

# HW Newsletter

Hazardous Materials Program  
Waste Management and Prevention Division  
Department of Environmental Conservation

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## Light on the Horizon for PVs

Following announcements in the fall of 2023, the U.S. Environmental Protection Agency (EPA) is in the process of developing a proposal that will add hazardous waste solar panels (also referred to as “PVs”) to the federal universal waste regulations. This proposal is in part in response to a petition submitted to EPA in 2021 by industry associations affiliated with the electric power industry.

While the news of a forthcoming proposal is noteworthy, policy changes will not be felt for some time; the proposal is not expected to be put forth until 2025. The Hazardous Materials Program will continue to follow EPA's progress on this, and we will work to communicate any significant information as it is available. For now, we'd like to provide some context on universal waste, cover how end-of-life solar panels are currently regulated as hazardous waste, and point you to additional resources on these topics.

## WHAT IS UNIVERSAL WASTE?

Universal waste meets hazardous waste criteria (i.e., it contains listed hazardous waste; and/or it is ignitable, corrosive, reactive, and/or toxic), however, it may be managed under alternative standards that are generally considered less stringent than the requirements that apply to hazardous waste. Universal waste poses a relatively low risk to the environment compared to hazardous waste, and as the name implies, it is widely generated across all types and categories of generators. We don't know what EPA will put forth as far as alternative management standards for end-of-life solar panels, but we know that they will be unique. If you are interested in understanding what alternative management standards look like for wastes that are already regulated as universal waste (e.g., mercury-containing devices and thermostats, post-consumer paint, batteries), read our fact sheet on [Universal Waste](#). Please refer to [Subchapter 9](#) of the [Vermont Hazardous Waste Management Regulations \(VHWMR\)](#) for the specific requirements.

## MANAGING SOLAR PANELS UNDER THE VHWMR



Figure 1: Example of solar panels on a barn roof

Solar panels are mostly composed of nonhazardous materials like glass and metal. However, they may also contain hazardous materials, including silver, lead, cadmium, and other heavy metals. Handlers should be aware that solar panels placed in a landfill may not effectively contain these hazardous constituents. If end-of-life solar panels contain specific heavy metals at high enough concentrations, they are regulated as hazardous waste due to the

characteristic of toxicity. The wastes that are regulated for the characteristic of toxicity and their respective regulatory levels are listed in [§ 7-208 of the VHWMR](#).

It is the responsibility of the generator to determine whether their end-of-life solar panels contain heavy metals at levels that require management as hazardous waste and are to manage them according to the applicable regulatory requirements. The test for determining whether a waste meets the characteristic of toxicity is referred to as the [Toxicity Characteristic Leaching Procedure \(TCLP\)](#). If a generator of end-of-life solar panels has knowledge that a material would fail the TCLP test (e.g., fail results from previous TCLP testing on the same make and model of solar panel), they can determine that the waste is hazardous without the need for testing.

**“If end-of-life solar panels contain specific heavy metals at high enough concentrations, they are regulated as hazardous waste due to the characteristic of toxicity.”**

## MORE INFORMATION

We expect there will be more to say about regulatory requirements and best management practices as EPA’s proposal comes to fruition. In the meantime, our Program has developed a fact sheet on [Solar Panels](#), which expands on the previous points and includes links to resources from EPA. More information on EPA’s proposal effort is available on their webpage: [End-of-Life Solar Panels: Regulations and Management](#). As solar power generation continues to increase, so does the need for the proper management and disposal of its associated waste. If you have questions, please feel free to contact our Program using the information at the end of this newsletter. ●

## Observations from the Field

If you have been reading the newsletter since last year, you may recall the piece in which we covered the violations that were observed during the prior federal fiscal year (FFY). We want to offer another

annual update, this time looking at what was observed throughout FFY 2023, which ran from October 1, 2022, through September 30, 2023.

## THE BIG PICTURE

The Program works to conduct at least 75 compliance evaluation inspections (CEIs) per FFY. However, the catastrophic flooding that occurred across the state in July of 2023 impacted our ability to prioritize inspections during the final quarter of the FFY. Some inspectors are also members of the Vermont Department of Environmental Conservation (DEC) Spill Program, and their focus temporarily shifted toward managing the over 200 reports of hazardous material releases related to the flooding. That said, the Program completed 64 compliance evaluation inspections (CEIs) in FFY 2023: 14% of these inspections involved large quantity generators (LQGs) and/or treatment, storage, and disposal facilities (TSDFs); 36% involved small quantity generators (SQGs), and the remaining 50% involved very small quantity generators (VSQGs).

