

# ***Flavorings in Cannabis Vaping Products***

**Oregon Liquor Control Commission Advisory Committee Meeting  
Added Substances in Marijuana Rules Package – Technical Expert RAC  
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Washington, D.C.**

# History and Mission



Flavor and Extract Manufacturers Association of the U.S.

- FEMA was established in 1909.
- 125 members that include companies that make and use flavors.
- Based in Washington, D.C.
- Mission to support the U.S. flavor industry

Primary work – Assure flavor safety through the FEMA GRAS program.

- Cooperative and collaborative relationships with the U.S. Food and Drug Administration and global regulators.

# Flavorings added to foods

## Compounded flavors

- These are the flavorings added to foods to provide flavor
- Compounded flavors are mixtures of individual flavoring substances and natural flavor complexes that impart or modify flavor, and adjuvants that help the compounded flavor function in food such as solvents, emulsifiers and preservatives.

## Some general principles

- Flavorings are not intended to be consumed as such.
- Flavorings are not nutritional
- Flavorings should be used at the lowest level necessary to accomplish the desired flavoring effect.
- Flavorings do not include substances that have an exclusively sweet, sour, or salty taste (e.g. sugar, vinegar, and salt)
- Flavorings shall not be used to mislead consumers about the nature or quality of food.

# Compounded flavors – individual constituents impart or modify flavor

**Foods contain a very large number of individual flavoring substances so compounded flavors must also to provide the same flavor sensation**



Banana

around 250

Strawberry

around 350

Chocolate

around 600

Coffee, freshly brewed

around 1000

Steak, grilled

over 2000



# Regulation of Flavors in the U.S.



U.S. Food and Drug Administration (FDA) regulates the safety of substances added to food.

- FEMA has an excellent relationship with FDA

Food Additives Amendments of 1958 to the Federal Food, Drug, and Cosmetic Act (FFDCA)

- Established FDA premarket approval for all food ingredients unless ingredients are “generally recognized as safe” (GRAS).
- GRAS applies only to a specific use of a substance in food – it is the use of the substance that is GRAS, not the substance itself.

FDA is developing regulations relevant to tobacco vaping products and the inclusion of flavors in such products.

# Generally Recognized as Safe - GRAS



GRAS status can be determined in several ways for flavors:

1. FDA voluntary GRAS notification program
  - Final regulations published 17 August 2016; 81 *Fed. Reg.* 54960.
  - The final rule provides guidance on several important GRAS issues
  
2. “Private” GRAS conclusion – permitted by FFDCA.

These two pathways are very rarely, if ever, used for flavors.

Most common pathway to regulatory authority to use flavors in the U.S. is the FEMA GRAS program.

# The FEMA GRAS Program



Established in 1960 and is the longest-running and most extensive safety evaluation program for flavors.

Most important component is the FEMA Expert Panel

- 8 experts in a number of scientific disciplines – toxicology, pharmacokinetics, pathology etc.

The Expert Panel is supported by the FEMA Scientific Staff

- 5 Ph.D. scientists and 6 scientific support staff.

# FEMA Expert Panel procedures for GRAS assessment for flavoring substances



The FEMA Expert Panel evaluates individual flavoring substances for GRAS status **ONLY** under their conditions of intended use as flavoring substances for food.

- Other technical effects are not considered (e.g. sweetening)
- Other applications, such as inhalation applications, are not considered

FEMA Expert Panel has well-defined and published procedures

- Strict conflict of interest protections

Transparency requirements

- All safety information provided to FDA and made available to the public through publication and other means

Well-defined safety evaluation procedures



# FEMA Expert Panel procedures for GRAS assessment for flavoring substances



## GRAS assessment of chemically defined flavoring substances

- Well-defined criteria for safety assessment – Smith *et al.*, 2005
- Characterization – chemical identity, sensory
- Safety data – toxicology, metabolism, pharmacokinetics
- Exposure – Anticipated volume of use and use levels

## GRAS assessment of natural flavor complexes

- Well-defined criteria for safety assessment – Cohen *et al.*, 2018
- Characterization
- Constituent-based approach
- Safety data on constituents-toxicology, metabolism and pharmacokinetics
- Exposure - anticipated volume of use and use levels

# Safety evaluation and GRAS assessment for flavoring substances



Key objective is safety to protect public health

Many flavoring substances – naturally or synthetically derived

- ~ 2,900 single chemically-defined flavoring substances
- ~ 300 natural flavoring complexes

Many belong to similar, well-defined structural classes

- e.g. More than 400 simple esters used as flavoring substances

Significant majority are used at less than 50,000 kg/year globally.

# Scientific evidence used in FEMA GRAS evaluations



Identity of substance, specifications

Toxicology data - results of animal studies

Anticipated biological fate of substance and **structurally-related** substances

- Absorption, distribution, metabolism and excretion
- Target organ toxicity?

Use level and exposure calculations

- Margin of safety - **under conditions of intended use in food**

# The FEMA GRAS Program



There is much publicly available information on the FEMA GRAS Program

- FEMA website – [femaflavor.org](https://femaflavor.org) - “About the FEMA GRAS Program”
- FEMA Flavor Ingredient Library- much information on flavoring substances including safety information and conditions of intended use as the basis for the GRAS conclusion.

## Publications

- More than 250 published reports and other scientific reports
- See Hallagan *et al.* The GRAS provision – The FEMA GRAS program and the safety and regulation of flavors in the United States. *Food and Chemical Toxicology*. 2020.

# FEMA Position on Flavors in Vaping Products



FEMA first published its position in 2013

- FEMA does not support the use of flavors in vaping products in the absence of rigorous safety assessments performed by vaping product manufacturers and marketers that demonstrate safety for this use. The manufacturers and marketers of vaping 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.

# Flavorings and Cannabis Vaping Products



Some flavoring substances are naturally present in cannabis

- Focus is on terpene flavoring substances such as *B*-myrcene, limonene, pinene and others but natural occurrence does not mean that they are safe for addition to vaping products

In addition to flavoring substances, compounded flavors contain non-flavor ingredients such as solvents, preservatives and emulsifiers that while safe for addition to food have not been demonstrated to be safe for vaping

- What are the effects of heating? Repeated exposures?

# Thank You!



We are happy to share information on flavor safety and regulation, and the FEMA GRAS program. Please contact:

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