Indirect Precursors of Perfluorooctane Sulfonate (PFOS): Human health tier II assessment

21 April 2016

Chemicals in this assessment

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester	376-14-7
Acrylic acid, ester with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide	423-82-5
1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, iodide	1652-63-7
1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-	1691-99-2
1-Octanesulfonamide, N,N',N''-[phosphinylidynetris(oxy-2,1-ethanediyl)]tris[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	2250-98-8
Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt	2991-51-7

Chemical Name in the Inventory	CAS Number
1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-	3820-83-5
1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-	24448-09-7
Poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-	29117-08-6
1-Octanesulfonamide, N,N'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt	30381-98-7
1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-	31506-32-8
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-	37338-48-0
1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, chloride	38006-74-5
1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N,N-bis(2-hydroxyethyl)-	40630-61-3
Benzoic acid, 2,3,4,5-tetrachloro-6-[[[3-[[(heptadecafluorooctyl)sulfonyl]oxy]phenyl]amino]carbonyl]-, monopotassium salt	57589-85-2
Carbamic acid, (4-methyl-1,3-phenylene)bis-, bis[2-[ethyl[(perfluoro-C4-8-alkyl)sulfonyl]amino]ethyl] ester	68081-83-4
Poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-methoxy-	68958-61-2
1-Octanesulfonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, monohydrochloride	67939-88-2
1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-, diammonium salt	67969-69-1

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, butyl ester, telomer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-hydroxypoly(oxy-1,4-butanediyl), .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,4-butanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate,2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol	68227-96-3
1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl](3-sulfopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, inner salt	68298-11-3
2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[butyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, methyloxirane polymer with oxirane di-2-propenoate, methyloxirane polymer with oxirane mono-2-propenoate and 1-octanethiol	68298-62-4
2-Propenoic acid, 2-methyl-, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl ester, telomer with butyl 2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,5-undecafluoropentyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[(1,1,2,2	68298-78-2

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, 2-methyl-, 4-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]butyl ester, telomer with butyl 2-propenoate, 2-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 4-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]butyl 2-methyl-2-propenoate, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propen-1-yl)-.omega.-hydroxypoly(oxy-1,4-butanediyl), .alpha.-(2-methyl-1-oxo-2-propen-1-yl)-.omega.-[(2-methyl-1-oxo-2-propen-1-yl)oxy]poly(oxy-1,4-butanediyl), 4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]butyl 2-methyl-2-propenoate, 2-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]butyl 2-me	68299-39-8
2-Propenoic acid, eicosyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, hexadecyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and octadecyl 2-propenoate	68329-56-6
2-Propenoic acid, butyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl2-propenoate	68555-90-8
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	68555-91-9

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, 2-methyl-, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	68555-92-0
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-chloro-1,3-butadiene, 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate	68568-77-4
2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, telomer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-hydroxypoly(oxy-1,2-ethanediyl), .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol	68586-14-1
Sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,3-diisocyanatomethylbenzene polymer	68608-13-9
Sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,1'-methylenebis[4-isocyanatobenzene]	68608-14-0

Chemical Name in the Inventory	CAS Number
1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-, reaction products with N-ethyl-1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-1-butanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-1-hexanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,5-undecafluoro-N-(2-hydroxyethyl)-1-pentanesulfonamide, polymethylenepolyphenylene isocyanate and stearyl alcohol	68649-26-3
2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-propenoate	68797-76-2
2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)	68867-60-7
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 1-octanethiol and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)	68867-62-9
Chromium, diaquatetrachloro[.mu.-[N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]glycinato-O1:O1']]-.mu.-hydroxybis[2-methylpropanol]di-	68891-96-3

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, eicosyl ester, polymer with branched octyl 2-propenoate, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate, octadecyl 2-propenoate and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)	68909-15-9
2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 1,1-dichloroethene, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate	70776-36-2
2-Propenoic acid, 2-methyl-, 2-[[[[5-[[[4-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]butoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl ester, telomer with butyl 2-propenoate, 2-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,5-undecafluoropentyl	70900-40-2
Glycine, N-[(heptadecafluorooctyl)sulfonyl]-, monopotassium salt	75260-69-4

