

**APPENDIX D  
FLAVORING SUBSTANCES**

FEMA No. and Priority <sup>1</sup>	CAS No. and OSHA IMIS <sup>2</sup> No.	Substance	Synonyms	PEL	IDLH <sup>3</sup>	Respiratory Acute <sup>3,4</sup>	Analytical Method <sup>2</sup>	Sampling Medium <sup>2</sup>	Air Volume and Sampling Rate <sup>2</sup>
1231 Low	78-92-2 0461	sec-Butyl alcohol	2-Butanol; Butylene hydrate; 2-Hydroxybutane; Methyl ethyl carbinol <sup>3</sup>	TWA 150 ppm (450 mg/m <sup>3</sup> )	2000 ppm	Irritating to respiratory tract	NIOSH 1401	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2003 High	75-07-0 0010	Acetaldehyde	Acetic aldehyde; ethanal; ethyl aldehyde <sup>3</sup>	TWA 200 ppm (360 mg/m <sup>3</sup> )	2000 ppm	Mildly irritating to respiratory tract	OSHA 68	HMP-coated XAD-2 tube (450/225 mg)	3 L 0.05 L/min
2006 High	64-19-7 0020	Acetic acid	Acetic acid (aqueous); glacial acetic acid (pure compound); ethanoic acid; methane-carboxylic acid <sup>3</sup>	TWA 10 ppm (25 mg/m <sup>3</sup> )	50 ppm	Pulmonary edema	OSHA PV2119	Charcoal tube (400/200 mg)	48 L 0.2 L/min
2008 High	513-86-0 A624	Acetoin	Acetyl methyl carbinol; 1-hydroxyethyl methyl ketone; gamma-hydroxy-beta oxybutane; 3-hydroxy-2,3-butanone; 2,3-butanolone; dimethylketol <sup>2</sup>	None	No Data in NPG		NIOSH 2558	Anasorb CMS tube (150/75 mg)	10L 0.2 L/min
2035 High	870-23-5	Allyl mercaptan	2-Propene-1-thiol <sup>5</sup>	None	No Data in NPG				
2053 High	12124-99-1	Ammonium sulfide	Ammonium sulfide; ammonium sulphide; ammonium hydrogen sulfide; ammonium hydrosulfide; ammonium mercaptan; ammonium sulfhydrate; monoammonium sulfide <sup>6</sup>	None	No Data in NPG	Strong irritant to skin and mucous membranes <sup>5</sup>			
2055 Low	123-92-2 1530	Isoamyl acetate	Banana oil; isopentyl acetate; 3-methyl-1-butanol acetate; 3-methylbutyl ester of acetic acid; 3-methyl-butyl ethanoate <sup>3</sup>	TWA 100 ppm (525 mg/m <sup>3</sup> )	1000 ppm	Irritating to respiratory tract	OSHA PV2142	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2057	123-51-3 1532	Isoamyl alcohol	Primary isoamyl alcohol; fermentation amyl alcohol; fusel oil; isobutyl carbinol; isopentyl alcohol; 3-methyl-1-butanol <sup>3</sup>	TWA 100 ppm (360 mg/m <sup>3</sup> )	500 ppm	Irritating to respiratory tract	NIOSH 1402	Charcoal tube (100/50 mg)	10 L 0.2 L/min

