land/recycle>

<https://deq.mt.gov/Land/recycle/compostingnew>

Department of Agriculture

Pesticide Disposal

<https://agr.mt.gov/Pesticide-Waste-Disposal-Program>

Industrial Hemp

<https://agr.mt.gov/Industrial-Hemp>

Composting

<https://www.compostingtechnology.com/compost-calculator/>

<https://www.compostingtechnology.com/what-makes-cannabis-composting-unique/>

<https://www.biocycle.net/a-primer-on-composting-cannabis-residuals/>

<https://deq.mt.gov/Portals/112/Land/Recycle/Documents/pdf/Compost-Recipe-Brochure-MT.pdf>

<https://stillwater.msuextension.org/fcsmontguides/HomeComposting.pdf>

https://www.ams.usda.gov/sites/default/files/media/Compost_FINAL.pdf

<http://www.cias.wisc.edu/wp-content/uploads/2008/07/artofcompost.pdf>

<https://www.nal.usda.gov/afsic/compost-and-composting>

Packaging

<https://www.bpiworld.org/>

<https://cedar-grove.com/>

<https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data>

Appendix B – Relevant Administrative Rules of Montana (ARM)

Department:	Department of Revenue
Chapter:	Cannabis Control
Subchapter:	Quality Assurance; Packaging and Labeling

Department of Revenue

[42.39.310 WASTE MANAGEMENT](#)

(1) A licensee must store, manage, and dispose of solid and liquid waste generated during marijuana production and processing in accordance with applicable state and local laws and regulations.

(2) A licensee must store marijuana waste in a secured waste receptacle in the possession of and under the control of the licensee.

(3) Waste that must be rendered unusable prior to disposal includes:

(a) marijuana plant waste, including roots, stalks, leaves, and stems that have not been processed with solvent;

(b) waste solvents used in the marijuana process;

(c) spent solvents, laboratory waste, and excess marijuana from any quality assurance testing; and

(d) marijuana items that ultimately fail to meet testing requirements.

(4) The allowable method to render a marijuana item unusable is by grinding (for solids) and incorporating or absorbing (for liquids) the marijuana item with other ground materials so the resulting mixture is undesirable, unrecognizable, unfit for human use, and incapable of growth or germination. For whole marijuana plants, the resulting mixture must be at least 50 percent non-marijuana waste by volume.

(5) For purposes of this rule, "use" includes, but is not limited to, ingestion, inhalation, topical application, processing, or remediation.

(6) Nonhazardous marijuana waste shall be disposed of as follows:

Marijuana Item	Destruction Method	Disposal Method
Marijuana plants	Mix with yard debris, wood chips, sawdust, soil, manure, vegetable-based grease or oils, other wastes	Compost or anaerobic digester, if available, off-site

Usable marijuana	Mix with yard debris, wood chips, sawdust, soil, manure, vegetable-based grease or oils, other wastes	Landfill, transfer station, or incinerator, if composting not available or feasible
Liquid concentrate, extracts, or infused products	Absorb in cat litter, slack lime, soil, or similar substance	Landfill, transfer station, or incinerator
Solid concentrate, extracts, or infused products	Mix with soil, slack lime, garbage, or similar substance	Landfill, transfer station, or incinerator

(7) Marijuana testing laboratories, marijuana manufacturers, and other licensees that generate hazardous waste shall follow all applicable rules and regulations for the disposal of hazardous waste, including ARM [17.53.105](#) and [17.53.113](#). Licensees need to contact the Department of Environmental Quality Hazardous Waste Program for assistance.

(8) A licensee must maintain accurate and comprehensive records regarding waste material in the seed-to-sale tracking system that accounts for, reconciles, and evidences all waste activity related to the disposal of marijuana to include:

- (a) what was disposed;
- (b) quantity by weight or volume;
- (c) date disposed;
- (d) video evidence of disposal to be retained for 30 days; and
- (e) reason for the disposal.

