

REPRINTED FROM

food technology

JOURNAL OF THE INSTITUTE OF FOOD TECHNOLOGISTS

for
FLAVORING EXTRACT
MANUFACTURERS'
ASSOCIATION

Recent Progress in the
Consideration of Flavoring Ingredients
Under the Food Additives Amendment

III. GRAS Substances

MEMBERS
OF THE
FLAVORING EXTRACT MANUFACTURERS' ASSOCIATION
FOOD ADDITIVES COMMITTEE
during the period covered by this article:

*J. J. Broderick
Frank Brumburgh
A. T. Fiore
C. E. Fricke
L. F. Hasnaw
H. L. Janovsky
David Jorysch*

*J. K. Krum
J. L. Laughlin
R. V. Leary
J. R. Leitz
J. H. McClumphy
J. F. Perkins
M. F. Preiser*

*A. T. Schramm
F. R. Schumm
R. C. Sherwood
H. C. Spencer
A. S. Wendt
R. L. Hall, Chairman
R. L. Oser, Consultant*

Recent Progress in the Consideration of Flavoring Ingredients Under the Food Additives Amendment

III. GRAS Substances

RICHARD L. HALL and BERNARD L. OSER

■ THE Flavoring Extract Manufacturers' Association has conducted a program since 1958 to determine the status of flavoring substances under the Food Additives Amendment of 1958. The key portion of this program has involved the creation of a panel of expert pharmacologists and toxicologists to determine, on the basis of all available data, including experience based on common use in food, what substances are "generally recognized as safe" (GRAS). This article, in a series describing the program, lists all substances which are GRAS and the average maximum use levels at which each has been reported to be used in different categories of food. Inasmuch as all food ingredients, including those that are GRAS, must be used only in accord with good manufacturing practice, certain general guidelines to good manufacturing practice may be drawn from the available data. Such guidelines are presented and discussed.

Previously published articles (Anon., 1961a-f, 1962; Hall, 1959, 1960; Hall and Oser, 1961) and Committee reports (Food Additives Committee, 1958-1964) have given in detail the chronology of the steps taken by the flavoring industry in compliance with the Food Additives Amendment of 1958. The key portion of the program has been the organization of a panel of highly qualified experts who are equipped by both experience and current knowledge to determine general recognition of safety. The background leading to the present article will be found in the list of references, and the article represents the next logical step in the series mentioned above. The data on levels of use which the panel employed in making its judgments are presented in detail for each substance generally recognized as safe. Also stated and discussed are certain general interpretive principles by which

these data may be used as guidelines to certain aspects of good manufacturing practice.

COMMON USE FACTOR

The Food Additives Amendment of 1958 states that the term "food additive" means "any substance the intended use of which results . . . directly or indirectly, in its becoming a component . . . of any food . . . , if such substance is not generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures (or, in the case of a substance used in food prior to January 1, 1958, through either scientific procedures or *experience based on common use in food*) to be safe under the *conditions of its intended use*; . . ." The phrases from the Food Additives Amendment inextricably couple general recognition of safety with the conditions of intended use. Any adverse indications regarding safety derived from experience in common use may militate against general recognition of safety. Almost all of the flavoring ingredients contained herein were in use prior to January 1, 1958. In almost every case, therefore, common use was a factor, sometimes a major factor, in the panel's final judgment.

The principal source of information on "common use" was a survey of flavoring and representative food manufacturers, conducted by the Flavoring Extract Manufacturers' Association (FEMA). Included in addition to the information derived from this survey are data on chewing gum flavors obtained through the National Association of Chewing Gum Manufacturers, and a limited amount of additional data on candy flavors obtained from several leading manufacturers. While this report does not in-

clude all actual flavor uses, it does provide widely representative data from which "common use" can be judged.

It must be emphasized that there can be no general recognition of safety without knowledge of the conditions of intended use and reasonable assurance that actual use conforms appropriately to the intended conditions. This statement applies as fully to those substances which are on the Food and Drug Administration's "White Lists" as to the flavoring ingredients which are on the FEMA GRAS list. This report, therefore, includes both. Those substances which appear only on an FDA White List are indicated in the accompanying survey tabulation with an asterisk.

The enormous variety of flavoring ingredients and the uses to which they may be put make it completely impossible to establish hard-and-fast rules defining their use. As an illustration, oil of clove may be used as a trace ingredient at less than a part per million in the finished food at which level it is not recognizable as such. Or it may be used at a few parts per million as one of the principal flavor notes in a product. Finally, it may reasonably be used at more than 1,000 parts per million when it is the dominant flavor note, for example, in hard candy. Thus in some cases, the use of a substance to impart a dominant note may be at a level more than 1,000 times that of the same substance used as a trace ingredient. In general, the upper limit of use is governed by the general acceptability of the product. Those who have worked with flavors are familiar with this self-limiting characteristic.

A complication which should be noted arises from multiple introductions of a particular chemical entity into a single food product. This occurs because a substance may be added

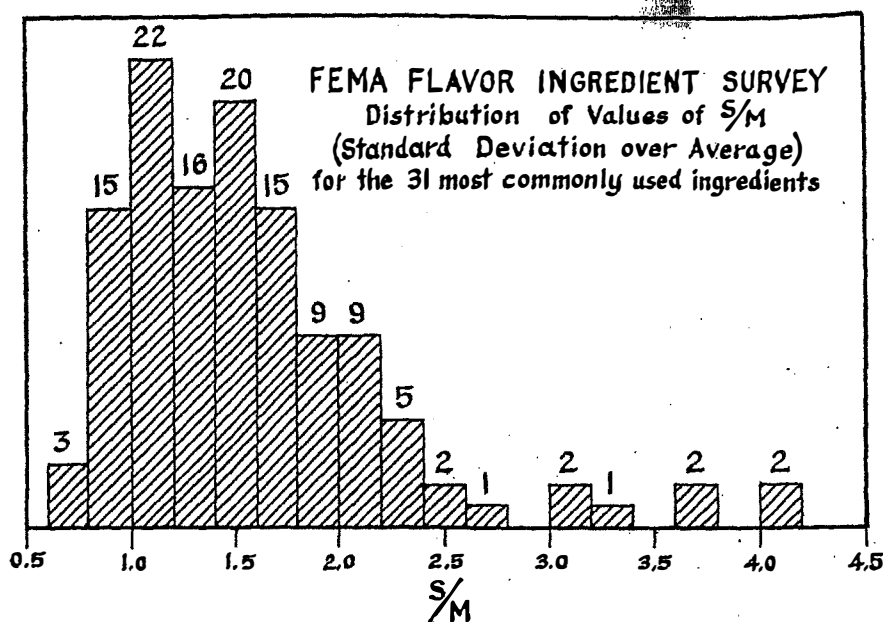


Fig. 1

both as such, and as a normal constituent of one or more natural flavoring materials. For example, the uses reported here of benzaldehyde do not include its use as almond oil added to the same food product, and the uses of eugenol do not reflect that which is separately listed under oil of clove.

GENERAL INTERPRETATIONS

This report reproduces for each major food category on which information was obtained the average of the maximum use levels reported by those firms participating in the survey which appears at the end of this article. The heading "Candy" is taken in the broadest sense, to include chocolate and hard candies such as sour balls, pressed sugar tablets, lozenges, etc. The category "Condiments" includes salad dressings, mustard, relishes, sauces, and comparable highly seasoned food products which are not ordinarily eaten as such but are consumed in conjunction with other foods. The category "Beverages" includes primarily soft drinks, but also some flavored wines and liqueurs which are not specifically listed separately. It also includes beverage tablets and powders, in which cases the use levels involved are computed on the basis of an 8-ounce serving of finished beverage.

In instances where there was only one report, the figure "1" in parentheses appears with the reported maximum use level. Two replies are shown individually rather than as the average.

It is obvious that most averages are derived from sets of figures, some of

which may individually depart widely from the mean. Usually, though not necessarily, the average is close to the median, i.e., approximately half of the individual responses will exceed the average, and half be less. One or a few very low or high figures may greatly influence the average. Whether or not this influence by extreme figures is misleading depends on two other factors, neither of which was possible to control. One of these factors is the reliability of the apparently aberrant figure, and the other is the weight which it should be given in the total picture.

A maximum use level that appears to be unreasonably low may show either that the reporting firm used the substance only as a trace ingredient, or that the value may actually have resulted from an error in calculation (e.g., in converting ounces per 100 gallons to parts per million). An extremely high value may represent a reasonable but unusual use, or it, too, could have been erroneous. While an effort was made to recheck extremely high figures, it clearly was not possible, in many cases, to be sure whether the figure represented an error in calculation or an unusual, but nevertheless actual, use.

The second factor concerns the weight that should be given each report. In theory, the averages would be most meaningful if each reply were weighted in proportion to the percentage of total consumption within each food category which that reply covered. In practice, this was impossible to determine, and the only feasible

alternative was to use a simple average. This meant, however, that an extreme value could influence the average out of all proportion to its actual importance. This is particularly true of high figures. As every food manufacturer knows, progressively higher flavoring levels (above the most generally preferred or acceptable levels) appeal to progressively smaller segments of the population. Thus, an extremely high use level, even though actual, would ordinarily represent a very limited total consumption. All factors considered, these use figures are reasonably accurate, even though we must remain constantly aware of the qualifications which affect their interpretation.

It should also be noted that the use levels obtained in the survey and reported here are those *introduced* into the food. They do not reflect the losses which may occur in later processing—through volatilization, leaching, or other means.

THE BASIC PROBLEM

We come, then, to the basic problem of how to employ an average maximum use level (bearing in mind the qualifications just stated) as a guide to that "good manufacturing practice" which should govern its "intended use" and is required by both common sense and government regulation. In preparing for this, two steps have been taken:

- 1) In the calculation of average maximum use levels reported here, responses from the individual manu-

facturer have been omitted which exceed four times the average calculated from data submitted by other firms, provided that these high levels appeared to be separate and distinct from the common levels of use, rather than at the end of a continuous spectrum of values. This was done to eliminate patently erroneous values. In such cases, this obviously resulted in figures lower than the actual arithmetic averages, because (a) unusually low figures were not eliminated, and (b) some isolated high values were undoubtedly real, even though unusual.

2) *All* reports for four principal food categories (beverages, frozen desserts, candy, and baked goods) on the 31 ingredients on which 50 or more replies were received were analyzed statistically. In the analysis of these 124 cases, the elimination procedure described in (1) above was not followed, except for one clearly erroneous value. The average (*M*) and the standard deviation (*S*) of the average maximum use levels for each food category were calculated. The data for a possible relationship between *M* and *S* were then examined and it was found that one did, indeed, exist, as shown in Fig. 1.

In the most frequent (modal) case, the ratio of the standard deviation to the mean (*S/M*) ranged between 1.0 and 1.19. In 100 out of 124, *S/M* was less than 2.00. Careful analysis of those cases where the ratio was 2.0 or greater revealed that either (a) the reported value was obviously in error, or (b) an exceptionally high single flavor note was employed.

Clearly, the great majority of maximum use levels are less than five times the average (*M*). An even higher proportion of *all* uses (including those less than the maxima) fall below 5*M*.

Finally, as mentioned above, extremely high uses strongly influenced *S*, and to a lesser extent *M*, in this unweighted average, out of all proportion to the necessarily limited volume of food covered by such high use.

Thus, it is reasonable to conclude that in actual manufacturing practice, a level of five times the average maximum use will include nearly all normal applications of the ingredient.

RATIONALE

This multiple of five is subject to both upward and downward variation in a number of special cases. To define it more usefully and specifically required consideration of a number of determinants, which may operate

singly or in combination. The numbered points which follow summarize the effect of these determinants upon use levels, and upon the factor which relates the average maximum level to the general range of good manufacturing practice. A brief discussion of the rationale is included where appropriate.

- 1) If a flavoring substance is used to provide the principal, or a single, flavoring note, the level of use may be more than five times the average maximum use level.
- 2) While there are many exceptions, natural flavors are, in general, used at higher levels than synthetic components. In the 124 cases analyzed, only 15 concern an average maximum use in excess of 500 ppm in any single food category. Thirteen of these cases involve natural oils or extracts (Table 1).

Table 1. Cases in which the average maximum use level is greater than 500 ppm.

Substance	Recalculated av. max. use level (ppm) ^a	<i>S/M</i>	Food category
Anise, oil	570.	1.82	Candy
Cassia bark, oil	750.	.78	Candy
Cinnamaldehyde	670.	1.72	Candy
Grapefruit, oil	570.	1.18	Candy
Lemon, oil	1,000.	1.04	Candy
	540.	.90	Baked goods
Lime, oil	700.	1.00	Candy
Methyl salicylate	980.	2.29	Candy
Orange peel, sweet, oil	1,200.	1.22	Candy
	580.	.92	Baked goods
Peppermint, oil	1,200.	1.17	Candy
Vanilla, extract	1,800.	1.48	Beverages
	3,900.	1.16	Ice cream, ices, etc.
	3,700.	1.09	Candy
	4,100.	1.68	Baked goods

^a These are recalculated, including *all* data (see text).

- 3) Substances used at very high levels usually entail a smaller multiple of the average maximum than those used at lower levels. In the 15 cases (Table 1) where the levels of use are more than 500 ppm, only one, methyl salicylate, involves an *S/M* value higher than 1.82. The use of methyl salicylate in hard candy and chewing gum presents some unusual aspects, of which this is one. Ten of the fifteen cases are below 1.23. Thus, most would

be covered by a factor of 3*M*, rather than 5*M*. On the other hand, all of the 22 cases in Table 2 in which *S/M* is greater than

Table 2. Cases in which *S/M* is 2.0 or greater.

Substance	Recalculated av. max. use level (ppm) ^a	<i>S/M</i>	Food category
Acetic acid	110.	2.16	Ice cream, ices, etc.
Anise, oil	50.	4.19	Beverages
Benzaldehyde	96.	3.1	Beverages
	120.	3.1	Ice cream, ices, etc.
Butyric acid	26.	2.02	Beverages
	84.	2.1	Baked goods
Cassia bark, oil	49.	3.32	Beverages
	100.	2.35	Ice cream, ices, etc.
Clove bud, oil	14.	2.00	Beverages
Coriander, oil	78.	3.6	Candy
	67.	3.6	Baked goods
	66.	4.0	Ice cream, ices, etc.
Diacetyl	3.7	2.00	Beverages
Ethyl butyrate	40.	2.15	Beverages
	38.	2.23	Ice cream, ices, etc.
Ethyl methyl phenylglycidate	18.	2.23	Ice cream, ices, etc.
Ethyl vanillin	170.	2.30	Candy
	170.	2.60	Baked goods
Lemon oil, terpeneless	39.	2.47	Beverages
	93.	2.23	Ice cream, ices, etc.
	100.	2.17	Candy
	120.	2.56	Baked goods
Methyl salicylate	930.	2.29	Candy
Nutmeg, oil	200.	2.04	Baked goods

^a These are recalculated, including *all* data (see text).

two, and thus not covered by 5*M*, are concerned with uses under 200 ppm, again except for methyl salicylate. In two instances, *S/M* is exactly 2.0. All but six of these 24 cases are below 120 ppm.

- 4) Products such as hard candies and some baked or fried goods involve processing with resultant high flavor losses. This requires the flavor to be introduced at high levels, and may involve a wider range than in other foods, such as beverages, in which no processing losses occur. Of the 15 high-level cases (average maximum use level greater than 500 ppm) in Table 1, 13 deal with baked goods and candies. The other two are vanilla extract in beverages and ice cream. Vanilla extract is ordinarily used at a relatively high level in any food product.
- 5) Of the 22 cases involving *S/M* ratios greater than 2.0, most are

explainable by the foregoing causes. In addition, it must be pointed out that foods consumed in small portions tend to be flavored at high levels. Obvious examples are chewing gum, flavored wines, liqueurs, and hard candies. The special considerations applicable to chewing gum are discussed in considerable detail by Heggie *et al.* (1965). The FEMA survey reflects primarily soft-candy uses, since hard candies (including lozenges and pressed mints) are only approximately 12.5 percent of total U. S. candy production (Steinberg, 1963). It was evident from the data that the "average maxima" of hard-candy uses ran from 2 to 10 times the average maximum use levels reported for all candy in the survey reported here, and on rare occasions were higher.

One may estimate the confidence which can be placed in the reported average maximum-use levels from the total number of replies on which these figures are based. This is given in the first column to the right of the name of the substance. Obviously, for substances on which a large number of responses were received, the average figure is more reliable than in cases where only a handful of reports were received.

These considerations, applied to the average maximum-use levels, are consistent with good manufacturing practice, and were taken into account by the panel in arriving at its judgments that these substances are generally recognized as safe. The panel's conclusions were based on over-all conditions of use of each substance in relation to its total intake.

GUIDELINES, NOT TOLERANCES

The Food and Drug Administration has constantly emphasized the necessity of observing "good manufacturing practice." In Paragraph 121.101, it defines the term to include the following restrictions:

"(1) The quantity of the substance added to food does not exceed the amount reasonably required to accom-

plish its intended physical, nutritive, or other technical effect in food.

"(2) Any substance intended for use in or on food is of appropriate food grade and is prepared and handled as a food ingredient."

The figures presented and discussed in this report are not tolerances. The word "tolerance" means a level within the safe range established by scientific procedures, but no greater than necessary to achieve the desired effect, and hence above which the substance may not legally be used. In contrast, the figures cited here are averages to which certain flexible principles, stated above, must be applied. It is the opinion of the expert panel that, except where specifically noted, it is neither necessary nor practical to establish tolerances or rigid use limits for the flavoring substances covered by this report.

It is clear that the fact that a flavor ingredient may have been reported as used only in certain food categories does not necessarily preclude its use, as a substance generally recognized as safe, in other categories within the principles stated above. However, in special cases where flavoring substances are used in a manner, or at levels, substantially different from those embraced by current good manufacturing practice, justification for such uses, in terms of safety and necessity, may have to be accomplished independently by the user concerned.

It is again emphasized that these are guidelines to "good manufacturing practice" or to "intended use" or to "common use" in which these substances are generally recognized as safe. They are not tolerances in any sense of the word.

ACKNOWLEDGMENTS

It should be noted that the work reported here is the result of the contributions of many individuals. Special thanks go to the members of the Food Additives Committee of the FEMA, and to the expert panel, not merely for time and professional effort expended but for the active personal interest unstintingly displayed. Acknowledgment is also made to Miss Janis Klima, for invaluable contributions to organizing, recording, and re-

porting the work, and to Mr. John Thomas Johnson, of Loyola College, Baltimore, Maryland, for helpful advice and assistance in statistical analysis of the data.

REFERENCES

- Anon. 1961a. *Food Chemical News* Feb. 27.
- Anon. 1961b. *Food Chemical News* July 10.
- Anon. 1961c. *Food Proc.* March, p. 27.
- Anon. 1961d. *Food Proc.* August, p. 58.
- Anon. 1961e. *What's New in Food and Drug Research* April.
- Anon. 1961f. *What's New in Food and Drug Research* July.
- Anon. 1962. *What's New in Food and Drug Research* August.
- Food Additives Committee. 1958. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 71-75.
- Food Additives Committee. 1959. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 78-81.
- Food Additives Committee. 1960. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 73-82.
- Food Additives Committee. 1961. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 70-77.
- Food Additives Committee. 1962. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 77-82.
- Food Additives Committee. 1963. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 62-64.
- Food Additives Committee. 1964. Report. *Proc. Flavoring Extract Manufacturers' Association Convention* pp. 51-55.
- Hall, Richard L. 1959. Flavoring agents as food additives. *Food Technol.* 13(7), 14.
- Hall, Richard L. 1960. Recent progress in the consideration of flavoring ingredients under the food additives amendment. *Food Technol.* 14(10), 488.
- Hall, Richard L., and Bernard L. Oser. 1961. Recent progress in the consideration of flavoring ingredients under the food additives amendment. II. *Food Technol.* 15(12), 20.
- Heggie, R., and R. C. Bucher, F. T. deAngelis, E. L. Fenimore, J. L. Scanlan, R. S. Towne, H. Wakeham, J. I. Weeks, and F. Witzel. 1965. Flavoring substances used in chewing gum. *Food Technol.* (in press).
- Steinberg, D. S. 1963. Private communication. Nov. 8.

THE AUTHORS are respectively director of research and development, McCormick & Co., and president, Food and Drug Research Laboratories.



