

Understanding Compliance in Your Cannabis Facilities

A well-designed industrial shredder can provide significant cost and labor savings as well as facilitate compliance with local waste disposal requirements.

OVERVIEW

Cannabis growing and product manufacturing is a rapidly growing industry. Meeting the needs of a changing regulatory landscape can be a challenging task and requires consideration in every step in the process—from initial processing of plant material to the disposal of waste. Ironically, the same kind of equipment may be needed at both the start and end of the production cycle, namely shredding. Having a well-designed and fit-to-purpose shredding system can greatly reduce labor costs and can even protect a company from noncompliance issues and liability.

CANNABIS WASTE DISPOSAL COMPLIANCE

The number of states that have legalized cannabis has grown considerably in recent years (see [FIGURE 1](#)), however



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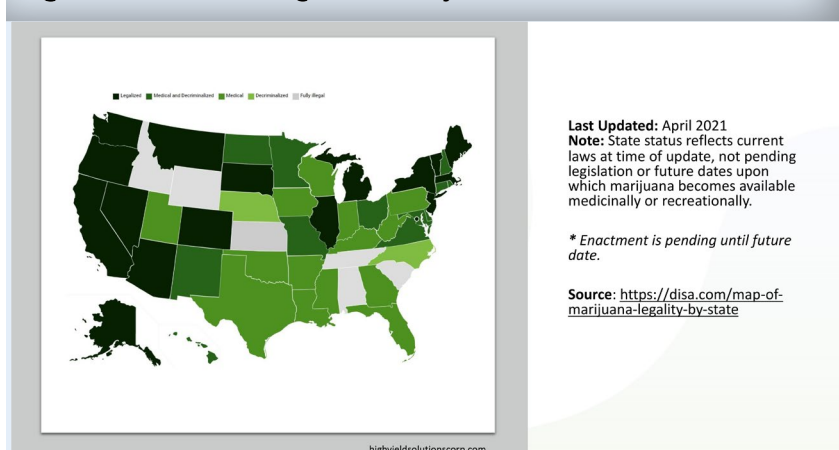
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Figure 1: States with legalized marijuana.



the degree of legalization varies by state, and the regulations around production, handling, testing, and sales are different and constantly changing amongst the 36 states in which cannabis is legal. This variability also applies to regulations around waste disposal, although there are some fairly common issues to focus on. The first is to determine if the cannabis waste should be classified as hazardous or non-hazardous waste, as these will have very different landfill requirements.

Under most circumstances, cannabis product considered waste must be rendered unusable and unrecognizable through grinding and incorporating with an unusable solid waste mixture of at least 50% non-cannabis waste. In some cases, the resulting waste product may be compostable, or could also be destroyed by incineration or anaerobic digestion. In any case, noncompliance could have serious repercussions, including fines or even loss of license. For instance, in 2019, a testing lab in Massachusetts was fined \$225,000 for improper disposal (1). Additionally, in 2020, Nevada's Cannabis Compliance Board reported multiple violations from four separate companies across the state, which resulted in one company experiencing a 10-year ban from the industry (2). Such instances emphasize the need to ensure that compliance is met with all local state requirements.

BENEFITS OF SHREDDING FOR DISPOSAL

Volume reduction. Proper disposal practices can have benefits beyond avoiding fines. An obvious one comes from volume reduction, as shredding can reduce the volume by 50% or more. To put it simply, you can fit more

shredded waste into a dumpster because cannabis plants tend to be bulky and take up a large amount of space for a given weight. Also, with shredding, it may be possible to bring the dumpster to its weight limit just before reaching its volume limit. Having both weight and volume at least close to the limit is the optimal use of disposal resources. Shredding also means fewer dumpsters and lower disposal costs. The requirement to dilute cannabis waste with other waste actually eases the burden of organization, as other facility waste can be put into the same waste processing stream (if using a capable shredder).

Compliance. In addition to compliance goals, shredding waste also provides protection against leakage of proprietary information and products. Having a dumpster full of unrecognizable and undifferentiated shredded material makes it unappealing to potential "dumpster divers," which alleviates potential liability issues.

Efficiency and cost reduction. Another benefit involves a substantial reduction in the time and manual effort spent carrying plant material and cutting up plants. Manual processing often requires additional tools that must be maintained and replaced as needed, and having a shredder available eliminates the need for such manual tools. Because shredders can handle a wide range of materials—including paper, cardboard, netting materials, and even wood container materials—the need for sorting is largely eliminated.

Shredder systems are self-contained, low maintenance, and require low operating

costs. There are only a few points requiring grease, and the oil reservoir should be checked annually. The systems can be rated for both indoor and outdoor use and are completely turnkey, requiring only a source of power to begin operation. Because they are electric, there is no need to vent exhaust fumes. There is also the process streamlining that comes from the fact that shredded material can be binned in consistent containers, which makes it easier to transport out of the facility

Furthermore, strict and potentially expensive disposal requirements for cannabis require strategic equipment investments. High Yield Solutions' return-on-investment (ROI) calculator is available for more information on the previously mentioned benefits.