Chemical Name in the Inventory	CAS Number
Fatty acids, C18-unsatd., trimers, reaction products with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8 heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-1-octanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-1-butanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-N-methyl-1-heptanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-N-methyl-1-hexanesulfonamide and 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-N-(2-hydroxyethyl)-N-methyl-1-pentanesulfonamide	161074-58-4
Sulfonamides, C4-8 -alkane, perfluoro, N-(hydroxyethyl)- N-methyl, reaction products with 12-hydroxystearic acid and 2,4 -TDI, ammonium salts	306973-47-7
Propanoic acid, 3-hydroxy- 2-(hydroxymethyl) -2-methyl-, polymer with 2-ethyl -2-(hydroxymethyl) -1,3-propanediol and N, N', 2-tris(6-isocyanatohexyl) imidodicarbonic diamide reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8 heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide and N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulfonamide, compds. with triethylamine	306975-56-4
Sulfonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with epichlorohydrin, adipates (esters)	91081-99-1
Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-ethoxyethyl 2-propenoate, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino] ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-propenoate	92265-81-1
1-Propanesulfonic acid, 3-[[3-(dimethylamino)propyl] [(heptadecafluorooctyl)sulfonyl]amino]-2-hydroxy-, monosodium salt	94133-90-1
1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl](2-hydroxy-3-sulfopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, monosodium salt	94133-91-2
Carbamic acid, [5-[[[2-[[(heptadecafluorooctyl)sulfonyl]methylamino] ethoxy]carbonyl]amino]-2-methylphenyl]-, 9-octadecenyl ester, (Z)-	94313-84-5

Chemical Name in the Inventory	CAS Number
2-Propenoic acid, 2-methyl-, polymers with butyl methacrylate, lauryl methacrylate and 2-[methyl[(perfluoro-C4-8-alkyl)sulfonyl]amino]ethyl methacrylate	127133-66-8
9-Octadecenoic acid (Z)-, reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide	185630-90-4
Sulfonamides, C4-8-alkane, perfluoro, N-[3-(dimethylamino)propyl], reaction products with acrylic acid	192662-29-6
1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, reaction products with succinic anhydride monopolyisobutylene derivs.	253682-96-1
2-Propenoic acid, butyl ester, polymer with 2[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl 2-propenoate and 2-methylpropyl 2-propenoate	594864-11-6
Sulfonamides, C4-8-alkane, perfluoro, N-[4,7-dimethyl-4-[[(1-methylpropylidene)amino]oxy]-3,5-dioxa-6-aza-4-silanon-6-en-1-yl]-N-ethyl	944578-05-6

Preface

This assessment was carried out by staff of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) using the Inventory Multi-tiered Assessment and Prioritisation (IMAP) framework.

The IMAP framework addresses the human health and environmental impacts of previously unassessed industrial chemicals listed on the Australian Inventory of Chemical Substances (the Inventory).

The framework was developed with significant input from stakeholders and provides a more rapid, flexible and transparent approach for the assessment of chemicals listed on the Inventory.

Stage One of the implementation of this framework, which lasted four years from 1 July 2012, examined 3000 chemicals meeting characteristics identified by stakeholders as needing priority assessment. This included chemicals for which NICNAS already held exposure information, chemicals identified as a concern or for which regulatory action had been taken overseas, and chemicals detected in international studies analysing chemicals present in babies' umbilical cord blood.

Stage Two of IMAP began in July 2016. We are continuing to assess chemicals on the Inventory, including chemicals identified as a concern for which action has been taken overseas and chemicals that can be rapidly identified and assessed by using Stage One information. We are also continuing to publish information for chemicals on the Inventory that pose a low risk to human health or the environment or both. This work provides efficiencies and enables us to identify higher risk chemicals requiring assessment.

The IMAP framework is a science and risk-based model designed to align the assessment effort with the human health and environmental impacts of chemicals. It has three tiers of assessment, with the assessment effort increasing with each tier. The

Tier I assessment is a high throughput approach using tabulated electronic data. The Tier II assessment is an evaluation of risk on a substance-by-substance or chemical category-by-category basis. Tier III assessments are conducted to address specific concerns that could not be resolved during the Tier II assessment.

These assessments are carried out by staff employed by the Australian Government Department of Health and the Australian Government Department of the Environment and Energy. The human health and environment risk assessments are conducted and published separately, using information available at the time, and may be undertaken at different tiers.

This chemical or group of chemicals are being assessed at Tier II because the Tier I assessment indicated that it needed further investigation.