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2127 High	100-52-7 B105	Benzaldehyde	Benzoic aldehyde; benzenecarbonyl; benzene carbaldehyde <sup>3</sup>	None	No Data in NPG				
2147 Low	100-53-8	Benzyl mercaptan	$\alpha$ -Toluenethiol; benzylthiol <sup>5</sup>	None	No Data in NPG	Toxic by inhalation and ingestion; irritant to tissue <sup>5</sup>			
2170 Low	78-93-3 0430	2-Butanone	Ethyl methyl ketone; MEK; methyl acetone; methyl ethyl ketone <sup>3</sup>	TWA 200 ppm (590 mg/m <sup>3</sup> )	3000 ppm	Irritating to respiratory tract	OSHA 1004	Anasorb CMS (150/75 mg)  SKC 575-002 Passive Sampler  3M 3520 Organic Vapor Monitor	12 L 0.05 L/min  5 to 240 min  5 to 240 min
2174 Low	123-86-4 0440	Butyl acetate	n-Butyl acetate; n-butyl ester of acetic acid; butyl ethanoate <sup>3</sup>	TWA 150 ppm (710 mg/m <sup>3</sup> )	1700 ppm [10%LEL]	Irritating to respiratory tract	OSHA 1009	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2175 Low	110-19-0 1534	Isobutyl acetate	Isobutyl ester of acetic acid; 2-methylpropyl acetate; 2-methylpropyl ester of acetic acid; b-methylpropyl ethanoate <sup>3</sup>	TWA 150 ppm (700 mg/m <sup>3</sup> )	1300 ppm [10%LEL]	Irritating to respiratory tract	OSHA 1009	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2178 Low	71-36-3 0460	Butyl alcohol	n-Butyl alcohol; 1-butanol; n-butanol; 1-hydroxy-butane; n-propyl carbinol <sup>3</sup>	TWA 100 ppm (300 mg/m <sup>3</sup> )	1400 ppm [10%LEL]	Irritating to respiratory tract	NIOSH 1401	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2179 Low	78-83-1 1536	Isobutyl alcohol	IBA; isobutanol; isopropylcarbinol; 2-methyl-1-propanol <sup>3</sup>	TWA 100 ppm (300 mg/m <sup>3</sup> )	1600 ppm	Irritating to respiratory tract	NIOSH 1401	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2219 Low	123-72-8	Butyraldehyde	Butaldehyde; n-butanal; n-butyraldehyde; butyric aldehyde <sup>5</sup>	None	No Data in NPG				

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2220 High	78-84-2 R237	Isobutyraldehyde	2-Methylpropanal; isobutyric aldehyde; isopropylformaldehyde; isobutnal; methyl propanal; valine aldehyde; isobutaldehyde; 2-methylpropionaldehyde <sup>3</sup>	None	No Data in NPG		NIOSH 2539 (OSHA modified)	HMP-coated XAD-2 tube (150/75 mg)	5 L 0.05 L/min
2221 High	107-92-6 B709	Butyric acid	Butanoic acid; ethylacetic acid; propylformic acid <sup>3</sup>	None	No Data in NPG		SLTC in-house literature file	Silica Gel tube (520/260 mg)	18 L 0.1 L/min
2222 High	79-31-2	Isobutyric acid	2-Methylpropanoic acid <sup>3</sup>	None	No Data in NPG				
2230 Low	76-22-2 0522	Camphor	2-Camphonone; Synthetic camphor; Gum camphor; Laurel camphor <sup>3</sup>	2 mg/m <sup>3</sup>	200 mg/m <sup>3</sup>	Irritating to respiratory tract, skin, and eyes	NIOSH 1301	Charcoal tube (100/50 mg)	24 L 0.2 L/min
2286 Low	104-55-2	Cinnamaldehyde	3-Phenylpropenal; cinnamyl aldehyde; cinnamic aldehyde <sup>5</sup>	None	No Data in NPG				
2370 High	431-03-8 D740	Diacetyl	Biacetyl; 2,3-butanedione; 2,3-diketobutane; dimethyldiketone; dimethylglyoxal; glyoxal, dimethyl <sup>2</sup>	No PEL	No Data in NPG		OSHA PV2118	Two silica gel tubes in-series (150/75 mg each)	3 L 0.05 L/min
2414 Low	141-78-6 1040	Ethyl acetate	Acetic ester; acetic ether; ethyl ester of acetic acid; ethyl ethanoate <sup>3</sup>	TWA 400 ppm (1400 mg/m <sup>3</sup> )	2000 ppm [10%LEL]	Irritating to respiratory tract	NIOSH 1457	Charcoal tube (100/50 mg); ship cold to lab	6 L 0.2 L/min
2418 High	140-88-5 1050	Ethyl acrylate	Ethyl acrylate (inhibited); ethyl ester of acrylic acid; ethyl propenoate <sup>3</sup>	TWA 25 ppm (100 mg/m <sup>3</sup> ) [skin]	Ca [300 ppm]	Irritating to respiratory tract	OSHA 92	TBC coated Charcoal tube (110/55 mg)	12 L 0.05 L/min
2419 Low	64-17-5 1060	Ethyl alcohol	Alcohol; ethanol; EtOH; grain alcohol; <sup>3</sup> cologne spirit <sup>3</sup>	TWA 1000 ppm (1900 mg/m <sup>3</sup> )	3300 ppm [10%LEL]	Irritating to respiratory tract	OSHA 100	Two Anasorb 747 tubes in-series (400/200 mg); separate tubes after sampling	12L 0.05 L/min