SURVEY OF FLAVORING INGREDIENT USAGE LEVELS

Flavoring Extract Manufacturers' Association average maximum use levels (in ppm) on which the expert panel based its judgments that the substances are generally recognized as safe. Those substances which appear only on an FDA "White List" are indicated with an asterisk.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2001 *ACACIA, GUM [<i>Acacia senegal</i> (L.) Willd.]—Arabic, gum	102	330.	430.	410.	460.	840.	740. 2,800.	Meringue 750. 7,000.	Syrups 210. 240.	
2002 ACETAL--Acetaldehyde diethyl acetal	7	7.3	52.	39.	6.0 120.					
2003 ACETALDEHYDE--Ethanal	33	3.9	25.	22.	12.	6.8	20. 270.			
2004 ACETALDEHYDE PHENETHYL PROPYL ACETAL- Acetal R; Pepital	1	-	-	(1)2.5	(1)2.5					
2005 ACETANISOLE--4'-Methoxyacetophenone; p-Acetyl anisole; p-Methoxyacetophenone; Novatone	12	2.3	2.5	4.6	5.8		(1)840.			
2006 ACETIC ACID--Ethanoic acid	60	39.	32.	52.	38.	(1)15.	60. 60.	Condiments 5,900.		
2007 (tri-)ACETIN--Glyceryl triacetate; Enzactin; Vanay	9	190.	60. 2,000.	560.	1,000.		(1)4,100.			
2008 ACETOIN--3-Hydroxy-2-butanone; Acetyl methyl carbinol; 2,3-Butanediol; γ-Hydroxy- β-oxobutane; Dimethylketol	34	7.4	3.3	18.	32.	0.60 21.		Cottage Cheese (1)7.0	Margarine 0.80 50.	Shortening (1)8.0
2009 ACETOPHENONE--Methyl phenyl ketone; Acetyl benzene; Hypnone	24	0.98	2.8	3.6	5.6	(1)7.0	0.60 20.			
2010 ACONITIC ACID--1-Propene-1,2,3-tricarboxylic acid; Achilleic acid; Citridic acid; Equisetic acid	4	0.20 2.0	(1)0.60	0.60 30.	0.60 15.		(1)28.	Alcoholic Beverages (1)20.		
2011 ADIPIC ACID--1,4-Butanedicarboxylic acid; Hexanedioic acid	2	(1)40.	-	-	-	(1)5,000.				
2012 *AGAR-- <i>Gelidium cartilagineum</i> (L.) Gaillon and <i>Gracilaria confervoides</i> (L.) Greville and related red algae	10	420. 1,000.	130. 1,000.	-	490.			Icings 300. 30,000.	Meringue (1)2,000.	
2013 *ALFALFA, EXTRACT-- <i>Medicago sativa</i> L.	2	(1)10.	-	-	-			Alcoholic Beverages (1)200.		
2014 *ALGIN-- <i>Laminaria</i> spp. and other kelps	9	100. 240.	2,000. 2,400.	-	-	(1)4,000.		Emulsions (1)100.		
2015 ALGINATES, SODIUM, CALCIUM, and AMMONIUM	25	340.	1,000.	-	70. 200.			Condiments 5,200.	Meats (1)1,000.	Toppings 4,500.
2016 ALKANET ROOT, EXTRACT [<i>Alkanna tinctoria</i> Tausch]--Alcannin, extract; Alcannin, extract; Anchusin, extract	6	(1)1.0	(1)3.0	(1)10.	(1)10.			Icings (1)70.	Meats (1)20.	
2017 *ALLSPICE-- <i>Pimenta officinalis</i> Lindl.	36	120.	1.5 2.0	(1)2.0	1,400.		(1)40.	Condiments 1,000.	Meats 670.	
2018 *ALLSPICE, OIL-- <i>Pimenta officinalis</i> Lindl.	56	18.	15.	66.	48.		40. 1,700.	Alcoholic Beverages (1)5.0 Meats 110.	Condiments 70. Pickles 29.	Soups (1)55.
2019 *ALLSPICE, OLEORESIN-- <i>Pimenta officinalis</i> Lindl.	8	-	-	-	(1)600.			Condiments 25. 130.	Meats 69.	
2020 ALLYL ANTHRANILATE	5	1.1	0.67	2.0	0.02 1.0	(1)2.0				
2021 ALLYL BUTYRATE	6	1.2	0.50 1.0	1.3	0.50 3.0	(1)1.0				
2022 ALLYL CINNAMATE	8	1.0	1.4	1.8	2.6					
2023 ALLYL CYCLOHEXANECETATE	5	1.1	1.6	3.5	4.0					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2024 ALLYL CYCLOHEXANEBUTYRATE	6	1.0	1.4	3.3	3.8					
2025 ALLYL CYCLOHEXANEHEXANOATE	3	(1)1.4	(1)3.3	8.0	8.5					
2026 ALLYL CYCLOHEXANEPROPIONATE--Allyl 3-cyclohexylpropionate; Allyl β -cyclohexylpropionate	30	3.7	3.1	13.	7.1	7.7	(1)30.	Icings (1)0.20		
2027 ALLYL CYCLOHEXANEVALERATE	5	1.2	2.3	4.4	4.8					
2028 ALLYL DISULFIDE--Diallyl disulfide	5	-	-	-	-			Condiments 6.5	Meats 7.0	
2029 ALLYL 2-ETHYLBUTYRATE	2	0.50 1.0	-	(1)2.0	-	(1)1.0				
2030 ALLYL 2-FUROATE	5	0.53	0.05 2.0	1.6	0.75 2.0	(1)1.0				
2031 ALLYL HEPTANOATE--Allyl enanthate; Allyl heptate; Allyl heptylate	15	1.3	2.7	6.4	6.4	2.9	(1)86.			
2032 ALLYL HEXANOATE--2-Propenyl hexanoate	52	7.0	11.	32.	25.	22.	210.			
2033 ALLYL α -IONONE--1-(2,6,6-Trimethyl-2-cyclohexene-1-yl)-1,6-heptadien-3-one; Cetone V	6	0.50	1.4	2.6	3.1	(1)1.0		Toppings (1)2.0		
2034 ALLYL ISOTHIOCYANATE--Mustard oil	23	0.02 0.50	(1)0.50	(1)0.50	5.2			Condiments 52.	Meats 87.	Pickles 10. 88.
2035 ALLYL MERCAPTAN--2-Propene-1-thiol; Allylthiol; Allyl sulphydrate	4	(1)0.25	0.50 2.0	(1)0.50	0.50 2.0			Condiments 2.0 3.0	Meats (1)0.50	
2036 ALLYL NONANOATE	4	0.70	0.50 3.0	5.0	3.0 5.0				Meats (1)1.0	
2037 ALLYL OCTANOATE	15	1.7	3.3	5.1	4.0	(1)0.10				
2038 ALLYL PHENOXYACETATE--Acetate PA	4	0.82	0.004 0.40	2.3	0.02 1.0	(1)3.0				
2039 ALLYL PHENYLACETATE	3	0.06 3.0	(1)8.0	14.	(1)40.					
2040 ALLYL PROPIONATE	3	0.06 3.0	(1)16.	6.5	(1)10.					
2041 ALLYL SORBATE--2,4-Hexadienoate	3	0.86	(1)0.50	0.50 5.0	(1)1.0	(1)2.0				
2042 ALLYL SULFIDE--Thioallyl ether; Diallyl sulfide	10	0.04	0.06	0.07	0.05			Condiments 13.	Meats 3.7	
2043 ALLYL TIGLATE--Allyl <i>trans</i> -2-methyl-2-butenate	3	0.28	0.50 0.50	0.50 3.0	0.50 3.0					
2044 ALLYL 10-UNDECENOATE--Allyl undecylenate	2	0.25 1.0	0.50 0.50	(1)0.50	(1)0.50					
2045 ALLYL <i>iso</i> -VALERATE	5	8.6	18.	22.	15. 48.	(1)1.0				
2046 *ALMONDS, BITTER, OIL (FFPA)-- <i>Prunus amygdalus</i> Batsch var. <i>amara</i> (DC.) Focke	99	80.	66.	97.	96.	29.	330.	Maraschino Cherries 340.		
2047 ALOE, EXTRACT-- <i>Aloe</i> spp.	4	5.0 2,000.	-	-	-			Alcoholic Beverages (1)130.		
2048 ALTHEA ROOT [<i>Althea officinalis</i> L.]--Marshmallow root	3	5.7 10.	-	-	-					
2049 *AMBERGRIS, TINCTURE	4	2.0	1.7	9.7	(1)0.10					
2050 *AMBRETTE, ABSOLUTE, OIL-- <i>Hibiscus abelmoschus</i> L.	3	0.14	0.22	0.34	0.34					
2051 *AMBRETTE SEED, OIL-- <i>Hibiscus abelmoschus</i> L.	3	0.30	0.30 0.50	0.80	0.80					
2052 *AMBRETTE, TINCTURE-- <i>Hibiscus abelmoschus</i> L.	3	(1)5.0	1.0 5.0	0.04 10.	(1)10.			Alcoholic Beverages (1)10.		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —	
2053 AMMONIUM SULFIDE	1	-	-	-	(1)5.0			Condiments (1)5.0	
2054 AMMONIUM <i>iso</i> -VALERATE	4	-	-	-	58.			Syrups (1)0.20	
2055 <i>iso</i> -AMYL ACETATE * --common Amyl acetate; β-Methyl butyl acetate	72	28.	56.	190.	120.	100.	2,700.		
2056 AMYL ALCOHOL--Pentyl alcohol; 1-Pentanol	16	18.	15.	35.	24.	7.7 50.	150. 340.		
2057 <i>iso</i> -AMYL ALCOHOL-- <i>iso</i> -Pentyl alcohol; 3-Methyl- 1-butanol; <i>iso</i> -Butyl carbinol	21	17.	7.6	52.	24.	46.	(1)300.	Alcoholic Beverages (1)100.	
2058 <i>iso</i> -AMYL BENZOATE-- <i>iso</i> -Pentyl benzoate	13	3.0	2.5	3.5	7.4	(1)4.6	(1)200.		
2059 AMYL BUTYRATE--Pentyl butyrate	45	19.	32.	76.	43.	0.50 1.4	760.	Syrups (1)58.	
2060 <i>iso</i> -AMYL BUTYRATE-- <i>iso</i> -Pentyl butyrate	37	13.	34.	79.	51.	60.	570.		
2061 α-AMYL CINNAMALDEHYDE--α-Pentylcinnamaldehyde; α-Amyl β-phenylacrolein; Buxine®	20	1.3	1.5	4.0	4.5	0.03 0.05	(1)15.		
2062 α-AMYL CINNAMALDEHYDE DIMETHYL ACETAL-- 1,1-Dimethoxy-2-amyl-3-phenyl-2-propene	5	0.80	1.5 2.0	(1)2.0	2.6				
2063 <i>iso</i> -AMYL CINNAMATE-- <i>iso</i> -Pentyl cinnamate	13	3.1	4.2	13.	13.				
2064 α-AMYL CINNAMYL ACETATE--α-Pentylcinnamyl acetate	4	0.92	3.5	3.5	3.0		(1)3.0		
2065 α-AMYL CINNAMYL ALCOHOL--α-Pentylcinnamyl alcohol	6	0.47	1.5	1.6	1.5		(1)2.0		
2066 α-AMYL CINNAMYL FORMATE--α-Pentylcinnamyl formate	3	0.17	0.93	1.5	1.5		(1)1.0		
2067 α-AMYL CINNAMYL <i>iso</i> -VALERATE--α-Pentylcinnamyl <i>iso</i> -valerate	4	0.36	1.2	1.3	1.7		(1)1.0		
2068 AMYL FORMATE--Pentyl formate	22	13.	11.	31.	8.0		170.		
2069 <i>iso</i> -AMYL FORMATE-- <i>iso</i> -Pentyl formate	23	8.4	14.	22.	16.	2.0 28.	250.		
2070 <i>iso</i> -AMYL 2-FURANBUTYRATE-- <i>iso</i> -Pentyl 2-furanbutyrate; α- <i>iso</i> -Amyl furfurylpropionate	5	0.03 5.0	(1)2.8	6.0	0.50 8.0	(1)5.0			
2071 <i>iso</i> -AMYL 2-FURANPROPIONATE-- <i>iso</i> -Pentyl 2-furanpropionate; α- <i>iso</i> -Amyl furfurylacetate	4	0.02 0.33	0.33 0.65	1.6 3.6	1.6 3.6				
2072 AMYL 2-FUROATE--Pentyl 2-furoate	3	(1)5.0	-	1.5 6.0	(1)1.0			Condiments (1)10.	
2073 AMYL HEPTANOATE--Pentyl heptanoate	9	7.0	3.8	7.5	3.0	(1)3.5	(1)53.		
2074 AMYL HEXANOATE--Pentyl hexanoate	16	5.3	16.	22.	8.3	0.30 3.7	(1)110.		
2075 <i>iso</i> -AMYL HEXANOATE-- <i>iso</i> -Pentyl hexanoate	19	7.8	14.	17.	15.	(1)3.7			
2076 2-AMYL-5 or 6-KETO-1,4-DIOXANE	1		(1)5.0	(1)5.0	(1)5.0			Shortening (1)5.0	
2077 <i>iso</i> -AMYL LAURATE-- <i>iso</i> -Pentyl laurate; <i>iso</i> -Amyl dodecanoate	2	0.04 3.0	0.16 6.0	0.50 6.0	0.50 6.0				
2078 <i>iso</i> -AMYL NONANOATE-- <i>iso</i> -Pentyl nonanoate	6	1.5	3.3	3.0	4.0				
2079 AMYL OCTANOATE--Pentyl octanoate	8	5.0	3.5	6.0	3.5	(1)2.1			
2080 <i>iso</i> -AMYL OCTANOATE-- <i>iso</i> -Pentyl octanoate	10	6.6	5.1	7.4	3.5	(1)2.1			

* Throughout this report, the names "*iso*-amyl" and "amyl" are used in accord with the rules of chemical nomenclature. In commercial practice, however, "amyl" invariably means "*iso*-amyl" unless it is prefaced by the *n*- for normal.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2081 iso-AMYL PHENYLACETATE—iso-Pentyl phenylacetate	22	5.0	16.	12.	14.	0.15 3.4		Toppings 0.25 0.80		
2082 iso-AMYL PROPIONATE—iso-Pentyl propionate	14	3.8	13.	38.	6.1	0.80 3.7	750.			
2083 iso-AMYL PYRUVATE—iso-Pentyl pyruvate	4	4.7	8.1	9.2	12.					
2084 iso-AMYL SALICYLATE—iso-Pentyl salicylate; iso-Amyl o-hydroxybenzoate; Orchidee	6	1.4	2.9	3.0	3.0					
2085 iso-AMYL iso-VALERATE—iso-Pentyl iso-valerate	35	8.5	14.	33.	41.	1.0 61.	390.	Jellies (1)10.		
2086 ANETHOLE—p-Propenylanisole; 1-Methoxy-4-propenylbenzene; Anise camphor	43	11.	26.	340.	150.		1,500.	Alcoholic Beverages 1,400.		
2087 *ANGELICA ROOT, EXTRACT— <i>Angelica archangelica</i> L.	12	49.	46.	44.	61.			Syrups 1.0 100.		
2088 *ANGELICA ROOT, OIL— <i>Angelica archangelica</i> L.	18	12.	0.99	0.86	1.0	0.03 5.0	(1)60.	Alcoholic Beverages 15.		
2089 *ANGELICA SEED, EXTRACT— <i>Angelica archangelica</i> L.	6	1,100.	-	19.	(1)50.			Condiments (1)10.	Syrups (1)100.	
2090 *ANGELICA SEED, OIL— <i>Angelica archangelica</i> L.	10	6.3	1.4	1.9	2.2	(1)5.0		Alcoholic Beverages 32.		
2091 *ANGELICA STEM, OIL— <i>Angelica archangelica</i> L.	2	0.50 1.5	0.50 10.	1.0 25.	1.0 24.	(1)0.50				
2092 *ANGOSTURA, EXTRACT— <i>Galipea officinalis</i> Hancock	8	18.	-	-	-			Alcoholic Beverages 1,700.		
2093 *ANISE— <i>Pimpinella anisum</i> L.	17	2.0 30.	1.0 4.0	3.0 4.0	490.			Condiments 96. 5,000.	Meats 1,200.	
2094 *ANISE, OIL— <i>Pimpinella anisum</i> L.	83	7.5	67.	500.	120.		3,200.	Alcoholic Beverages 45.	Meats 65.	
2095 *ANISE, STAR— <i>Illicium verum</i> Hook. f.	33	13.	18.	83.	140.			Alcoholic Beverages 40. 60.	Meats 500. 1,000.	
2096 ANISE, STAR, OIL— <i>Illicium verum</i> Hook. f.	46	12.	99.	190.	230.			Alcoholic Beverages 50.	Meats 20. 55.	Syrups (1)8.0
2097 ANISOLE—Methoxybenzene; Methylphenyl ether	6	9.0	16.	51.	34.					
2098 ANISYL ACETATE—p-Methoxybenzyl acetate	21	6.3	8.0	15.	12.	11.	(1)30.			
2099 ANISYL ALCOHOL—p-Methoxybenzyl alcohol; Anisic alcohol	15	7.4	8.0	11.	12.	(1)1.9				
2100 ANISYL BUTYRATE—p-Methoxybenzyl butyrate	4	3.1	5.7	10.	13.					
2101 ANISYL FORMATE—p-Methoxybenzyl formate	9	3.2	3.9	7.9	14.	(1)0.20				
2102 ANISYL PROPIONATE—p-Methoxybenzyl propionate	14	5.6	6.1	16.	20.	(1)0.25				
2103 ANNATTO, EXTRACT [<i>Bixa orellana</i> L.]— Annotta, extract; Annotta, extract	14	(1)25.	200.	-	2,000.			Breakfast Cereals (1)2,000.	Margarine 330.	
2104 ANNATTO, SEED [<i>Bixa orellana</i> L.]—Annotta, seed; Annotta, seed	3	-	-	-	100. 100.					
2105 *APRICOT KERNEL, OIL [<i>Prunus armeniaca</i> L.]— Persic, oil	9	130. 150.	3.4 400.	300. 360.	270.			Soups 1.0 500.		
2106 *ASAFETIDA, FLUID EXTRACT— <i>Ferula assafoetida</i> L.	4	(1)4.0	(1)10.	(1)5.0	8.0 10.			Condiments (1)50.	Meats (1)10.	Soups (1)30.
2107 *ASAFETIDA, GUM— <i>Ferula assafoetida</i> L.	5	(1)5.0	(1)10.	15. 25.	(1)15.			Condiments 5.0 160.		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2108 *ASAFETIDA, OIL-- <i>Ferula asse-foetida</i> L.	3	-	-	1.0 15.	(1)1.0			Condiments (1)10.		
2109 ASCORBIC ACID--Vitamin C	34	130.	0.80 250.	4.0 6,000.	1.0 500.			Fruit Sauces 280. 380.	Meats 0.49 470.	
2110 *ASH BARK, PRICKLY, EXTRACT-- <i>Xanthoxylum amercanum</i> L. or <i>Xanthoxylum clava-herculis</i> L.	4	59.	-	(1)78.	(1)82.					
2111 *BALM [<i>Melissa officinalis</i> L.]--Balm, lemon	0	-	-	-	-					
2112 *BALM LEAVES, EXTRACT [<i>Melissa officinalis</i> L.]--Balm, lemon, extract; Melissa, extract	1	(1)2,000.	-	-	-					
2113 *BALM, OIL [<i>Melissa officinalis</i> L.]--Balm, lemon, oil; Melissa, oil	7	8.5	1.7 15.	20.	10. 60.					
2114 BALSAM FIR, OIL-- <i>Abies balsamea</i> (L.) Mill.	7	4.5	0.50 1.5	5.2	5.2	0.50 1.0				
2115 BALSAM FIR, OLEORESIN-- <i>Abies balsamea</i> (L.) Mill.	3	(1)0.20	(1)1.5	(1)5.0	(1)5.0					
2116 *BALSAM, PERU-- <i>Myroxylon pereirae</i> Klotzsch	38	3.0	5.9	10.	32.	0.05 1.0	120.	Syrups 0.25 7.0		
2117 *BALSAM, PERU, OIL-- <i>Myroxylon pereirae</i> Klotzsch	15	3.2	2.2	8.4	6.6					
2118 *BASIL-- <i>Ocimum basilicum</i> L.	20	(1)2.5	(1)5.0	(1)5.0	680.			Condiments 500.	Meats 520.	
2119 *BASIL, OIL-- <i>Ocimum basilicum</i> L.	21	2.0	2.7	6.2	4.2	(1)0.01		Condiments 15.	Meats 24.	
2120 *BASIL, OLEORESIN-- <i>Ocimum basilicum</i> L.	3	-	-	-	(1)16.			Condiments 2.0 5.0		
2121 *BAY LEAVES, WEST INDIAN, EXTRACT-- <i>Pimenta acris</i> Kostel	8	0.67	(1)2.0	1.6 2.0	(1)2.0			Meats 54.	Soups (1)0.72	
2122 *BAY LEAVES, WEST INDIAN, OIL [<i>Pimenta acris</i> Kostel]--Myrcia, oil	16	1.5	2.3	4.4	4.6			Condiments 27.	Meats 15.	
2123 *BAY LEAVES, WEST INDIAN, OLEORESIN-- <i>Pimenta acris</i> Kostel	3	-	-	-	-			Meats 25. 25.	Soups (1)72.	
2124 *BAY, SWEET-- <i>Laurus nobilis</i> L.	18	0.36 2.5	(1)5.0	(1)5.0	5.0 400.			Condiments 130.	Meats 840.	
2125 *BAY, SWEET, OIL-- <i>Laurus nobilis</i> L.	5	2.0	1.8	2.6	21.		(1)2.9	Condiments (1)30.		
2126 BEESWAX, WHITE [<i>Apis mellifera</i> L.]--Cire d'abeille absolute	5	0.50 0.50	2.0	10.	10.			Honey (1)5.0		
2127 BENZALDEHYDE--Benzenecarbonal; Benzene- methylal; Benzoic aldehyde	78	36.	42.	120.	110.	160.	840.	Alcoholic Beverages 50. 60.		
2128 BENZALDEHYDE DIMETHYL ACETAL	5	26.	22.	56.	45.	(1)50.		Alcoholic Beverages (1)60.		
2129 BENZALDEHYDE GLYCERYL ACETAL--2-Phenyl- m-dioxan-5-ol	9	21.	24.	110.	73.	100.	(1)840.			
2130 BENZALDEHYDE PROPYLENE GLYCOL ACETAL--4-Methyl-2-phenyl-m-dioxolane	5	34.	27.	110.	96.	(1)50.				
2131 BENZOIC ACID--Benzenecarboxylic acid; Phenyl- formic acid; Dracrylic acid	14	7.5	4.8	8.9	40.		20. 32.	Iceings (1)250.		
2132 BENZON--2-Hydroxy-2-phenylacetophenone	3	4.5	0.54	2.0	1.4	(1)0.10				
2133 BENZOIN, RESIN [<i>Styrax benzoin</i> Dryander; <i>S. paralleloneurus</i> Perkins; <i>S. tonkinensis</i> (Pierre) Craib ex Hartwich, or other spp. of the Section <i>Anthostyrax</i> of the genus <i>Styrax</i>]-- Gum Benjamin; Benzoe	16	15.	5.1	8.7	26.	(1)10.	(1)110.			

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2134 BENZOPHENONE--Diphenyl ketone; Benzoyl-benzene	8	0.50	0.61	1.7	2.4					
2135 BENZYL ACETATE	38	7.8	14.	34.	22.	23.	760.			
2136 BENZYL ACETOACETATE--Benzyl acetyl acetate	5	2.7	6.0	13.	13.	0.50 10.	(1)50.			
2137 BENZYL ALCOHOL--Phenyl carbinol; Phenyl methanol; α -Hydroxytoluene	24	15.	160.	47.	220.	21. 45.	1,200.			
2138 BENZYL BENZOATE--Benzyl benzene carboxylate; Benzyl phenylformate	20	4.5	12.	39.	33.		280.			
2139 BENZYL BUTYL ETHER	2	0.50 2.0	(1)3.5	(1)8.0	2.0 8.0	(1)2.0				
2140 BENZYL BUTYRATE--Benzyl butanoate	24	4.5	6.9	7.7	9.9	(1)3.0	(1)310.			
2141 BENZYL iso-BUTYRATE--Benzyl 2-methyl propanoate	11	5.2	12.	12.	25.					
2142 BENZYL CINNAMATE--Benzyl β -Phenylacrylate; Cinnamoin	20	1.4	2.5	6.7	6.6	3.0 5.0	5.3 120.			
2143 BENZYL 2,3-DIMETHYLCROTONATE--Benzyl methyl tiglate	4	0.75	2.8	1.8	1.5					
2144 BENZYL ETHYL ETHER	2	0.50 1.0	(1)2.5	(1)7.5	(1)7.5					
2145 BENZYL FORMATE	14	2.4	8.0	12.	8.6		(1)3.2			
2146 3-BENZYL-4-HEPTANONE--Benzyl dipropyl ketone; Morellone	4	1.2	4.6	11.	11.					
2147 BENZYL MERCAPTAN-- α -Toluenethiol; Benzylthiol	2	0.15 0.25	0.15 0.50	0.50 0.75	0.50 0.75					
2148 BENZYL METHOXYETHYL ACETAL--Acetaldehyde benzyl β -methoxyethyl acetal; 1-Benzyl-oxy-1-(β -methoxy)ethoxy ethane	1	(1)0.50	(1)1.0	(1)1.0	(1)1.0					
2149 BENZYL PHENYLACETATE	9	1.3	2.6	6.6	4.3			Toppings (1)5.0		
2150 BENZYL PROPIONATE--Benzyl propanoate	20	4.1	5.8	19.	17.		19. 150.	Icings (1)40.		
2151 BENZYL SALICYLATE--Benzyl o-hydroxybenzoate	7	1.4	0.89	1.8	0.01 2.2					
2152 BENZYL iso-VALERATE	16	2.2	3.4	16.	9.4	(1)56.	(1)200.			
2153 *BERGAMOT, OIL [<i>Citrus aurantium</i> L. subsp. <i>bergamia</i> Wright et Arn.]--Bergamot orange, oil	29	8.9	7.9	27.	29.	5.3 90.	43.	Icings 1.0 130.		
2154 BIRCH, SWEET, OIL [<i>Betula lenta</i> L.]--Birch, black, oil	97	48.	44.	310.	110.	(1)0.07	4,300.	Syrups (1)5.0		
2155 BLACKBERRY BARK, EXTRACT-- <i>Rubus</i> , spp. of Section <i>Eubatus</i>	7	81.	3.0 880.	230.	3.0 660.			Alcoholic Beverages 150. 10,000.		
2156 *BOIS DE ROSE, OIL-- <i>Aniba rosaeodora</i> Ducke	12	0.65	2.6	6.7	9.3		(1)35.			
2157 BORNEOL--Bornyl alcohol; 2-Hydroxycamphane; Borneocamphor; 2-Camphanol; d-Camphanol	8	0.25 1.4	(1)1.4	3.7	5.1		(1)0.30	Syrups (1)0.30		
2158 iso-BORNEOL	8	6.2	23.	11.	8.3		(1)0.80			
2159 BORNYL ACETATE	11	1.1	1.8	1.9	1.4	(1)70.	(1)0.30			
2160 iso-BORNYL ACETATE	8	9.6	12.	3.9	9.5	(1)70.				

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2161 BORNYL FORMATE	5	3.7	0.30 3.0	0.80 2.0	0.80 2.0			Syrups (1)0.04		
2162 iso-BORNYL FORMATE	3	0.06 1.0	0.03 1.0	0.74	(1)0.80					
2163 iso-BORNYL PROPIONATE	3	0.01 1.0	0.80 1.0	1.2	(1)1.8					
2164 BORNYL VALERATE	3	0.06 1.0	(1)0.30	0.90 2.0	(1)0.80					
2165 BORNYL iso-VALERATE Bornyval	3	0.06 1.0	0.40 1.0	0.90 2.0	0.90 2.0			Syrups (1)1.2		
2166 iso-BORNYL iso-VALERATE	3	0.60 1.0	0.30 1.0	0.90	0.80 2.0					
2167 BORONIA, ABSOLUTE-- <i>Boronia megastigma</i> Nees	9	4.3	2.8	11.	10.					
2168 BROMINATED VEGETABLE OILS	62	170.	260.	-	35. 190.					
2169 BUCHU LEAVES, OIL-- <i>Barosma betulina</i> Bartl. et Wendl., <i>B. crenulata</i> (L.) Hook., or <i>B. serratifolia</i> Willd.	12	1.9	6.8	8.5	5.2			Alcoholic Beverages (1)0.50	Condiments (1)7.0	
2170 2-BUTANONE--Methyl ethyl ketone; MEK	1	(1)70.	(1)270.	(1)100.	(1)100.					
2171 BUTTER ACIDS ^b	5	(1)2.0	(1)3.0	300.	8.3					
2172 BUTTER ESTERS ^c	13	-	24.	78.	86.			Popcorn Oil (1)1,200.	Toppings (1)2.0	
2173 BUTTER STARTER DISTILLATE	10	-	20. 40.	420.	720.			Shortening 750. 12,000.		
2174 BUTYL ACETATE	24	11.	16.	32.	32.	13.	220.			
2175 iso-BUTYL ACETATE	28	11.	16.	36.	35.	170.	860.	Icings (1)5.5		
2176 BUTYL ACETOACETATE	3	4.2	7.3	26.	26.					
2177 iso-BUTYL ACETOACETATE	3	4.0	7.0	25.	25.					
2178 BUTYL ALCOHOL--1-Butanol	9	12.	7.0	34.	32.			Alcoholic Beverages (1)1.0	Cream (1)4.0	
2179 iso-BUTYL ALCOHOL--iso-Butanol	6	17.	7.0	30.	24.					
2180 iso-BUTYL ANGELATE--iso-Butyl cis-2-methyl-2- butenoate	2	(1)1.5	(1)1.5	(1)5.0	-			Icings 3.0 100.		
2181 BUTYL ANTHRANILATE	10	1.3	2.6	9.0	6.7					
2182 iso-BUTYL ANTHRANILATE	10	2.0	4.0	12.	12.		5.0 1,700.			
2183 BUTYLATED HYDROXYANISOLE--Mixture of 2-tert-Butyl-4-methoxyphenol and 3-tert-Butyl- 4-methoxyphenol; BHA; Embanox	34	0.82	0.81	9.6	2.8	0.54	13.	Potatoes (1)5.0	Shortening 230.	
2184 BUTYLATED HYDROXYTOLUENE--2,6-di-tert- Butyl p-cresol; BHT; 2,6-di-tert-Butyl-4- methylphenol; Ionol C.P.; Impruvol; Vianol; Parabar	0	-	-	-	-					
2185 iso-BUTYL BENZOATE	5	2.0 9.0	7.9	12.	10. 23.					
2186 BUTYL BUTYRATE	21	8.6	22.	24.	22.	14.	150. 1,500.			
2187 iso-BUTYL BUTYRATE	16	8.3	16.	25.	24.	14.	(1)2,000.	Alcoholic Beverages (1)2.0		
2188 BUTYL iso-BUTYRATE	12	8.7	4.0 5.0	19.	39.		(1)2,000.			

^b Assuming that these are a mixture consisting only of the saponified acids reported in the literature as derived from butter in the approximate proportions normally occurring.

^c Assuming that these are the ethyl esters of butter acids (q.v.).