For more detail on this program please visit:**www.nicnas.gov.au**

Disclaimer

ACRONYMS & ABBREVIATIONS

Grouping Rationale

The chemicals in this group are perfluoroalkyl sulfonates (PFSAs) and related compounds containing a chain of eight perfluorinated carbon atoms linked to a sulfonyl or sulfonamide group. Some members of this group include a range of perfluorinated chain lengths up to eight carbon atoms in length.

NICNAS has developed an action plan to assess and manage chemicals which may degrade to perfluorinated carboxylic acids (PFCAs), PFSAs and similar chemicals, which can be found in Appendix G of the Handbook for Notifiers on the NICNAS website (NICNASa). The primary assumption outlined in this action plan is that chemicals with a perfluorinated chain terminated by a sulfonyl group will degrade to the PFSAs.

On this basis, the chemicals in this group are considered to have the potential to degrade into the environmentally persistent perfluorooctane sulfonate (PFOS) anion and, therefore, are considered to be indirect PFOS precursors (Environment Canada, 2012). Some of the chemicals might also release shorter chain PFSAs, but the toxicity profile will be dominated by the most toxic degradant, PFOS.

The degradation of PFOS is very slow compared with its rate of formation from precursor degradation and PFOS will be the final degradant from all of these precursors. Therefore, the amount of the PFOS in the environment (general or local) is expected to be higher than that of any of the individual precursors. Whilst polymeric precursors generally do not present significant risks, direct exposure to their degradation products, such as PFOS, can pose health risks. However, the available information indicates that any use of these small molecule precursors is in small volume and/or low concentrations in Australia (see **Australian import, manufacture and use**). Consequently, the most important health risk is expected to arise from secondary exposure to PFOS through the environment. As such, the focus of this assessment is on the long-term effects of the chemicals due to the chemicals degrading to PFOS. Acute and local effects have not been considered.

Import, Manufacture and Use

Australian

Information collected by NICNAS indicate that chemicals in this group are not manufactured in Australia. Products containing chemicals based on PFSA, which may also include some of the chemicals in this group, have been used in Australia:

- as coatings in the photography and photolithographic industries;
- in aviation fluids;
- in surface treatments;
- in curatives;
- in fire fighting foams;
- in printing inks; and
- in industrial coatings as an oil and water repellent

In 2006 and 2007, approximately 7.4 tonnes and 13.6 tonnes, respectively, of chemicals based on PFSA were imported into Australia as technical grade chemicals and in products. However, most of the imports were chemicals based on perfluorobutane sulfonate (PFBS), a four-carbon PFAS. Based on the available information, only one of the chemicals in this group was reported as being introduced for use in the photography industry (surfactants—0.002 %) at very low volumes (less than 10 kg per annum).

In 2007, approximately 1600 kg fire fighting foams, containing 1–5 % chemicals based on PFSA (16–80 kg; chain length unspecified), were imported into Australia and over 60 tonnes (0.6–3 tonnes chemicals based on PFSA) were held in stock at sites around Australia (NICNAS, 2013).

It is noted that some of the chemicals in this group could be present in the environment due to historic use or due to release from articles.

International

The following international uses for chemicals of this group have been reported by the Organisation for Economic Co-operation and Development (OECD, 2011) or identified through Galleria Chemica and through internet searches for specific CAS numbers:

- as coatings and coating additives, in the photolithographic industry;
- as raw material to synthesise fluoropolymers;
- as surfactants;
- in fire fighting foams;
- as wetting agents;
- in industrial cleaning agents; and
- as oil and water repellent coatings.

According to an OECD survey published in 2011, no perfluorosulfonamides or sulfonamidoacrylates (included in the List of Substances) were reported as being manufactured or formulated into products (OECD, 2011).

A survey published in 2005 confirmed that PFOS, its salts and its precursors, are not being manufactured in, or being exported from, Canada. Only one substance was imported into Canada, representing a quantity of approximately three tonnes of PFOS. The imported substance was sold as a product that is used as a surfactant in the electroplating sector (Government of Canada, 2008).

No evidence of these chemicals in consumer products was found in the available North American databases (Household Products Database and Personal Care Council), indicating that the chemicals are not likely to be widely available for domestic or cosmetic uses.

Restrictions

Australian

No known mandatory restrictions have been identified for most of the chemicals assessed.