(9) A licensee must provide a minimum of 72 hours' notice in the seed-to-sale tracking system prior to rendering the marijuana item unusable and disposing of it.

[42.39.319 PACKAGING REQUIREMENTS](#)

(1) All packaging of marijuana and marijuana products shall:

- (a) protect the product from contamination and shall not impart any toxic or deleterious substance to the marijuana or marijuana product;
- (b) be capable of being resealed if the package contains more than one serving size;
- (c) not primarily appeal to children. Packaging that primarily appeals to children includes but is not limited to packaging that:
 - (i) depicts a child;
 - (ii) portrays objects, images, celebrities, or cartoon figures that primarily appeal to children or are commonly used to market products to children; or
 - (iii) otherwise has special attractiveness for children beyond the general attractiveness for adults;

(d) not bear any reasonable resemblance to the trademarked or characteristic packaging of any commercially available product including but not limited to candy, snacks, baked goods, or beverages.

(2) All marijuana and marijuana products provided to customers at the point of sale shall be in exit packaging that:

(a) is child-resistant as defined in ARM [42.39.102](#);

(b) is opaque; and

(c) contains the warnings required by [16-12-215](#), MCA, in the format required by [16-12-208](#), MCA.

(3) Drinkable marijuana products that contain more than one serving per package must include a device or mechanism for measuring a single serving of the product.

(4) Exit packaging of marijuana and marijuana products provided to customers at the point of sale may not contain any other information or design elements than what is allowed under [16-12-208\(6\)\(b\)\(ii\)](#), MCA.

Solid Waste

[17.50.503 WASTE GROUPS](#)

(1) Solid wastes are grouped based on physical and chemical characteristics which determine the degree of care required in handling and disposal and the potential of the wastes for causing environmental degradation or public health hazards. Solid wastes are categorized into three groups:

(a) Group II wastes include decomposable wastes and mixed solid wastes containing decomposable material but exclude regulated hazardous wastes. Examples include, but are not limited to, the following:

(i) municipal and household solid wastes such as garbage and putrescible organic materials, paper, cardboard, cloth, glass, metal, plastics, street sweepings, yard and garden wastes, digested sewage treatment sludges, water treatment sludges, ashes, dead animals, offal, discarded appliances, abandoned automobiles, and hospital and medical facility wastes, provided that infectious wastes have been rendered non-infectious to prevent the danger of disease; and

(ii) commercial and industrial solid wastes such as packaging materials, liquid or solid industrial process wastes that are chemically or biologically decomposable, contaminated soils, crop residues, manure, chemical fertilizers, and emptied pesticide containers that have been triple rinsed or processed by methods approved by the department.

(b) Group III wastes include wood wastes and non-water soluble solids. These wastes are characterized by their general inert nature and low potential for adverse environmental impacts. Examples include, but are not limited to, the following:

(i) inert solid waste such as unpainted brick, dirt, rock, and concrete;

(ii) clean, untreated, unglued wood materials, brush, unpainted or untreated lumber, and vehicle tires; and

(iii) industrial mineral wastes which are essentially inert and non-water soluble and do not contain hazardous waste constituents.

(c) Group IV wastes include construction and demolition wastes, and asphalt, except regulated hazardous wastes.

(2) Clean fill is not regulated under this subchapter.

Appendix C – Montana Code Annotated (MCA) Definitions

Title:	Department of Revenue
Chapter:	12
Part:	1

Department of Revenue

MCA 16-12-102 Definitions. As used in this chapter, the following definitions apply:

- (1) "**Adult-use dispensary**" means a licensed premises from which a person licensed by the department may:
- (a) obtain marijuana or marijuana products from a licensed cultivator, manufacturer, dispensary, or other licensee approved under this chapter; and
 - (b) sell marijuana or marijuana products to registered cardholders, adults that are 21 years of age or older, or both.
- (2) "**Affiliate**" means a person that directly, or indirectly through one or more intermediaries, controls or is controlled by, or is under common control with, another person.
- (3) "**Beneficial owner of**", "beneficial ownership of", or "beneficially owns an" is determined in accordance with section 13(d) of the federal Securities and Exchange Act of 1934, as amended.
- (4) "**Canopy**" means the total amount of square footage dedicated to live plant production at a licensed premises consisting of the area of the floor, platform, or means of support or suspension of the plant.
- (5) "**Consumer**" means a person 21 years of age or older who obtains or possesses marijuana or marijuana products for personal use from a licensed dispensary but not for resale.
- (6) "**Control**," "**controls**," "**controlled**," "**controlling**," "**controlled by**," and "**under common control with**" mean the possession, direct or indirect, of the power to direct or cause the direction of the management or policies of a person, whether through the ownership of voting owner's interests, by contract, or otherwise.
- (7) "**Controlling beneficial owner**" means a person that satisfies one or more of the following:
- (a) is a natural person, an entity that is organized under the laws of and for which its principal place of business is located in one of the states or territories of the United States or District of Columbia, or a publicly traded corporation, and:
 - (i) acting alone or acting in concert, owns or acquires beneficial ownership of 5% or more of the owner's interest of a marijuana business;
 - (ii) is an affiliate that controls a marijuana business and includes, without limitation, any manager; or
 - (iii) is otherwise in a position to control the marijuana business; or
 - (b) is a qualified institutional investor acting alone or acting in concert that owns or acquires beneficial ownership of more than 15% of the owner's interest of a marijuana business.

(8) "**Correctional facility or program**" means a facility or program that is described in 53-1-202(2) or (3) and to which an individual may be ordered by any court of competent jurisdiction.

(9) "**Cultivator**" means a person licensed by the department to:

(a) plant, cultivate, grow, harvest, and dry marijuana; and

(b) package and relabel marijuana produced at the location in a natural or naturally dried form that has not been converted, concentrated, or compounded for sale through a licensed dispensary.

(10) "**Debilitating medical condition**" means:

(a) cancer, glaucoma, positive status for human immunodeficiency virus, or acquired immune deficiency syndrome when the condition or disease results in symptoms that seriously and adversely affect the patient's health status;

(b) cachexia or wasting syndrome;

(c) severe chronic pain that is a persistent pain of severe intensity that significantly interferes with daily activities as documented by the patient's treating physician;

(d) intractable nausea or vomiting;

(e) epilepsy or an intractable seizure disorder;

(f) multiple sclerosis;

(g) Crohn's disease;

(h) painful peripheral neuropathy;

(i) a central nervous system disorder resulting in chronic, painful spasticity or muscle spasms;

(j) admittance into hospice care in accordance with rules adopted by the department; or

(k) posttraumatic stress disorder.

(11) "**Department**" means the department of revenue provided for in 2-15-1301.

(12) (a) "Employee" means an individual employed to do something for the benefit of an employer.

(b) The term includes a manager, agent, or director of a partnership, association, company, corporation, limited liability company, or organization.

(c) The term does not include a third party with whom a licensee has a contractual relationship.

(13) (a) "**Financial interest**" means a legal or beneficial interest that entitles the holder, directly or indirectly through a business, an investment, or a spouse, parent, or child relationship, to 5% or more of the net profits or net worth of the entity in which the interest is held.

(b) The term does not include interest held by a bank or licensed lending institution or a security interest, lien, or encumbrance but does include holders of private loans or convertible securities.

(14) "**Former medical marijuana licensee**" means a person that was licensed by or had an application for licensure pending with the department of public health and human services to provide marijuana to individuals with debilitating medical conditions on November 3, 2020.