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2189 iso-BUTYL iso-BUTYRATE	10	7.5	7.4	16.	17.	3.3 10.		Alcoholic Beverages (1)2.0		
2190 BUTYL BUTYRYLLACTATE--Lactic acid, butyl ester, butyrate	15	13.	9.0	44.	58.					
2191 α-BUTYLCINNAMALDEHYDE	4	0.50 1.0	1.0 2.8	2.0 8.0	2.0 8.0			Alcoholic Beverages (1)2.0		
2192 BUTYL CINNAMATE	5	0.83	2.6	1.0 15.	1.0 15.			Alcoholic Beverages (1)2.0		
2193 iso-BUTYL CINNAMATE	7	1.3	3.4	5.4	5.4					
2194 BUTYL 2-DECENOATE--Butyl decylenate	2	(1)8.0	-	1.5 22.	(1)30.		(1)2,000.			
2195 BUTYL ETHYL MALONATE	2	(1)3.0	-	(1)0.13	-					
2196 BUTYL FORMATE	8	2.9	3.2	11.	9.1	(1)5.0				
2197 iso-BUTYL FORMATE--Teteryl formate	10	2.2	7.1	19.	8.2	(1)5.0				
2198 iso-BUTYL 2-FURANPROPIONATE--iso-Butyl furelypropionate	7	8.1	14.	17.	21.	4.0 30.	(1)12.	Icings (1)20.		
2199 BUTYL HEPTANOATE	2	0.50 1.0	2.0 10.	2.0 25.	2.0 25.					
2200 iso-BUTYL HEPTANOATE	2	0.50 1.5	2.4 10.	7.0 25.	7.0 25.					
2201 BUTYL HEXANOATE	6	1.7	3.9	7.6	10.					
2202 iso-BUTYL HEXANOATE	8	5.4	3.9	8.1	8.3		(1)2.0			
2203 BUTYL p-HYDROXYBENZOATE--Butyl parasept	2	(1)1,000.	-	-	(1)10.					
2204 2-BUTYL-5 or 6-KETO-1,4-DIOXANE	1	-	(1)5.0	(1)5.0	(1)5.0			Shortening (1)5.0		
2205 BUTYL LACTATE	3	0.66	2.8	6.5	7.7					
2206 BUTYL LAURATE--Butyl dodecanoate	4	0.40 3.0	(1)0.60	17.	1.0 40.					
2207 BUTYL LEVULINATE	3	0.20 1.0	2.1	4.6	4.6					
2208 α-iso-BUTYLPHENETHYL ALCOHOL--4-Methyl-1-phenyl-2-pentanol; Benzyl iso-butyl carbinol; Benzyl iso-amyl alcohol	3	1.0 10.	38.	54.	15. 50.			Alcoholic Beverages (1)50.		
2209 BUTYL PHENYLACETATE	7	0.50	2.1	4.5	4.6	(1)5.0				
2210 iso-BUTYL PHENYLACETATE	11	2.8	2.8	5.5	5.0	(1)5.0		Mareschino Cherries (1)3.0		
2211 BUTYL PROPIONATE	10	4.0	5.2	25.	27.					
2212 iso-BUTYL PROPIONATE	10	5.4	4.2	25.	35.					
2213 iso-BUTYL SALICYLATE	7	3.5	1.8	2.6	5.0					
2214 BUTYL STEARATE--Butyl octadecanoate	5	(1)1.0	(1)2.0	190.	340.		(1)330.	Alcoholic Beverages (1)5.0		
2215 BUTYL SULFIDE--Dibutyl sulfide	2	0.02 1.0	0.01 1.0	0.03 1.0	0.03 1.0					
2216 BUTYL 10-UNDECENOATE	5	0.90	2.0	6.6	7.8		0.40 60.	Alcoholic Beverages (1)5.0	Icings (1)5.0	
2217 BUTYL VALERATE	5	3.0	2.6	8.0	6.8					
2218 BUTYL iso-VALERATE	7	4.6	12.	13.	15.	(1)50.				

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2219 BUTYRALDEHYDE--Butanal; Butyl aldehyde; Butyric aldehyde	6	0.71	4.8	2.9	5.4			Alcoholic Beverages (1)0.50	Icings (1)0.25	
2220 iso-BUTYRALDEHYDE--2-Methyl propanal; iso-Butyl aldehyde; iso-Butyric aldehyde	4	0.30	0.25 0.50	0.67	0.50 1.0			Alcoholic Beverages (1)5.0		
2221 BUTYRIC ACID--Ethylacetic acid; Butanoic acid	54	5.5	6.5	82.	32.	0.19 45.	60. 270.	Margarine .18.		
2222 iso-BUTYRIC ACID--2-Methyl propanoic acid; iso-Propylformic acid	16	4.1	12.	41.	38.		(1)470.	Margarine (1)30. Margarine 2.0 50.		
2223 (tri-)BUTYRIN--Glyceryl tributyrate; Butyrin	5	(1)0.10	(1)0.04	0.33 1,000.	290.	(1)0.36				
2224 CAFFEINE--1,3,7-Trimethylxanthine; 1,3,7-Trimethyl-2,6-dioxopurine; Coffeine; Theine; Guaranine; Methyltheobromine; No-Doz®	24	120.	-	-	-					
2225 CAJEPUT, OIL-- <i>Melaleuca leucadendron</i> L.	5	0.50 2.0	(1)1.0	13.	11.					
2226 CALAMUS [<i>Acorus calamus</i> L.]--Sweet Flag	6	68.	(1)1.0	(1)10.	(1)15.			Alcoholic Beverages (1)30.	Bitters (1)3,000.	
2227 CALAMUS, OIL [<i>Acorus calamus</i> L.]--Sweet flag, oil	16	2.0	1.5	3.0	3.8	(1)0.02		Alcoholic Beverages 5.0 15.		
2228 CALCIUM ACETATE--Sorbo-Calcion, technical product known as Brown or Gray Acetate of Lime	2	(1)200.	-	-	(1)500.					
2229 CAMPHENE--2,2-Dimethyl-3-methylenenorbornane	4	40. 90.	(1)20.	(1)160.	27.					
2230 d-CAMPHOR	4	-	(1)0.10	1.1 25.	11.			Condiments (1)20.		
2231 CAMPOR, JAPANESE, WHITE, OIL-- <i>Cinnamomum camphora</i> (L.) Nees et Eberm.	5	5.4	-	-	1.6 48.			Condiments (1)15.		
2232 *CANANGA, OIL-- <i>Cananga odorata</i> Hook. f. and Thoms.	4	7.0	(1)1.0	(1)2.0	(1)2.0					
2233 *CAPSICUM, EXTRACT-- <i>Capsicum frutescens</i> L.; <i>C. annuum</i> L.	8	120.	(1)15.	(1)12.	12. 14.			Condiments 50. 100.	Meats (1)200.	
2234 *CAPSICUM, OLEORESIN-- <i>Capsicum frutescens</i> L.; <i>C. annuum</i> L.	49	14.	-	11.	(1)14.		46.	Condiments 92.	Meats 50. 100.	
2235 CARAMEL COLOR	123	2,200.	590.	180.	220.			Meats 2,100.	Syrups 2,800.	
2236 *CARAWAY-- <i>Carum carvi</i> L.	7	(1)63.	(1)63.	-	3,000. 10,000.			Condiments (1)96.		
2237 *CARAWAY, BLACK-- <i>Nigella sativa</i> L.	0	-	-	-	-					
2238 *CARAWAY, OIL-- <i>Carum carvi</i> L.	33	29.	49.	86.	150.		(1)0.80	Alcoholic Beverages 140.	Condiments 38.	Meats 34.
2239 CARBOXYMETHYLCELLULOSE	23	91.	670.	9.0	41.			Condiments 1)2,000.	Icings & Toppings 2,300.	Meats (1)100.
2240 *CARDAMOM-- <i>Elletaria cardamomum</i> (L.) Maton	22	3.0	(1)2.0	(1)2.0	1,700.			Condiments (1)900.	Meats 570.	
2241 *CARDAMOM SEED, OIL-- <i>Elletaria cardamomum</i> (L.) Maton	37	1.9	1.3	5.8	57.		(1)2.2	Alcoholic Beverages 10. 10.	Pickles 10. 16.	Condiments 8.0 Meats 36.
2242 CARMINE-- <i>Coccus cacti</i> L.	5	-	-	10. 100.	7.0 300.			Condiments (1)200.	Meats (1)40.	
2243 *CAROB BEAN, EXTRACT [<i>Ceratonia siliqua</i> L.]--St. John's bread	33	66.	93.	180.	120.	600.		Icings & Toppings 500. 1,000.		
2244 *CARROT, OIL-- <i>Daucus carota</i> L.	13	3.1	5.5	5.1	4.4	(1)0.02		Condiments (1)15.	Soups (1)1.0	

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2245 CARVACROL--2-p-Cyrenol; 2-Methyl-5-iso-propylphenol; iso-Thymol; Cymophenol; 2-Hydroxy-p-cymene; iso-Propyl o-cresol	9	26.	34.	92.	120.			Condiments 37.		
2246 CARVACRYL ETHYL ETHER--2-Ethoxy-p-cymene; Ethyl carvacrol.	3	2.0 13.	(1)10.	21.	3.0 39.					
2247 CARVEOL--p-Mentha-6,8-dien-2-ol	3	1.5 13.	(1)3.0	3.0 39.	3.0 5.0					
2248 4-CARVOMENTHENOL--1-p-Menthen-4-ol; 4-Terpinenol; 1-Methyl-4-iso-propyl-1-cyclohexene-4-ol; Origanol	3	1.0 21.	1.0 84.	7.0 63.	(1)7.0			Alcoholic Beverages 130.		
2249 CARVONE--6,8(9)-p-Menthadien-2-one; Carvol	20	850.	120.	180.	110.					
2250 CARVYL ACETATE	3	1.5 11.	3.0 44.	20.	20.					
2251 CARVYL PROPIONATE	2	(1)1.0	(1)2.0	2.0 24.	2.0 24.					
2252 β-CARYOPHYLLENE	9	14.	(1)2.0	34.	27.		(1)200.	Condiments (1)50.		
2253 CASCARA, BITTERLESS, EXTRACT-- <i>Rhamnus purshiana</i> DC.	4	(1)100.	(1)50.	-	(1)100.					
2254 *CASCARILLA BARK, EXTRACT-- <i>Croton cascarilla</i> Benn. and <i>C. eluteria</i> Benn.	2	5.0 800.	-	-	-					
2255 *CASCARILLA BARK, OIL-- <i>Croton cascarilla</i> Benn. and <i>C. eluteria</i> Benn.	9	2.3	3.0	8.7	13.			Condiments (1)50.		
2256 *CASSIA-- <i>Cinnamomum cassia</i> Blume	33	9.2	5.1	130.	3,000.					
2257 *CASSIA BARK, EXTRACT-- <i>Cinnamomum cassia</i> Blume	5	310.	(1)10.	(1)10.	(1)10.					
2258 *CASSIA BARK, OIL-- <i>Cinnamomum cassia</i> Blume--	66	3.0	11.	150.	73.		1,900.	Condiments 140.	Meats 290.	
2259 *CASSIA BUDS [<i>Cinnamomum cassia</i> Blume] Cinnamon flowers; Cassia flowers	1	(1)1,000.	-	-	-					
2260 CASSIE, ABSOLUTE-- <i>Acacia farnesiana</i> (L.) Willd.	7	0.96	1.2	4.1	4.1	(1)1.0				
2261 *CASTOREUM, EXTRACT-- <i>Castor fiber</i> L. and <i>C. canadensis</i> Kuhl	19	5.0	5.6	12.	41.		(1)400.	Condiments (1)50.	Toppings (1)2.0	
2262 *CASTOREUM, LIQUID-- <i>Castor fiber</i> L. and <i>C. canadensis</i> Kuhl	23	3.2	1.9	4.9	7.3	1.2 2.0	19. 60.	Toppings (1)2.0		
2263 CASTOR, OIL [<i>Ricinus communis</i> L.]--Ricinus, oil; Palma Christi, oil; Tangan-tangan, oil	11	1.5 140.	3.0 540.	3.0 410.	210.					
2264 CATECHU, EXTRACT [<i>Acacia catechu</i> Willd.]--Black cutch, extract; Cachou, extract; Pegu catechu, extract; Cashoo, extract	7	16.	21.	140.	140.					
2265 CATECHU, POWDER [<i>Acacia catechu</i> Willd.]--Gambir, gum; Palecatechu; Gambir catechu; Terra japonica	10	45.	27.	43.	37.		(1)15.			
2266 *CAYENNE-- <i>Capsicum annum</i> L. var. <i>longum</i> Sendt	22	(1)1.0	(1)2.0	(1)2.0	2.0 50.			Condiments 610.	Meats 910.	Soups (1)100.
2267 CEDAR LEAF, OIL ⁴ -- <i>Thuja occidentalis</i> L.	11	0.01 0.50	0.01 1.0	12.	1.0 20.			Alcoholic Beverages (1)16.	Meats (1)15.	
2268 *CELERY SEED-- <i>Apium graveolens</i> L.	29	0.37 1,000.	-	-	1,800.			Condiments 2,500.	Meats 1,400. Soups 37. 500.	Pickles 13. 590.

⁴ Provided it is used at levels such that no thujone is detectable in the finished food, using the standard AOAC method.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatin and Puddings	Chewing Gum	— Other Category Uses —		
								Condiments	Meats	Soups
2269 *CELERY SEED, EXTRACT-- <i>Apium graveolens</i> L.	15	240.	(1)5.0	(1)10.	1,900.			Condiments (1)10.	Meats (1)100.	Soups 160. 500.
2270 *CELERY SEED, EXTRACT SOLID-- <i>Apium graveolens</i> L.	5	(1)150.	-	(1)8.0	(1)12.			Condiments (1)7.0	Syrups (1)10.	
2271 *CELERY SEED, OIL-- <i>Apium graveolens</i> L.	42	11.	3.0 13.	13.	12.		(1)28.	Condiments 40.	Meats 40. Pickles 10. 35.	Soups (1)1.0
2272 *CHAMOMILE FLOWER, ENGLISH, OIL-- <i>Anthemis nobilis</i> L.	4	4.1	0.10 0.50	1.3 5.0	0.10 5.0					
2273 *CHAMOMILE FLOWER, HUNGARIAN, OIL-- <i>Matricaria chamomilla</i> L.	8	2.6	6.1	3.8	6.5		(1)0.80	Alcoholic Beverages (1)1.0		
2274 *CHAMOMILE FLOWER, ROMAN, EXTRACT-- <i>Anthemis nobilis</i> L.	8	13.	9.3	6.7	16.					
2275 *CHAMOMILE FLOWER, ROMAN, OIL-- <i>Anthemis nobilis</i> L.	10	2.3	3.3	4.3	4.3	(1)0.25		Alcoholic Beverages (1)20.		
2276 *CHERRY BARK, WILD, EXTRACT-- <i>Prunus serotina</i> Ehrh.	35	120.	140.	200.	76.	(1)3.5		Alcoholic Beverages 300. 800.	Syrups (1)30.	
2277 CHERRY LAUREL, OIL (FFPA)-- <i>Prunus laurocerasus</i> L.	5				(1)75.			Maraschino Cherries (1)77.	Extracts 50. 65.	
2278 CHERRY PITS, EXTRACT-- <i>Prunus avium</i> L. (sweet cherry); <i>P. cerasus</i> L. (sour cherry)	6	80. 150.	50. 60.	-	-					
2279 *CHERVIL-- <i>Anthriscus cerefolium</i> (L.) Hoffm.	4	(1)100.	(1)50.	-	(1)150.			Condiments (1)60.		
2280 *CHICORY, EXTRACT-- <i>Cichorium intybus</i> L.	19	63.	58.	57.	100.					
2281 CINCHONA BARK, RED-- <i>Cinchona succirubra</i> Pav. or its hybrids	9	1.5 3.7	(1)3.0	(1)3.0	27.			Alcoholic Beverages 20. 300.	Bitters (1)1,000.	
2282 CINCHONA BARK, RED, EXTRACT-- <i>Cinchona succirubra</i> Pav. or its hybrids	3	(1)100.	(1)25.	-	(1)20.			Condiments (1)60.		
2283 *CINCHONA BARK, YELLOW-- <i>Cinchona ledgeriana</i> Moens, <i>C. calisaya</i> Wedd., or hybrids of these with other spp. of <i>Cinchona</i>	4	-	-	-	-			Alcoholic Beverages (1)300.	Bitters (1)100.	
2284 CINCHONA BARK, YELLOW, EXTRACT-- <i>Cinchona ledgeriana</i> Moens, <i>C. calisaya</i> Wedd., or hybrids of these with other spp. of <i>Cinchona</i>	4	(1)100.*	-	-	-					
2285 CINCHONA, EXTRACT [<i>Cinchona ledgeriana</i> Moens et Trimen; <i>C. succirubra</i> Pavon et Klotzsch or its hybrids; <i>C. calisaya</i> Wedd., or hybrids of these with other <i>Cinchona</i> spp.]--Quinine, extract	4	(1)10.	-	(1)1.0	-					
2286 CINNAMALDEHYDE--Cinnamic aldehyde; 3-Phenylpropenal; Phenylacrolein; Cinnamal	51	9.0	7.7	700.	180.		4,900.	Condiments (1)20.	Meats (1)60.	
2287 CINNAMALDEHYDE ETHYLENE GLYCOL ACETAL--Cinnacloal	2	-	-	0.06 2.0	(1)2.0			Condiments (1)5.0		
2288 CINNAMIC ACID-- β -Phenylacrylic acid; 3-Phenylpropenoic acid	10	31.	40.	30.	36.		(1)10.			
2289 *CINNAMON [<i>Cinnamomum zeylanicum</i> Nees; <i>C. loureirii</i> Blume; <i>C. cassia</i> Blume]--Ceylon cinnamon; Chinese cinnamon; Saigon cinnamon	43	5.6	53.	10. 4,000.	1,900.			Apple Butter 78. 450.	Condiments (1)110.	Meats 880.
2290 *CINNAMON BARK, EXTRACT-- <i>Cinnamomum zeylanicum</i> Nees; <i>C. loureirii</i> Blume; <i>C. cassia</i> Blume	6	10. 13.	(1)8.5	-	(1)170.			Condiments 40. 200.	Meats (1)40.	

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2291 *CINNAMON BARK, OIL-- <i>Cinnamomum zeylanicum</i> Nees; <i>C. loureirii</i> Blume; <i>C. cassia</i> Blume	33	5.5	18.	80.	110.		620.	Condiments (1)25.	Meats (1)50.	
2292 *CINNAMON LEAF, OIL [<i>Cinnamomum zeylanicum</i> Nees; <i>C. loureirii</i> Blume; <i>C. cassia</i> Blume]—Ceylon cinnamon leaf, oil; Chinese cinnamon leaf, oil; Saigon cinnamon leaf, oil	24	6.8	3.4	32.	54.	(1)0.20	160. 520.	Condiments 20. 78. Condiments 2.0 2.0	Pickles 32. 48.	Spiced Fruits (1)3.0
2293 CINNAMYL ACETATE	32	2.7	6.5	16.	11.		(1)8.7			
2294 CINNAMYL ALCOHOL--3-Phenyl-2-propen-1-ol; Cinnamic alcohol; Styryl carbinol; γ-Phénylallyl alcohol	19	8.8	8.7	17.	33.	(1)22.	720.	Alcoholic Beverages (1)5.0		
2295 CINNAMYL ANTHRANILATE	14	6.8	1.7	4.3	5.3	(1)28.	46. 730.			
2296 CINNAMYL BUTYRATE	11	1.6	8.5	7.6	11.	(1)1.2				
2297 CINNAMYL iso-BUTYRATE	16	1.5	5.0	7.7	8.5	0.02 1.2	(1)140.	Toppings (1)1.0		
2298 CINNAMYL CINNAMATE--Phenylallyl cinnamate; Styracin	4	0.81	1.5	10.	7.0					
2299 CINNAMYL FORMATE	10	1.3	9.1	6.9	8.0		(1)0.60			
2300 CINNAMYL PHENYLACETATE	5	2.7	0.25 2.0	7.3	7.3					
2301 CINNAMYL PROPIONATE--γ-Phenylallyl propionate; 3-Phenyl-2-propenyl propanoate	22	1.0	4.3	7.5	8.8	2.4 4.0	20. 53.			
2302 CINNAMYL iso-VALERATE	21	2.2	2.6	4.1	3.6	11.	19. 30.			
2303 CITRAL--3,7-Dimethyl-2,6-octadienal; Geranial	78	9.2	23.	41.	43.		170.			
2304 CITRAL DIETHYL ACETAL--3,7-Dimethyl-2,6-octadienal diethyl acetal	3	(1)0.03	-	(1)0.13	-			Condiments (1)110.		
2305 CITRAL DIMETHYL ACETAL--3,7-Dimethyl-2,6-octadienal dimethyl acetal	3	6.3	11.	60.	60.		(1)15.			
2306 CITRIC ACID--2-Hydroxy-1,2,3-propanetricarboxylic acid; β-Hydroxytricarballic acid	89	2,500.	1,600.	4,300.	1,200.		3,600.			
2307 CITRONELLAL--3,7-Dimethyl-6-octenal; Rhodinal	16	4.0	1.3	4.5	4.7	(1)0.60	(1)0.30			
2308 *CITRONELLA, OIL-- <i>Cymbopogon nardus</i> Rendle	6	17.	26.	25.	31.					
2309 dl-CITRONELLOL--3,7-Dimethyl-6-octen-1-ol (commercial Citronellol is largely dl-)	16	4.1	4.1	16.	18.	5.8	29. 52.			
2310 CITRONELLOXYACETALDEHYDE--6,10-Dimethyl-3-oxa-9-undecenal	3	0.005 1.0	1.4	4.1	4.3					
2311 CITRONELLYL ACETATE--3,7-Dimethyl-6-octen-1-yl acetate	13	3.4	4.2	7.5	9.7	0.71 3.7	6.9 600.			
2312 CITRONELLYL BUTYRATE--3,7-Dimethyl-6-octen-1-yl butyrate	13	3.8	11.	13.	11.	3.1 4.2	(1)2.3			
2313 CITRONELLYL iso-BUTYRATE--3,7-Dimethyl-6-octen-1-yl iso-butyrate	8	2.3	1.7	8.2	12.	(1)3.1				
2314 CITRONELLYL FORMATE--3,7-Dimethyl-6-octen-1-yl formate	7	14.	13.	19.	32.		63. 100.			
2315 CITRONELLYL PHENYLACETATE--3,7-Dimethyl-6-octen-1-yl phenylacetate	6	1.3	0.95	2.4	17.					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses—		
2316 CITRONELLYL PROPIONATE--3,7-Dimethyl-6-octen-1-yl propionate	7	3.1	9.0	18.	19.		0.80 15.			
2317 CITRONELLYL VALERATE--3,7-Dimethyl-6-octen-1-yl valerate	4	1.0	2.5	3.0	7.7					
2318 *CITRUS PEELS, EXTRACT-- <i>Citrus</i> spp.	10	190.	420.	480.	480.					
2319 *CIVET, ABSOLUTE--Civet cats: <i>Viverra civetta</i> Schreber and <i>V. zibetha</i> Schreber	10	1.0	3.0	3.7	2.8	(1)0.10	(1)2.2			
2320 *CLARY [<i>Salvia sclarea</i> L.]--Clary sage	2	-	-	-	-			Alcoholic Beverages (1)500.		
2321 *CLARY, OIL [<i>Salvia sclarea</i> L.]--Clary sage, oil	18	1.8	3.9	5.3	13.			Alcoholic Beverages (1)100.	Condiments (1)20.	
2322 *CLOVE BUD, EXTRACT-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	7	16.	19.	2.0 20.	48.			Condiments (1)150.	Meats 160. 250.	
2323 *CLOVE BUD, OIL-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	76	3.1	13.	320.	37.	0.33 5.0	1,800.	Alcoholic Beverages (1)300. Meats 75.	Condiments 55. Spiced Fruits 830.	Jellies (1)7.3
2324 *CLOVE BUD, OLEORESIN-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	5	-	-	-	-			Meats 100.		
2325 *CLOVE LEAF, OIL-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	21	8.6	16.	22.	30.	(1)5.0		Apple Butter (1)2.0 Pickles 7.0 16.	Condiments 14. 40.	Meats 670.
2326 *CLOVER TOPS, RED, EXTRACT SOLID [<i>Trifolium pratense</i> L.]--Trifolium, extract solid	2	(1)2.0	(1)3.0	(1)20.	(1)9.0					
2327 *CLOVES-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	32	20. 1,000.	33.	-	1,200.			Spiced Cherries (1)500.	Meats 810.	
2328 *CLOVE STEM, OIL-- <i>Eugenia caryophyllata</i> Thunb. [<i>Eugenia aromatica</i> (L.) Baill.]	11	5.9	4.0 7.0	91.	64.			Condiments 30. 70.		
2329 *COCA LEAF, EXTRACT (DECOCAINIZED)-- <i>Erythroxylon coca</i> Lam.	7	200.	(1)540.	(1)400.	-					
2330 COCHINEAL-- <i>Coccus cacti</i> L.	5	(1)100.	-	36.	(1)300.			Condiments (1)200.		
2331 *COGNAC, GREEN, OIL	44	5.2	8.2	12.	14.		56.	Alcoholic Beverages 390.	Condiments (1)1.0	
2332 *COGNAC, WHITE, OIL	19	5.6	14.	18.	24.	(1)0.10				
2333 *CORIANDER-- <i>Coriandrum sativum</i> L.	20	7.4	(1)1.0	1.0 20.	880.			Alcoholic Beverages (1)1,000.	Condiments (1)54.	Meats 1,300.
2334 *CORIANDER, OIL-- <i>Coriandrum sativum</i> L.	60	3.1	4.5	8.8	9.3		7.4	Alcoholic Beverages 10. 30.	Condiments 12.	Meats 47.
2335 *CORN SILK-- <i>Zea mays</i> L.	4	16. 28.	5.5 10.	12. 18.	12. 21.					
2336 COSTUS ROOT, OIL [<i>Saussurea lappa</i> Clarke (<i>Apilotaxis lappa</i> Dec., <i>A. auriculata</i> DC., <i>Aucklandia costus</i> Falc.)]--Spiral flag, oil	7	0.08	0.90	1.9	1.2	(1)0.10				
2337 p-CRESOL--4-Cresol	3	0.67	0.01 1.0	0.01 2.0	0.01 2.0					
2338 CUBEBS-- <i>Piper cubeba</i> L. f.	4	(1)800.	-	-	-				Meats 25. 30.	
2339 CUBEBS, OIL-- <i>Piper cubeba</i> L. f.	13	2.4	(1)0.25	1.8	4.6			Condiments 33.		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2340 *CUMIN— <i>Cuminum cyminum</i> L.	18	-	-	-	(1)2,500.			Condiments 300. 3,900.	Meats 1,000.	
2341 CUMINALDEHYDE-- <i>p</i> -iso-Propyl benzaldehyde; Cuminal; Cuminaldehyde; Cumaldehyde	16	3.1	3.2	4.0	4.0		0.40 0.50	Condiments (1)3.0		
2342 *CUMIN, BLACK-- <i>Nigella sativa</i> L.	0	-	-	-	-					
2343 *CUMIN, OIL-- <i>Cuminum cyminum</i> L.	20	0.48	0.66	7.3	10.		(1)0.20	Condiments 230.	Meats 40. 100.	Pickles (1)40.
2344 *CURACAO PEEL, EXTRACT-- <i>Citrus aurantium</i> L.	3	1,700.	-	-	-					
2345 *CURACAO PEEL, OIL-- <i>Citrus aurantium</i> L.	5	33.	0.80 20.	43.	4.0 100.					
2346 CURRANT BUDS, BLACK, ABSOLUTE [<i>Ribes nigrum</i> L.]—Cassis	4	4.7	(1)8.0	(1)20.	(1)20.	(1)5.0				
2347 CYCLOHEXANEACETIC ACID—Cyclohexylacetic acid	2	(1)1.0	(1)2.0	(1)2.0	(1)2.0					
2348 CYCLOHEXANEETHYL ACETATE--Cyclohexylethyl acetate	1	(1)2.0	(1)3.0	(1)6.0	(1)20.					
2349 CYCLOHEXYL ACETATE	10	20.	15.	100.	110.					
2350 CYCLOHEXYL ANTHRANILATE	3	10.	3.7	3.7	2.0 10.	(1)1.0				
2351 CYCLOHEXYL BUTYRATE	14	3.9	5.7	9.2	28.	(1)0.54				
2352 CYCLOHEXYL CINNAMATE	4	2.0	1.0 5.0	4.0 10.	4.0 20.					
2353 CYCLOHEXYL FORMATE	4	11.	2.8	8.0	7.0 10.					
2354 CYCLOHEXYL PROPIONATE	3	2.4	2.7	2.0 3.0	(1)3.0	(1)5.0				
2355 CYCLOHEXYL <i>iso</i> -VALERATE	7	13.	7.0 25.	9.3	1.7 60.			Condiments 10. 130.		
2356 <i>p</i> -CYMENE—Cymene; Cymol	9	3.3	5.3	10.	7.0		(1)250.			
2357 *DANDELION, FLUID EXTRACT-- <i>Taraxacum</i> <i>officinale</i> Weber; <i>T. erythrospermum</i> Andr.	5	35.	6.0	2.0 8.0	53.					
2358 *DANDELION ROOT, EXTRACT SOLID-- <i>Taraxacum</i> <i>officinale</i> Weber; <i>T. erythrospermum</i> Andr.	5	10.	2.5 20.	8.0 40.	27.					
2359 DAVANA, OIL-- <i>Artemisia pallens</i> Wall.	4	3.0	6.5	8.0	11.		(1)5.0			
2360 γ-DECALACTONE--4-Hydroxydecanoic acid, γ-lactone	10	2.0	4.5	5.7	7.1	0.08 8.0				
2361 δ-DECALACTONE--5-Hydroxydecanoic acid, δ-lactone	4	5.0 5.0	(1)10.	0.25 5.0	0.25 8.0			Toppings (1)5.0		
2362 DECANAL--Capraldehyde; Capric aldehyde; Caprin- aldehyde; Aldehyde C-10	24	2.3	4.1	5.7	6.6	(1)3.0	0.60			
2363 DECANAL DIMETHYL ACETAL--1,1-Dimethoxy- decane	3	1.0 2.0	(1)2.0	(1)8.0	(1)8.0	(1)3.0		Alcoholic Beverages (1)8.0		
2364 DECANOIC ACID--Capric acid; Decylic acid	14	9.9	3.1	4.5	7.8	0.10 3.0		Shortening (1)5.0		
2365 1-DECANOL--Decyl alcohol; Decylic alcohol; Nonylcarbinol; Alcohol C-10	16	2.1	4.6	5.2	5.2		(1)3.0			
2366 2-DECENAL--Decenaldehyde	5	3.4	6.0	9.0	9.0					
2367 DECYL ACETATE--Decanyl acetate; Acetate C-10	12	3.4	2.7	6.1	10.	(1)1.2	(1)12.			
2368 DECYL BUTYRATE	4	0.18	1.4	5.9	7.5					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2369 DECYL PROPIONATE	4	0.81	1.4	5.9	7.5					
2370 DIACETYL--2,3-Butanedione; Biacetyl; Dimethyl ketone; Dimethylglyoxal; 2,3-Diketobutane	63	2.5	5.9	21.	44.	19.	35.	Shortening		
2371 DIBENZYL ETHER	6	8.3	5.6	23.	25.		85. 160.			
2372 4,4-DIBUTYL-γ-BUTYROLACTONE--4,4-Dibutyl-4-hydroxybutyric acid, γ-lactone	2	-	2.8 3.5	4.4 15.	(1)15.					
2373 DIBUTYL SEBACATE--Butyl sebacate	2	1.0 5.0	2.0 5.0	(1)15.	(1)15.					
2374 DIETHYL MALATE--Ethyl malate	3	5.5	6.5	18.	44.	(1)1.5				
2375 DIETHYL MALONATE--Ethyl malonate; Malonic ester	15	5.6	17.	20.	19.	(1)20.				
2376 DIETHYL SEBACATE--Ethyl sebacate	22	4.1	9.1	21.	41.	3.2 19.	2.7 450.			
2377 DIETHYL SUCCINATE	11	7.3	11.	38.	45.					
2378 DIETHYL TARTRATE	1	(1)50.	(1)200.	(1)200.	(1)200.					
2379 DIHYDROCARVEOL--8-p-Menthen-2-ol; 6-Methyl-3-iso-propenylcyclohexanol	3	(1)84.	(1)300.	10. 250.	10. 250.			Alcoholic Beverages		
2380 DIHYDROCARVYL ACETATE--8-p-Menthen-2-yl acetate; 6-Methyl-3-iso-propenylcyclohexyl acetate	4	2.0 5.0	(1)20.	22.	22.			Condiments		
2381 DIHYDROCOUMARIN--Hydrocoumarin; 1,2-Benzodihydropyrone	26	7.8	21.	44.	28.	10.	78.			
2382 *DILL-- <i>Anethum graveolens</i> L.	14	-	-	-	(1)4,800.			Condiments	Meats	Pickles
2383 *DILL, OIL-- <i>Anethum graveolens</i> L.	31	1.6	5.8	9.9	5.0	(1)20.	3.8 8.0	Alcoholic Beverages	Condiments	Meats
2384 DILL SEED, INDIAN-- <i>Anethum sowa</i> Roxb. (<i>Peucedanum graveolens</i> Benth. et Hook.; <i>A. graveolens</i> L.)	9	-	-	-	(1)400.			Condiments	Meats	
2385 m-DIMETHOXYBENZENE--Resorcinol dimethyl ether; 1,3-Dimethoxybenzene; Dimethyl resorcinol	6	3.0	5.0	5.0	8.0					
2386 p-DIMETHOXYBENZENE--Hydroquinone dimethyl ether; Dimethyl hydroquinone	14	8.1	5.0	4.7	5.8					
2387 2,4-DIMETHYLACETOPHENONE	6	0.78	0.77	3.9	2.7			Alcoholic Beverages		
2388 α,α-DIMETHYLBENZYL iso-BUTYRATE--Phenyl dimethyl carbinyl iso-butyrate	3	(1)5.0	(1)40.	(1)30.	(1)20.					
2389 2,6-DIMETHYL-5-HEPTENAL--Melonal	11	2.8	1.7	8.4	19.	0.02 10.	(1)0.80			
2390 2,6-DIMETHYL OCTANAL--iso-Decylaldehyde	3	0.44	3.2	1.9	1.9					
2391 3,7-DIMETHYL-1-OCTANOL--Tetrahydrogeraniol	5	4.3	2.0 44.	15.	19.					
2392 α,α-DI METHYLPHENETHYL ACETATE--Benzyl dimethyl carbinyl acetate; Benzylpropyl acetate	5	2.8	8.0	22.	19.		(1)2.9			
2393 α,α-DIMETHYLPHENETHYL ALCOHOL--Dimethyl benzyl carbinol; Benzylpropyl alcohol	8	3.3	3.2	4.0	4.9	(1)0.01	(1)100.	Jellies		
2394 α,α-DIMETHYLPHENETHYL BUTYRATE--Benzyl dimethyl carbinyl butyrate	1	(1)10.	(1)20.	(1)20.	-	(1)20.				