Measures taken to date to reduce the importation and use of PFOS compounds, their salts and precursors have largely been through NICNAS recommendations since 2002 and subsequent voluntary action by industry. NICNAS recommended that PFOS- and related PFSA-based chemicals be restricted to only essential uses for which no suitable or less hazardous alternatives were available (NICNAS, 2013).

International

Perfluorooctane sulfonates and perfluorooctane sulfonamides are listed on Annex III of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, ratified by over 150 parties (Rotterdam Convention, 2013).

Canada introduced regulations to prohibit the production and use of PFOS and its salts and substances that contained one of the following groups: perfluorooctyl sulfonyl (C8F17SO2), sulfonate (C8F17SO3) or sulfonamide (C8F17SO2N). These regulations were established to prohibit the manufacture, use, sale, offer for sale and import of PFOS or products containing these substances with certain exemptions. Importers of PFOS-based fume suppressants were required to submit annual reports detailing types, quantities, sales and end uses for the substances that they imported (Government of Canada, 2008).

In the United States of America (USA) most of the chemicals in this group are subject to a Significant New Use Rule (SNUR). These SNURs allow the continuation of a few limited, highly technical uses of these chemicals for which no alternatives are available, and which are characterised by very low volume, low exposure, and low releases. Any other uses of these chemicals requires prior notice to and review by the United States Environmental Protection Agency (US EPA) (US EPA 2002; US EPA 2007).

The use of chemicals containing the PFOS moiety, including neutral and ionic organic chemicals, polymers, telomers and unknown or variable composition, complex reaction products or biological materials (UVCBs), is restricted under European Commission Regulation No 850/2004 on Persistent Organic Pollutants (European Commission, 2010). These chemicals may only be used in select applications in electroplating systems, photolithography processes, photographic coatings, chromium plating and aviation hydraulic fluids. Use is to be phased out as alternative substances or technologies become available.

Twenty-seven chemicals in this group have been pre-registered for use in the European Union (EU) under the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) legislation (ECHA, 2015). However, the chemicals in this group have not undergone the full registration process (ECHA, 2014).

Existing Worker Health and Safety Controls

Hazard Classification

The chemicals covered in this assessment are not listed on the Hazardous Chemicals Information System (HCIS) (Safe Work Australia).

Exposure Standards

Australian

No specific exposure standards are available.

International

No specific exposure standards are available.

Health Hazard Information

Limited data are available for chemicals in this group. The primary health risk for the chemicals in this group is expected to arise from secondary exposure to PFOS (see **Grouping Rationale**). Avendano and Liu (2015) demonstrated that the aerobic soil degradation of two technical grade perfluoro sulfonamide derivatives, (N-ethyl perfluorooctane sulfonamidoethanol, CAS No. 1691-99-2; and N-ethyl perfluorooctane sulfonamide, CAS No. 4151-50-2) caused increased concentrations of PFOS. Their degradation in soil followed the same pathway as found in activated sludge and marine sediments.

Repeated exposure to PFOS resulted in hepatotoxicity and mortality. Adverse signs of toxicity included hepatic vacuolisation and hepatocellular centrilobular hypertrophy, gastrointestinal effects, haematological abnormalities, convulsions and death (NICNASb). Limited available data on oral repeated dose toxicity of some of these chemicals (N-EtFOSE; CAS No. 1691-99-2 and N-MeFOSE; CAS No. 24448-09-7) indicate similar effects and dose response as for PFOS (Health Canada, 2006). The target organ for all three chemicals was the liver and the lowest observed adverse effect level (LOAEL) of the two PFSAs was 2 mg/kg bw/day compared with 0.5 mg/kg bw/day for PFOS.

In a two-year cancer study in rats with N-EtFOSE, increased incidence of hepatocellular adenoma in females and of thyroid follicular cell adenoma in males was observed (Health Canada, 2006). PFOS is classified as hazardous with the risk phrase Carc. Cat 3 - Limited evidence of a carcinogenic effect (Xn; R40). The chemicals induced benign tumours of the liver and the thyroid gland (Sibinski, 1987, Biegel et al., 2001). Tumours of mammary glands were also observed in these studies; however, it has been argued that since the morphologic appearance, overall incidence, and distribution of the tumours observed in treated groups were similar to historical control data for mammary-gland tumours in untreated animals (Giknis and Clifford, 2004), the incidence of mammary gland tumours is not a result of chronic dietary administration of APFO (Hardisty et al., 2010).