- (15) (a) "**Indoor cultivation facility**" means an enclosed area used to grow live plants that is within a permanent structure using artificial light exclusively or to supplement natural sunlight.
- (b) The term may include:
- (i) a greenhouse;
 - (ii) a hoop house; or
 - (iii) a similar structure that protects the plants from variable temperature, precipitation, and wind.
- (16) "**Licensed premises**" means all locations related to, or associated with, a specific license that is authorized under this chapter and includes all enclosed public and private areas at the location that are used in the business operated pursuant to a license, including offices, kitchens, restrooms, and storerooms.
- (17) "**Licensee**" means a person holding a state license issued pursuant to this chapter.
- (18) "**Local government**" means a county, a consolidated government, or an incorporated city or town.
- (19) "**Manufacturer**" means a person licensed by the department to convert or compound marijuana into marijuana products, marijuana concentrates, or marijuana extracts and package, repackage, label, or relabel marijuana products as allowed under this chapter.
- (20) (a) "**Marijuana**" means all plant material from the genus Cannabis containing tetrahydrocannabinol (THC) or seeds of the genus capable of germination.
- (b) The term does not include hemp, including any part of that plant, including the seeds and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis, or commodities or products manufactured with hemp, or any other ingredient combined with marijuana to prepare topical or oral administrations, food, drink, or other products.
- (c) The term does not include a drug approved by the United States Food and drug administration pursuant to section 505 of the Federal Food, Drug, and Cosmetic Act, 21 USC 301, et seq.
- (21) "**Marijuana business**" means a cultivator, manufacturer, adult-use dispensary, medical marijuana dispensary, combined-use marijuana licensee, testing laboratory, marijuana transporter, or any other business or function that is licensed by the department under this chapter.
- (22) "**Marijuana concentrate**" means any type of marijuana product consisting wholly or in part of the resin extracted from any part of the marijuana plant.
- (23) "**Marijuana derivative**" means any mixture or preparation of the dried leaves, flowers, resin, or byproducts of the marijuana plant, including but not limited to marijuana concentrates and other marijuana products.
- (24) "**Marijuana product**" means a product that contains marijuana and is intended for use by a consumer by a means other than smoking. The term includes but is not limited to edible products, ointments, tinctures, marijuana derivatives, and marijuana concentrates.
- (25) "**Marijuana transporter**" means a person that is licensed to transport marijuana and marijuana products from one marijuana business to another marijuana business, or to and from a testing laboratory, and to temporarily store the transported retail marijuana and retail marijuana products at its

licensed premises, but is not authorized to sell marijuana or marijuana products to consumers under any circumstances.

(26) "**Mature marijuana plant**" means a harvestable marijuana plant.

(27) "**Medical marijuana**" means marijuana or marijuana products that are for sale solely to a cardholder who is registered under Title 16, chapter 12, part 5.

(28) "**Medical marijuana dispensary**" means the location from which a registered cardholder may obtain marijuana or marijuana products.

(29) "**Outdoor cultivation**" means live plants growing in an area exposed to natural sunlight and environmental conditions including variable temperature, precipitation, and wind.

(30) "**Owner's interest**" means the shares of stock in a corporation, a membership in a nonprofit corporation, a membership interest in a limited liability company, the interest of a member in a cooperative or in a limited cooperative association, a partnership interest in a limited partnership, a partnership interest in a partnership, and the interest of a member in a limited partnership association.

(31) "**Paraphernalia**" has the meaning provided for "drug paraphernalia" in 45-10-101.

(32) "**Passive beneficial owner**" means any person acquiring an owner's interest in a marijuana business that is not otherwise a controlling beneficial owner or in control.

(33) "**Person**" means an individual, partnership, association, company, corporation, limited liability company, or organization.

(34) "**Qualified institutional investor**" means:

(a) a bank or banking institution including any bank, trust company, member bank of the federal reserve system, bank and trust company, stock savings bank, or mutual savings bank that is organized and doing business under the laws of this state, any other state, or the laws of the United States;

(b) a bank holding company as defined in 32-1-109;

(c) a company organized as an insurance company whose primary and predominant business activity is the writing of insurance or the reinsuring of risks underwritten by insurance companies, and that is subject to regulation or oversight by the insurance department of the office of the state auditor or a similar agency of another state, or any receiver or similar official or any liquidating agent for such a company, in their capacity as such an insurance company;

(d) an investment company registered under section 8 of the federal Investment Company Act of 1940, as amended;

(e) an employee benefit plan or pension fund subject to the federal Employee Retirement Income Security Act of 1974, excluding an employee benefit plan or pension fund sponsored by a licensee or an intermediary holding company licensee that directly or indirectly owns 10% or more of a licensee;

(f) a state or federal government pension plan; or

(g) any other entity identified by rule by the department.