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	—Other Category Uses—		
2395 α,α-DIMETHYLPHENETHYL FORMATE--Benzyl dimethyl carbonyl formate	1	(1)2.0	(1)10.	(1)10.	-					
2396 DIMETHYL SUCCINATE	3	1.0 100.	(1)5.0	(1)15.	(1)15.		(1)5.0			
2397 1,3-DIPHENYL-2-PROPANONE--Dibenzyl ketone	4	1.7	4.5	9.5	13.					
2398 DISODIUM PHOSPHATE	18	350.	350.	-	(1)2,300.			Meats 50. 250.	Toppings 2,500.	
2399 DITTANY OF CRETE [<i>Origanum dictamnus</i> L.]-- Cretan dittany; Spanish hops	4	(1)25.	-	-	(1)8.8					
2400 γ-DODECALACTONE--4-Hydroxydodecanoic acid, γ-lactone; γ-Octyl-γ-butyrolactone	7	3.3	4.3	13.	11.	0.15		Jellies (1)0.01		
2401 δ-DODECALACTONE--5-Hydroxydodecanoic acid, δ-lactone	2	-	-	(1)0.06	(1)0.06			Toppings (1)10.		
2402 2-DODECENAL	5	2.9	3.1	2.8	2.8					
2403 *DOGGRASS, EXTRACT [<i>Agropyron repens</i> (L.) Beauv.]--Agropyrum; Quack grass; Quick grass; Couch grass; Triticum; Graminis	2	(1)2.0	(1)4.0	(1)6.0	(1)6.0					
2404 DRAGON'S BLOOD, EXTRACT [<i>Daemonorops</i> spp. or other botanical sources]--Draco rubin, extract	2	(1)300.	-	-	-					
2405 *DULSE-- <i>Rhodomenia palmata</i> (L.) Grev.	1	-	-	-	-					
2406 *ELDER FLOWERS-- <i>Sambucus canadensis</i> L. or <i>S. nigra</i> L.	5	340.	(1)1.0	(1)1.0	(1)1.0			Alcoholic Beverages (1)25.		
2407 ELEM1, GUM-- <i>Canarium commune</i> L. or <i>C. luzonicum</i> (Miq.) A. Gray	4	(1)0.13	(1)0.25	(1)0.25	(1)0.25					
2408 ELEM1, OIL-- <i>Canarium commune</i> L. or <i>C. luzonicum</i> (Miq.) A. Gray	5	0.71	0.25 5.0	0.25 15.	7.5			Soups (1)10.		
2409 ERIGERON, OIL [<i>Erigeron canadensis</i> L.]--Fleabane, oil	5	0.13 4.8	0.25 3.5	0.26 30.	0.25 1.0			Condiments (1)2.0		
2410 ERYTHORBIC ACID--Ascorbic acid; iso- Ascorbic acid	15	100.	(1)20.	-	(1)500.			Meats 380.		
2411 ESTRAGOLE--p-Allylanisole; Methyl chavicol; Chavicol methyl ether; Esdragol; p-Methoxyallyl- benzene	10	10.	11.	36.	41.		(1)150.	Condiments (1)2.0		
2412 *ESTRAGON, OIL [<i>Artemisia dracunculus</i> L.]-- Tarragon, oil	18	0.79	0.50 0.70	0.85	17.			Alcoholic Beverages 1.0 3.0	Condiments 26.	Meats (1)40.
2413 p-ETHOXYBENZALDEHYDE	2	0.06 0.08	0.36 0.50	1.0 1.0	1.0 1.0			Alcoholic Beverages 50. 65.		
2414 ETHYL ACETATE--Acetic ether; Vinegar naphtha	81	67.	99.	170.	170.	200.	1,400.			
2415 ETHYL ACETOACETATE--Acetoacetic ester; Ethyl 3-oxobutanoate	21	17.	24.	110.	120.	93.	530.			
2416 ETHYL 2-ACETYL-3-PHENYLPROPIONATE--Ethyl benzyl acetoacetate; Ethyl α-acetylhydrocinna- mate	2	0.10 5.0	(1)2.0	(1)7.0	-					
2417 ETHYL ACONITATE (Mixed esters)--Ethyl 1-propene- 1,2,3-tricarboxylate	5	3.6	12.	55.	66.	(1)2.5				
2418 ETHYL ACRYLATE	5	0.13 0.26	0.06 1.0	1.1	1.1		0.10 0.10			

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2419 ETHYL ALCOHOL--Ethanol	92	1,700.	2,000.	2,200.	1,800.	(1)230.	1,400.	Maple Syrup (1)610. Alcoholic Beverages 250. 450,000.	Condiments (1)1,000.	Dairy Products (1)30.
2420 ETHYL p-ANISATE	10	2.6	0.96	8.8	7.2					
2421 ETHYL ANTHRANILATE	21	5.9	7.6	19.	23.	14.	(1)79.			
2422 ETHYL BENZOATE--Ethyl benzenecarboxylate	31	2.8	2.8	9.0	10.	(1)0.06	59.	Alcoholic Beverages (1)0.50		
2423 ETHYL BENZOYLACETATE	1	(1)0.70	(1)5.0	(1)10.	(1)10.					
2424 α-ETHYL BENZYL BUTYRATE--α-Phenylpropyl butyrate	3	0.13 1.0	0.12 0.20	1.0	(1)0.14					
2425 2-ETHYL BUTYL ACETATE	2	(1)5.0	(1)2.0	0.03 7.0	-					
2426 2-ETHYLBUTYRALDEHYDE	2	(1)10.	(1)40.	0.12 25.	0.20 20.					
2427 ETHYL BUTYRATE	77	28.	44.	98.	93.	54.	1,400.			
2428 ETHYL iso-BUTYRATE	8	10.	25.	73.	(1)200.	(1)6.0		Toppings (1)1.5		
2429 2-ETHYLBUTYRIC ACID--α-Ethylbutyric acid	2	(1)5.0	(1)20.	20. 35.	(1)20.					
2430 ETHYL CINNAMATE--Ethyl 3-phenylpropenoate; Ethyl phenylacrylate	27	4.1	8.8	9.5	12.	2.4	11. 40.			
2431 ETHYL CYCLOHEXANEPROPIONATE--Ethyl cyclohexylpropionate	2	(1)9.0	-	0.03 30.	(1)24.			Alcoholic Beverages 3.0 10.		
2432 ETHYL DECANOATE	12	2.1	4.5	8.3	23.	5.3		Ground Spices 21.	Whole Spices 15. 45.	
2433 ETHYLENE OXIDE f--Epoxyethane	6	-	-	-	-			Alcoholic Beverages (1)10.		
2434 ETHYL FORMATE--Formic ether	49	9.4	21.	50.	98.	0.35 11.	430.			
2435 ETHYL 2-FURANPROPIONATE--Ethyl furylpropion- ate; Ethyl furfurylhydracrylate	8	1.6	1.6	5.6	7.5					
2436 4-ETHYLGUAICOL--4-Ethyl-2-methoxyphenol	2	(1)0.05	(1)1.1	-	-	(1)0.23		Alcoholic Beverages 8.5 20.		
2437 ETHYL HEPTANOATE	39	6.8	7.5	17.	24.	0.06 350.	340.			
2438 2-ETHYL-2-HEPTENAL--2-Ethyl-3-butylacrolein	2	(1)0.40	-	0.03 2.0	-					
2439 ETHYL HEXANOATE--Capronic ether absolute	26	7.0	18.	12.	12.	(1)10.	32.	Jellies (1)1.3		
2440 ETHYL LACTATE--Ethyl α-hydroxypropionate	25	5.4	17.	28.	71.	8.3	580. 3,100.	Alcoholic Beverages (1)1,000.	Syrups (1)35.	
2441 ETHYL LAURATE--Ethyl dodecanoate	15	1.7	3.7	17.	17.	4.4	(1)39.	Alcoholic Beverages (1)3.0		
2442 ETHYL LEVULINATE	6	5.8	11.	12.	12.					
2443 ETHYL 2-METHYLBUTYRATE	1	(1)0.50	(1)3.0	(1)5.0	-					
2444 ETHYL METHYL PHENYLGLYCIDATE--Ethyl 3-methyl-3-phenylglycidate; Strawberry alde- hyde; Aldehyde C-16 Pure (so-called)	58	5.6	6.7	21.	18.	13.	470.	Alcoholic Beverages (1)30.		
2445 ETHYL MYRISTATE--Ethyl tetradecanoate	7	6.7	8.0	10.	14.					

f As a fumigant for whole and ground spices, provided that residues of ethylene oxide do not exceed 50 p.p.m.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2446 ETHYL NITRITE--Spirit of nitrous ether; Sweet spirit of nitre	11	3.0	4.5	0.10 8.0	(1)0.10		(1)3.9	Icings (1)13.	Syrups (1)52.	
2447 ETHYL NONANOATE	28	3.9	4.0	14.	15.	(1)15.	(1)580.	Alcoholic Beverages 20.	Icings (1)39.	
2448 ETHYL 2-NONYNOATE--Ethyl octyne carbonate	5	0.56	0.55	0.52	1.2					
2449 ETHYL OCTANOATE	16	4.1	2.4	9.0	11.	0.10 2.7	4.0 60.			
2450 ETHYL OLEATE	2	(1)0.10	(1)0.10	0.10 40.	0.10 55.	(1)0.10				
2451 ETHYL PALMITATE--Ethyl hexadecanoate	1	-	(1)20.	(1)40.	(1)20.					
2452 ETHYL PHENYLACETATE-- α -Toluic acid, ethyl ester	14	2.4	5.2	8.1	6.0			Syrups (1)24.		
2453 ETHYL 4-PHENYLBUTYRATE	2	0.06 1.0	-	(1)0.06	-					
2454 ETHYL 3-PHENYLGLYCIDATE	17	4.6	12.	18.	20.	10. 70.				
2455 ETHYL 3-PHENYLPROPIONATE--Ethyl hydrocinnamate	5	1.8	1.0	2.5	0.50 3.0					
2456 ETHYL PROPIONATE	33	7.7	29.	78.	110.	10. 15.	1,100.			
2457 ETHYL PYRUVATE	4	(1)50.	20. 150.	35.	40.					
2458 ETHYL SALICYLATE--Salicylic ether; Sal ethyl	15	2.8	11.	10.	16.	(1)0.04	(1)16.			
2459 ETHYL SORBATE--Ethyl 2,4-hexadienoate	5	5.5	14.	15.	18.					
2460 ETHYL TIGLATE--Ethyl <i>trans</i> -2-methyl-2-butenate	8	5.3	6.0	20.	6.5					
2461 ETHYL 10-UNDECENOATE	5	1.7	8.7	10.	11.			Alcoholic Beverages (1)5.0		
2462 ETHYL VALERATE	24	4.2	4.4	15.	8.3	5.5	260.			
2463 ETHYL <i>iso</i> -VALERATE--Ethyl β -methylbutyrate	33	4.9	7.5	29.	27.	5.0	80. 430.	Condiments (1)1.0		
2464 ETHYL VANILLIN--3-Ethoxy-4-hydroxybenzaldehyde; Ethovan; Vanillal	110	20.	47.	65.	63.	74.	110.	Alcoholic Beverages (1)100. Chocolate 250.	Imitation Vanilla Extract 28,000.	Icings & Toppings 140. 200.
2465 EUCALYPTOL--1,8-Epoxy- <i>p</i> -menthane; Cineole; Cajeputol	9	(1)0.13	(1)0.50	15.	0.50 4.0		190.			
2466 EUCALYPTUS, OIL-- <i>Eucalyptus globulus</i> Labille	14	1.7	0.50 50.	130.	76.			Alcoholic Beverages (1)1.0		
2467 EUGENOL--4-Allyl-2-methoxyphenol; 4-Allylguaiacol; 4-Hydroxy-3-methoxy-1-allylbenzene	36	1.4	3.1	32.	33.	(1)0.60	500.	Condiments 9.6 100.	Meats 40. 2,000.	
2468 <i>iso</i> -EUGENOL--2-Methoxy-4-propenylphenol; 4-Propenylguaiacol	15	3.7	3.8	5.0	11.		0.30 1,000.	Condiments (1)1.0		
2469 EUGENYL ACETATE--Acetyl eugenol	12	0.43	3.3	20.	10.		25. 100.	Condiments 2.0 2.0		
2470 <i>iso</i> -EUGENYL ACETATE--2-Methoxy-4-propenylphenyl acetate; Acetyl <i>iso</i> -eugenol	6	0.44	2.1	17.	17.		(1)100.			
2471 EUGENYL BENZOATE--4-Allyl-2-methoxyphenyl benzoate; Benzoyl eugenol	2	0.03 0.13	0.25 2.0	0.25 10.	0.13 10.					
2472 <i>iso</i> -EUGENYL ETHYL ETHER--2-Ethoxy-5-propenylanisole; Ethyl <i>iso</i> -eugenol	2	(1)7.8	(1)0.50	(1)17.	1.0 3.5					
2473 EUGENYL FORMATE--4-Allyl-2-methoxyphenyl formate	1	-	-	-	-			Condiments (1)0.20		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2474 iso-EUGENYL FORMATE--2-Methoxy-4-propenyl-phenyl formate	1	-	-	-	-			Condiments (1)0.20		
2475 EUGENYL METHYL ETHER--4-Allylveratrole; Methyl eugenol; 1,2-Dimethoxy-4-allylbenzene	8	10.	4.8	11.	13.			Jellies (1)52.		
2476 iso-EUGENYL METHYL ETHER--4-Propenylveratrole; Methyl iso-eugenol	10	4.0	7.7	13.	18.	(1)0.10	(1)110.			
2477 iso-EUGENYL PHENYLACETATE--2-Methoxy-4-propenylphenyl phenylacetate	2	(1)0.05	(1)0.20	(1)3.0	2.0 3.0					
2478 FARNESOL--3,7,11-Trimethyl-2,6-10-dodecatrien-1-ol	7	0.76	0.40	1.4	1.7	(1)0.10		Alcoholic Beverages (1)5.0		
2479 d-FENCHONE--d-1,3,3-Trimethyl-2-norbornanone	4	0.13 0.80	(1)0.25	0.25 30.	(1)0.25					
2480 FENCHYL ALCOHOL--1,3,3-Trimethyl-2-norbornanol; 2-Fenchanol; Fenchol	3	1.8	(1)0.25	4.7	(1)0.25					
2481 *FENNEL, COMMON-- <i>Foeniculum vulgare</i> Mill.	9	(1)800.	-	-	300. 6,500.			Condiments (1)50.	Meats 2,400.	
2482 *FENNEL, SWEET [<i>Foeniculum vulgare</i> Mill. var. <i>dulce</i> (DC.) Alef.]--Finochio; Florence fennel	4	(1)11.	(1)44.	(1)33.	(1)33.			Meats 40. 300.		
2483 *FENNEL, SWEET, OIL-- <i>Foeniculum vulgare</i> Mill. var. <i>dulce</i> (DC.) Alef.	31	3.9	0.38	22.	19.	0.10 10.		Alcoholic Beverages 10. 20.	Condiments (1)2.0	Meats 40. 100.
2484 *FENUGREEK-- <i>Trigonella foenum-graecum</i> L.	13	(1)470.	15. 560.	600.	570.			Condiments 420. 800.	Meats (1)250.	Syrups (1)450.
2485 *FENUGREEK, EXTRACT-- <i>Trigonella foenum-graecum</i> L.	51	50.	85.	280.	99.	30.	(1)7.6	Alcoholic Beverages (1)20. Pickles (1)90.	Condiments (1)150. Syrups 170.	Icings 37. Meats 40. 60.
2486 *FENUGREEK, OLEORESIN-- <i>Trigonella foenum-graecum</i> L.	18	290.	72.	90.	72.	(1)500.		Syrups 300.		
2487 FORMIC ACID	2	(1)1.0	(1)5.0	5.0 18.	5.0 6.1					
2488 FUMARIC ACID--trans-Butenedioic acid; trans-1,2-Ethylenedicarboxylic acid; Allomaleic acid; Boletic acid	3	(1)50.	-	-	(1)1,300.	(1)3,600.				
2489 FURFURAL--2-Furaldehyde; Pyromucic aldehyde	16	4.0	13.	12.	17.	(1)0.80	45.	Alcoholic Beverages (1)10.	Syrups (1)30.	
2490 FURFURYL ACETATE	4	11.	17.	37.	1.0 40.		(1)500.			
2491 FURFURYL ALCOHOL--2-Furancarbinol; α-Furyl-carbinol; 2-Furylcarbinol; 2-Hydroxymethylfuran; Furfuralcohol	5	19.	88.	59.	110.			Alcoholic Beverages (1)10.		
2492 2-FURFURYLIDENE BUTYRALDEHYDE--2-Ethyl-3-furylacrolein	2	(1)0.50	0.50 3.0	2.0 6.0	2.0 6.0					
2493 FURFURYL MERCAPTAN--2-Furanmethanethiol	18	0.52	0.78	2.0	2.1	(1)0.10		Icings (1)0.50		
2494 FURYL ACROLEIN--2-Furanacrolein	6	(1)0.17	6.1	36.	21.	0.10 0.56				
2495 4-(2-FURYL)-3-BUTEN-2-ONE--Furfurylidene acetone Furfuralacetone	4	4.2	4.8	33.	46.	(1)1.6				
2496 (2-FURYL)-2-PROPANONE--Furyl acetone	3	-	(1)5.0	3.8 20.	2.0 20.			Alcoholic Beverages (1)2.5		
2497 FUSEL, OIL, REFINED * --Amyl alcohol, commercial	20	21.	4.1	30.	34.	(1)4.0	(1)270.			
2498 *GALANGAL ROOT-- <i>Alpinia officinarum</i> Hance; <i>A. galanga</i> Willd.	4	750.	-	-	-					

* Assuming that refined fusel oil is mixed amyl alcohols, predominantly 3-Methyl-1-butanol

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2499 *GALANGAL ROOT, EXTRACT— <i>Alpinia officinarum</i> Hance; <i>A. galanga</i> Willd.	5	0.10 350.	(1)0.30	(1)0.20	(1)0.10			Alcoholic Beverages (1)350.	Bitters (1)80.	
2500 *GALANGAL ROOT, OIL— <i>Alpinia officinarum</i> Hance; <i>A. galanga</i> Willd.	6	0.27	0.40	1.5	2.3			Alcoholic Beverages (1)1.0	Condiments (1)2.0	
2501 GALBANUM, OIL— <i>Ferula galbaniflua</i> Boiss. et Buhse and other <i>Ferula</i> spp.	5	0.16	0.84	1.7	1.8					
2502 GALBANUM, RESIN— <i>Ferula galbaniflua</i> Boiss. et Buhse and other <i>Ferula</i> spp.	5	0.04 0.25	0.05 0.50	1.7	2.4			Condiments (1)50.		
2503 *GARLIC, OIL— <i>Allium sativum</i> L.	20	0.01 0.30	(1)0.04	2.9	6.0		(1)12.	Condiments 16.		
2504 GENET, ABSOLUTE— <i>Spartium junceum</i> L.	5	0.83	0.50 1.0	1.7	1.0 2.0		(1)12.			
2505 GENET, EXTRACT [<i>Spartium junceum</i> L.]—Broom, extract	4	1.4	-	-	-					
2506 GENTIAN ROOT, EXTRACT— <i>Gentiana lutea</i> L.	22	26.	47.	120.	160.			Alcoholic Beverages 13.		
2507 GERANIOL— <i>trans</i> -3,7-Dimethyl-2,6-octadien-1-ol	36	2.1	3.3	10.	11.	2.0 2.0	0.80 2.9	Toppings (1)1.0		
2508 *GERANIUM, ROSE, OIL— <i>Pelargonium graveolens</i> L'Her.	36	1.6	2.8	6.9	8.1	1.1 2.0	(1)210.	Jellies (1)5.2		
2509 GERANYL ACETATE	37	1.6	6.5	15.	17.	6.8 7.5	0.30 1.2	Syrups (1)1.0		
2510 GERANYL ACETOACETATE	2	0.50 0.50	1.0 1.0	1.0 3.0	1.0 10.					
2511 GERANYL BENZOATE	3	0.10 0.13	0.16 0.25	(1)0.50	(1)0.50					
2512 GERANYL BUTYRATE	17	1.6	2.8	10.	10.	5.3	0.30 1.5			
2513 GERANYL <i>iso</i> -BUTYRATE	8	1.0	0.80	5.0	4.9	(1)0.60	(1)15.			
2514 GERANYL FORMATE	17	1.9	1.6	7.5	4.1	3.4	(1)0.80			
2515 GERANYL HEXANOATE	8	1.3	0.90	3.2	(1)2.0					
2516 GERANYL PHENYLACETATE	10	1.1	3.1	6.7	4.7		(1)11.			
2517 GERANYL PROPIONATE	12	1.5	1.3	3.7	4.9	(1)3.0	30. 70.			
2518 GERANYL <i>iso</i> -VALERATE	9	4.2	11.	10.	6.8					
2519 *GHATTI, GUM [<i>Anogeissus latifolia</i> Wall.]—Indian gum	4	(1)2,100.	(1)800.	-	-					
2520 *GINGER— <i>Zingiber officinale</i> Rosc.	40	44.	220.	-	2,500.			Meats 1,500.		
2521 *GINGER, EXTRACT— <i>Zingiber officinale</i> Rosc.	32	65.	43.	83.	100.			Condiments (1)15.	Meats 56.	
2522 *GINGER, OIL— <i>Zingiber officinale</i> Rosc.	52	17.	20.	14.	47.			Condiments 13.	Meats 12.	
2523 *GINGER, OLEORESIN— <i>Zingiber officinale</i> Rosc.	43	79.	36. 65.	27.	52.			Condiments 10. 1,000.	Meats 30. 250.	
2524 GLUCOSE PENTAACETATE	1	(1)100.	-	-	(1)1,500.					
2525 GLYCEROL—Glycerine; 1,2,3-Propanetriol trihydroxypropane	53	570.	500.	980.	1,300.	(1)360.	17. 6,000.	Extracts (1)400,000.	Meats (1)40.	Toppings (1)23,000.
2526 GLYCERYL MONOOLEATE—(mono)Olein	4	(1)15.	-	(1)8.0	30. 2,000.			Shortening (1)600.		
2527 GLYCERYL MONOSTEARATE—(mono)Stearin; Glyceryl monoctadecanoate	6	-	2,000.	(1)100.	1,100.		(1)1,600.			