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2434 Low	109-94-4 1155	Ethyl formate	Ethyl ester of formic acid; ethyl methanoate <sup>3</sup>	TWA 100 ppm (300 mg/m <sup>3</sup> )	1500 ppm	Irritating to respiratory tract	NIOSH 1452	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2487 High	64-18-6 1310	Formic acid	Formic acid (85%–95% in aqueous solution); hydrogen carboxylic acid; methanoic acid <sup>3</sup>	TWA 5 ppm (9 mg/m <sup>3</sup> )	30 ppm	Corrosive, Pulmonary edema	OSHA ID 186SG	Charcoal tube (400/200 mg) ship cold to lab	48 L 0.2 L/min
2489 High	98-01-1 1325	Furfural	Fural; 2-furancarboxaldehyde; furfuraldehyde; 2-furfuraldehyde <sup>3</sup>	TWA 5 ppm (20 mg/m <sup>3</sup> ) [skin]	100 ppm	Irritating to respiratory tract	OSHA 72	Petroleum-base Charcoal tube (100/50)	180 L 1.0 L/min
2491 Low	98-00-0 1330	Furfuryl alcohol	2-Furylmethanol; 2-hydroxymethylfuran <sup>3</sup>	TWA 50 ppm (200 mg/m <sup>3</sup> )	75 ppm	Irritating to respiratory tract	NIOSH 2505	Porapak Q tube (150/75 mg)	25 L 0.05 L/min
2525	56-81-5 1363	Glycerol	Glycerin (anhydrous); glyceryl alcohol; 1,2,3-propanetriol; trihydroxypropane <sup>3</sup>	TWA 15 mg/m <sup>3</sup> (total) TWA 5 mg/m <sup>3</sup> (resp)	No Data in NPG	Irritating to respiratory tract	OSHA PV2121	Tared 37-mm low-ash PCV filter	960 L 2.0 L/min (Total Dust) 10-mm Nylon Cyclone; 816 L 1.7 L/min (Respirable Fraction)
2544	110-43-0 1675	2-Heptanone	Amyl methyl ketone; n-amyl methyl ketone; methyl (n-amyl) ketone <sup>3</sup>	TWA 100 ppm (465 mg/m <sup>3</sup> )	800 ppm	Irritating to respiratory tract	NIOSH 1301	Charcoal tube (100/50 mg)	25 L 0.2 L/min
2676 Low	79-20-9 1650	Methyl acetate	Methyl ester of acetic acid; methyl ethanoate <sup>3</sup>	TWA 200 ppm (610 mg/m <sup>3</sup> )	3100 ppm [10%LEL]	Irritating to respiratory tract	NIOSH 1458	Charcoal tube (100/50 mg)	7 L 0.2 L/min
2691 Low	96-17-3	2-Methylbutraldehyde	2-Methylbutanal <sup>5</sup>	None	No Data in NPG				

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2692 Low	590-86-3 1201	3-Methylbutyr- aldehyde	Isovaleral; isovaleral; isovaleric aldehyde; 3- methylbutyraldehyde <sup>5</sup>	None	No Data in NPG		SLTC in- house literature file	Three DNPH- coated filters; two stacked, one separated by a cassette ring; store collected samples in dark	3 L 0.05 L/min
2716 High	74-93-1 1643	Methyl mercaptan	Mercaptomethane; methanethiol; methyl sulfhydrate <sup>3</sup>	C 10 ppm (20 mg/m <sup>3</sup> )	150 ppm	Irritating to respiratory tract	OSHA 26	Mercuric acetate- coated 37- mm glass fiber filter	20 L 0.2 L/min
2731 Low	108-10-1 1385	4-Methyl-2- pentanone	Isobutyl methyl ketone; methyl isobutyl ketone; MIBK; hexone <sup>3</sup>	TWA 100 ppm (410 mg/m <sup>3</sup> )	500 ppm	Irritating to respiratory tract	OSHA 1004	Anasorb CMS (150/75 mg)  SKC 575- 002 Passive Sampler  3M 3520 Organic Vapor Monitor	12 L 0.05 L/min  5 to 240 min  5 to 240 min
2742 Low	554-12-1	Methyl propionate	Propionic acid, methyl ester; methyl propanoate; methyl propylate; propanoic acid, methyl ester <sup>6</sup>	None	No Data in NPG				
2746 High	75-18-3 D650	Methyl sulfide	Dimethyl sulfide; dimethyl sulphide; thiobismethane; DMS; methylthiomethane; 2- thiopropene; 2-thiapropene <sup>3</sup>	None	No Data in NPG		SLTC in- house literature file	Charcoal tube (100/50 mg)	5 L 0.1 L/min
2842 Low	107-87-9 2010	2-Pentanone	Ethyl acetone; methyl propyl ketone; MPK <sup>3</sup>	TWA 200 ppm (700 mg/m <sup>3</sup> )	1500 ppm	Irritating to respiratory tract	NIOSH 1300	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2908 High	110-89-4 R269	Piperidine	Cyclopentimine; azacyclohexane; cypentil; hexahydropyridine; hexazane; pentamethyleneimine; pentaethyleneimine; pyridine, hexahydro <sup>3</sup>	None	No Data in NPG				