(35) "**Registered cardholder**" or "**cardholder**" means a Montana resident with a debilitating medical condition who has received and maintains a valid registry identification card.

- (36) "**Registry identification card**" means a document issued by the department pursuant to 16-12-503 that identifies an individual as a registered cardholder.
- (37) (a) "**Resident**" means an individual who meets the requirements of 1-1-215.
- (b) An individual is not considered a resident for the purposes of this chapter if the individual:
- (i) claims residence in another state or country for any purpose; or
 - (ii) is an absentee property owner paying property tax on property in Montana.
- (38) "**Seedling**" means a marijuana plant that has no flowers and is less than 12 inches in height and 12 inches in diameter.
- (39) "**State laboratory**" means the laboratory operated by the department of public health and human services to conduct environmental analyses.
- (40) "**Testing laboratory**" means a qualified person, licensed under this chapter that:
- (a) provides testing of representative samples of marijuana and marijuana products; and
 - (b) provides information regarding the chemical composition and potency of a sample, as well as the presence of molds, pesticides, or other contaminants in a sample.
- (41) (a) "**Usable marijuana**" means the dried leaves and flowers of the marijuana plant that are appropriate for the use of marijuana by an individual.
- (b) The term does not include the seeds, stalks, and roots of the plant. (*Subsection (15)(b)(ii) terminates October 1, 2023--sec. 117(1), Ch. 576, L. 2021.*)

Solid Waste

17.50.403 Definitions. Unless the context requires otherwise, in this subchapter the following definitions apply:

- (1) "**Aerobic**" means occurring in the presence of oxygen.
- (2) "**Barn waste**" means the bedding, waste feed, manure and other animal excretions generated from the operation of a barn or feedlot.
- (3) "**Board**" means the Board of Environmental Review provided for in 2-15-3502, MCA.
- (4) "**Commercial waste**" means waste generated from stores, offices, restaurants, food processing facilities, warehouses, and other non-manufacturing activities, and non-processing wastes such as office and packing waste generated at industrial facilities.
- (5) "**Composting**" means the controlled biological decomposition of organic solid waste under aerobic conditions.
- (6) "**Contaminated soil**" means soil, rocks, dirt, or earth that has been made impure by contact, commingling, or consolidation with organic compounds such as petroleum hydrocarbons. This definition does not include soils contaminated solely by inorganic metals, soils that meet the definition of hazardous waste under ARM Title 17, chapter 53, or regulated PCB (polychlorinated biphenyls) contaminated soils.
- (7) "**Custom exempt butcher operation**" means a processor that only processes meat that is not sold and is only consumed by:

- (a) the owner of the animal;
 - (b) the owner's immediate family; and
 - (c) non-paying guests.
- (8) "**Department**" means the Department of Environmental Quality provided for in 2-15-3501, MCA.
- (9) "**Dispose**" or "**disposal**" means the discharge, injection, deposit, dumping, spilling, leaking, or placing of any solid waste into or onto the land so that the solid waste or any constituent of it may enter the environment or be emitted into the air or discharged into any waters, including ground water.
- (10) "**Facility**" means a manufacturing, processing, or assembly establishment; a transportation terminal, or a treatment, storage, or disposal unit operated by a person at one site. This definition does not include infectious waste incinerators or other facilities that:
- (a) control the generation, transportation, treatment, storage, or disposal of infectious waste, as that term is defined in 75-10-1003(4), MCA;
 - (b) are owned by and operated as a part of a profession, occupation, or health care facility that generates infectious waste and that is licensed by a board or department of the state; and
 - (c) do not control the treatment, storage, or disposal of non-infectious solid waste.
- (11) "**Farm waste**" means waste from farms that is not household waste, hazardous waste, or barn waste. It includes, but is not limited to, cull potatoes and spoiled crops such as hay or grain.
- (12) "**Feedstock**" means any decomposable material used in the manufacture of compost.
- (13) "**Floodplain**" means the lowland and relatively flat areas adjoining inland waters, including flood-prone areas that are inundated by the 100-year flood, including an area designated as a "floodplain," "flood zone," or "special flood hazard area" by a state or federal agency.
- (14) "**Household hazardous waste**" means products commonly used in the home that due to corrosivity, ignitability, reactivity, toxicity, or other chemical or physical properties are dangerous to human health or the environment. Household hazardous waste includes, but is not limited to, cleaning, home maintenance, automobile, personal care, and yard maintenance products.
- (15) "**Household waste**" means any solid waste derived from households, including single and multiple residences, hotels and motels, crew quarters, campgrounds, and other public recreation and public land management facilities.
- (16) "**Infectious waste**" has the meaning specified in 75-10-1003, MCA.
- (17) "**Interim closure**" means the period of time from the department's receipt of the certification required in ARM 17.50.1403(10) until the department approves that certification.
- (18) "**Intermediate Class II facility**" means a Class II facility with a planned capacity of more than 5,000 tons per year but not more than 25,000 tons per year.
- (19) "**Intermediate incinerator**" means an incinerator facility with a planned capacity of more than 5,000 tons per year but not more than 25,000 tons per year.
- (20) "**Intermediate landfarm facility**" means a landfarm facility that has more than 2,400 cubic yards but less than 8,000 cubic yards of contaminated soil, from single or multiple events, undergoing treatment and accepted for treatment at the facility at any time during a calendar year.

- (21) "**Landfarm facility**" means a solid waste management system engaged in the controlled remediation through landfarm treatment technologies of non-hazardous contaminated soil that is not subject to regulation under the underground storage tank/leaking underground storage tank statutes and rules found in Title 75, chapter 11, MCA, and ARM Title 17, chapter 56.
- (22) "**Major Class II facility**" means a Class II facility with a planned capacity of more than 25,000 tons per year.
- (23) "**Major Class III facility**" means a Class III facility that disposes of 1,000 tons or more of material per year.
- (24) "**Major Class IV facility**" means a Class IV facility with a planned capacity of 1,000 tons or more per year.
- (25) "**Major compost facility**" means a composting facility that:
- (a) meets any of the following criteria:
 - (i) has greater than two acres of active working area;
 - (ii) accepts 5,000 cubic yards or more of composting feedstock annually; or
 - (iii) produces 2,500 cubic yards more of finished compost annually or;
 - (b) accepts:
 - (i) sewage sludge, biosolid, or septage for composting; or
 - (ii) 200 tons or more of offal from custom exempt butcher operations.
- (26) "**Major incinerator**" means an incinerator facility with a planned capacity of more than 25,000 tons per year.
- (27) "**Major landfarm facility**" means a landfarm facility that has 8,000 cubic yards or more of contaminated soil, from single or multiple events, undergoing treatment and accepted for treatment at the facility at any time during a calendar year.
- (28) "**Minor Class II facility**" means a Class II facility with a planned capacity of not more than 5,000 tons per year.
- (29) "**Minor Class III facility**" means a Class III facility that disposes of less than 1,000 tons of material per year.
- (30) "**Minor Class IV facility**" means a Class IV facility of less than 1,000 tons per year.
- (31) "**Minor compost facility**" means a composting facility that does not meet the definition of a major compost facility and that:
- (a) meets all of the following criteria:
 - (i) has two acres or less of active working area;
 - (ii) accepts less than 5,000 cubic yards of compost feedstock annually; and
 - (iii) produces less than 2,500 cubic yards of finished compost annually;
 - (b) does not accept sewage sludge, biosolids, or septage; or

(c) accepts less than 200 tons of offal from custom exempt butcher operations.