We are pleased to report that based on our observations, there were no referrals to DEC’s Environmental Enforcement Office for formal prosecution. However, in 48% of inspections, at least one instance of non-compliance was observed, and these facilities received a notice of alleged violation (NOAV). In

**Table 1: Most Common Violations Observed in FFY 2023**

<b>20%</b>	of facilities did not properly label containers of hazardous waste.
<b>41%</b>	of SQGs/LQGs did not make emergency arrangements (not applicable to VSQGs).
<b>34%</b>	of SQGs/LQGs did not comply with standards for short-term storage areas (STSAs) (not applicable to VSQGs).
<b>14%</b>	of facilities inspected did not properly manage universal waste.

the following sections we provide an overview of the most common violations (**see Table 1**) that Vermont inspectors observed over the course of the inspection year, along with links to guidance that the Program has developed to help you avoid such violations in the future.

## LABELING CONTAINERS OF HAZARDOUS WASTE

One of the most common areas of non-compliance involved hazardous waste container labeling, with 20% of inspected facilities being issued at least one violation in this area. The requirements for labeling containers of hazardous waste are found in [Subchapter 3](#) of the VHWMR. VSQGs have relatively limited requirements in this area—essentially, they need to label such containers with the words, “Hazardous Waste” and other words that identify the contents (§ 7-306(c)(1)(F)). 16% of VSQG facilities were in violation of this requirement.

SQGs and LQGs have more specific requirements for labeling depending on whether containers are being used for accumulation or storage. 25% of SQG and LQG facilities were issued a violation related to

requirements for labeling hazardous waste. The requirements for labeling *satellite accumulation* containers (§ 7-310(a)) are different from those for *accumulation* containers in short-term-storage areas (STSAs) (§ 7-310(b)), which are in turn different from those that apply to containers temporarily *storing* hazardous waste in STSAs (§ 7-311(f)). SQG and LQG facilities have limits for how long they may store hazardous waste onsite, standards for operating their STSAs (more below), and other requirements that pertain to the management of containers, so it is critical that container labels are in line with how the containers are used onsite. This is an admittedly technical topic, and we encourage you to refer to our fact sheet on [Accumulation and Storage of Hazardous Waste](#) to learn more. Also be aware that beyond the requirements for hazardous waste, many of the alternative management standards that apply to exemptions, used oil, universal waste, and hazardous waste pharmaceuticals include unique labeling requirements.

## **EMERGENCY PREPAREDNESS AND ARRANGEMENTS**

While 20% of all inspected facilities were issued a violation related to the emergency preparedness and arrangements requirements outlined in Subchapter 3, VSQGs do not have to meet specific requirements in this area. The figure is much more telling when only considering SQGs and LQGs: 41% of these facilities were in violation of at least part of these requirements. For SQGs specifically, the most common violation involved the requirement to post emergency information (§ 7-307(c)(13)(B)), including the contact information for emergency coordinator(s) and the location of fire extinguishers and spill control material. For LQGs, the most common violation in this area pertained to the requirement to maintain a contingency plan. Contingency plans must include a quick reference guide and be submitted to local emergency responders (§ 7-308(b)(14)(B)). For both SQGs and LQGs, common violations related to making arrangements with local authorities including local police and fire departments, other emergency response teams and contractors, equipment suppliers, and local hospitals (§ 7-309(a)(4)). Finally, SQGs and LQGs were commonly cited for not following the requirement to maintain aisle space that allows emergency personnel and equipment into any area of facility operations during an emergency (§ 7-309(a)(5)).

## **STANDARDS FOR SHORT-TERM STORAGE AREAS (STSAs)**

VSQGs do not have to follow requirements for STSAs; in fact, they are not required to maintain STSAs at all. So, while 17% of all inspected facilities were issued a violation in this area, 34% of SQGs/LQGs were non-compliant. The standards for STSAs are found in § 7-311 of Subchapter 3. The most common violations we observed in this area related to requirements for inventory and inspection (§ 7-311(d)) and security (§ 7-311(e)). SQGs and LQGs are required to maintain, at a location apart from the STSA, a list of all hazardous waste currently in storage that identifies each container being stored and its contents. Generators must also conduct inspections of each STSA at least every seven days. If the generator is utilizing “shift accumulation” as described in § 7-310(b), the STSA must be inspected daily.