OTHER APPLICATIONS

There are various applications for shredding beyond waste processing. Two such examples can be seen in [FIGURE 2](#). The HY-Roller, on the left in [FIGURE 2](#), is a pre-roll shredder that can process 100 lbs per hour with a single operator. The cutting heads are easily removable for quick change outs for cleaning, which minimizes down time. The speed is adjustable,

which provides control over particle size that is consistent from batch to batch.

A shredder can be effective at rendering whole plants into a uniform size for drying or extraction processing. A system such as the Hy-Reaper on the right in [FIGURE 2](#) can also be used to separate biomass from stalk material. The system is an industrial hemp shredder intended for use in hemp processing in the range of 100–10,000 lbs per hour and can shred dry flowers to the desired size for cannabidiol extraction, or entire plants for drying. It has the capability to separate and sort the stalks from the more desirable components. Any configuration is also available in stainless steel. The Hy-Reaper can be configured for either stationary on-site use, or for mobile applications with the shredder mounted on a trailer. The system can also be configured with vibratory in-feed and discharge conveyors. Pre-roll shredders deliver a customized cut and desired particle size. Any product-contacting components can be easily disassembled for cleaning in an alcohol bath to avoid between-strain contamination. One useful application is to use a mobile unit to shred stalks in the field to reduce transportation costs.

Figure 2: The HY-Roller (left) and Hy-Reaper (right) shredders.



SHREDDER FEATURES AND CONSIDERATIONS

The shredder should be rugged enough to be able to process anything likely to be thrown in. It should also provide some mixing so materials thrown in sequentially can become part of the same mix. Systems are available that provide high reliability and low maintenance and operating costs. Other desirable features are high level shutdown, jam protection, auto

Figure 3: Featured products for handling waste.

reversing, container full sensors, and automatic diverting chutes. Having a low-speed shredder reduces the generation of dust, which reduces cleaning and maintenance costs. Enclosed hoppers and chutes also reduce the potential risks to workers managing the equipment. Electrically driven systems may require wiring at the time of installation, but do not generate fumes and can be expected to have lower maintenance costs over the long run.

As examples, some of the shredders offered by High Yield Solutions can be seen in [FIGURE 3](#). The standard plant muncher, on the left of the figure, is a 5-HP model capable of processing 500 lbs per hour. This shredder is set up to be hand fed, with a discharge bin placed underneath. To the right of the plant muncher in [FIGURE 3](#) is a system with fully integrated automatic feed system and a 30-HP motor capable of processing 4000 lbs an hour. A split diversion chute at the end allows two dumpsters to be used without needing to move the shredder or the dumpsters.

Custom solutions are also available, such as the 10-HP green system seen on the center-right in [FIGURE 3](#). The outlet can straddle a dumpster, and the diversion chute can be used to direct the outflow to different parts of the dumpster so that it fills evenly and makes optimal use of the space available. Smaller, mobile units are also available—such as the 1-HP blue unit on the right in [FIGURE 3](#)—which is about the size of an office printer and is set on casters for easy movement around a facility. It can be plugged into a standard wall outlet to process about 100 lbs of material per hour. Shredded material is captured in a bin set within the body so that the unit can be rolled away from the shredding location easily.

Among the possible configurations are the chamber size, which sets the limit on the size of material that can be fed into the chamber. The chamber size can range from 8x8 inch to 60x60 inch. Obviously, the horsepower of the motor will need to be large enough to accommodate the size of the chamber. Motor

power can be chosen in the range of 1–200 HP. In the event of a jam, the motor will be protected from overcurrent by an intelligent drive control that will auto reverse to try to clear any jams, and then shut down the machine if the jam cannot be cleared.

The process of fitting a shredder to a facility generally starts with a conversation about the amount of waste being generated, and its ultimate disposition (composting, landfill, hazardous waste landfill, etc.), as well as site limitations that the shredder must fit within. Engineers then generate a quote, and if approved, manufacture a unit to fit the client's needs. Installation and on-site training are also available if needed. Test shreds with provided samples allow clients to get an idea of what to expect from a shredder. In the event that a facility's needs change, equipment can later be altered or upgraded to fit new requirements.

CONCLUSION

The challenges of starting and maintaining a business in a new market area are compounded for cannabis producers by strict

and changing regulations. Any process that can automate important tasks and ensure compliance with regulations is a good thing. Having a customized industrial shredder that can easily and quickly render waste material into a form that will meet the disposal requirements will streamline production, save on labor costs, and avoid liability or fines. Shredders are also useful at the front end as a way of breaking down plants into a consistent particle size and form for transportation, extraction, drying, or rolling. Finding a shredder that fits your needs may seem like a daunting task, but knowledgeable consultations can help you find the system that is a perfect fit for your facility and needs.

REFERENCES

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