Postnatal deaths and other developmental effects were reported in rat offspring exposed to low doses of PFOS (NICNASb). In a developmental study with N-EtFOSE in rats (oral gavage; days 6–17 of gestation), reduced live foetal body weight and increased skeletal and ossification alterations were seen in the presence of maternal toxicty (reduced bodyweight gain). The lowest observed effect level (LOEL) for maternal and foetal toxicity was 10 mg/kg bw/day.

Risk Characterisation

Critical Health Effects

The focus of this assessment is on the long-term effects of the chemicals due to their degradation to PFOS. Acute and local effects (irritation and sensitisation) have not been considered. Whilst polymeric precursors generally do not present significant risks while in polymeric form, direct exposure to small molecule precursors, such as those in this assessment, can pose health risks. However, the available information indicates that any use of these chemicals in Australia is in small volumes and/or low concentrations (see **Australian import, manufacture and use**). Consequently, the primary health risk is expected to arise from secondary exposure to PFOS.

PFOS and its salts and perfluorosulfonyl fluoride (PFOSF) (direct precursors) have been added to the list of Persistent Organic Pollutants (POPs) under the Stockholm Convention (Stockholm Convention, 2015). POPs are chemicals that are toxic, persist in the environment, accumulate in the food chain, and pose a risk of causing adverse effects to human health and the environment, even at low concentrations. The chemicals in this group are slowly eliminated from the body following absorption. The chemicals are expected to accumulate in the liver. The critical health effects for risk characterisation include systemic acute and long-term effects (hepatotoxicity and developmental toxicity and benign tumours of the liver and thyroid) from oral exposure.

Public Risk Characterisation

Use in consumer products

Given the uses identified for these chemicals, it is unlikely that the public will be exposed. Hence, the public risk from these chemicals is not considered to be unreasonable.

Secondary exposure to PFOS via the environment

Public exposure to PFOS could occur through secondary exposure via the environment. In Australia, PFOS has been found in drinking water at concentrations up to 0.02 micrograms per litre (NICNAS, 2015). While long-term studies in animals showed adverse effects from exposure to PFOS, epidemiological studies in workers exposed to PFOS did not provide clear evidence of effects in humans; and exposure of the general public to similar levels is not expected. Serum concentrations of PFOS in the Australian population have decreased from 2002 through to 2011, with the concentrations in serum ranging from 4.4-17.4 ng/mL (Toms et al., 2014). These levels are similar to median serum PFOS levels ranging between 1.93–44.7 µg/L reported in a recent study in subjects from different geographic locations (China) (Zeng et al., 2015). These serum levels are several orders of magnitude lower than the maternal serum levels in experimental studies (82 µg/mL) that showed developmental toxicity in the offspring (Luebker et al., 2005). In addition, PFOS was not detected in a survey of 65 foods and beverages packaged in glass, paper, plastic or cans, conducted by Food Standards Australia New Zealand (FSANZ, 2010). Nevertheless, since these chemicals will ultimately degrade to PFOS, which is extremely persistent in all media and can bioaccumulate, it is recommended that the chemicals in this group be restricted to only essential uses for which no suitable or less hazardous alternatives are available.

Occupational Risk Characterisation

Based on the available use information, the chemicals or their products are not manufactured in Australia. The chemicals are not likely to be used in significant quantities in Australia. Further assessment of the chemicals in this group may be necessary to inform the risk to workers if information becomes available indicating that these chemicals are introduced into Australia in significant quantities.

Long-term occupational exposure to very low concentrations of PFOS (as contaminants) could occur while using these polymers or formulated products. However, epidemiological studies in workers exposed to PFOS did not provide clear evidence of effects in humans. Therefore, the chemicals are not considered to pose an unreasonable risk to the health of workers.

NICNAS Recommendation

The chemicals in this group have been assessed as having the potential to give rise to adverse outcomes for the environment and public health. These chemicals are currently listed on the Australian Inventory of Chemical Substances (AICS), and are available to be introduced into Australia without any further assessment by NICNAS. Other chemicals with reduced potential for adverse outcomes are becoming available but, given the properties of these chemicals, their assessment as new chemicals under the *Industrial Chemicals (Notification and Assessment) Act 1989* (the ICNA Act) is still required to fully characterise the human health and the environmental risks associated with their use.

It is recommended that NICNAS consult with industry and other stakeholders to consider strategies, including regulatory mechanisms available under the ICNA Act, to encourage the use of safer chemistry.