Regarding security, generators must post signage at each STSA that is visible from at least 25 feet that reads, "Danger-Hazardous Waste Storage Area-Authorized Personnel Only." For facilities in the counties of Essex, Orleans, Franklin, and Grand Isle, the legend must be written in both English and French. If the generator is storing ignitable waste, a "No Smoking" sign must also be posted according to the same requirements.

## **UNIVERSAL WASTE STANDARDS**

14% of inspected facilities were issued a violation related to universal waste standards. As discussed in the earlier piece about end-of-life solar panels, universal waste is not regulated as hazardous waste if it is managed according to the alternative management standards prescribed in the VHWMR. [Subchapter 9](#) includes waste-specific requirements for dealing with universal wastes like thermostats, lamps, postconsumer paint, and aerosol cans. The most common violations for universal waste were related to accumulation time limits (§ 7-912(f)(1)) and the requirement to demonstrate the length of time accumulation has occurred (§ 7-912(f)(3)). Universal waste must be shipped offsite within one year of being generated, unless more than one year is necessary for proper recovery, treatment, or disposal of the waste (generators who take this approach must prove that the additional time is necessary (§ 7-912(f)(2)). Generators must demonstrate the length of time that the universal waste has been accumulated, and this is typically achieved by placing the universal waste in a container and marking the container with the earliest date that any universal waste in the container became a waste (i.e., dating the "first drop"), or by labeling each individual item of universal waste with the date it became a waste. Refer to the fact sheet on [Universal Waste](#) for more information.

Universal waste lamps (e.g., lamps containing mercury that would otherwise be regulated as D009 hazardous waste) were associated with a significant number of violations. When managing this waste,

**"The primary goal of compliance assistance visits (CAVs) is to assist hazardous waste handlers with following regulatory requirements, and we offer them without the risk of enforcement."**

generators must remember to manage them according to the standards in § 7-912(d)(5). Containers must be structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps, and they must remain closed. Full containers of universal waste lamps (generators often

use the cardboard box they came in) must be sealed with tape, and they cannot be stacked higher than five feet. Also remember that containers must be labeled with one of the following phrases: "Universal Waste-Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)" (§ 7-912(e)(6)). Universal waste handlers should be aware that they are responsible for determining whether any residue or waste collected from broken lamps exhibits a characteristic of hazardous waste. If it does, it must be managed as hazardous waste according to the VHWMR. The handler is considered the generator in this situation.

## RESOURCES

Please be aware that our Program offers compliance assistance visits (CAVs) to the regulated community, and generators may request such a visit at any time. The primary goal of CAVs is to assist hazardous waste handlers with following regulatory requirements, and we offer them without the risk of enforcement. CAVs typically include a review of hazardous waste documents including profiles, manifests, and inventories; a walkthrough of areas where hazardous waste is generated and stored; and post-inspection follow-up with directives for returning to compliance (if applicable). These visits create opportunities to discuss any issues or questions the facility may have regarding hazardous waste and the VHWMR. If you are interested in a CAV, please contact us using the information at the end of this newsletter.

Finally, we recognize that the regulations are incredibly technical, and we'd like to reiterate the other resources the Program offers to assist with compliance. As noted elsewhere in this issue, guidance on a variety of topics is available via our [Resources for Hazardous Waste Handlers](#) webpage. •

## A Refresher on VT-Listed Hazardous Waste

The Hazardous Materials Program is authorized by EPA, and under this authorization, Vermont maintains its own hazardous waste regulations. While the [VHWMR](#) have been determined to be no less stringent

**Table 2: VT-Listed Hazardous Wastes**

<b>VT01</b>	Waste containing PCBs in concentrations equal to or greater than 50 ppm
<b>VT02</b>	Waste containing greater than 5% by weight of petroleum distillates
<b>VT03</b>	Waste water-miscible metal cutting and grinding fluid
<b>VT06</b>	Pesticidal wastes of products classified under FIFRA as restricted use pesticides not specifically listed in Subchapter 2
<b>VT08</b>	Waste ethylene glycol and solutions containing greater than 700 ppm ethylene glycol
<b>VT11</b>	Waste determined to be hazardous pursuant to § 7-216
<b>VT20</b>	A solid material that when mixed with an equal weight of distilled water causes the liquid fraction of the mixture to exhibit the properties of the corrosivity characteristic
<b>VT21</b>	Liquid waste containing PFOA in concentrations equal to or greater than 20 ppt
<b>VT22</b>	Liquid wastes containing PFOS in concentrations equal to or greater than 20 ppt

than the federal hazardous waste regulations (i.e., Subtitle C of the Resource Conservation and Recovery Act (RCRA)), they are not exactly the same. As a case in point, there are nine wastes that are listed in Vermont as hazardous wastes that are not part of the F, K, P, U, or D lists in RCRA. Please **refer to Table 2** for a summary of these wastes, which we refer to as “VT-listed” or “state-listed” hazardous wastes in Vermont. Note that a more detailed table is provided in § 7-211.