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	—Other Category Uses—		
2528 GLYCYRRHIZIN, AMMONIATED-- <i>Glycyrrhiza glabra</i> L. and other spp. of <i>Glycyrrhiza</i>	15	51.	-	5.0 62.	(1)5.0					
2529 *GRAINS OF PARADISE-- <i>Alfomomum melegueta</i> (Rosc.)K. Schum.	6	43.	(1)120.	(1)120.	-					
2530 *GRAPEFRUIT, OIL-- <i>Citrus paradisi</i> Macf.	53	160.	180.	630.	370.	(1)250.	1,500.	Toppings (1)400.		
2531 GUAIAIC GUM, EXTRACT-- <i>Guaiacum officinale</i> L.; <i>G. sanctum</i> L.	2	(1)600.	-	-	-					
2532 GUAIAICOL--o-Methoxyphenol; o-Hydroxyanisole; Methylcatechol	11	0.95	0.52	0.96	0.75					
2533 GUAIAIC WOOD, EXTRACT-- <i>Guaiacum officinale</i> L.; <i>G. sanctum</i> L.; <i>Bulnesia sarmienti</i> Lorentz	6	760.	(1)4.0	(1)8.0	(1)70.					
2534 GUAIAIC WOOD, OIL-- <i>Guaiacum officinale</i> L.; <i>G. sanctum</i> L.; <i>Bulnesia sarmienti</i> Lorentz	25	1.1	4.1	9.2	8.1	4.2	(1)80.			
2535 GUAIAICYL PHENYLACETATE	4	0.38	1.0	2.2	3.2			Toppings (1)1.0		
2536 GUARANA, GUM-- <i>Paullinia cupana</i> HBK.	7	12.	-	(1)10.	-					
2537 GUAR, GUM [<i>Cyamopsis tetragonolobus</i> (L.) Taub.]--Guar flour; Gum cyamopsis; Jaguar; Regonol; Burtonite V-7-E	8	47. 100.	(1)5,000.	(1)10.	(1)2,900.			Meats (1)2,500.		
2538 HAW BARK, BLACK, EXTRACT-- <i>Viburnum prunifolium</i> L.	5	5.0 6.0	(1)2.5	(1)6.0	(1)6.0					
3034 HEMLOCK, OIL (See SPRUCE, OIL)-- <i>Tsuga canadensis</i> (L.) Carr.; <i>T. heterophylla</i> (Raf.) Sarg.; <i>Picea mariana</i> (Mill.); <i>P. glauca</i> (Moench) Voss										
2539 γ-HEPTALACTONE--4-Hydroxyheptanoic acid, γ-lactone	4	18.	40.	28.	26.					
2540 HEPTANAL--Enanthaldehyde; Heptaldehyde; Heptyl aldehyde; Enanthal; Aldehyde C-7	10	4.9	1.2	2.0	2.6			Alcoholic Beverages (1)4.0		
2541 HEPTANAL DIMETHYL ACETAL	3	0.10 0.13	(1)0.25	(1)0.25	(1)0.25			Condiments (1)1.0		
2542 HEPTANAL GLYCERYL ACETAL (Mixed 1,2 and 1,3 acetals)	2	(1)5.0	(1)10.	(1)10.	(1)10.			Condiments (1)100.		
2543 2,3-HEPTANEDIONE--Acetyl valeryl; Acetyl pentanoyl	14	0.96	3.1	8.2	7.9		(1)1.7	Condiments 10. 25.		
2544 2-HEPTANONE--Methyl amyl ketone; Ketone C-7	11	2.7	6.0	6.4	13.					
2545 3-HEPTANONE--Ethyl butyl ketone	3	0.13 2.0	0.25 170.	67.	0.25 130.					
2546 4-HEPTANONE--Dipropyl ketone; Butyrene	8	7.8	11.	19.	27.	0.60 8.0				
2547 HEPTYL ACETATE	6	4.1	3.3	4.9	4.8					
2548 HEPTYL ALCOHOL--1-Heptanol; Enanthyl alcohol; pri-Heptyl alcohol; Hydroxyheptane; Enanthic alcohol; Alcohol C-7	3	0.90	1.0 5.0	3.0	3.0					
2549 HEPTYL BUTYRATE	6	0.66	0.74	2.7	2.4					
2550 HEPTYL iso-BUTYRATE	5	1.2	0.82	2.6	3.0					
2551 HEPTYL CINNAMATE	4	3.3	1.0 2.0	1.0 6.0	(1)1.0		(1)270.			
2552 HEPTYL FORMATE	5	1.7	0.87	3.6	3.3					

