



Characterization of Electronic Nicotine Delivery Systems

FACT SHEET 37-069-1015

1. Purpose: To provide background information on the chemical makeup of the Electronic Nicotine Delivery Systems (ENDS) and guidance on the proper Resource Conservation and Recovery Act (RCRA) characterization of the items when discarded.

2. Background: ENDS, which include items such as e-cigarettes, electronic hookahs, e-cigars, and vape pens, contain a cartridge with a solution known as e-liquid. In addition to nicotine, the e-liquid consists of substances such as propylene glycol, vegetable glycerin, and flavorings. Attorneys for ENDS manufacturers have indicated the additional chemicals present in the liquid function as sweeteners, additives, and/or preservatives.

Nicotine is a Commercial Chemical Product (CCP) listed as a P075 hazardous waste when discarded in unused form. The scope of this listing includes commercially pure/technical grades, as well as formulations in which the chemical is the sole active ingredient. The EPA has previously interpreted the phrase "sole active ingredient" to mean that the active ingredient is the only chemically active component that performs the function of the product.¹ They have further clarified that preservatives, surfactants, fillers, solvents, diluents, colorants, and perfumes are not active ingredients because they do not perform the function of the product.² Consequently, e-liquids containing nicotine meet the criteria for P075 hazardous waste listing when discarded.³

Nicotine-containing cartridges and e-liquid vials meet the definition of a container under 40 CFR 260.10 and excess quantities are regulated as a P075 waste when discarded. Empty canisters and vials that previously held nicotine-containing e-liquids continue to be regulated as a P-listed container, unless they are triple rinsed in accordance with 40 CFR 261.7.

3. Manufactured Articles: The term CCP does not apply to manufactured articles containing a listed chemical. EPA has stated that their intent was to regulate only CCPs and manufacturing chemical intermediates that are known by their generic name. The agency indicated that manufactured articles "are designed for a purpose other than to access the chemicals that are present in the manufactured article". ENDS are used to deliver the listed chemical (nicotine) in a certain dosage and therefore the EPA has concluded they are not manufactured articles for the purpose of classification in 40 CFR 261.³

4. Household Hazardous Waste: The RCRA provides an exemption for hazardous wastes generated from households both on and off installations. ENDSs and e-liquids discarded by consumers at their residences would qualify for the exemption as described in 40 CFR 261.4; however, this exemption does not extend to items generated and discarded at locations other than households (e.g., office buildings, commercial facilities, etc.).

5. Reclamation: CCPs that are reclaimed are exempt from the definition of solid waste under 40 CFR 261.2, provided that the reclamation is considered legitimate. In order to qualify for this exemption, the four legitimacy factors listed in 40 CFR 260.43 must be met.

6. Final Disposition: Nicotine-containing ENDS, cartridges, and empty vials discarded from commercial establishments on an installation (e.g., PX, Shoppette, AAFES, etc.) should be managed as a P075 hazardous waste, unless they are being reclaimed. ENDSs, e-liquids, and empty vials generated and subsequently discarded at locations other than households (e.g., office buildings, commercial facilities, etc.) should also be managed as P075 waste as they do not qualify for the household hazardous waste exclusion.

¹ See USEPA, RCRA Online 14820, Dellinger to Barkholz, Application of P and U Waste Codes to Fertilizers Mixed with Insecticides or Herbicides, Feb 18, 2004.

² See USEPA, RCRA Online 11405, Barnes to McLaughlin, Pesticide Standards for Formaldehyde and Paraformaldehyde, March 14, 1989.

³ See US EPA, Johnson to DeWitt, May 15, 2015.

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