We want to provide a brief overview here of some of the regulatory aspects of the VHWMR that are specific to VT-listed hazardous wastes. We also want you to know how these wastes may appear on manifests, as we have observed that this can make it unclear to handlers how these wastes are regulated.

## MANAGING VT-LISTED HAZARDOUS WASTE

Generators should be aware that, like other aspects of the VHWMR, some of the requirements for managing state-listed hazardous waste apply to small quantity generators (SQGs) and large quantity generators (LQGs) but not to very small quantity generators (VSQGs). Please **refer to Table 3** for a summary of requirements and note that this is not a comprehensive list; refer to the regulations for specific requirements.

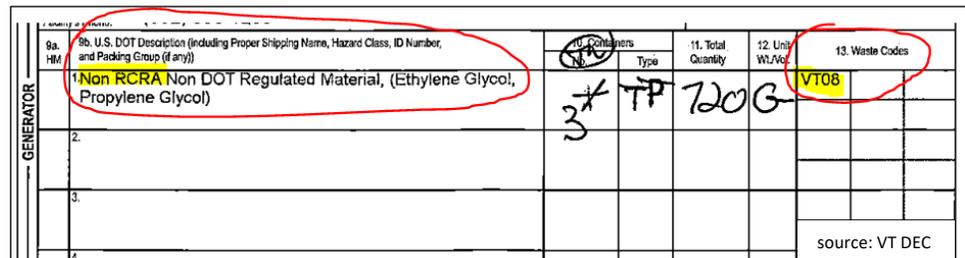
**Table 3: Requirements for Managing VT-Listed Hazardous Wastes**

<p><b>§ 7-202(c):</b> If a hazardous waste is identified by both EPA and Vermont waste codes and descriptions, the federal waste code and description shall be used (e.g., for a waste that is identified by both the D001 and VT02 waste codes, you are required to use the D001 waste code).</p>
<p><b>§ 7-305(c):</b> When determining their generator category (i.e., VSQG, SQG, or LQG), generators may average the amount of VT-listed hazardous waste generated over the six-month period that elapsed immediately prior to determining their generator category and add this average to the amount of non-acute hazardous waste (i.e., waste identified by federal waste codes, such as D001 or F003) generated in the calendar month. Unlike VT-listed hazardous wastes, hazardous wastes with federal waste codes cannot be averaged for the purpose of generator category determination.</p>
<p><b>§ 7-306(c)(3):</b> VSQGs may self-transport VT-listed hazardous waste to collection events and solid waste districts permitted to accept it, as is the case for hazardous wastes identified with federal waste codes. Alternatively, they may work with a hauler that is permitted to transport hazardous waste in Vermont.</p>
<p><b>§ 7-309(b)(3):</b> SQGs/LQGs may not offer VT-listed hazardous waste to a transporter that does not possess a valid permit to transport hazardous waste in Vermont, as is the case for hazardous wastes identified with federal waste codes.</p>
<p><b>§ 7-309(b)(5):</b> SQGs/LQGs shall transport VT-listed hazardous waste to a facility that is either a: designated facility; or a facility that is not a designated facility located in a state other than Vermont, provided the facility is authorized to receive such waste under applicable state and local regulations.</p>
<p><b>§ 7-309(b)(7):</b> In lieu of using a hazardous waste manifest—which is required for hazardous wastes identified by federal waste codes—SQGs/LQGs shipping VT-listed hazardous wastes may maintain an alternative shipping record for those wastes, such as a bill of lading (BOL). A copy of such shipping records must be provided to DEC within 10 days of shipment. Please note that VSQGs are not required to utilize a manifest for shipping hazardous wastes, regardless of whether they are VT-listed or have federal waste codes.</p>

## “NON RCRA” ON HAZARDOUS WASTE MANIFESTS

In their interactions with generators across the state, our hazardous waste inspectors have noticed that common shipping documents can be confusing with their descriptions of VT-listed hazardous wastes. As mentioned previously, VT-listed hazardous wastes are regulated according to the VHWMR. They are not regulated according to the federal RCRA listings, nor are they regulated as hazardous materials by the federal Department of Transportation (DOT). As a result, they are sometimes described on shipping documents as “non-RCRA” and/or “non-DOT.”