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2923 High	123-38-6 P129	Propionaldehyde	Propanal; propyl aldehyde; propionic aldehyde <sup>5</sup>	None	No Data in NPG	suffocating odor <sup>5</sup>			
2925 Low	109-60-4 2180	Propyl acetate	n-Propyl acetate; n-propyl ester of acetic acid <sup>3</sup>	TWA 200 ppm (840 mg/m <sup>3</sup> )	1700 ppm	Irritating to respiratory tract	NIOSH 1450	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2926 Low	108-21-4 1540	Isopropyl acetate	Isopropyl ester of acetic acid; 1-methylethyl ester of acetic acid; 2-propyl acetate <sup>3</sup>	TWA 250 ppm (950 mg/m <sup>3</sup> )	1800 ppm	Irritating to respiratory tract	NIOSH 1454	Charcoal tube (100/50 mg)	9 L 0.2 L/min
2928 Low	71-23-8 2170	Propyl alcohol	n-Propyl alcohol; ethyl carbinol; 1-propanol; n-propanol <sup>3</sup>	TWA 200 ppm (500 mg/m <sup>3</sup> )	800 ppm	Irritating to respiratory tract	NIOSH 1401	Charcoal tube (100/50 mg)	10 L 0.2 L/min
2929 Low	67-63-0 1560	Isopropyl alcohol	Dimethyl carbinol; IPA; isopropanol; 2-propanol; sec-propyl alcohol; rubbing alcohol <sup>3</sup>	TWA 400 ppm (980 mg/m <sup>3</sup> )	2000 ppm [10%LEL]	Irritating to respiratory tract	OSHA 109	Two Anasorb 747 tubes in-series (400/200 mg); separate tubes after sampling; ship cold to lab	18 L 0.2 L/min
2943 Low	110-74-7	Propyl formate	Formic acid, propyl ester; propyl methanoate; propylformate <sup>6</sup>	None	No Data in NPG				
2944 Low	625-55-8	Isopropyl formate	Formic acid, isopropyl ester; isopropyl formate; isopropyl methanoate; isopropylformate <sup>6</sup>	None	No Data in NPG				
2966 High	110-86-1 2220	Pyridine	Azabenzene; azine <sup>3</sup>	TWA 5 ppm (15 mg/m <sup>3</sup> )	1000 ppm	Irritating to respiratory tract	SLTC in-house file	Two XAD-7 tubes in-series (100/50 mg); separate tubes after sampling	10 L 0.1 L/min