F E M A No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2553 HEPTYL OCTANOATE	1	(1)1.0	-	-	-					
2554 1-HEXADECANOL--Cetyl alcohol; Alcohol C-16	1	-	(1)2.0	(1)2.0	-					
2555 ω-6-HEXADECENLACTONE--16-Hydroxy-6-hexadecenoic acid, ω-lactone; 6-Hexadecenolide; Ambretolide	6	0.32	0.18	0.16	0.19	(1)0.007	(1)0.70			
2556 γ-HEXALACTONE--4-Hydroxyhexanoic acid, γ-lactone; Ethyl butyrolactone; Tonkalide	3	7.0	0.07 84.	21.	21.					
2557 HEXANAL--Hexaldehyde; Hexoic aldehyde; Caproic aldehyde; Caprosaldehyde	10	1.3	2.8	3.6	4.2	2.0 2.5	(1)3.0			
2558 2,3-HEXANEDIONE--Acetyl butyryl	8	6.6	4.8	7.3	6.6					
2559 HEXANOIC ACID--Caproic acid; Hexoic acid	30	1.8	4.3	28.	22.		(1)1.5	Condiments (1)450.		
2560 2-HEXENAL	8	3.1	0.70	15.	16.					
2561 cis-3-HEXENAL	1	(1)0.20	(1)5.0	(1)5.0	-					
2562 2-HEXEN-1-OL	7	1.0	0.63	3.8	4.1					
2563 3-HEXEN-1-OL--Leaf alcohol; Blatteralkohol	6	1.0	3.7	5.0	5.0					
2564 2-HEXEN-1-YL ACETATE	4	0.28	0.40	1.7	1.7					
2565 HEXYL ACETATE	10	4.6	4.6	26.	26.		(1)3.0			
2566 2-HEXYL-4-ACETOXYTETRAHYDROFURAN	1	(1)1.0	(1)3.0	(1)3.0	(1)3.0					
2567 HEXYL ALCOHOL--1-Hexanol	10	6.6	26.	21.	18.	0.22 0.28				
2568 HEXYL BUTYRATE	6	2.6	2.1	7.8	8.6					
2569 α-HEXYLCINNAMALDEHYDE	5	0.80	2.6	6.5	2.4	(1)0.05				
2570 HEXYL FORMATE	5	12.	45.	39.	52.					
2571 HEXYL 2-FUROATE	2	-	-	(1)0.31	-			Condiments (1)0.20		
2572 HEXYL HEXANOATE	3	2.5 3.0	(1)2.5	3.6 10.	(1)10.					
2573 2-HEXYLIDENE CYCLOPENTANONE	1	(1)1.0	(1)5.0	(1)10.	-					
2574 2-HEXYL-5 or 6-KETO-1,4-DIOXANE--(1 or 2-Hexyl-2-hydroxyethoxy)acetic acid, β-lactone	1	-	(1)5.0	(1)5.0	(1)5.0			Margarine (1)5.0		
2575 HEXYL OCTANOATE	2	(1)1.0	-	-	-	(1)0.70				
2576 HEXYL PROPIONATE	5	5.7	23.	21.	22.					
2577 *HICKORY BARK, EXTRACT-- <i>Carya</i> spp.	5	21. 40.	0.01 25.	(1)48.	(1)48.			Alcoholic Beverages (1)70.	Condiments 65.	
2578 *HOPS, EXTRACT-- <i>Humulus lupulus</i> L.	5	160.	-	-	-					
2579 *HOPS, EXTRACT SOLID-- <i>Humulus lupulus</i> L.	4	8.0	20. 75.	0.70 50.	0.80 40.					
2580 *HOPS, OIL-- <i>Humulus lupulus</i> L.	13	1.7	1.7	2.5	2.9		(1)2.2	Condiments 20. 35.		
2581 *HOREHOUND (HOARHOUND), EXTRACT-- <i>Marrubium vulgare</i> L.	10	8.7	(1)2.0	680.	(1)2.0					
2582 *HORSEMINT LEAVES, EXTRACT-- <i>Monarda</i> spp.	2	(1)600.	-	-	-					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2583 HYDROXYCITRONELLAL--3,7-Dimethyl-7-hydroxy-octanal; Laurine®	17	3.5	13.	9.4	10.	(1)0.30	16.			
2584 HYDROXYCITRONELLAL DIETHYL ACETAL	4	2.7	0.50 1.0	7.3	2.2					
2585 HYDROXYCITRONELLAL DIMETHYL ACETAL	4	10.	(1)0.50	24.	0.50 20.					
2586 HYDROXYCITRONELLOL--3,7-Dimethyl-1,7-octanediol	9	2.0	1.6	3.6	3.5	(1)0.30	(1)0.30			
2587 5-HYDROXY-4-OCTANONE--Butyrolin	6	0.50 5.0	1.0 20.	10.	7.8					
2588 4-(p-HYDROXYPHENYL)-2-BUTANONE--p-Hydroxy-benzyl acetone	9	16.	34.	44.	54.	5.0 50.	40. 320.			
2589 *HYSSOP-- <i>Hyssopus officinalis</i> L.	2	-	-	-	-			Bitters (1)600.		
2590 *HYSSOP, EXTRACT-- <i>Hyssopus officinalis</i> L.	2	(1)13.	(1)13.	-	-			Alcoholic Beverages (1)50.		
2591 *HYSSOP, OIL-- <i>Hyssopus officinalis</i> L.	6	4.7	(1)0.25	14.	0.25 33.			Alcoholic Beverages 5.0 50.		
2592 *IMMORTELLE, EXTRACT-- <i>Helichrysum angustifolium</i> DC.	7	5.2	16.	11.	15.	(1)0.01	(1)0.50			
2593 INDOLE--2,3-Benzopyrrole	18	0.26	0.28	0.50	0.58	0.02 0.40				
2594 α-IONONE--4-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-3-buten-2-one; α-Irisone®	33	2.5	3.6	12.	6.7	3.6	39.	Icings (1)50.		
2595 β-IONONE--4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-3-buten-2-one; β-Irisone®	35	1.6	3.4	7.6	5.2	5.8	89.	Maraschino Cherries (1)10.		
2596 *IRISH MOSS, EXTRACT [<i>Chondrus crispus</i> (L.) Stackh. or <i>Gigartina mamillata</i> (Gooden. et Woodw.) J. Ag.]-Carrageen, extract; <i>Chondrus</i> , extract	24	300.	390.	3.0 500.	1,300.	1,700. 20,000.		Jellies (1)200.	Syrups 1,300.	
2597 α-IRONE--4-(2,5,6,6-Tetramethyl-2-cyclohexen-1-yl)-3-buten-2-one; 6-Methylionone	13	1.2	2.3	4.1	5.4		(1)1.4			
2598 *JASMINE, ABSOLUTE-- <i>Jasminum grandiflorum</i> L.	15	0.41	1.3	0.80	2.9	0.10 0.50	(1)30.			
2599 *JASMINE, CONCRETE-- <i>Jasminum grandiflorum</i> L.	5	0.70	1.0 1.5	1.0 3.4	1.0 15.	(1)1.0				
2600 *JASMINE, OIL-- <i>Jasminum grandiflorum</i> L.	13	0.63	1.6	3.0	9.3	0.50 1.0	(1)1.4	Jellies (1)0.25		
2601 *JASMINE, SPIRITUS-- <i>Jasminum grandiflorum</i> L.	3	(1)1.0	(1)0.75	(1)3.0	(1)4.0	(1)1.0		Maraschino Cherries (1)10.		
2602 *JUNIPER BERRIES-- <i>Juniperus communis</i> L.	3	-	-	-	-			Condiments (1)60.	Alcoholic Beverages 60. 2,000.	
2603 *JUNIPER, EXTRACT-- <i>Juniperus communis</i> L.	4	53.	(1)5.0	(1)5.0	(1)5.0					
2604 *JUNIPER, OIL-- <i>Juniperus communis</i> L.	25	32.	1.9	4.3	11.	(1)0.01	(1)0.10	Alcoholic Beverages 95.	Meats (1)20.	
2605 *KARAYA, GUM [<i>Sterculia urens</i> Roxb.]- <i>Sterculia</i> ; Indian tragacanth; Kadaya; Kullo; Katilo; Mucara; Kuteera	20	13.	1,300.	1.0 44.	36.			Emulsions 20. 18,000.	Meats (1)40.	Toppings (1)3,500.
2606 *KELP--Atlantic: <i>Laminaria digitata</i> ; <i>L. saccharina</i> ; Pacific: <i>Macrocystis pyrifera</i> (L.) C. Agardh	1	-	-	-	-					
2607 *KOLA NUT, EXTRACT-- <i>Cola acuminata</i> Schott et Endl.	34	120.	220.	160.	150.					
2608 LABDANUM, ABSOLUTE-- <i>Cistus</i> spp.	8	2.8	9.8	5.6	23.	(1)0.06	1.0 19.			
2609 LABDANUM, OIL [<i>Cistus</i> spp.]-Ambreine, oil	5	0.41	0.78	2.0	0.75					
2610 LABDANUM, OLEORESIN-- <i>Cistus</i> spp.	6	2.7	(1)2.0	5.5	(1)4.0					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	—Other Category Uses—		
2611 LACTIC ACID	25	34.	66.	130.	89.	14. 25.	(1)610.	Pickles & Olives 1,200. 24,000.	Toppings (1)300.	
2612 *LAUREL BERRIES-- <i>Laurus nobilis</i> L.	2	(1)450.	-	-	-	-	-	Spiced Vegetables (1)5.0		
2613 *LAUREL LEAVES, EXTRACT-- <i>Laurus nobilis</i> L.	1	-	-	-	-	-	-			
2614 LAURIC ACID--Dodecanoic acid; Laurostearic acid; Dodecoic acid	1	(1)15.	(1)16.	(1)2.4	(1)39.	(1)25.	-			
2615 LAURIC ALDEHYDE--Dodecanal; Lauraldehyde; Aldehyde C-12 Lauric	21	0.93	1.5	2.4	2.8	(1)0.10	0.20 110.			
2616 LAURYL ACETATE--Dodecyl acetate; Dodecanyl acetate; Acetate C-12	9	2.3	1.7	4.6	5.6	-	-			
2617 LAURYL ALCOHOL--Dodecyl alcohol; 1-Dodecanol; Alcohol C-12	11	2.0	1.0	2.8	1.7	-	16. 27.	Syrups (1)7.0		
2618 *LAVANDIN, OIL--Hybrids between <i>Lavandula officinalis</i> Chaix and <i>L. latifolia</i> Vill.	5	5.5	12.	18.	18.	-	(1)0.30			
2619 *LAVENDER-- <i>Lavandula officinalis</i> Chaix	1	(1)0.08	-	-	-	-	-			
2620 *LAVENDER, ABSOLUTE-- <i>Lavandula officinalis</i> Chaix	2	0.20 7.5	(1)0.40	2.0 14.	2.0 6.3	-	-			
2621 *LAVENDER, CONCRETE-- <i>Lavandula officinalis</i> Chaix	2	0.01 0.20	(1)0.08	0.03 0.25	(1)0.25	-	-			
2622 *LAVENDER, OIL-- <i>Lavandula officinalis</i> Chaix	8	2.9	7.8	5.5	8.3	-	(1)220.			
2623 *LEMON, EXTRACT-- <i>Citrus limon</i> (L.) Burm. f.	12	1,000.	540. 4,000.	400. 12,000.	8,900.	-	-	Icings (1)10,000.		
2624 *LEMON-GRASS, OIL-- <i>Cymbopogon citratus</i> DC. and <i>C. flexuosus</i> Stapf	9	4.4	9.2	38.	38.	(1)290.	(1)220.			
2625 *LEMON, OIL-- <i>Citrus limon</i> (L.) Burm. f.	120	230.	380.	1,100.	580.	340.	1,900.	Breakfast Cereals - (1)140. Meats 25. 40.	Condiments 10. 80. Syrups (1)65.	Icings 65. 600.
2626 *LEMON, OIL, TERPENELESS [<i>Citrus limon</i> (L.) Burm. f.]--Cedro, oil	64	13.	25.	68.	50.	80.	110. 670.	Toppings (1)1,000.		
2627 LEVULINIC ACID--3-Acetylpropionic acid; 4-Oxo-valeric acid	3	14.	14.	53.	53.	(1)4.0	-			
2628 *LICORICE, EXTRACT [<i>Glycyrrhiza glabra</i> L. and other spp. of <i>Glycyrrhiza</i>]-- <i>Glycyrrhiza</i> , extract	28	33.	39.	130.	84.	(1)4.0	(1)29,000.	Syrups (1)50.		
2629 *LICORICE, EXTRACT POWDER-- <i>Glycyrrhiza glabra</i> L.	7	110.	(1)200.	6,500.	(1)200.	-	22,000. 22,000.			
2630 *LICORICE ROOT [<i>Glycyrrhiza glabra</i> L.]-- <i>Glycyrrhiza</i>	13	130.	-	(1)460.	(1)75.	-	(1)3,200.			
2631 *LIME, OIL-- <i>Citrus aurantifolia</i> (Christman) Swingle	97	130.	160.	680.	370.	200.	3,100.	Condiments (1)20.		
2632 *LIME, OIL, TERPENELESS-- <i>Citrus aurantifolia</i> (Christman) Swingle	42	15.	17.	37.	22.	26.	(1)0.10	Syrups (1)8.0		
2633 d-LIMONENE--d-p-Mentha-1,8-diene; Cinene; Dipentene; Cajeputene; Kautschin	14	31.	68.	49.	120.	48. 400.	2,300.			
2634 LINALOE WOOD, OIL-- <i>Bursaria delpechiana</i> Poiss. and other <i>Bursaria</i> spp.	10	4.3	3.8	16.	15.	-	-	Alcoholic Beverages (1)1.0		
2635 LINALOOL--3,7-Dimethyl-1,6-octadien-3-ol; Linalol; Licareol	35	2.0	3.6	8.4	9.6	2.3	0.80 90.	Meats (1)40.		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2636 LINALYL ACETATE--Bergamol	29	1.9	3.8	11.	8.9	3.8	13.			
2637 LINALYL ANTHRANILATE	8	1.8	0.72	4.7	0.20 8.0					
2638 LINALYL BENZOATE	5	0.31	0.42	1.2	1.6	(1)0.28				
2639 LINALYL BUTYRATE	13	1.2	4.3	2.2	13.	(1)0.09				
2640 LINALYL iso-BUTYRATE	12	1.7	2.8	4.9	13.					
2641 LINALYL CINNAMATE	6	0.57	0.59	2.0	2.1					
2642 LINALYL FORMATE	11	1.3	12.	3.8	13.		(1)1.2			
2643 LINALYL HEXANOATE	3	3.2	6.0	11.	(1)15.					
2644 LINALYL OCTANOATE	3	1.3	0.50 3.0	0.50	0.60 15.					
2645 LINALYL PROPIONATE	11	4.9	3.6	5.3	12.	(1)4.4				
2646 LINALYL iso-VALERATE	13	0.96	0.91	5.7	5.6	(1)0.10				
2647 *LINDEN FLOWERS-- <i>Tilia glabra</i> Vent.	5	12. 2,000.	-	-	-					
2648 *LOCUST, GUM-- <i>Ceratonla siligua</i> L.	21	2,900.	1,200.	-	(1)150.			Condiments (1)980.	Toppings 1,500. 6,000.	
2649 LOVAGE [<i>Levisticum officinale</i> Koch]--Smellage; Smellage	11	4.0 30.	18.	28.	25.			Syrups (1)0.08		
2650 LOVAGE, EXTRACT [<i>Levisticum officinale</i> Koch]--Smellage, extract; Smellage, extract	20	8.8	18.	26.	24.			Condiments (1)40.	Icings (1)0.07	Syrups 66.
2651 LOVAGE, OIL [<i>Levisticum officinale</i> Koch]-- Smellage, oil; Smellage, oil	26	1.3	0.60	0.83	2.4			Condiments 3.7	Icings (1)10.	Syrups 6.8
2652 *MACE-- <i>Myristica fragrans</i> Houtt.	28	350.	(1)40.	-	1,300.			Condiments 43.	Meats 500. 2,000.	
2653 *MACE, OIL-- <i>Myristica fragrans</i> Houtt.	45	6.0	4.5	23.	68.		(1)37.	Condiments 12.	Meats 33.	
2654 *MACE, OLEORESIN-- <i>Myristica fragrans</i> Houtt.	7	-	-	-	360.			Condiments (1)800.	Meats 100. 600.	Pickles (1)35.
2655 I-MALIC ACID--I-Hydroxysuccinic acid; Apple acid	10	380.	390.	420.	0.60 1.5					
2656 MALTOL--3-Hydroxy-2-methyl-4H-pyran-4-one; 3- Hydroxy-2-methyl-γ-pyrone; Larixinic acid; Corps Praline; Palatone	23	4.1	8.7	31.	30.	7.5	90.	Jellies (1)15.		
2657 *MANDARIN, OIL-- <i>Citrus reticulata</i> Blanco	44	62.	160.	350.	190.	(1)30.	83.			
2658 *MARIGOLD, POT [<i>Calendula officinalis</i> L.]-- Calendula	1	(1)11.	(1)44.	(1)33.	(1)33.					
2659 *MARJORAM, OLEORESIN-- <i>Majorana hortensis</i> Moench (<i>Origanum majorana</i> L.)	7	-	-	-	-			Condiments (1)75.	Meats 37.	
2660 *MARJORAM, POT-- <i>Origanum vulgare</i> L.	0	-	-	-	-					
2661 *MARJORAM SEED-- <i>Majorana hortensis</i> Moench (<i>Origanum majorana</i> L.)	7	(1)750.	-	-	-			Condiments 70. 700.	Meats 200. 3,500.	
2662 *MARJORAM, SWEET-- <i>Majorana hortensis</i> Moench (<i>Origanum majorana</i> L.)	23	(1)1.9	-	-	2,000.			Condiments (1)200.	Meats 510.	Soups (1)150.
2663 *MARJORAM, SWEET, OIL-- <i>Majorana hortensis</i> Moench (<i>Origanum majorana</i> L.)	23	4.2	1.0	4.0	15.			Condiments 8.0		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2664 p-MENTHA-1,8-DIEN-7-OL--Perillyl alcohol; 1-Hydroxymethyl-4-iso-propenyl-1-cyclohexene	3	0.50 1.0	0.50 1.0	20.	10. 50.					
2665 MENTHOL--5-Methyl-2-iso-propylcyclohexanol; Hexahydrothymol; 3-p-Menthanol; 5-Methyl-2-iso-propyl hexahydrophenol; l-Menthol; Pepper-mint camphor	31	35.	68.	400.	130.		1,100.			
2666 (d)-neo-MENTHOL--2-iso-Butyl-5-methyl cyclohexanol	4	10.	31.	50.	48.					
2667 MENTHONE--p-Menthan-3-one	10	7.7	33.	71.	52.		(1)8.7			
2668 MENTHYL ACETATE--p-Menth-3-yl acetate	9	5.5	4.0	26.	24.		(1)5.2			
2669 MENTHYL iso-VALERATE--p-Menth-3-yl iso-valerate; Validol	8	5.0	2.9	7.4	18.					
2670 p-METHOXYBENZALDEHYDE--p-Anisaldehyde; Aubepine liquid	32	6.3	5.6	14.	16.	0.50 30.	18. 76.			
2671 2-METHOXY-4-METHYLPHENOL--4-Methylguaiacol; 2-Methoxy-p-cresol; 4-Hydroxy-3-methyl-1-methylbenzene; Creosol	6	10. 21.	0.05	0.77	1.0			Alcoholic Beverages (1)0.02		
2672 4-(p-METHOXYPHENYL)-2-BUTANONE--Anisyl acetone	4	12.	10. 12.	28.	26.	(1)25.				
2673 1-(p-METHOXYPHENYL)-1-PENTEN-3-ONE--α-Methyl anisylidene acetone; Ethone	8	2.3	2.3	28.	12.					
2674 1-(p-METHOXYPHENYL)-2-PROPANONE--Anisyl methyl ketone; Anisic ketone; p-Methoxyphenyl acetone	2	0.60 2.8	1.2 2.8	4.4 6.0	4.4 6.0					
2675 2-METHOXY-4-VINYLPHENOL--p-Vinylguaiacol; 4-Hydroxy-3-methoxystyrene	2	0.25 3.0	0.25 11.	1.0 8.0	1.0 8.0			Alcoholic Beverages (1)0.20		
2676 METHYL ACETATE	4	28.	29.	11.	14.	(1)0.10				
2677 4-METHYL ACETOPHENONE--Methyl p-tolyl ketone; p-Methyl acetophenone; p-Acetyl toluene; 1-Methyl-4-acetyl benzene	18	1.1	1.6	5.2	4.9		(1)870.	Maraschino Cherries (1)8.0	Condiments (1)5.8	
2678 2-METHYLLALLYL BUTYRATE--2-Methyl-2-propen-1-yl butyrate	2	(1)0.20	-	-	(1)0.20					
2679 METHYL ANISATE	7	2.7	3.0	8.0	6.2					
2680 p-METHYLANISOLE--o-Cresyl methyl ether; Methyl o-tolyl ether; 2-Methoxytoluene	3	1.7	(1)1.0	2.3 4.0	(1)4.0					
2681 p-METHYLANISOLE--p-Cresyl methyl ether; p-Methoxytoluene; 4-Methoxytoluene	19	2.7	2.7	4.8	7.6	0.50 4.0		Condiments (1)2.0	Syrups (1)8.0	
2682 METHYL ANTHRANILATE--o-Aminomethyl benzoate; Methyl 2-aminobenzoate	67	16.	21.	56.	20.	23.	2,200.	Alcoholic Beverages (1)0.20		
2683 METHYL BENZOATE--Oil of Niobe	15	2.2	4.5	8.4	9.9		(1)61.			
2684 α-METHYLBENZYL ACETATE--Styralyl acetate; Methyl phenylcarbinyl acetate; Styrolene acetate; Gardenol	11	3.9	5.4	12.	17.		(1)0.80	Toppings (1)30.		
2685 α-METHYLBENZYL ALCOHOL--Styralyl alcohol; 1-Phenylethanol; α-Phenylethyl alcohol; Methyl phenylcarbinol	6	4.6	3.8	6.8	9.0	(1)4.0	(1)0.30			
2686 α-METHYLBENZYL BUTYRATE--Styralyl butyrate; Methyl phenylcarbinyl butyrate	2	4.0 5.0	4.0 10.	10. 20.	10. 20.					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2687 α-METHYLBENZYL iso-BUTYRATE--Styralyl iso-butyrate; Methyl phenylcarbinyl iso-butyrate	1	(1)2.0	(1)10.	(1)10.	(1)10.					
2688 α-METHYLBENZYL FORMATE--Styralyl formate; Methyl phenylcarbinyl formate	2	2.0 5.0	3.0 5.0	10. 20.	10. 20.					
2689 α-METHYLBENZYL PROPIONATE--Styralyl propionate; Methyl phenylcarbinyl propionate	2	4.0 5.0	4.0 5.0	10. 15.	10. 15.					
2690 METHYL p-tert-BUTYLPHENYLACETATE	3	(1)0.50	0.35 1.0	2.0	2.0					
2691 2-METHYLBUTYRALDEHYDE--2-Methylbutanal; Methyl ethyl acetaldehyde	3	1.5 2.0	2.0 8.0	6.6	5.7					
2692 3-METHYLBUTYRALDEHYDE--iso-Valeraldehyde; iso-Pentaldehyde; 3-Methylbutanal; iso-Valeric aldehyde; iso-Amyl aldehyde; iso-Valeral	10	0.63	1.4	2.8	3.1	(1)3.0				
2693 METHYL BUTYRATE	4	17.	31.	86.	48. 200.					
2694 METHYL iso-BUTYRATE	3	22.	38.	48. 200.	48. 200.					
2695 2-METHYLBUTYRIC ACID	1	(1)0.50	(1)3.0	(1)5.0	-					
2696 METHYL CELLULOSE--Cellulose methyl ether	5	90.	0.50 1,700.	0.50 30.	(1)0.65			Toppings (1)3,000.		
2697 α-METHYLCINNAMALDEHYDE	4	0.50 11.	1.0 15.	26.	27.		(1)430.			
2698 METHYL CINNAMATE	23	1.9	3.8	8.7	13.	1.7 14.	2.7 40.	Condiments (1)0.40		
2699 6-METHYLCOUMARIN	10	5.2	4.8	21.	24.	39.	0.80 15.			
2700 METHYLCYCLOPENTENOLONE--3-Methylcyclopentane-1,2-dione; Cyclotene; Kantonarome	22	11.	5.6	18.	13.	(1)14.	8.0 15.	Syrups 10. 30.		
2701 4-(3,4-METHYLENEDIOXYPHENYL)-2-BUTANONE--Piperonyl acetone	7	8.2	45.	40.	40.					
2702 5-METHYLFURFURAL	2	(1)0.13	(1)0.13	0.03 0.13	(1)0.03					
2703 METHYL 2-FUROATE--Methyl pyromucate	4	0.61	0.06 1.3	0.66	1.0 1.3			Condiments (1)0.02		
2704 2-METHYL-3-FURYLACROLEIN--α-Methyl furyl-acrolein	5	0.60	0.65	0.68	0.92					
2705 METHYL HEPTANOATE	5	0.80	0.83	0.33	0.50 0.60					
2706 2-METHYLHEPTANOIC ACID--2-Methyloanthic acid; Methylamylacetic acid	1	(1)1.0	(1)10.	(1)10.	(1)10.					
2707 6-METHYL-5-HEPTEN-2-ONE	12	1.1	1.1	1.1	1.3	(1)1.3				
2708 METHYL HEXANOATE	4	4.1	8.5	5.3	(1)20.					
2709 METHYL 2-HEXENOATE	2	0.03 0.12	-	(1)0.03						
2710 METHYL p-HYDROXYBENZOATE--Methylparaben; Methyl parasept; Nipagin; Tegosept M	2	(1)5.0	(1)5.0	(1)5.0	5.0 8.0					
2711 METHYL-α-IONONE--5-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-4-penten-3-one; Raldehyde®; α-Cetone	14	1.7	2.4	6.6	6.5		(1)0.60	Jellies (1)0.21		
2712 METHYL-β-IONONE--5-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-4-penten-3-one; Raldehyde®; β-Cetone	11	2.0	2.2	7.5	5.9					
2713 METHYL-δ-IONONE--5-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-4-penten-3-one	9	0.61	0.89	3.2	2.8					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	—Other Category Uses—		
2714 α-iso-METHYLIONONE--4-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-3-methyl-3-buten-2-one; Methyl-γ-ionone (so-called)	14	0.97	0.98	4.9	4.3	(1)0.05	(1)0.80			
2715 METHYL LAURATE--Methyl dodecanoate	3	0.50 5.0	0.50 5.0	0.02 0.50	(1)1.0					
2716 METHYL MERCAPTAN--Methanethiol	3	0.56	0.13 1.0	0.13 1.0	0.15 1.0					
2717 METHYL o-METHOXYBENZOATE--o-Methoxy methyl benzoate	1	(1)12.	(1)9.0	(1)30.	(1)40.					
2718 METHYL N-METHYLANTHRANILATE--Dimethyl anthranilate; 2-Methylamino methylbenzoate	22	5.1	5.0	18.	17.		Jellies (1)4.0			
2719 METHYL 2-METHYLBUTYRATE	1	(1)5.0	(1)10.	(1)10.	(1)10.					
2720 METHYL 2-METHYLTHIOPROPIONATE--Methyl β-methyl mercaptopropionate; Methyl β-methiopropionate	10	0.35	0.37	0.74	1.0			Syrups (1)0.05		
2721 METHYL 4-METHYLVALERATE--Methyl 4-methyl-pentanoate; Methyl iso-caproate; Methyl isobutyrate	1	(1)11.	(1)44.	(1)33.	(1)33.					
2722 METHYL MYRISTATE--Methyl tetradecanoate	4	0.25 0.50	0.25 0.50	2.4	0.30 2.0	(1)0.24				
2723 METHYL β-NAPHTHYL KETONE--2-Acetonsphthone; Oranger crystals; Cetone D	12	0.50	0.75	5.3	2.0	2.2 3.0	480. 700.			
2724 METHYL NONANOATE	6	3.9	3.6	6.2	7.1					
2725 METHYL 2-NONENOATE--Neofolione	6	3.2	12.	9.9	13.					
2726 METHYL 2-NONYNOATE--Methyl octyne carbonate	9	0.69	0.28	0.61	2.2	0.02 0.12		Condiments (1)10.		
2727 2-METHYLOCTANAL--Methyl hexyl acetaldehyde	2	(1)1.0	(1)1.0	(1)2.0	(1)2.0					
2728 METHYL OCTANOATE	4	0.02 1.0	1.0 10.	13.	1.0 40.					
2729 METHYL 2-OCTYNOATE--Methyl heptene carbonate; Folione®	24	0.15	0.30	1.4	1.4	1.7 1.7	13. 20.	Jellies (1)0.23		
2730 4-METHYL-2,3-PENTANEDIONE--Acetyl iso-butyl	13	7.6	5.6	6.2	8.3	1.2 18.				
2731 4-METHYL-2-PENTANONE--Methyl iso-butyl ketone	1	(1)6.3	(1)6.3	(1)6.3	(1)6.3					
2732 β-METHYLPHENETHYL ALCOHOL--Hydratropyl alcohol; 2-Phenyl-1-propanol	4	1.1	0.42	1.2	0.92					
2733 METHYL PHENYLACETATE--Methyl α-toluate	21	3.9	2.5	13.	12.	(1)0.10	(1)11.	Syrups (1)37.		
2734 3-METHYL-4-PHENYL-3-BUTENE-2-ONE--Benzylidene acetone methyl	5	0.59	2.0	2.8	2.0					
2735 2-METHYL-4-PHENYL-2-BUTYL ACETATE--Dimethyl phenethyl carbonyl acetate	4	1.8	(1)0.50	0.50 10.	0.50 10.					
2736 2-METHYL-4-PHENYL-2-BUTYL iso-BUTYRATE--Dimethyl phenethyl carbonyl iso-butyrate	3	0.50 11.	1.0 44.	11.	2.0 30.					
2737 2-METHYL-4-PHENYLBUTYRALDEHYDE	1	(1)0.02	(1)0.50	(1)0.50	(1)0.50					
2738 3-METHYL-2-PHENYLBUTYRALDEHYDE--α-iso-Propyl phenylacetaldehyde	2	(1)0.10	(1)0.50	0.32 0.50	-					
2739 METHYL 4-PHENYLBUTYRATE	4	0.56	0.52	1.6	1.4					
2740 4-METHYL-1-PHENYL-2-PENTANONE--Benzyl iso-butyl ketone	2	(1)1.0	(1)5.0	0.06 5.0	(1)5.0					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2741 METHYL 3-PHENYLPROPIONATE--Methyl hydrocinnamate	4	0.46	0.56	1.7	0.70 4.0					
2742 METHYL PROPIONATE	4	20.	29.	96.	130.					
2743 2-METHYL-3-(p-iso-PROPYLPHENYL) PROPIONAL- DEHYDE-- α -Methyl-p-iso-propyl hydrocinnamal- dehyde; Cyclamen aldehyde; Cyclamal; α -Methyl- p-iso-propyl phenylpropyl aldehyde; Violet Alpine, oil	10	0.30	0.45	0.99	1.2					
2744 4-METHYLQUINOLINE--Lepidine; p-Methylquinoline	4	0.22	1.4	1.8	1.8					
2745 METHYL SALICYLATE	76	59.	27.	840.	54.		8,400.	Syrups (1)200.		
2746 METHYL SULFIDE--Dimethyl sulfide	6	1.1	0.30	1.4	1.6	(1)0.13		Syrups (1)0.50		
2747 2-METHYLTHIOPROPIONALDEHYDE--Methional; β -Methiopropionaldehyde; Methylmercapto- propionaldehyde	8	0.35	0.01 1.0	0.01 1.0	0.66			Condiments 0.62	Meats (1)1.9	
2748 2-METHYL-3-TOLYL PROPIONALDEHYDE (Mixed o-, m-, p-)	1	(1)0.05	(1)1.0	(1)1.0	(1)1.0					
2749 2-METHYLUNDECANAL--Methyl nonyl acetaldehyde; 2-Methylhendecanal; Aldehyde C-12 MNA	17	0.31	0.11	0.94	1.3	0.50 2.5	(1)0.20	Jellies (1)0.33		
2750 METHYL 9-UNDECENOATE	4	3.7	6.7	22.	22.					
2751 METHYL 2-UNDECYNOATE--Methyl decyne carbonate	3	0.10 5.0	(1)20.	(1)15.	(1)15.					
2752 METHYL VALERATE	4	9.1	25.	28.	39.					
2753 METHYL iso-VALERATE	6	9.3	26.	26.	30.		(1)35.			
2754 2-METHYLVALERIC ACID--2-Methylpentanoic acid	1	-	-	(1)0.80	-					
2755 MIMOSA, ABSOLUTE-- <i>Acacia decurrens</i> Willd. var. <i>dealbata</i>	8	0.79	21.	1.7	17.					
2756 MONOSODIUM GLUTAMATE	29	-	-	(1)1.3	61.			Condiments 1,900. Soups 4,300.	Meats 2,900.	Pickles (1)130.
2757 MOUNTAIN MAPLE, EXTRACT SOLID-- <i>Acer spica-</i> <i>tum</i> Lam.	4	(1)100.	(1)8.0	2.0 60.	44.					
2758 MUSK AMBRETTE--2,6-Dinitro-3-methoxy-1-methyl- 4-tert-butylbenzene	13	0.43	0.26	4.8	0.41	(1)0.01	(1)9.0			
2759 *MUSK TONQUIN-- <i>Moschus moschiferus</i> L.	9	0.67	0.62	2.0	2.7			Syrups (1)3.0		
2760 *MUSTARD, BROWN [<i>Brassica juncea</i> (L.) Coss. (brown); <i>B. nigra</i> (L.) Koch (blk.)]--Mustard, black	6	-	-	-	-			Condiments 5,200.	Meats 2,300.	
2761 *MUSTARD, YELLOW [<i>Brassica hirta</i> Moench (<i>B. alba</i> (L.) Boiss.)]--Mustard, white	23	(1)350.	-	-	(1)20.			Condiments 8,200.	Meats 1,400.	Pickles 2,500. 38,000.
2762 MYRCENE--7-Methyl-3-methylene-1,6-octadiene	5	4.4	6.4	0.50 13.	4.9					
2763 MYRISTALDEHYDE--Tetradecanal; Tetradecyl alde- hyde; Aldehyde C-14 (Myristic)	5	2.7	0.06 8.0	1.9	0.08 24.	(1)0.15				
2764 MYRISTIC ACID--Tetradecanoic acid	6	5.3	2.6 10.	4.1	5.3	(1)0.10				
2765 MYRRH, GUM-- <i>Commiphora molmol</i> Engler; <i>C. abys-</i> <i>sinica</i> (Berg) Engler; and other <i>Commiphora</i> spp.	5	84.	(1)0.13	0.13 10.	(1)0.15		(1)1.2	Soups (1)10.		
2766 MYRRH, OIL-- <i>Commiphora molmol</i> Engler; <i>C. abys-</i> <i>sinica</i> (Berg) Engler; and other <i>Commiphora</i> spp.	4	3.3	8.3	13.	13.					
2767 β -NAPHTHYL ANTHRANILATE--2-Naphthyl anthran- ilite	9	2.3	1.1	16.	19.					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2768 β-NAPHTHYL ETHYL ETHER--2-Ethoxynaphthalene; Ethyl 2-naphthyl ether; Nerolin; Neroline	14	0.65	0.74	2.8	3.6	(1)0.12		Alcoholic Beverages (1)0.20		
2769 *NARINGEN, EXTRACT-- <i>Citrus paradisi</i> Macf.	9	71.	5.7	-	-					
2770 NEROL--cis-3,7-Dimethyl-2,6-octadien-1-ol; Nerosol	10	1.4	3.9	16.	19.	1.0 1.3	(1)0.80			
2771 *NEROLI BIGARDE, OIL [<i>Citrus aurantium</i> L.]-- Orange flowers, bitter, oil	36	2.0	3.2	8.9	16.		(1)40.			
2772 NEROLIDOL--3,7,11-Trimethyl-1,6,10-dodecatrien- 3-ol; Peruvial	5	0.91	0.92	3.5	2.0 8.0					
2773 NERYL ACETATE	11	1.3	1.6	5.1	15.					
2774 NERYL BUTYRATE	6	6.2	22.	16.	25.					
2775 NERYL iso-BUTYRATE	6	1.2	1.8	3.3	5.4					
2776 NERYL FORMATE	6	5.3	23.	17.	22.					
2777 NERYL PROPIONATE	6	6.3	23.	21.	21.					
2778 NERYL iso-VALERATE	5	0.97	1.6	4.0	5.7					
2779 *NITROUS OXIDE	1	-	-	-	-					
2780 2,6-NONADIEN-1-OL	2	(1)0.01	(1)0.05	0.05 0.50	(1)0.01			Alcoholic Beverages (1)0.01		
2781 γ-NONALACTONE--4-Hydroxynonanoic acid, γ-lac- tone; γ-Amyl butyrolactone; Aldehyde C-18 (so-called); Prunolide; Coconut Aldehyde	38	11.	14.	33.	55.	28.	(1)15.	Icings 25.		
2782 NONANAL--Pelargonic aldehyde; Pelargonaldehyde; Aldehyde C-9	17	1.3	1.3	4.1	2.3	(1)6.0	0.20 38.			
2783 1,3-NONANEDIOL ACETATE (Mixed esters)--Octyl crotonyl acetate; Hexylene glycol diacetate; Jasmonyl; Diasmol	2	0.30 1.0	0.50 1.0	1.5 6.0	1.5 4.0					
2784 NONANOIC ACID--Pelargonic acid; Nonotic acid; Nonylic acid	5	1.8	7.8	6.6	13.			Shortening (1)10.		
2785 2-NONANONE--Methyl heptyl ketone	5	0.55	0.10 1.0	0.40 4.0	0.40 4.0					
2786 3-NONANON-1-YL ACETATE--Methylol methyl hexyl ketone acetate; Ketone alcohol ester; Compound 1051	2	(1)0.30	(1)0.30	0.80 5.0	(1)1.0			Condiments (1)10.		
2787 NONANOYL 4-HYDROXY-3-METHOXYBENZYL- AMIDE--Pelargonyl vanillylamide; N-(4-Hydroxy- 3-methoxybenzyl) nonanamide; N-Nonanoyl vanillylamide	1	-	-	(1)10.	(1)10.			Condiments (1)10.		
2788 NONYL ACETATE--Acetate C-9	6	0.81	0.81	1.9	3.1					
2789 NONYL ALCOHOL--1-Nonanol; Alcohol C-9; Nonalol	9	0.70	0.61	2.0	1.9		(1)18.			
2790 NONYL OCTANOATE	2	(1)2.0	-	-	(1)0.06					
2791 NONYL iso-VALERATE	3	0.50 1.0	0.50	1.0 2.0	1.4					
2792 *NUTMEG-- <i>Myristica fragrans</i> Houtt.	44	700.	550.	-	2,000.			Condiments (1)100.	Meats 670.	Pickles (1)100.
2793 *NUTMEG, OIL-- <i>Myristica fragrans</i> Houtt.	75	14.	13.	19.	75.		1.2 640.	Condiments 21. Syrups (1)16.	Icings 2.0 30.	Meats 150.

F E M A No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2794 OAK CHIPS, EXTRACT-- <i>Quercus alba</i> L.	5	2.5 21.	2.5 84.	2.5 63.	(1)63.			Alcoholic Beverages 1,000. 1,000.		
2795 OAK MOSS, ABSOLUTE-- <i>Evernia prunastri</i> (L.) Ach., <i>E. furfuracea</i> (L.) Mann, and other lichens	8	1.8	0.41	0.81	2.5	(1)0.15		Condiments (1)40.	Soups (1)0.50	
2796 γ-OCTALACTONE--4-Hydroxyoctanoic acid, γ-lactone	9	4.8	16.	16.	17.	(1)15.		Syrups (1)57.		
2797 OCTANAL--Caprylaldehyde; Caprylic aldehyde; Octylaldehyde; Aldehyde C-8	18	1.4	1.6	3.4	4.4	3.0 6.1	(1)0.10			
2798 OCTANAL DIMETHYL ACETAL--1,1-Dimethoxy- octane; C-8 Dimethylacetal	4	0.74	0.78	2.8	2.8			Alcoholic Beverages (1)3.0		
2799 OCTANOIC ACID--Caprylic acid; Octoic acid; C-8	11	2.9	2.0	13.	18.			Condiments (1)12.		
2800 1-OCTANOL--Octyl alcohol; Heptyl carbinol; pri- Octyl alcohol; Capryl alcohol; Caprylic alcohol; Alcohol C-8	12	2.9	0.91	2.8	3.0	(1)1.5	16. 57.			
2801 2-OCTANOL--secondary Octyl alcohol; secondary Capryl alcohol; Methyl hexyl carbinol	1	-	(1)0.60	(1)3.0	(1)4.0	(1)2.0				
2802 2-OCTANONE--Methyl hexyl ketone	7	0.10 1.0	0.20 1.0	0.40 4.0	0.40 4.0					
2803 3-OCTANONE--Ethyl amyl ketone; EAK	8	3.3	10.	11.	11.					
2804 3-OCTANON-1-OL--Methylol methyl amyl ketone; Ketone alcohol; Compound 1010	2	(1)0.20	(1)0.30	(1)0.80	0.60 0.80			Condiments (1)1.0		
2805 1-OCTEN-3-OL--Amyl vinyl carbinol	1	(1)0.20	(1)1.0	(1)2.0	(1)6.0			Condiments (1)6.0	Soups (1)6.0	
2806 OCTYL ACETATE--2-Ethyl hexyl acetate; Acetate C-8	8	1.6	0.87	4.7	6.0					
2807 OCTYL BUTYRATE	6	0.59	1.3	2.9	2.9					
2808 OCTYL iso-BUTYRATE	6	2.0	2.4	3.5	3.5		(1)0.50			
2809 OCTYL FORMATE	4	0.01 1.0	(1)1.0	5.0	7.0					
2810 OCTYL HEPTANOATE	2	0.13 1.0	0.13 1.0	0.13 2.0	0.20 2.0					
2811 OCTYL OCTANOATE	2	0.50 1.0	0.50 1.0	0.50 2.0	0.50 2.0					
2812 OCTYL PHENYLACETATE	4	1.3	(1)1.0	0.20 4.0	(1)4.0					
2813 OCTYL PROPIONATE	5	0.84	0.57	3.6	2.0 4.0					
2814 OCTYL iso-VALERATE	4	0.90	0.80 1.0	1.0 4.0	1.0 4.0					
2815 OLEIC ACID--9-Octadecenoic acid; Oleinic acid	10	0.25 0.40	30.	3.5	25.			Condiments (1)0.02		
2816 OLIBANUM, OIL [<i>Boswellia carteri</i> Birdw. and other <i>Boswellia</i> spp.]--Frankincense	4	0.60	1.2	3.3	3.7					
2817 *ONION, OIL-- <i>Allium cepa</i> L.	20	(1)0.50	(1)0.50	(1)0.50	1.9			Condiments 2.2	Meats 10.	Pickles (1)16.
2818 *ORANGE BLOSSOMS, ABSOLUTE-- <i>Citrus aurantium</i> L.	3	1.7	7.3	5.7	1.0 15.		(1)10.			
2819 *ORANGE FLOWERS-- <i>Citrus aurantium</i> L.	2	100. 2,000.	-	-	-					
2820 *ORANGE LEAF, ABSOLUTE-- <i>Citrus aurantium</i> L.	1	(1)0.02	(1)0.10	(1)0.25	(1)0.25					
2821 *ORANGE, OIL, DISTILLED-- <i>Citrus sinensis</i> (L.) Osbeck	19	130.	140.	690.	440.	45. 500.	(1)930.			

