



FLAVOR AND EXTRACT MANUFACTURERS ASSOCIATION OF THE UNITED STATES

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Safety Assessment and Regulatory Authority to Use Flavors – Focus on Electronic Nicotine Delivery Systems and Flavored Tobacco Products

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The Use of Flavors in ENDS and Flavored Tobacco Products

“Electronic nicotine delivery systems” (ENDS), including “electronic cigarettes” (“e-cigarettes”), provide the means by which the user inhales vapor from a mixture of constituents typically including nicotine, flavor and other materials. The use of ENDS, and other flavored non-cigarette tobacco products like cigars, smokeless tobacco products, and hookah products is increasing. The 2009 Family Smoking Prevention and Tobacco Control Act prohibits the use of “characterizing flavors,” except for tobacco flavors and menthol, in combustible cigarettes but not in other tobacco products such as cigars and smokeless tobacco products, or in hookah smoking products (“flavored tobacco products”). There are several important issues associated with the use of flavors in ENDS, and other flavored tobacco products.

1. There is no apparent direct regulatory authority in the United States to use flavors in ENDS, and flavored tobacco products. In this context, it is important to note that the “generally recognized as safe” (GRAS) provision in Section 201(s) of the Federal Food, Drug, and Cosmetic Act (FFDCA) applies only to food as defined in Section 201(f) of the Act.

2. None of the primary safety assessment programs for flavors, including the GRAS program sponsored by the Flavor and Extract Manufacturers Association of the United States (FEMA), evaluate flavor ingredients for use in products other than human food. FEMA GRAS™ status for the use of flavor ingredients in food does not provide regulatory authority to use flavor ingredients in ENDS, or any tobacco products in the U.S.

- The manufacturers and marketers of ENDS, and all other flavored tobacco products, and flavor manufacturers and marketers, should not represent or suggest that the flavor ingredients used in these products are safe because they have FEMA GRAS™ status for use in food because such statements are false and misleading.
- The manufacturers and marketers of ENDS, and all other flavored tobacco products should take appropriate action to assure the safety of flavor ingredients used in these products. FEMA GRAS™ status for the use of flavor ingredients in food does not mean that FEMA GRAS™ flavor ingredients are safe for use in ENDS and flavored tobacco products.

3. The U.S. Food and Drug Administration (FDA) has been concerned with issues associated with ENDS for some time. In 2010 FDA issued [regulatory correspondence on e-cigarettes](#). In 2014, FDA published proposed regulations to deem ENDS, cigars, hookah tobacco, pipe tobacco, and certain other products as tobacco products subject to the regulatory authority of the 2009 Family Smoking Prevention and Tobacco Control Act amendments to the Federal Food, Drug, and Cosmetic Act thereby bringing them under regulation by the FDA. [80 Fed. Reg. 23142 \(25 April 2014\)](#). FDA’s final rule deeming ENDS to be tobacco products subject to the Act was published in 2016. [81 Fed. Reg. 28974, 10 May 2016](#). There is little discussion of the use of flavors in ENDS and other products in the final rule. Although the final rule does not

prohibit the use of flavors in these products, FDA designated flavors as “components” of ENDS and stated the agency’s intent to issue guidance and product standards in the future that are likely to address issues associated with flavors.

The Regulation of Flavors in the United States

In the U.S., the vast majority of flavoring substances are added to food consistent with the GRAS provision in FFDCFA Section 201(s). For the purposes of the FFDCFA GRAS provision, food is defined in FFDCFA Section 201(f) as “(1) articles used for food or drink for man or other animals, (2) chewing gum, (3) articles used as components for any such article.” The primary route to regulatory authority to use flavor ingredients in the U.S. is the FEMA GRAS™ program.

The FEMA Expert Panel

The FEMA Expert Panel evaluates the safety of flavoring substances only under their conditions of intended use in human food, including beverages and chewing gum. Therefore, the Expert Panel only evaluates flavor ingredients for exposure through ingestion. The Expert Panel does not evaluate flavor ingredients for use in ENDS or any tobacco products, or other products that are not human food, or products that result in exposures other than by ingestion.

Other Safety Assessment and Regulatory Programs

There are a variety of programs in various countries and geographic regions to evaluate the safety of flavoring substances for use in food. All of these programs evaluate the safety of flavoring substances only under their conditions of intended use in human food meaning that they are evaluated only for safety upon ingestion. In Europe, flavoring substances are evaluated by the European Food Safety Authority solely for their use in human food. Also consistent with this principle is the global flavor safety evaluation program conducted by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) that also evaluates the safety of flavoring substances solely for their use in human food.

Occupational Exposure Limits and E-Cigarettes

Occupational exposure limits (OELs) have been established for a small number of flavoring substances. OELs have no relevance to exposure to flavors from the use of ENDS or other uses that do not constitute exposure in the workplace. OELs, such as permissible exposure limits (PELs) established by the Occupational Safety and Health Administration (OSHA), recommended exposure limits (RELs) established by the National Institute for Occupational Safety and Health (NIOSH) and threshold limit values (TLVs) established by the American Conference of Government Industrial Hygienists (ACGIH), are intended to serve as regulatory limits in the case of OSHA PELs, or in the case of RELs and TLVs, as benchmarks for limiting exposure to substances in the workplace. It is improper to use OELs as indications of safe levels of exposure to flavoring substances from the use of ENDS and exposures that do not occur in the workplace.

Recent Publications of Interest

ENDS, including e-cigarettes, have generated increasing interest among academic and government researchers and many publications are available. Three recent articles of interest are:

Allen J.G., Flanigan S.S., LeBlanc M., Vallarino J., MacNaughton P., Stewart J.H. and Christiani D.C. Flavoring chemicals in e-cigarettes: diacetyl, 2,3-pentanedione, and acetoin in a sample of 51 products, including fruit-, candy-, and cocktail-flavored e-cigarettes. *Environmental Health Perspectives*. 124, 733. 2016.

Leigh N.J., Lawton R.I., Hershberger P.A. and Goniewicz M.L. Flavorings significantly affect inhalation toxicity of aerosol generated from electronic nicotine delivery systems (ENDS). *Tobacco Control*. Published online 15 September 2016.

Zhu S.-H., Sun J.Y., Bonnevie E., Cummins S.E., Gamst A., Yin L., and Lee M. Four hundred and sixty brands of e-cigarettes and counting: implications for product regulation. *Tobacco Control*. 23, iii3. 2016.

For More Information

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