Since “RCRA” is often used interchangeably with “hazardous waste regulations” in the world of waste management, the “non-RCRA” descriptor is especially confusing. If a state-listed



GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers Type	11. Total Quantity	12. Units Wt./Vol.	13. Waste Codes
			1 Non RCRA Non DOT Regulated Material, (Ethylene Glycol, Propylene Glycol)	3	TP 200G	
	2.					
	3.					
	4.					

source: VT DEC

Figure 2: Manifest with VT-listed hazardous waste (VT08) described as “Non RCRA”

hazardous waste is described as “non-RCRA” on the manifest (**refer to Figure 2**) (the description is in the box labeled, “9b. U.S. DOT Description”), it may cause handlers or emergency response personnel to incorrectly infer that they are dealing with non-hazardous waste. If ever in doubt, handlers should *defer to the waste code* in the box labeled, “13. Waste Codes.” As an important reminder, generators are responsible for properly identifying their waste, be it federally listed, state-listed, or non-hazardous. Generators should not rely solely on their waste haulers to complete their manifests.

## WHAT ABOUT VT99?

As explained in Appendix VI (Vermont Tax Codes) of the VHWMR, the “VT99” code should be used to describe any non-hazardous wastes that do not require a unique identity on a manifest for either data tracking or tax purposes. The VT99 waste code is to be used *only* for non-hazardous waste shipped using a hazardous waste manifest (see § 7-211). ●

## Keep an Eye Out

We use this recurring section of the newsletter to keep you aware of upcoming deadlines and other important information. Please make note of the following:

## BIENNIAL HAZARDOUS WASTE REPORTS DUE MARCH 1

All large quantity generators (LQGs); permitted treatment, storage, and disposal facilities (TSDFs); and any other generators that operated as an LQG for any month in 2023 are required to complete the

Biennial Hazardous Waste Report (Biennial Report) by March 1, 2024. In addition to basic information such as facility name, address, and EPA ID Number, facilities report on the quantity and nature of hazardous waste generated and whether the hazardous waste was sent for recycling, treatment, storage, or disposal.

LQGs should note that electronic reporting through RCRAInfo is required unless a waiver has been approved to allow paper reporting. Also note that facilities may opt out of completing the Biennial Report if their notified LQG status is based on the generation of Vermont-listed hazardous wastes (see the other piece in this newsletter about VT-listed hazardous waste). The link for completing the report and additional resources are accessible from our [Biennial Hazardous Waste Report Information](#) webpage. If you are unsure whether you are required to complete a Biennial Report or you have questions related to reporting, contact Wendy Edwards: [wendy.edwards@vermont.gov](mailto:wendy.edwards@vermont.gov), 802-522-0261.

### **TUHWR ANNUAL PROGRESS REPORTS AND FEES DUE MARCH 31**

Planners should be aware that annual progress reports and annual fee payments are due March 31, 2024. Both the report and the fee payment are to be submitted *electronically*. Planners may complete the report form as a fillable PDF (preferred) or scan a completed hard copy. The reporting form is accessible on the [TUHWR webpage](#), along with a fee payment calculator and additional resources. Annual fees are to be paid using the [ANR Online Services Portal](#).

For context, TUHWR planning is required by statute ([10 V.S.A. §§ 6623-6633](#)) for facilities that use toxic substances and/or generate hazardous waste beyond specific thresholds. Planning is intended to provide those facilities with a summary of their toxics use and hazardous waste generation and to facilitate the consideration of alternatives. If you are unsure whether your facility is required to plan, or if you have further questions, please contact us using the information at the end of this newsletter. Also, please note that interested facilities may request a compliance assistance visit (CAV) from our Program, which we offer without the risk of enforcement. ●

## **New Guidance Resources**

Our [Resources for Hazardous Waste Handlers](#) webpage includes links to guidebooks, fact sheets, webinar recordings, and more. If you have not already done so, we encourage you to bookmark the page as a reference. Below are a couple of resources that we have posted on our website since the last issue of the newsletter was distributed. We will continue to add new information when it becomes available.

### **FACT SHEETS**

[Solar Panels](#): provides a high-level overview of why solar panels may be hazardous waste at end of life, and includes links to EPA resources on regulations, management, recycling, and related questions.

**Vaping Devices:** summarizes the requirements for managing vaping devices that contain nicotine and/or lithium-ion batteries, addresses unique considerations for acutely hazardous waste nicotine, and offers best management practices. ●

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**FOR MORE INFORMATION PLEASE CONTACT:**

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