Regulatory Control

Advice for industry

Control measures

Control measures to minimise the risk from exposure to the chemicals should be implemented in accordance with the hierarchy of controls. Approaches to minimise risk include substitution, isolation and engineering controls. Measures required to eliminate, or minimise risk arising from storing, handling and using a hazardous chemical depend on the physical form and the manner in which the chemicals are used. Examples of control measures which could minimise the risk include, but are not limited to:

- using closed systems or isolating operations;
- health monitoring for any worker who is at risk of exposure to the chemicals, if valid techniques are available to monitor the effect on the worker's health;
- minimising manual processes and work tasks through automating processes;
- work procedures that minimise splashes and spills;
- regularly cleaning equipment and work areas; and
- using protective equipment that is designed, constructed, and operated to ensure that the worker does not come into contact with the chemicals.

Guidance on managing risks from hazardous chemicals are provided in the *Managing risks of hazardous chemicals in the workplace—Code of practice* available on the Safe Work Australia website.

Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Obligations under workplace health and safety legislation

Information in this report should be taken into account to help meet obligations under workplace health and safety legislation as adopted by the relevant state or territory. This includes, but is not limited to:

- ensuring that hazardous chemicals are correctly classified and labelled;
- ensuring that (material) safety data sheets ((M)SDS) containing accurate information about the hazards (relating to both health hazards and physicochemical (physical) hazards) of the chemicals are prepared; and
- managing risks arising from storing, handling and using a hazardous chemical.

Your work health and safety regulator should be contacted for information on the work health and safety laws in your jurisdiction.

Information on how to prepare an (M)SDS and how to label containers of hazardous chemicals are provided in relevant codes of practice such as the *Preparation of safety data sheets for hazardous chemicals—Code of practice* and *Labelling of workplace hazardous chemicals—Code of practice*, respectively. These codes of practice are available from the Safe Work Australia website.

A review of the physical hazards of these chemicals has not been undertaken as part of this assessment.

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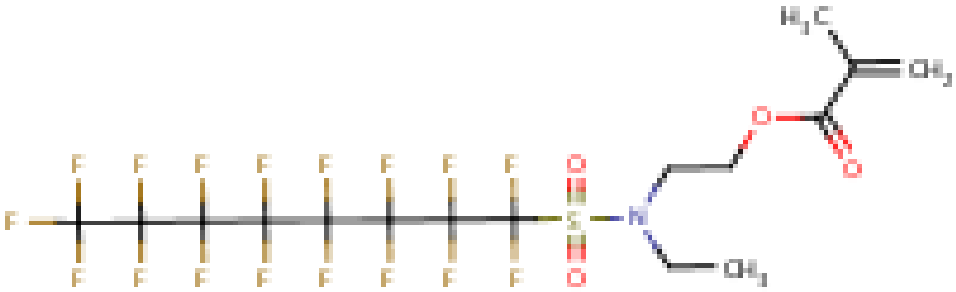
Last Update 21 April 2016

Chemical Identities

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester** 2-(ethyl((heptadecafluorooctyl)sulfonyl)amino)ethyl methacrylate EtFOSMAC methacrylic acid, ester with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide(7CI,8CI)
CAS Number	376-14-7
Structural Formula	