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3039 High	7446-09-5 2290	Sulfur dioxide	Sulfurous acid anhydride; sulfurous oxide; sulfur oxide <sup>3</sup>	TWA 5 ppm (13 mg/m <sup>3</sup> )	100 ppm	Irritating to respiratory tract	NIOSH 6004	MCEF filter followed by Na <sub>2</sub> CO <sub>3</sub> -coated cellulose filter	200 L 1.5 L/min
3173 Low	5077-67-8	1-Hydroxy-2-butanone		None	No Data in NPG				
3217 High	764-40-9	2,4 Pentadienal		None	No Data in NPG				
3218 High	764-39-6	2-Pentenal		None	No Data in NPG				
3219 High	107-85-7	Isopentylamine	1-Amino-3-methylbutane <sup>6</sup>	None	No Data in NPG				
3223 High	108-95-2 2040	Phenol	Carbolic acid; hydroxybenzene; monohydroxy-benzene; phenyl alcohol; phenyl hydroxide <sup>3</sup>	TWA 5 ppm (19 mg/m <sup>3</sup> ) [skin]	250 ppm	Corrosive, Pulmonary edema	OSHA 32	XAD-7 tube (100/50 mg)	24 L 0.1 L/min
3233 Low	100-42-5 2280	Styrene	Ethenyl benzene; phenylethylene; styrene monomer; styrol; vinyl benzene <sup>3</sup>	TWA 100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)	700 ppm	Irritating to respiratory tract	OSHA 89	TBC-coated Charcoal tube (100/50 mg)	12 L 0.05 L/min
3326 Low	67-64-1 0040	Acetone	Dimethyl ketone; ketone propane; 2-propanone <sup>3</sup>	TWA 1000 ppm (2400 mg/m <sup>3</sup> )	2500 ppm [10%LEL]	Irritating to respiratory tract	OSHA 69	Carbosieve S-III tube (130/65 mg)	3 L 0.05 L/min
3368 Low	141-79-7 1635	4-Methyl-3-penten-2-one	Isobutenyl methyl ketone; isopropylideneacetone; methyl isobutenyl ketone; mesityl oxide <sup>3</sup>	TWA 25 ppm (100 mg/m <sup>3</sup> )	1400 ppm [10%LEL]	Irritating to respiratory tract	NIOSH 1301	Charcoal tube (100/50 mg)	10 L 0.2 L/min

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3382 Low	1629-58-9	1-Penten-3-one	Ethyl vinyl ketone <sup>6</sup>	None	No Data in NPG				
3407 Low	497-70-0	2-Methyl-2-butenal		None	No Data in NPG				
3417 Low	625-33-2	3-Penten-2-one	Ethylidene acetone; methyl propenyl keto <sup>6</sup>	None	No Data in NPG				
3478 Low	109-79-5 0480	1-Butanethiol	Butanethiol; n-butanethiol; 1-mercaptobutane; n-butyl mercaptan <sup>3</sup>	TWA 10 ppm (35 mg/m <sup>3</sup> )	500 ppm	Irritating to respiratory tract	SLTC in-house literature file	Mercuric acetate-coated 37-mm glass fiber filter	20 L 0.2 L/min
3521 High	107-03-9	Propanethiol	3-Mercapto-propane; propane-1-thio; propyl mercaptan; n-propyl mercaptan <sup>3</sup>	None	No Data in NPG				
3523 High	123-75-1	Pyrrolidine	Azacyclopentane, prolamine, pyrrole, tetrahydro-; tetrahydropyrrole, tetramethyleneimi <sup>6</sup>	None	No Data in NPG				
3536 Low	624-92-0	Dimethyl disulfide	Methyl disulfide; dimethyl disulfide; dimethyldisulphide, dimethyldisulfide, disulphide, dimethyl; disulfide, dimethyl; 2, 3-dithiabutane; DMDS Evolution <sup>6</sup>	None	No Data in NPG		SLTC in-house literature file	Charcoal tube (100/50 mg)	10 L 0.1 L/min
3537	108-83-8 0924	2,6-Dimethyl-4-heptanone	Diisobutyl ketone; DIBK; sym-diisopropyl acetone; isovalerone; valerone <sup>3</sup>	TWA 50 ppm (290 mg/m <sup>3</sup> )	500 ppm	Irritating to respiratory tract	NIOSH 1300	Charcoal tube (100/50 mg)	25 L 0.2 L/min
3553 Low	78-59-1 1538	Isophorone	Isoacetophorone; 3,5,5-trimethyl-2-cyclohexenone; 3,5,5-trimethyl-2-cyclohexen-1-one <sup>3</sup>	TWA 25 ppm (140 mg/m <sup>3</sup> )	200 ppm	Irritating to respiratory tract	NIOSH 2508	Petroleum-based Charcoal tube (100/50 mg)	12 L 0.2 L/min
3584 Low	616-25-1	1-Penten-3-ol	Ethyl vinyl carbinol; 1-pentenol-3 <sup>6</sup>	None	No Data in NPG				