(32) "**Minor incinerator**" means an incinerator facility with a planned capacity of not more than 5,000 tons per year.

(33) "**Minor landfarm facility**" means a landfarm facility that has up to 2,400 cubic yards of contaminated soil from single or multiple events either undergoing treatment or accepted for treatment at the facility.

(34) "**MSW composting**" means municipal solid waste composting and is the controlled degradation of municipal solid waste. This includes the composting of municipal solid waste after some form of preprocessing to remove non-compostable inorganic materials.

(35) "**Municipal solid waste landfill**" means any publicly or privately owned landfill or landfill unit that receives household waste or other types of waste, including commercial waste, non-hazardous sludge, and industrial solid waste. The term does not include land application units, surface impoundments, injection wells, or waste piles.

(36) "**One-time household hazardous waste collection event**" means a collection of household hazardous waste from the public with a frequency no greater than annually at any given location.

(37) "**One-time landfarm**" means a landfarm facility for the remediation of less than 2,400 cubic yards of non-hazardous contaminated soil generated from a single source that will not be used to treat contaminated soil from multiple sources on an on-going basis.

(38) "**Person**" means an individual, firm, partnership, company, association, corporation, city, town, local governmental entity, or any other governmental or private entity, whether organized for profit or not.

(39) "**Post-consumer recycling**" means the reuse of materials generated from residential and commercial waste, excluding recycling of material from industrial processes that has not reached the consumer, such as glass broken in the manufacturing process.

(40) "**Recyclables**" are materials that still have useful physical or chemical properties after serving their original purpose and that can, therefore, be reused or remanufactured into additional products.

(41) "**Recycling**" means the process by which materials otherwise destined for disposal are collected, reprocessed or remanufactured, and reused.

(42) "**Recycling facility**" means a facility, generally open to the public, that handles only source-separated or presorted material for the purpose of recycling either in bulk or in container(s) with a total site capacity of more than 40 cubic yards.

(43) "**Remediate**" means to treat contaminated soil to the point that it no longer poses a threat to human health or the environment.

(44) "**Residue**" is the materials remaining after processing, incineration, composting, or recycling have been completed. Residues are usually disposed of in sanitary landfills.

(45) "**Resource recovery**" means the recovery of material or energy from solid waste.

(46) "**Resource recovery facility**" means a facility at which solid waste is processed for the purpose of extracting, converting to energy, or otherwise separating and preparing solid waste for reuse.

(47) "**Resource recovery system**" means a solid waste management system which provides for the collection, separation, recycling, or recovery of solid wastes, including disposal of nonrecoverable waste residues.

(48) "**Reuse**" is the use of a product more than once in its same form for the same purpose; e.g., a soft drink bottle is reused when it is returned to the bottling company for refilling.

(49) "**Sewage sludge**" or "**septage**" has the meaning specified in ARM 17.50.802.

(50) "**Solid waste**" means all putrescible and nonputrescible wastes including, but not limited to, garbage; rubbish; refuse; ashes; sludge from sewage treatment plants, water supply treatment plants, or air pollution control facilities; construction and demolition wastes; dead animals, including offal; discarded home and industrial appliances; and wood products or wood byproducts and inert materials. "Solid waste" does not mean municipal sewage, industrial wastewater effluents, mining wastes regulated under the mining and reclamation laws administered by the department, slash and forest debris regulated under laws administered by the department, or marketable byproducts.

(51) "**Solid waste management system**" means a system which controls the storage, treatment, recycling, recovery, or disposal of solid waste. Such a system may be composed of one or more solid waste management facilities. This term does not include hazardous waste management systems.

(52) "**Source**" means the facility or origin of release that created contaminated soil.

(53) "**Source reduction**" is the design, manufacture, acquisition, and reuse of materials so as to minimize the quantity and/or toxicity of waste produced. Source reduction prevents waste either by redesigning products or by otherwise changing societal patterns of consumption, use, and waste generation.