	
Molecular Formula	C16H14F17NO4S
Molecular Weight	639

Chemical Name in the Inventory and Synonyms	**Acrylic acid, ester with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide** 2-propenoic acid, 2-[ethyl[(heptadecafluorooctyl)sulfonyl 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl acrylate EtOSAC
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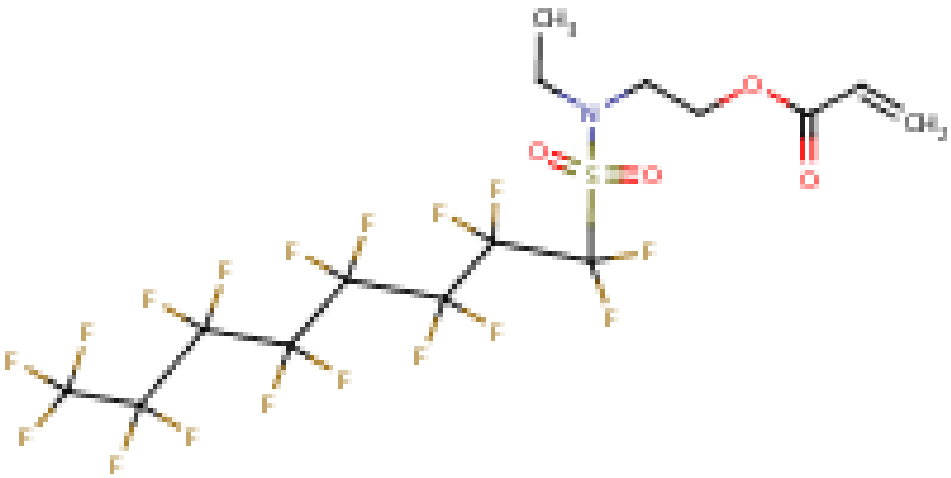
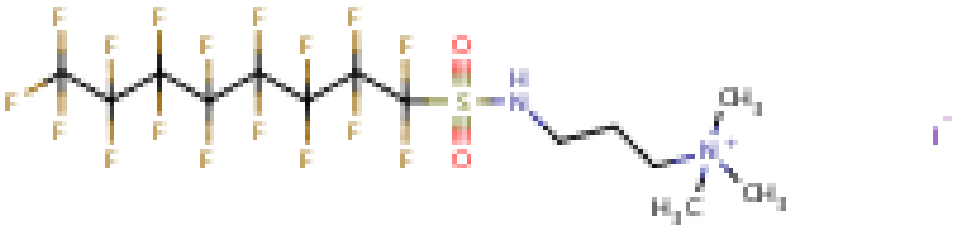
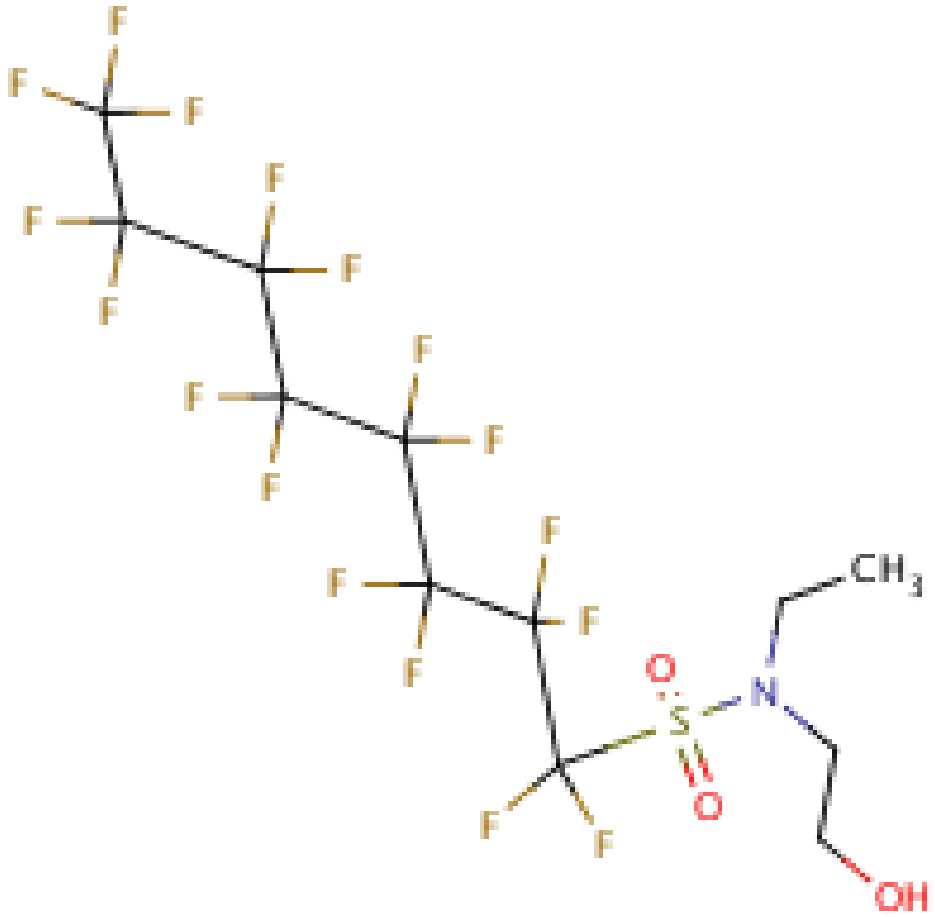
	