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3646 Low	107-86-8	3-Methyl-2-butenal	3-Methyl-2-butenal; 3, 3-dimethylacrylaldehyde; 3, 3-dimethylacrolein; 3-methylcrotonaldehyde; senecioaldehyde <sup>6</sup>	None	No Data in NPG				
3647 Low	556-82-1	3-Methyl-2-buten-1-ol	2-Buten-1-ol, 3-methyl-; dimethylallyl alcohol; gamma, gamma-dimethylallyl alcohol; 3, 3-dimethylallyl alcohol; prenyl; prenyl alcohol <sup>6</sup>	None	No Data in NPG				
3667 Low	101-84-8 2047	Diphenyl ether	Diphenyl oxide; phenoxy benzene; phenyl oxide; phenyl ether <sup>3</sup>	TWA 1 ppm (7 mg/m <sup>3</sup> )	100 ppm	Irritating to respiratory tract	SLTC in-house file	XAD-7 tube (100/50 mg)	20 L 0.2 L/min
3779 High	7783-06-4 1480	Hydrogen sulfide	Hydrosulfuric acid; sewer gas; sulfuretted hydrogen <sup>3</sup>	C 20 ppm 50 ppm [10-minute maximum peak]	100 ppm	Irritating to respiratory tract, Pulmonary edema	OSHA 1008	Special sampling tube containing uncoated GFF followed by Na <sub>2</sub> CO <sub>3</sub> -coated GFF followed by two AgNO <sub>3</sub> -coated silica gel beds (200/200 mg)	7.5 L 0.5 L/min ceiling  5 L 0.5 L/min Peak
3860 Low	624-89-5	Methyl ethyl sulfide		None	No Data in NPG				
3897 High	75-33-2 S248	2-Propanethiol	Isopropanethiol; 2-propanethion; 2-mercaptopropane <sup>3</sup>	None	No Data in NPG				
3898 High	5724-81-2	1-Pyrrolidine		None	No Data in NPG				

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3909 Low	108-94-1 0830	Cyclohexanone	Anone; cyclohexyl ketone; pimelic ketone <sup>3</sup>	TWA 50 ppm (200 mg/m <sup>3</sup> )	700 ppm	Irritating to respiratory tract	OSHA 1	Chromosorb 106 tube (100/50 mg)	10 L 0.2 L/min
3946 Low	583-60-8 1765	2-Methylcyclohexanone	o-Methylcyclohexanone <sup>3</sup>	TWA 100 ppm (460 mg/m <sup>3</sup> ) [skin]	600 ppm	Irritating to respiratory tract	NIOSH 2521	Porapak Q tube (150/75 mg)	6 L 0.05 L/min
3965 Low	78-96-6 A606	1-Amino-2-Propanol	Isopropanolamine; 1-aminopropan-2-ol; aminopropyl alcohol; 2-hydroxypropylamine <sup>3</sup>	None	No Data in NPG		OSHA PV2122	NTIC-coated XAD-2 tube (80/40 mg)	20 L 0.1 L/min
	Not applicable 9135	Particulates not otherwise regulated (Total Dust)	PNOR (Total Dust)	15 mg/m <sup>3</sup>			OSHA PV2121	Tared 37-mm low-ash PCV filter	960 L 2.0 L/min
	Not applicable 9130	Particulates not otherwise regulated (Respirable Fraction)	PNOR (Respirable Fraction)	5 mg/m <sup>3</sup>			OSHA PV2121	Tared 37-mm low-ash PCV filter	10-mm Nylon Cyclone; 816 L 1.7 L/min

Notes:

<sup>1</sup> The high/low Priority notations were assigned by the Flavoring Extract Manufacturers Association (FEMA). The priority levels were assigned based on inhalation exposure data, chemical structure, and volatility. FEMA stated that the higher priority chemicals pose a greater risk of respiratory injury, whereas, the lower priority chemicals pose a hazard only in more extreme circumstances of exposure.

NPG = NIOSH Pocket Guide to Chemical Hazards (referenced below).

References:

- <sup>2</sup> OSHA Chemical Sampling Information [http://osha.gov/dts/chemicalsampling/toc/toc\\_chemsamp.html](http://osha.gov/dts/chemicalsampling/toc/toc_chemsamp.html)  
<sup>3</sup> NIOSH Pocket Guide to Chemical Hazards. <http://www.cdc.gov/niosh/npg/>  
<sup>4</sup> International Chemical Safety Cards. <http://www.cdc.gov/niosh/ipcs/ipccard.html>  
<sup>5</sup> Lewis, R.J. *Hawley's Condensed Chemical Dictionary*, 14<sup>th</sup> Edition [CD-ROM] Wiley Interscience: New York, 2002.  
<sup>6</sup> ChemWatch Material Data Safety Sheet. <http://osha.chemwatch.us/> (accessed May 22, 2007 by paid subscription).