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses—		
2822 *ORANGE, OIL, TERPENELESS-- <i>Citrus sinensis</i> (L.) Osbeck	49	10.	17.	38.	25.	230.	13. 160.	Condiments (1)25. Alcoholic Beverages (1)4.0		
2823 *ORANGE PEEL, BITTER, OIL-- <i>Citrus aurantium</i> L.	29	67.	71.	150.	110.	(1)300.	(1)500.			
2824 *ORANGE PEEL, SWEET, EXTRACT-- <i>Citrus sinensis</i> (L.) Osbeck	10	99.	170.	320. 330.	320. 330.					
2825 *ORANGE PEEL, SWEET, OIL-- <i>Citrus sinensis</i> (L.) Osbeck	104	210.	330.	1,000.	430.	1,300.	4,200.	Alcoholic Beverages (1)5.0 Condiments (1)32.	Breakfast Cereals (1)49. Icings 190.	Meats (1)10. Syrups (1)0.34
2826 *ORANGE PEEL, SWEET, OIL, TERPENELESS-- <i>Citrus sinensis</i> (L.) Osbeck	6	43.	83.	190.	240.	(1)600.				
2827 *OREGANO [Mexican: <i>Lippia</i> spp., usually <i>L. graveolens</i> HBK European: <i>Origanum</i> spp. Elsewhere: Other genera, including <i>Coleus</i> , <i>Lantana</i> , and <i>Hyptis</i>]- <i>Oreganum</i> ; Mexican oregano; Mexican sage; Origan	22	(1)320.	-	-	(1)400.			Condiments 2,800.	Meats 540.	
2828 *ORIGANUM, OIL (EXTRACTIVE) [<i>Thymus capitatus</i> Hoffm. et Link (syn. <i>Coridothymus capitatus</i> Reichb.)]-Spanish origanum	12	(1)0.50	(1)0.50	(1)0.50	0.60 33.			Condiments 30.	Meats 37.	
2829 ORRIS, CONCRETE, LIQUID, OIL-- <i>Iris florentina</i> L.	41	1.7	0.52	1.1	1.3	(1)0.56	8.8	Icings (1)4.0		
2830 ORRIS ROOT, EXTRACT-- <i>Iris florentina</i> L.]-White flag, extract	22	9.2	29.	56.	31.	(1)2.0	10. 120.			
2831 *PALMAROSA, OIL-- <i>Cymbopogon martini</i> (Roxb.) Stapf	7	4.2	1.7	12.	13.					
2832 PALMITIC ACID--Hexadecanoic acid; Hexadecylic acid; Cetyllic acid	1	-	-	-	-			Condiments (1)1.0		
2833 *PAPRIKA-- <i>Capsicum annuum</i> L.	31	-	-	-	1,900.			Condiments 970.	Meats 7,400.	Soups 1,000. 7,500.
2834 *PAPRIKA, OLEORESIN-- <i>Capsicum annuum</i> L.	17	1.0 25.	(1)1.0	0.56	(1)1.2			Condiments 100.	Meats 96.	
2835 *PARSLEY-- <i>Petroselinum crispum</i> (Miller) Nyman (<i>P. sativum</i> Hoffm.)	18	(1)3,000.	-	-	(1)850.			Condiments 2,700.	Meats 1,000.	Soups 200. 500.
2836 *PARSLEY, OIL-- <i>Petroselinum crispum</i> (Miller) Nyman (<i>P. sativum</i> Hoffm.)	17	1.4	0.20 0.25	4.1	8.5			Condiments 4.9		
2837 *PARSLEY, OLEORESIN-- <i>Petroselinum crispum</i> (Miller) Nyman (<i>P. sativum</i> Hoffm.)	2	-	-	-	-			Condiments 5.0 30.		
2838 PATCHOULY, OIL-- <i>Pogostemon cablin</i> Benth. and <i>P. heyneanus</i> Benth.	12	0.88	1.1	6.3	10.		43. 220.			
2839 PENNYROYAL, OIL [<i>Hedeoma pulegioides</i> (L.) Pers. (American); <i>Menha pulegium</i> L. var. <i>orientalis</i> (European and North African)]--Hedeoma, oil	4	1.5 5.0	3.7	14.	20. 24.					
2840 n-PENTADECALACTONE--15-Hydroxypentadecanoic acid, α -lactone; Cyclopentadecanolide; 14-Hydroxytetradecanoic acid; Thibetolide [®] ; Angelica lactone; Exaltolide; Pentadecanolide	8	0.27	0.68	1.4	1.5	(1)0.10		Alcoholic Beverages (1)0.50		
2841 2,3-PENTANEDIONE--Acetyl propionyl	16	0.60	3.3	5.9	9.6	0.28		Toppings (1)0.30		
2842 2-PENTANONE--Methyl propyl ketone; Ethyl acetone	3	13.	34.	32.	32.					
2843 4-PENTENOIC ACID--Allyl acetic acid	1	(1)1.0	(1)2.0	(1)5.0	(1)5.0			Margarine (1)2.0		

h. The expert panel can find no evidence for oral sensitivity to orris root, extract, and orris concrete.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2844 *PEPPER, BLACK-- <i>Piper nigrum</i> L.	33	(1)30.	-	-	1,200.			Condiments 690. Meats 1,700.	Pickles 7.2 230.	Soups 27 100.
2845 *PEPPER, BLACK, OIL-- <i>Piper nigrum</i> L.	15	2.7	0.10 20.	5.3	8.5			Condiments 17.	Meats (1)140.	
2846 *PEPPER, BLACK, OLEORESIN-- <i>Piper nigrum</i> L.	21	15.	1.0 20.	1.0 15.	1,600.			Condiments 370.	Meats 230.	
2847 *PEPPERMINT LEAVES-- <i>Mentha piperita</i> L.	5	-	-	-	-			Alcoholic Beverages 240. Meats (1)8.0	Icings 5.0 54.	Toppings 650.
2848 *PEPPERMINT, OIL-- <i>Mentha piperita</i> L.	81	99.	110.	1,200.	300.	75. 200.	8,300.			
2849 *PEPPER, RED-- <i>Capaicum frutescens</i> L. (<i>C. annuum</i> L.)	28	15. 240.	-	-	270.			Condiments 630.	Meats 310.	Pickles 11. 59.
2850 *PEPPER, WHITE-- <i>Piper nigrum</i> L.	22	5.9 140.	-	-	(1)450.			Condiments 2,700.	Meats 600.	Soups (1)500.
2851 *PEPPER, WHITE, OIL-- <i>Piper nigrum</i> L.	3	-	-	-	(1)0.60					
2852 *PEPPER, WHITE, OLEORESIN-- <i>Piper nigrum</i> L.	6	-	-	-	-			Meats (1)50.		
2853 *PETITGRAIN, LEMON, OIL-- <i>Citrus limon</i> (L.) Bum. f.	3	8.6	9.3	35.	35.					
2854 *PETITGRAIN, MANDARIN, OIL-- <i>Citrus reticulata</i> Blanco var. mandarin	14	4.3	4.1	4.5	11.	(1)0.43				
2855 *PETITGRAIN, OIL-- <i>Citrus aurantium</i> L.	27	1.5	1.4	5.3	17.	(1)0.20	4.1	Condiments (1)15.		
2856 α -PHELLANDRENE-- <i>p</i> -Mentha-1,5-diene; 2-Methyl- 5-iso-propyl-1,3-cyclohexadiene	11	10.	28.	130.	41.					
2857 PHENETHYL ACETATE--2-Phenylethyl acetate; Benzyl carbinyl acetate	17	1.4	2.2	4.2	5.6					
2858 PHENETHYL ALCOHOL-- β -Phenylethyl alcohol; 2-Phenylethyl alcohol; Benzyl carbinol	30	1.5	8.3	12.	16.	(1)0.15	21. 80.			
2859 PHENETHYL ANTHRANILATE--2-Phenylethyl anthranilate	9	1.4	1.9	6.2	5.8					
2860 PHENETHYL BENZOATE--2-Phenylethyl benzoate	5	1.0	1.0	2.0	(1)4.0		(1)3.8			
2861 PHENETHYL BUTYRATE--2-Phenylethyl butyrate	10	3.2	8.9	13.	13.					
2862 PHENETHYL iso-BUTYRATE--2-Phenylethyl iso- butyrate	12	3.4	4.0	13.	11.					
2863 PHENETHYL CINNAMATE--2-Phenylethyl cinnamate	7	1.7	0.80	3.2	3.1	(1)0.10				
2864 PHENETHYL FORMATE--2-Phenylethyl formate	8	1.3	11.	13.	15.					
2865 PHENETHYL 2-FUROATE--2-Phenylethyl 2-furoate	2	(1)0.03	-	(1)0.03	(1)0.03					
2866 PHENETHYL PHENYLACETATE--2-Phenylethyl phenylacetate	13	2.3	4.2	4.8	5.3			Maraschino Cherries (1)10.		
2867 PHENETHYL PROPIONATE--2-Phenylethyl pro- pionate	10	3.6	11.	12.	16.					
2868 PHENETHYL SALICYLATE--2-Phenylethyl salicy- late	5	0.75	0.67	1.5	2.0 2.0					
2869 PHENETHYL SENECIOATE--Phenethyl 3,3-dimethyl- acrylate; 2-Phenylethyl senecioate; Phenethyl 3- methylcrotonate	1	-	(1)5.0	(1)5.0	-			Alcoholic Beverages (1)5.0		

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2870 PHENETHYL TIGLATE--2-Phenylethyl tiglate	5	0.80 0.90	4.3	10.	10.					
2871 PHENETHYL iso-VALERATE--2-Phenylethyl iso-valerate; Phenethyl 3-methylbutyrate	13	1.3	2.5	5.9	6.1		0.80 45.			
2872 PHENOXYACETIC ACID--Phenoxyethanoic acid; O-Phenylglycolic acid; Phenylum	4	0.37	1.0	2.2	2.2					
2873 2-PHENOXYETHYL iso-BUTYRATE	2	0.90 5.0	5.0 30.	15. 30.	15. 30.					
2874 PHENYLACETALDEHYDE-- α -Toluic aldehyde; α -Tolualdehyde; Hyacinthin	8	0.68	0.75	1.6	2.0		1.7 87.			
2875 PHENYLACETALDEHYDE 2,3-BUTYLENE GLYCOL ACETAL	2	-	-	(1)4.0	-					
2876 PHENYLACETALDEHYDE DIMETHYL ACETAL--Viridine	6	0.40	0.78	1.4	8.8		(1)1.0			
2877 PHENYLACETALDEHYDE GLYCERYL ACETAL	2	(1)5.0	(1)20.	0.06 20.	-					
2878 PHENYLACETIC ACID-- α -Toluic acid	25	1.8	5.3	5.9	12.	(1)27.	5.4 11.	Alcoholic Beverages (1)0.10	Syrups (1)0.10	
2879 4-PHENYL-2-BUTANOL--Phenylethyl methyl carbinol	3	0.12 0.90	0.60 6.0	1.5 15.	1.5 15.					
2880 4-PHENYL-3-BUTEN-2-OL--Methyl styryl carbinol	2	(1)2.0	(1)20.	0.03 20.	(1)20.					
2881 4-PHENYL-3-BUTEN-2-ONE--Benzilidene acetone; Methyl styryl ketone; Benzylacetone	12	0.82	0.84	3.7	4.5	(1)2.1		Shortening (1)0.20		
2882 4-PHENYL-2-BUTYL ACETATE--Phenylethyl methyl carbonyl acetate	3	0.10 3.0	(1)3.0	(1)3.0	0.50 3.0					
2883 1-PHENYL-3-METHYL-3-PENTANOL--Phenylethyl methyl ethyl carbinol	1	(1)0.16	-	(1)0.16	-	(1)0.60				
2884 1-PHENYL-1-PROPANOL--Phenyl ethyl carbinol	1	(1)0.50	(1)0.50	(1)1.5	(1)1.5					
2885 3-PHENYL-1-PROPANOL--Hydrocinnamyl alcohol; Benzylethyl alcohol; Phenylpropyl alcohol	8	0.73	1.4	2.8	3.3		(1)4.3	Alcoholic Beverages (1)5.0		
2886 2-PHENYLPROPIONALDEHYDE--Hydratropaldehyde; 2-Phenylpropanal; α -Methyl phenylacetaldehyde; α -Methyl tolualdehyde	5	0.61	0.30	0.85	0.85					
2887 3-PHENYLPROPIONALDEHYDE--Hydrocinnamaldehyde; Phenylpropyl aldehyde; Benzylacetaldehyde	10	1.0	1.7	5.0	5.5	(1)4.3				
2888 2-PHENYLPROPIONALDEHYDE DIMETHYL ACETAL--Hydratropaldehyde dimethyl acetal	11	0.26	0.51	1.5	3.1		(1)5.0	Condiments (1)5.0		
2889 3-PHENYLPROPIONIC ACID--Hydrocinnamic acid; Benzylacetic acid	4	0.02 1.0	0.48 1.0	0.80 4.0	17.	(1)1.2		Dairy Products (1)2.0	Toppings (1)1.0	
2890 3-PHENYLPROPYL ACETATE--Hydrocinnamyl acetate	14	3.2	4.8	4.6	6.3		(1)10.	Condiments (1)0.10		
2891 2-PHENYLPROPYL BUTYRATE-- β -Methylphenethyl butyrate; Hydratropyl butyrate; α -Phenylpropyl alcohol, butyric ester	1	(1)1.0	(1)1.0	(1)2.0	(1)2.0					
2892 2-PHENYLPROPYL iso-BUTYRATE--Hydratropyl iso-butyrate; α -Phenylpropyl alcohol, iso-butyric ester	1	(1)5.0	(1)20.	(1)20.	-					
2893 3-PHENYLPROPYL iso-BUTYRATE--Hydrocinnamyl iso-butyrate	7	1.3	3.0	5.0	5.8					
2894 3-PHENYLPROPYL CINNAMATE--Hydrocinnamyl cinnamate	7	3.4	4.1	4.3	5.3					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2895 3-PHENYLPROPYL FORMATE--Hydrocinnamyl formate	3	1.3	0.90 1.5	3.0 5.0	2.7					
2896 3-PHENYLPROPYL HEXANOATE--Hydrocinnamyl hexanoate	4	0.67	1.3	3.3	3.7					
2897 3-PHENYLPROPYL PROPIONATE--Hydrocinnamyl propionate	4	0.49	0.52	2.0	2.4		0.80 50.			
2898 2-(3-PHENYLPROPYL)-TETRAHYDROFURAN--2-Hydrocinnamyl tetrahydrofuran	2	(1)0.50	(1)2.0	0.03 2.0	-	(1)2.0	(1)2.3			
2899 3-PHENYLPROPYL iso-VALERATE--Hydrocinnamyl iso-valerate	4	0.90	0.90	1.8	1.7					
2900 PHOSPHORIC ACID	43	510.	660.	(1)5,000.	(1)1,500.					
2901 *PIMENTA LEAF, OIL-- <i>Pimenta officinalis</i> Lindl.	25	2.8	1.3	35.	32.	(1)0.06	(1)80.	Condiments 80.	Meats 160.	
2902 α-PINENE--2-Pinene; 2,6,6-Trimethylbicyclo-(3.1.1)-2-heptene	10	16. 54.	(1)64.	(1)48.	160.			Condiments 2.6 150.		
2903 β-PINENE--2(10)-Pinene; Nopinene	3	0.05 16.	(1)64.	48. 600.	48. 600.					
2904 PINE NEEDLE, DWARF, OIL [<i>Pinus mugo</i> Turra var. <i>pumilio</i> (Haenke) Zenari]-- <i>Pinus pumilio</i> , oil; Pine, mountain, oil	5	0.39	0.63	1.9	1.9					
2905 PINE NEEDLE, OIL [<i>Abies sibirica</i> Ledeb.; <i>A. alba</i> Mill.; <i>A. sachalinensis</i> Masters; <i>A. mayriana</i> Miyabe and Kudo]--Siberian fir, oil	5	1.5	0.62	5.2	2.7					
2906 PINE, SCOTCH, OIL-- <i>Pinus sylvestris</i> L.	3	(1)6.0	-	(1)3.0	(1)2.0					
2907 PINE TAR, OIL [<i>Pinus palustris</i> Mill. and other spp. of <i>Pinus</i>]--Tar, oil	3	-	(1)2.0	(1)10.	-					
2908 PIPERIDINE--Hexahydropyridine	2	(1)3.0	-	(1)5.0	0.05 5.0			Condiments (1)0.05	Meats (1)0.05	Soups (1)0.05
2909 PIPERINE--Piperoylpiperidine	1	(1)0.01	-	-	-					
2910 d-PIPERITONE--p-Menth-1-en-3-one; 1-Methyl-4-iso-propyl-1-cyclohexen-3-one	5	1.0 11.	18.	18.	18.					
2911 PIPERONAL--Heliotropine; Piperonyl aldehyde; Dioxymethylene protocatechuic aldehyde; 3,4-Methylenedioxybenzaldehyde	48	6.0	7.0	7.4	18.	5.8	36.			
2912 PIPERONYL ACETATE--Heliotropyl acetate	2	27. 50.	80. 110.	70. 80.	55. 80.					
2913 PIPERONYL iso-BUTYRATE	3	0.05 1.0	(1)0.05	0.05 3.5	0.10 3.5					
2914 *PIPSISSEWA LEAVES, EXTRACT-- <i>Chimaphila umbellata</i> Nutt.	6	41.	-	(1)75.	-					
2915 POLYSORBATE 20--Polyoxyethylene (20) sorbitan monooleate; Tween® 20	6	180.	(1)500.	200. 1,000.	200. 1,000.			Condiments (1)380.		
2916 POLYSORBATE 60--Polyoxyethylene (20) sorbitan monostearate; Tween® 60	11	110.	150.	280.	1,600.	(1)100.	(1)28.	Soups (1)4,000.	Toppings 5,000. 12,000.	
2917 POLYSORBATE 80--Polyoxyethylene (20) sorbitan monooleate; Tween® 80	35	170.	200.	300.	320.			Soups (1)200.	Pickles 100. 120.	Toppings (1)8,000.
2918 *POMEGRANATE BARK, EXTRACT-- <i>Punica granatum</i> L.	0	-	-	-	-					
2919 *POPPY SEED-- <i>Papaver somniferum</i> L.	10	-	-	-	8,600.					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2920 POTASSIUM ACETATE	1	(1)1.5	-	-	-	-	-	Cottage Cheese (1)500.	Meats (1)20.	
2921 POTASSIUM SORBATE	12	110.	(1)580.	-	100. 1,000.	-	-			
2922 PROPENYLGLUAETHOL--6-Ethoxy-m-anol; 2-Propenyl-6-ethoxyphenol; 1-Ethoxy-2-hydroxy-4-propenylbenzene; Hydroxymethyl anethole; Vaniltrope®	17	5.9	6.3	20.	20.	(1)2.5	-			
2923 PROPIONALDEHYDE--Propanal; Methylacetaldehyde; Propyl aldehyde	5	3.9	12.	11.	13.	-	-			
2924 PROPIONIC ACID--Propanoic acid; Methylacetic acid; Ethylformic acid	6	1.2 5.8	6.0	14.	20.	-	-	Cheese (1)600.		
2925 PROPYL ACETATE	12	4.0	16.	12.	14.	-	-			
2926 iso-PROPYL ACETATE	5	16.	17.	58.	75.	-	-			
2927 p-iso-PROPYLACETOPHENONE	2	(1)0.08	(1)0.10	(1)0.50	(1)1.0	-	-	Pickles (1)5.0		
2928 PROPYL ALCOHOL--1-Propanol; Propylic alcohol; Optal	2	0.50 5.0	(1)0.50	(1)0.50	(1)0.65	-	-			
2929 iso-PROPYL ALCOHOL--2-Propanol; iso-Propanol; Petrohol; Dimethylcarbinol	10	(1)25.	-	10. 75.	(1)75.	-	-			
2930 p-PROPYL ANISOLE--Dihydroanethole; Propyl methoxybenzene	4	4.3	9.9	64.	67.	-	-			
2931 PROPYL BENZOATE	1	(1)11.	(1)44.	(1)33.	(1)33.	-	-			
2932 iso-PROPYL BENZOATE	1	(1)0.50	(1)1.0	(1)1.0	(1)1.0	-	-			
2933 p-iso-PROPYLBENZYL ALCOHOL--p-Cymen-7-ol; Cuminic alcohol; Cumin alcohol; Cuminy alcohol; Cuminal	5	11.	0.47	33.	35.	-	-			
2934 PROPYL BUTYRATE	9	6.8	4.6	24.	16.	-	-			
2935 iso-PROPYL BUTYRATE	5	9.7	21.	39.	39.	-	-			
2936 PROPYL iso-BUTYRATE	8	6.8	4.8	24.	20.	-	-			
2937 iso-PROPYL iso-BUTYRATE	3	12. 25.	18. 25.	58. 100.	60. 100.	-	-			
2938 PROPYL CINNAMATE	7	2.6	2.9	4.9	4.3	(1)0.07	-			
2939 iso-PROPYL CINNAMATE	5	0.52	0.75	1.3	2.3	-	-			
2940 PROPYLENE GLYCOL--1,2-Propanediol; Methyl glycol; 1,2-Dihydroxypropane	89	690.	810.	1,300.	1,300.	250. 290.	1,800.	Maraschino Cherries (1)300. Pickles (1)20. Syrups 17,000. Condiments 1,000. 50,000.	Icings (1)0.08 Soups (1)20.	Meats 10. 40. Toppings 3,500.
2941 PROPYLENE GLYCOL ALGINATE	6	(1)200.	800. 2,100.	-	-	-	-		Icings (1)150.	
2942 PROPYLENE GLYCOL STEARATE--Propylene glycol octadecanoate	2	-	-	17. 5,000.	43. 20,000.	-	-	Toppings (1)100,000.		
2943 PROPYL FORMATE	5	20.	57.	65.	85.	-	-			
2944 iso-PROPYL FORMATE	2	18. 25.	18. 25.	55. 100.	60. 100.	-	-			
2945 PROPYL 2-FURANACRYLATE--Propyl 3-(2-furyl) acrylate	2	(1)3.0	-	(1)0.03	-	-	-			

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2946 PROPYL 2-FUROATE	2	-	-	(1)0.03	(1)0.03			Condiments (1)0.20		
2947 PROPYL GALLATE--Tenox P G®	9	0.08	0.05	0.16	0.97	(1)0.03		Alcoholic Beverages (1)3.0		
2948 PROPYL HEPTANOATE	4	3.8	5.1	5.9	18.					
2949 PROPYL HEXANOATE	5	2.2	3.0	8.0	-					
2950 iso-PROPYL HEXANOATE	2	(1)0.50	5.5 10.	20. 40.	20. 40.					
2951 PROPYL p-HYDROXYBENZOATE--Propylparaben; Propylparasept; Nipasol	2	0.20 32.	(1)130.	(1)96.	(1)96.					
2952 3-PROPYLIDENEPHTHALIDE	1	-	(1)5.0	(1)5.0	(1)5.0					
2953 α-PROPYLPHENETHYL ALCOHOL--1-Phenyl-2- pentanol; Benzylpropyl carbinol; Benzylbutyl alcohol	1	(1)1.0	(1)5.0	(1)5.0	-	(1)5.0				
2954 p-iso-PROPYLPHENYLACETALDEHYDE--p-Cymen- 7-carboxaldehyde	1	(1)0.10	(1)0.50	(1)0.50	-					
2955 PROPYL PHENYLACETATE	4	0.30 1.0	0.30 1.5	2.7	1.0 5.0					
2956 iso-PROPYL PHENYLACETATE	3	0.20 0.50	1.8	0.50 8.0	3.0 8.0					
2957 3-(p-iso-PROPYL)PHENYL PROPIONALDEHYDE-- p-iso-Propyl hydrocinnamaldehyde; Cumyl acetaldehyde	3	(1)0.80	(1)0.80	(1)1.3	(1)3.0		(1)5.0			
2958 PROPYL PROPIONATE	9	6.0	12.	25.	25.					
2959 iso-PROPYL PROPIONATE	3	9.7	5.0 50.	40. 50.	30. 50.					
2960 PROPYL iso-VALERATE	7	5.0	16.	17.	20.					
2961 iso-PROPYL iso-VALERATE	5	3.4	3.4	11.	11.					
2962 iso-PULEGOL--p-Menth-8-en-3-ol	4	7.4	29.	23.	23.					
2963 PULEGONE--p-Menth-4(8)-en-3-one; Δ-4(8)-p-Menthen- 3-one; 1-Methyl-4-iso-propylidene-3-cyclohexan- one	3	5.0 8.0	5.0 32.	17.	24. 25.					
2964 iso-PULEGONE--p-Menth-8-en-3-one; Δ-8(9)-p- Menthen-3-one; 1-Methyl-4-iso-propenyl-3- cyclohexanone	3	4.0	12.	16.	16.					
2965 iso-PULEGYL ACETATE	4	5.8	22.	19.	19.					
2966 PYRIDINE	3	(1)1.0	0.02 0.12	(1)0.40	(1)0.40			Meats 30. 300.		
2967 PYROLIGNEOUS ACID¹	16	10.	15.	51.	33.	(1)30.		Alcoholic Beverages (1)20.	Meats 100. 300.	
2968 PYROLIGNEOUS ACID, EXTRACT¹	4	-	-	-	50. 200.					
2969 PYRUVALDEHYDE--Pyruvic aldehyde; Acetyl- formaldehyde; 2-Ketopropionaldehyde; 2-Oxo- propanal	2	(1)1.0	(1)1.0	0.03 5.0	0.03 5.0					
2970 PYRUVIC ACID--Pyruvic acid; Acetylformic acid; 2-Ketopropionic acid; 2-Oxopropanoic acid; α-Ketopropionic acid	5	(1)0.25	0.25 20.	27.	30.		(1)110.			
2971 QUASSIA. EXTRACT { <i>Picrasma excelsa</i> (Sw.) Planch.; <i>Quassia amara</i> L. }--Bitter wood, extract; Bitter ash, extract	12	3.4	-	-	(1)50.			Alcoholic Beverages 3.4		

¹ Prior Sanction - Federal Register, November 30, 1957, Page 9594, Section 3.201

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —	
2972 QUEBRACHO BARK, EXTRACT— <i>Aspidosperma quebracho-blanco</i> Schlecht., or <i>Schinopsis lorentzii</i> (Griseb.) Engl.	4	11.	23.	27.	28.				
2973 QUILLAIA [<i>Quillaja saponaria</i> Molina]—Soap bark; Saponin; China bark, extract	22	95.	(1)0.12	(1)18.	-			Syrups (1)6.8	
2974 *QUINCE SEED, EXTRACT— <i>Cydonia oblonga</i> Mill. (<i>C. vulgaris</i> Pers.)	3	0.01 40.	0.06 20.	-	(1)1.0				
2975 QUININE BISULFATE	2	95. 100.	-	-	-				
2976 QUININE HYDROCHLORIDE	19	110.	-	-	-				
2977 QUININE SULFATE	6	100.	-	-	-				
2978 iso-QUINOLINE	3	(1)0.25	(1)0.25	(1)1.0	0.004 1.0				
2979 RHATANY, EXTRACT [<i>Krameria triandra</i> Ruiz et Pavon (Peruvian); <i>K. argentea</i> Martius (Brazilian)]— <i>Krameria</i> , extract	7	11.	31.	40.	8.0 63.			Alcoholic Beverages (1)10.	
2980 RHODINOL--3,7-Dimethyl-7-octen-1-ol; (Commercial Rhodinol is largely 1-Citronellol)	28	2.0	2.1	7.6	8.1	(1)2.9	(1)31.	Jellies (1)0.92	
2981 RHODINYL ACETATE	10	2.8	1.4	9.4	18.				
2982 RHODINYL BUTYRATE	7	0.94	1.1	3.0	9.7		(1)1.1		
2983 RHODINYL iso-BUTYRATE	9	1.1	1.8	3.3	4.5	(1)0.01			
2984 RHODINYL FORMATE	9	1.3	1.8	4.3	4.9	(1)0.08			
2985 RHODINYL PHENYLACETATE	7	1.2	1.2	3.8	4.4				
2986 RHODINYL PROPIONATE	7	1.8	2.4	4.9	5.8				
2987 RHODINYL iso-VALERATE	5	2.0	2.3	7.2	7.2				
2988 *ROSE, ABSOLUTE-- <i>Rosa alba</i> L.; <i>R. centifolia</i> L. and varieties of these spp.	11	0.63	1.2	2.0	1.6				
2989 *ROSE, BULGARIAN, TRUE OTTO, OIL [<i>Rosa damascena</i> Mill.]--Attar of roses	24	0.51	0.68	2.6	1.2	0.01 0.50	15.	Jellies (1)0.05	
2990 *ROSE HIPS, EXTRACT [<i>Rosa canina</i> L.; <i>R. gallica</i> L.; <i>R. condita</i> Scop.; <i>R. rugosa</i> Thunb.; and other <i>Rosa</i> spp.]--Hipberries, extract	1	-	-	-	-				
2991 *ROSEMARY-- <i>Rosmarinus officinalis</i> L.	15	(1)700.	-	-	-			Condiments 680.	Meats 380.
2992 *ROSEMARY, OIL [<i>Rosmarinus officinalis</i> L.]--Garden rosemary, oil	17	3.6	0.50 4.0	7.5	6.3			Condiments 2.9	Meats (1)40.
2993 *ROSE WATER, STRONGER-- <i>Rosa centifolia</i> L.	2	(1)100.	-	-	-				
2994 *RUE-- <i>Ruta graveolens</i> L.	2	-	-	-	(1)6.0				
2995 *RUE, OIL-- <i>Ruta graveolens</i> L.	13	1.2	1.3	4.1	3.3			Condiments (1)1.0	
2996 RUM ETHER--Ethyl oxyhydrate	53	67.	110.	320.	230.	(1)1.7	380.	Alcoholic Beverages 80. 1,600.	
2997 SACCHARINE, SODIUM SALT--1,2-Benzisothiazolin-3-one, 1,1-dioxide, sodium salt; Kristallose; Crystallöse; Saccharin soluble	8	72.	(1)150.	2,100. 2,600.	(1)12.				

