Discarded Nicotine-containing Materials are considered Hazardous Waste. The use of e-cigarettes and vaping fluids has emerged as a growing business to serve the general public as an alternative to smoking. In the process of establishing this industry, the manufacturers of these vaping fluids also became active participants in environmental compliance regulations, associated with generating hazardous waste.

RETAILERS that direct-sell vapor products to the public must be aware of their potential hazardous waste generator role, as the EPA’s state and local regulatory agencies are finding situations in the retail e-cigarette sector where hazardous waste is being generated but not appropriately managed. One recent inspection revealed a retail establishment that generated waste nicotine product (unsalable nicotine containing vape products, sample or customer bottles, and nicotine contaminated parts or other diluted nicotine products) and waste spill control items (rags, towels, wipes, gloves, or disposable lab coats). Because of these findings, the establishment is under increased regulatory scrutiny to determine if they have been following proper hazardous waste management.

The Environmental Protection Agency (EPA) enacted the Resource Conservation and Recovery Act (RCRA) in 1976 which provided for promulgation of hazardous waste management regulations beginning in 1980. RCRA established regulations for generation, transportation, treatment, storage and disposal of hazardous waste. These rules apply to all business sectors including but not limited to industrial, goods services, healthcare and technology. Vaping eliquids fall within this jurisdiction.

So what does it all mean to your business?

The first task for any vape-business is to evaluate all wastes generated at your facility and determine which, if any, meet the definition of hazardous waste, either through generator (i.e. creator of the substance) knowledge or analytical testing.

One of these evaluation criteria is toxicity of a substance, meaning the degree to which it can harm humans or animals. Based on toxicity testing results, the EPA has listed nicotine as an acute hazardous waste. Acute hazardous waste is defined in the rules as “can be fatal to humans in low doses”.

- In a letter from the EPA Office of Solid Waste and Emergency Response to Warner, Norcross & Judd LLP, dated May 18, 2015, EPA stated that any other components of vaping liquids such as flavorings and diluents are not “sole active ingredients” because they do not perform the function of the product, thus concluding that nicotine-containing vapor fluids are acute hazardous waste.

Hazardous waste disposal rules are based on the quantity of waste your business generates on a monthly basis. The generators of acute hazardous waste are considered either a conditionally exempt small quantity generator (CESQG) when generating less than 2.2 pounds per month or a large quantity generator (LQG) at greater than 2.2 pounds per month. LQGs of acute hazardous waste are subject to both the large quantity generator rules along with more stringent storage threshold quantities.

So exactly when is hazardous waste generated? When a generator (business) decides that a hazardous chemical or substance will be discarded or is no longer usable for its intended purpose, the substance – at that point - becomes “hazardous waste”.
The EPA specifies the listing of a hazardous substance as:

1. The listed substance is generated as a discarded commercial chemical product, off-specification commercial chemical product, container residue or spill residue.
2. Also, the discarded listed substance is further categorized as being the “sole active ingredient”.

**NOTE:** During the vapor fluid manufacturing process, any waste vaping fluids must be managed as an acute hazardous waste.

What makes vaping fluids’ **acute category** of waste even more burdensome is increased management of the vaping fluid **containers** including e-cigarette cartridges.

1. Any container that previously held nicotine-containing fluids is also considered to be an acute hazardous waste until it has been rinsed three times with an effective cleaning material.
2. The rinse material at that point also becomes acute hazardous waste and must be managed as such. In addition, any materials used to cleanup nicotine-containing spills must be managed as acute hazardous waste.

**Generators are required to obtain a site-specific EPA generator identification number.** Once the nicotine-containing items/substances are deemed to be waste, containers must be marked as hazardous waste and then stored properly following the rules. Generators must ensure that wastes are appropriately managed for offsite disposal/recycling in the prescribed timeframe per their generator status. Other requirements include employee hazardous waste management training, record keeping, inspections, written emergency response procedures and possible annual reporting in most states and EPA biennial reporting for all LQGs. Keep in mind as well, these requirements may be more stringent in areas where state or local agencies have been given RCRA authorization. So it’s important that you educate yourself about the rules in your state and municipality.

**RCRA generator rules include specific requirements for on-site storage of hazardous waste:**

1. There are two defined storage areas at a generator location. One is referred to as a satellite accumulation area. This is the area at a facility where waste is actively being placed into a container, under control of an operator, as part of daily operations. For acute waste generators, the accumulated quantity is restricted to one quart of waste. When the container is full, it must be moved to a permanent storage area within three (3) days. For LQGs, once placed in the permanent storage area, the container must be marked with the accumulation start date and then be shipped off-site to a permitted facility within 90 days. CESQGs have no accumulation storage restrictions as long as no more than 2.2 pounds of acute waste are stored onsite at any one time.

The goal of hazardous waste management is to protect human health and the environment and to encourage waste recovery and recycling. **Therefore, Nicotine-containing waste should not be thrown in the regular municipal trash.** Several options are available for off-site management of the waste. These include shipment to a permitted treatment, storage or disposal (TSD) facility or a legitimate recycling facility where nicotine residue will be reused. When shipping the waste off-site, a licensed hazardous waste transporter must be used and the waste must be accompanied by a uniform hazardous waste manifest. The only exceptions to this requirement are for CESQGs who can self-transport the wastes without a manifest to a permitted CESQG collection facility or if the waste can be used as a feedstock (re-use the nicotine for new vaping fluid).
One question that comes up as part of hazardous waste management is whether hazardous waste liquids can be discharged to the municipal sewer. RCRA does not expressly prohibit such discharges; however, pretreatment is required for acute hazardous waste. In addition, the generator would need to get authorization from the local publicly-owned treatment works (POTW) that receive wastewater discharges from a facility. The POTW is regulated through the National Pollution Discharge Elimination System program authorized by the Clean Water Act.

As with any regulation, rule, or ordinance, Notice-of-Violations (NOVs), citations and/or fines can be levied to hazardous waste generators that are not in compliance. In general, LQGs are subject to more frequent agency inspections which are typically unannounced. More scrutiny may occur for CESQGs as well - at the local level - based on how robust these programs are. Given the array of information described for hazardous waste generator requirements, it is imperative that businesses evaluate the processes being applied at their locations where the possibility of hazardous waste generation occurs as part of normal operations.

**Bottom Line:** Discarding vaping fluids or any vapor fluid containers constitutes disposal of acute hazardous waste which must be managed in accordance with RCRA regulations.

(The only exemption to the RCRA rules are for the consumer who disposes these items at their residences.)