(54) "**Source separation**" is the segregation of specific materials at the point of generation for separate collection. Residences source separate recyclables as part of a curbside recycling program.

(55) "**Substantial change**" means any change in the operation, ownership, or siting of a facility in which review by the department takes more than 24 hours.

(56) "**Storage**" means the actual or intended containment of wastes, either on a temporary basis or for a period of years.

(57) "**Transfer station**" means a solid waste management facility that can have a combination of structures, machinery, or devices, where solid waste is taken from collection vehicles (public, commercial, or private) and placed in other transportation units for movement to another solid waste management facility.

(58) "**Transport**" means the movement of wastes from the point of generation to any intermediate points and finally to the point of ultimate storage or disposal.

(59) "**Treatment**" means a method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any solid waste so as to neutralize the waste or so as to render it safer for transport, amenable for recovery, amenable for storage, or reduced in volume.

(60) "**Waste generation**" means the act or process of producing waste materials.

(61) "**Yard waste**" means leaves, grass clippings, prunings, and other natural organic matter discarded from yards, gardens, parks, etc.

Hazardous Waste

75-10-403 Definitions. Unless the context requires otherwise, in this part, the following definitions apply:

- (1) "**Board**" means the board of environmental review provided for in 2-15-3502.
- (2) "**Department**" means the department of environmental quality provided for in 2-15-3501.
- (3) "**Dispose**" or "**disposal**" means the discharge, injection, deposit, dumping, spilling, leaking, or placing of any hazardous waste into or onto the land or water so that the hazardous waste or any constituent of the hazardous waste may enter the environment or be emitted into the air or discharged into any waters, including ground water.
- (4) "**Environmental protection law**" means a law contained in or an administrative rule adopted pursuant to Title 75, chapter 2, 5, 10, or 11.
- (5) "**Facility**" or "hazardous waste management facility" means all contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units.
- (6) "**Generation**" means the act or process of producing waste material.
- (7) "**Generator**" means any person, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation under this part.
- (8)
 - (a) "**Hazardous waste**" means a waste or combination of wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may:
 - (i) cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or
 - (ii) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed.
 - (b) Hazardous wastes do not include those substances governed by Title 82, chapter 4, part 2.
- (9) "**Hazardous waste management**" means the management of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous wastes.
- (10) "**Hazardous waste transfer facility**" means any land, structure, or improvement, including loading docks, parking areas, holding sites, and other similar areas, used for the transfer and temporary storage of hazardous wastes and where shipments of hazardous waste are temporarily held for a period of 10 days or less during the normal course of transportation up to but not including the point of ultimate treatment, storage, or disposal.
- (11) "**Manifest**" means the shipping document that is originated and signed by the generator and that is used to identify the hazardous waste and its quantity, origin, and destination during its transportation.
- (12) "**Person**" means the United States, an individual, firm, trust, estate, partnership, company, association, corporation, city, town, local governmental entity, or any other governmental or private entity, whether organized for profit or not.

(13) "**Remediation waste**" means, for the purposes of fee assessment only, all hazardous waste, debris, and media, including ground water, surface water, soils, and sediments, that are managed for implementing cleanup.

(14) "**Storage**" means the actual or intended containment of hazardous wastes, either on a temporary basis or for a period of years.

(15) "**Transportation**" means the movement of hazardous wastes from the point of generation to any intermediate points and finally to the point of ultimate storage or disposal.

(16) "**Transporter**" means a person engaged in the offsite transportation of hazardous waste by air, rail, highway, or water.

(17) "**Treatment**" means a method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize the waste or so as to render it nonhazardous, safer for transportation, amenable for recovery, amenable for storage, or reduced in volume.

(18) "**Used oil**" means any oil that has been refined from crude oil or any synthetic oil, either of which has been used and as a result of that use is contaminated by physical or chemical impurities.

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