1 Rum ether shall consist of at least 99 per cent water, ethyl alcohol, ethyl acetate, methanol, ethyl formate, acetone, acetaldehyde, and formaldehyde. It shall all distill at a temperature not exceeding 100°C. at atmospheric pressure, and shall leave no residue on evaporation. The methanol and formaldehyde contents, combined, shall not exceed 5 per cent.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
2998 *SAFFRON-- <i>Crocus sativus</i> L.	11	(1)1.3	-	-	(1)10.			Alcoholic Beverages (1)200.	Meats 260.	
2999 *SAFFRON, EXTRACT [<i>Crocus sativus</i> L.]--Crocus, extract	5	1.3 7.5	1.3 9.0	6.3	1.9 14.			Condiments (1)50.		
3000 *SAGE-- <i>Salvia officinalis</i> L.	25	(1)300.	-	-	170.			Meats 1,500.		
3001 *SAGE, OIL-- <i>Salvia officinalis</i> L.	22	3.7	16.	11.	14.		(1)30.	Condiments 14.	Meats 110.	Pickles (1)2.4
3002 *SAGE, OLEORESIN-- <i>Salvia officinalis</i> L.	7	-	-	-	-			Condiments (1)100.	Meats 100.	
3003 *SAGE, SPANISH, OIL -- <i>Salvia lavandulaefolia</i> Vahl.	8	2.0 11.	2.0 44.	20.	20.			Condiments (1)50.	Meats 40: 40.	
3004 SALICYLALDEHYDE--o-Hydroxybenzaldehyde	10	0.55	1.1	1.8	6.3		11. 18.	Alcoholic Beverages (1)5.0	Condiments (1)2.0	
3005 SANDALWOOD, YELLOW, OIL [<i>Santalum album</i> L.]--Sandalwood, East Indian, oil; Saunders, white, oil; Arheol	8	2.4	7.5	7.7	6.6		(1)47.			
3006 SANTALOL (α - and β -)--Argeol	2	0.06 2.0	0.35 2.0	1.0 10.	1.0 8.0		(1)0.20			
3007 SANTALYL ACETATE	4	0.53	0.78	2.0	2.0		(1)2.3			
3008 SANTALYL PHENYLACETATE	3	1.0	0.95	2.0	2.0					
3009 SARSAPARILLA, EXTRACT ^k -- <i>Smilax</i> spp.	9	190.	130.	(1)1,000.	(1)2,000.					
3010 SASSAFRAS BARK, EXTRACT (Safrol-free)-- <i>Sassafras albidum</i> (Nutt.) Nees	5	290.	(1)10.	(1)100.	(1)50.					
3011 SASSAFRAS LEAVES (Safrol-free)-- <i>Sassafras albidum</i> (Nutt.) Nees	2	-	-	-	-			Soups (1)30,000.		
3012 *SAVORY, SUMMER-- <i>Satureja hortensis</i> L.	8	-	-	-	800. 850.			Condiments (1)200.	Meats 1,100.	
3013 *SAVORY, SUMMER, OIL-- <i>Satureja hortensis</i> L.	2	-	-	(1)4.0	(1)4.0			Condiments 10. 50.		
3014 *SAVORY, SUMMER, OLEORESIN-- <i>Satureja hortensis</i> L.	2	-	-	(1)4.0	(1)4.0			Condiments 35. 50.		
3015 *SAVORY, WINTER-- <i>Satureja montana</i> L.	0	-	-	-	-					
3016 *SAVORY, WINTER, OIL-- <i>Satureja montana</i> L.	1	-	-	(1)4.0	(1)4.0			Condiments (1)50.		
3017 *SAVORY, WINTER, OLEORESIN-- <i>Satureja montana</i> L.	1	-	-	(1)4.0	(1)4.0			Condiments (1)50.		
3018 *SCHINUS MOLLE, OIL [<i>Schinus molle</i> L.]--Pepper tree, oil	4	-	-	(1)10.	(1)10.			Condiments (1)3.0		
3019 SKATOLE--3-Methylindole; β -Methylindole	8	0.75	1.0	0.78	0.80	(1)0.01	(1)0.10			
3020 *SLOE BERRIES [<i>Prunus spinosa</i> L.]--Blackthorn berries	2	-	-	-	-					
3021 *SLOE BERRIES, EXTRACT [<i>Prunus spinosa</i> L.]--Blackthorn berries, extract	7	110.	50. 100.	(1)40.	(1)45.			Alcoholic Beverages 43,000.		
3022 *SLOE BERRIES, EXTRACT SOLID [<i>Prunus spinosa</i> L.]--Blackthorn berries, extract solid	0	-	-	-	-					
3023 SNAKEROOT, CANADIAN, OIL [<i>Asarum canadense</i> L.]--Wild ginger, Canadian, oil	9	1.9	1.0 5.0	8.3	8.3			Condiments 1.4 4.0		
3024 SODIUM ACETATE	4	(1)1.5	(1)15.	(1)200.	(1)15.			Breakfast Cereals (1)60.		

^k Judged solely on the basis of common use.

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
3025 SODIUM BENZOATE	89	350.	39.	350.	300.		(1)12.			
3026 SODIUM CITRATE--(Trisodium citrate); Citratin; Citrosodine	47	490.	(1)15.	(1)40.	220.			Meats 40. 600.	Toppings 50. 3,900.	
3027 SODIUM HEXAMETAPHOSPHATE--Sodium metaphosphates; Calgon; Giltex; Quadrafos; Micromet; Hagen phosphate	6	-	-	-	-	500. 7,000.		Breakfast Cereals (1)3,000.		
3028 SORBITAN MONOSTEARATE--Span® 60	6	140.	(1)5.0	9.0 7,500.	1,400.			Cheese (1)8.0	Condiments (1)8.0	
3029 d-SORBITOL--d-Glucitol; Sorbit; Sorbol; Sorbo; Nevitin; Karion; Sionon; Diakarmon	24	1,300.	70,000.	21,000.	50,000.	(1)8,000.		Icings (1)500.	Toppings (1)280,000.	
3030 *SPEARMINT-- <i>Mentha spicata</i> L.	5	(1)500.	-	-	-			Condiments (1)1,000.	Meats (1)500.	
3031 *SPEARMINT, EXTRACT-- <i>Mentha spicata</i> L.	4	2,100.	(1)100.	(1)0.20	-					
3032 *SPEARMINT, OIL-- <i>Mentha spicata</i> L.	47	100.	81.	830.	270.	(1)75.	6,200.	Alcoholic Beverages (1)100.	Jellies 72. 1,900.	
3033 *SPIKE LAVENDER, OIL-- <i>Lavandula latifolia</i> Vill. (<i>L. spica</i> DC.)	5	10. 11.	10. 44.	18.	33. 50.					
3034 SPRUCE, OIL [<i>Tsuga canadensis</i> (L.) Carr.; <i>T. heterophylla</i> (Raf.) Sarg.; <i>Picea mariana</i> (Mill.); <i>P. glauca</i> (Moench) Voss]--Hemlock, oil	15	6.2	15.	11.	2.0 4.0	(1)1.0	(1)44.			
3035 STEARIC ACID--Octadecanoic acid	4	2.0 10.	-	(1)4,000.	(1)3.5					
3036 STORAX [<i>Liquidambar orientalis</i> Mill.; <i>L. styraciflua</i> L.]--Styrax, gum	8	2.0	2.0	13.	23.		(1)300.	Toppings (1)15.		
3037 STYRAX, EXTRACT-- <i>Liquidambar orientalis</i> Mill.; <i>L. styraciflua</i> L.	5	0.84	0.25 0.60	3.5	4.0 6.0	(1)0.04				
3038 SUCROSE OCTAACETATE	2	0.35 20.	-	-	-					
3039 SULFUR DIOXIDE--Sulfurous anhydride; Sulfurous oxide	10	180.	(1)2.5	-	-			Condiments (1)400.	Dehydrated Potatoes (1)60.	Soups (1)20.
3040 TAGETES, OIL [<i>Tagetes erecta</i> L.; <i>T. patula</i> L.; or <i>T. glandulifera</i> Schrank]--Marigold, oil	8	4.1	7.4	9.0	13.	(1)7.0		Condiments (1)20.		
3041 *TANGERINE, OIL-- <i>Citrus reticulata</i> Blanco	43	90.	160.	160.	250.	(1)20.	810.			
3042 TANNIC ACID[Nut galls of <i>Quercus infectoria</i> Oliv. and related spp. of <i>Quercus</i>]--Gallotannic acid; Tannin	5	1.1 45.	(1)160.	0.20 100.	40.			Alcoholic Beverages 6.0 1,000.		
3043 *TARRAGON-- <i>Artemisia dracunculus</i> L.	16	-	-	-	(1)20.			Condiments 23.	Meats 260.	
3044 TARTARIC ACID (d-, l-, dl-, meso)--Racemic acid	45	960.	570.	5,400.	1,300.	(1)60.	(1)3,700.	Condiments (1)10,000.		
3045 α-TERPINEOL--p-Menth-1-en-8-ol	24	5.4	16.	14.	19.	12. 16.	40.	Condiments (1)38.		
3046 TERPINOLENE--p-Menth-1,4(8)-diene; 1,4(8)-Terpadiene	2	(1)16.	(1)64.	0.12 48.	(1)49.					
3047 TERPINYL ACETATE--p-Menth-1-en-8-yl acetate	19	3.5	3.2	9.9	15.		14. 260.	Condiments (1)15.	Meats 1.7 40.	
3048 TERPINYL ANTHRANILATE--p-Menth-1-en-8-yl anthranilate	3	1.1	1.5 2.6	6.3	6.0 6.0					
3049 TERPINYL BUTYRATE--p-Menth-1-en-8-yl butyrate	4	6.4	9.2	11.	9.5		(1)210.			
3050 TERPINYL iso-BUTYRATE--p-Menth-1-en-8-yl iso-butyrate	2	0.90 2.4	(1)5.0	4.0 15.	5.0 15.					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
3051 TERPINYL CINNAMATE-- <i>p</i> -Menth-1-en-8-yl cinnamate	1	(1)0.50	(1)2.6	(1)6.0	(1)6.0			Alcoholic Beverages		
3052 TERPINYL FORMATE-- <i>p</i> -Menth-1-en-8-yl formate	3	0.50 3.0	2.6 5.0	6.0 10.	6.0 10.			(1)1.0		
3053 TERPINYL PROPIONATE-- <i>p</i> -Menth-1-en-8-yl propionate	3	1.5	2.6 3.0	6.0 10.	6.0 10.					
3054 TERPINYL <i>iso</i> -VALERATE-- <i>p</i> -Menth-1-en-8-yl <i>iso</i> -valerate	2	0.50 5.0	2.6 5.0	6.0 10.	6.0 10.					
3055 TETRAHYDROFURFURYL ACETATE	3	1.3 2.0	(1)8.0	1.0 20.	1.0 20.					
3056 TETRAHYDROFURFURYL ALCOHOL--Tetrahydro-2-furanmethanol; Tetrahydro-2-furylmethanol; Tetrahydro-2-furancarbinol; THFA	2	0.03 14.	(1)0.03	0.03 18.	(1)0.04					
3057 TETRAHYDROFURFURYL BUTYRATE	1	(1)0.90	(1)6.0	(1)15.	(1)15.					
3058 TETRAHYDROFURFURYL PROPIONATE	3	1.3 2.0	(1)8.0	1.0 20.	1.0 20.					
3059 TETRAHYDRO- <i>pseudo</i> -IONONE--6,10-Dimethyl-9-undecen-2-one	4	0.50 0.50	0.60 2.4	14.	14.					
3060 TETRAHYDROLINALOOL--3,7-Dimethyloctan-3-ol	5	1.3	2.7	5.6	5.6					
3061 TETRAMETHYL ETHYLCYCLOHEXENONE (Mixture of isomers)	1	(1)5.0	(1)30.	(1)30.	(1)30.					
3062 2-THIENYL MERCAPTAN--2-Thienylthiol	1	-	-	(1)0.10	(1)0.10					
3063 *THYME-- <i>Thymus vulgaris</i> L.	24	(1)13.	-	(1)5.0	550.			Meats 360.	Soups 500. 1,000.	
3064 *THYME, OIL-- <i>Thymus vulgaris</i> L.	14	1.0 5.0	(1)20.	1.0 15.	1.5 5.3		(1)100.	Condiments 18.	Meats 33.	Soups (1)0.13
3065 *THYME, WHITE, OIL-- <i>Thymus vulgaris</i> L.	9	0.01 1.0	(1)0.01	27.	5.4			Alcoholic Beverages (1)5.0	Condiments 4.0 8.0	Meats 15.
3066 THYMOL--3- <i>p</i> -Cymenol; 5-Methyl-2- <i>iso</i> -propylphenol; Thyme camphor	10	2.5 11.	(1)44.	9.4	5.0 6.5		(1)100.			
3067 TOLUALDEHYDE GLYCERYL ACETAL (Mixed <i>o</i> -, <i>m</i> -, <i>p</i> -)	3	0.08 6.0	6.0 8.0	12. 15.	12. 15.					
3068 TOLUALDEHYDES (Mixed <i>o</i> -, <i>m</i> -, <i>p</i> -)	27	11.	16.	25.	28.	8.3	430.	Maraschino Cherries (1)100.		
3069 TOLU, BALSAM, EXTRACT-- <i>Myroxylon balsamum</i> L. Harms (<i>M. toluiferum</i> HBK.)	8	32.	150.	57.	71.		2.0 38.			
3070 TOLU, BALSAM, GUM-- <i>Myroxylon balsamum</i> L. Harms (<i>M. toluiferum</i> HBK.)	7	2.6	13.	5.2	8.0			Syrups (1)3.0		
3071 <i>p</i> -TOLYLACETALDEHYDE-- <i>p</i> -Methylphenylacetaldehyde	2	-	(1)2.0	0.03 2.0	(1)2.0					
3072 <i>o</i> -TOLYL ACETATE-- <i>o</i> -Cresyl acetate; Acetyl <i>o</i> -cresol; <i>o</i> -Cresylic acetate	5	2.8	2.6	11.	9.0 10.	(1)1.0	0.30 220.			
3073 <i>p</i> -TOLYL ACETATE-- <i>p</i> -Cresyl acetate; Acetyl <i>p</i> -cresol; <i>p</i> -Cresylic acetate	6	0.50 1.0	1.3	4.3	4.4		0.30 220.	Condiments (1)10.		
3074 4-(<i>p</i> -TOLYL)-2-BUTANONE-- <i>p</i> -Methylbenzyl acetone	2	(1)1.0	(1)1.5	(1)6.0	(1)6.0					
3075 <i>p</i> -TOLYL <i>iso</i> -BUTYRATE-- <i>p</i> -Cresyl <i>iso</i> -butyrate	2	0.10 4.0	(1)0.05	0.12 6.0	0.12 7.0					
3076 <i>p</i> -TOLYL LAURATE-- <i>p</i> -Tolyl dodecanoate; <i>p</i> -Cresyl dodecanoate; <i>p</i> -Cresyl laurate	1	(1)1.0	(1)1.0	(1)2.0	(1)2.0					
3077 <i>p</i> -TOLYL PHENYLACETATE-- <i>p</i> -Cresyl phenylacetate	9	1.6	0.87	4.8	5.4					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses —		
3078 2-(p-TOLYL)-PROPIONALDEHYDE--p-Methylhydropropionaldehyde	2	(1)0.13	(1)0.13	(1)0.13	(1)0.20			Alcoholic Beverages (1)0.005		
3079 *TRAGACANTH, GUM-- <i>Astragalus gummifer</i> Lab. or other Asiatic spp. of <i>Astragalus</i>	70	42.	65.	67.	140.	(1)2,000.	(1)170.	Condiments 470.	Meats 50. 60.	
3080 TRIBUTYL ACETYLCITRATE--Citroflex A-4	1	(1)0.40	-	-	-					
3081 TRICALCIUM PHOSPHATE	25	1,000.	46.	50. 60.	80.	700.		Condiments (1)540.	Meats 360.	
3082 2-TRIDECENAL	2	0.10 0.30	1.6 6.0	4.0 6.0	4.0 6.0		(1)0.10			
3083 TRIETHYL CITRATE--Ethyl citrate	13	13.	47.	180.	230.	(1)10.				
3084 *TUBEROSE, OIL-- <i>Polianthes tuberosa</i> L.	5	0.26	0.45	1.5	1.7					
3085 *TURMERIC-- <i>Curcuma longa</i> L.	22	-	-	-	-	(1)0.05		Condiments 760. Soups 30. 50.	Meats 200.	Pickles 690.
3086 *TURMERIC, EXTRACT-- <i>Curcuma longa</i> L.	13	(1)0.78	-	-	-			Condiments 59. Soups 30. 40.	Meats 43. Pickles (1)40.	
3087 *TURMERIC, OLEORESIN-- <i>Curcuma longa</i> L.	13	-	-	-	-			Condiments 640.	Meats 20. 100.	Pickles 200.
3088 TURPENTINE, GUM-- <i>Pinus palustris</i> Mill. and other <i>Pinus</i> spp.	5	-	-	-	(1)15.					
3089 TURPENTINE, STEAM DISTILLED-- <i>Pinus palustris</i> Mill. and other <i>Pinus</i> spp.	6	-	-	11.	10. 20.		(1)7.1			
3090 2,3-UNDECADIONE--Acetyl nonyl; Acetyl pelargonyl	1	(1)1.5	(1)3.0	(1)3.0	(1)3.0					
3091 γ-UNDECALACTONE--4-Hydroxyundecanoic acid, γ-lactone; γ-Undecyl lactone; γ-Heptyl butyrolactone; Aldehyde C-14 pure (so-called); Peach aldehyde	46	4.4	3.0	11.	7.1	7.5	90.			
3092 UNDECANAL--Undecylic aldehyde; Aldehyde C-11 Undecylic; Hendecanal	6	0.95	3.1	2.0	2.4		(1)56.			
3093 2-UNDECANONE--Methyl nonyl ketone	13	2.8	0.54	2.6	3.1	(1)5.0				
3094 9-UNDECENAL--Undecylenic aldehyde; Hendecen-9-al; Aldehyde C-11 Undecylenic	9	4.8	4.2	4.5	4.6					
3095 10-UNDECENAL	2	0.05 1.0	(1)0.20	(1)0.20	-					
3096 10-UNDECEN-1-yl ACETATE--10-Hendecenyl acetate; Undecenyl acetate; Undecylenic acetate; Acetate C-11	3	3.7	15.	12.	12.					
3097 UNDECYL ALCOHOL--1-Undecanol; Alcohol C-11 Undecylic	4	2.9	15.	12.	12.					
3098 VALERALDEHYDE--Pentanal; Valeric aldehyde; Valeral; Amyl aldehyde	5	1.3	5.0	4.2	5.4					
3099 VALERIAN ROOT, EXTRACT-- <i>Valeriana officinalis</i> L.	22	25.	35.	65.	69.			Condiments (1)24.		
3100 VALERIAN ROOT, OIL-- <i>Valeriana officinalis</i> L.	18	0.52	0.36	2.6	3.1	0.02 1.5				
3101 VALERIC ACID--Pentanoic acid; Propylacetic acid	16	1.2	1.8	2.5	8.0					

FEMA No. and Substance	No. of Reports	Beverages	Ice Cream, Ices, Etc.	Candy	Baked Goods	Gelatins and Puddings	Chewing Gum	— Other Category Uses—		
3102 iso-VALERIC ACID-- β -Methylbutyric acid; active Valeric acid; Valerianic acid; iso-Propylacetic acid; Delphinic acid; iso-Butyl formic acid	19	1.2	14.	12.	5.5			Cheese (1)2.4		
3103 γ -VALEROLACTONE--4-Hydroxypentanoic acid, γ -lactone; 3-Methylbutyrolactone; 3-Valerolactone	1	(1)4.0	(1)20.	(1)50.	(1)50.					
3104 *VANILLA-- <i>Vanilla planifolia</i> Andrews or <i>V. tahitensis</i> J. W. Moore	40	420.	600.	490.	530.	630.		Icings 200. 630.	Syrups (1)10.	Toppings (1)300.
3105 *VANILLA, EXTRACT-- <i>Vanilla planifolia</i> Andrews or <i>V. tahitensis</i> J. W. Moore	68	200.	3,000.	4,000.	1,900.			Icings 2,000. 4,800.	Syrups 8.5 54.	Toppings 2,700.
3106 *VANILLA, OLEORESIN-- <i>Vanilla planifolia</i> Andrews or <i>V. tahitensis</i> J. W. Moore	26	190.	290.	210.	300.	(1)230.		Condiments (1)200.		
3107 VANILLIN--Methylprotocatechuic aldehyde; Vanillic aldehyde; 4-Hydroxy-3-methoxybenzaldehyde	127	63.	95.	200.	220.	120.	270.	Chocolate 970. Toppings 150.	Margarine (1)0.20	Syrups 330. 20,000.
3108 VANILLIN ACETATE--Acetyl vanillin	3	11.	11.	28.	28.					
3109 VERATRALDEHYDE--Vanillin methyl ether; Veratric aldehyde; 3,4-Dimethoxybenzenecarbal; Dimethyl ether protocatechualdehyde	12	9.0	9.2	32.	36.	(1)15.				
3110 *VIOLET LEAVES, ABSOLUTE-- <i>Viola odorata</i> L.	5	2.3	8.4	7.6	2.0 24.					
3111 WALNUT HULL, EXTRACT-- <i>Juglans nigra</i> L. or <i>J. regia</i> L.	3	43. 90.	100. 170.	(1)130.	100. 130.					
3112 WINTERGREEN, EXTRACT [<i>Gaultheria procumbens</i> L.]--Checkerberry, extract	4	10. 10.	-	900. 5,000.	-					
3113 WINTERGREEN, OIL [<i>Gaultheria procumbens</i> L.]--Checkerberry, oil	22	56.	44.	260.	1,500.		3,900.			
3114 WORMWOOD! [<i>Artemisia absinthium</i> L.]--Absinthium	4	360.	-	-	-			Alcoholic Beverages (1)5.0		
3115 WORMWOOD, EXTRACT! [<i>Artemisia absinthium</i> L.]--Absinthium, extract	8	15. 43.	(1)170.	(1)130.	-			Alcoholic Beverages 10. 40.		
3116 WORMWOOD, OIL! [<i>Artemisia absinthium</i> L.]--Absinthium, oil	11	14.	0.50 32.	9.0	(1)2.0			Alcoholic Beverages 11.		
3117 YARROW, HERB [<i>Achillea millefolium</i> L.]--Milfoil	6	29.	-	-	-			Alcoholic Beverages 5.0 40.		
3118 YERBA SANTA, FLUID EXTRACT-- <i>Eriodictyon californicum</i> (Hook. and Arn.) Torr.	2	(1)25.	(1)200.	(1)400.	(1)400.					
3119 *YLANG YLANG, OIL-- <i>Cananga odorata</i> Hook. f. and Thomson	16	0.95	1.4	2.9	2.9		18. 25.	Icings (1)0.75		
3120 YUCCA, JOSHUA TREE-- <i>Yucca brevifolia</i> Engelm.	9	120.	(1)20.	-	-					
3121 YUCCA, MOHAVE, EXTRACT [<i>Yucca schidigera</i> Roehl. ex Ortgies (<i>Y. mohavensis</i> Sarg.)--Cactus root, extract; Plantarome	10	150.	-	-	-					
3122 *ZEDOARY-- <i>Curcuma zedoaria</i> (Berg.) Rosc.	4	7.5 2,000.	-	-	-					
3123 *ZEDOARY BARK, EXTRACT-- <i>Curcuma zedoaria</i> (Berg.) Rosc.	0	-	-	-	-					
3124 ZINGERONE--4-(4-Hydroxy-3-methoxyphenyl)-2-butanone; Zingiberone	6	6.9	7.8	11.	11.		(1)15.			

! Provided it is used at levels such that no thujone is detectable in the finished food, using the standard AOAC method.

BECAUSE of the unusual expenses involved in the composition, printing, and distribution of so lengthy an article, it is necessary to charge \$5 for each reprint. Requests for reprints should be sent to either of the authors at the addresses listed below. Reprint requests must be accompanied by a check or money order in the appropriate amount, which should be made payable to the Flavoring Extract Manufacturers' Association Food Additives Fund.

DR. RICHARD L. HALL, MCCORMICK & COMPANY,
INC., BALTIMORE, MARYLAND 21202

DR. BERNARD L. OSER, FOOD AND DRUG RESEARCH
LABORATORIES, INC., MAURICE AVENUE AT
58TH STREET, MASPETH, NEW YORK, 11378

Reprinted for

FLAVORING EXTRACT MANUFACTURERS' ASSOCIATION