Molecular Formula	C15H12F17NO4S
Molecular Weight	625

Chemical Name in the Inventory and Synonyms	**1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, iodide** 3-(((heptadecafluorooctyl)sulfonyl)amino)-N,N,N-trimethyl-1-propanaminium iodide FC-134 HX-134 FC-135 (40%) FC-750 (40%)
CAS Number	1652-63-7
Structural Formula	

	
Molecular Formula	C14H16F17N2O2S.I
Molecular Weight	726.224

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-** N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide N-EtFOSE FT-10 FC-10
CAS Number	1691-99-2
Structural Formula	

	
Molecular Formula	C12H10F17NO3S
Molecular Weight	571

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N,N',N''-[phosphinylidynetris(oxy-2,1-ethanediyl)]tris[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-** N,N',N''-(phosphinylidynetris(oxyethane-2,1-diyl))tris(N-ethylheptadecafluorooctane-1-sulphonamide)
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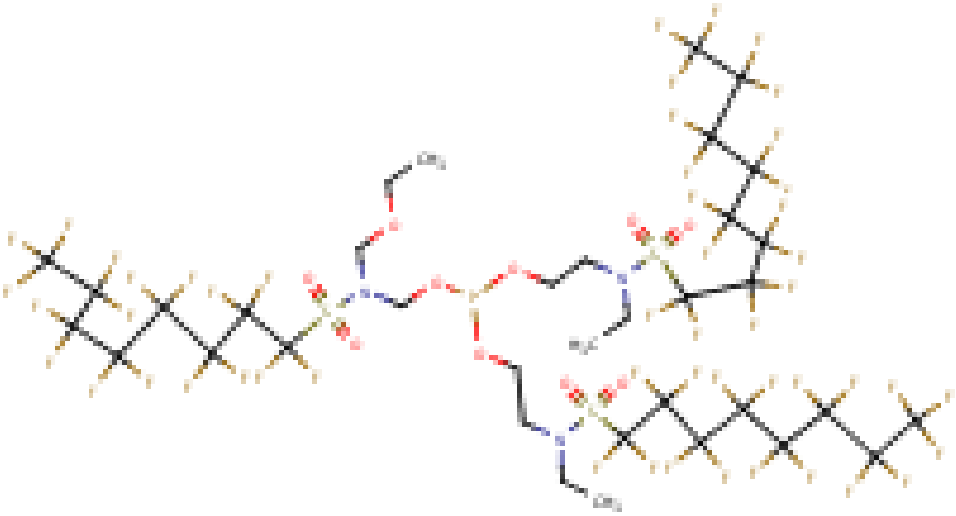
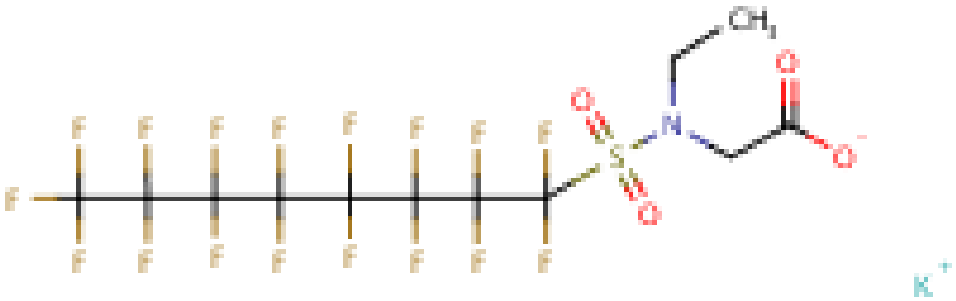
Structural Formula	



Molecular Formula	C36H27F51N3O10PS3
Molecular Weight	1758.690

Chemical Name in the Inventory and Synonyms	**Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt** potassium N-perfluorooctylsulfonyl-N-ethylglycinate FC 128 potassium EtFOSAA glycine, N-ethyl-N-((1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl)-, potassium salt (1:1)
CAS Number	2991-51-7
Structural Formula	

	
Molecular Formula	C12H8F17NO4S.K
Molecular Weight	623.32

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-** N-ethylheptadecafluoro-N-[2-(phosphonooxy)ethyl]octanesulphonamide N-ethyl perfluorooctanesulfonamidoethyl dihydrogen phosphate
CAS Number	3820-83-5
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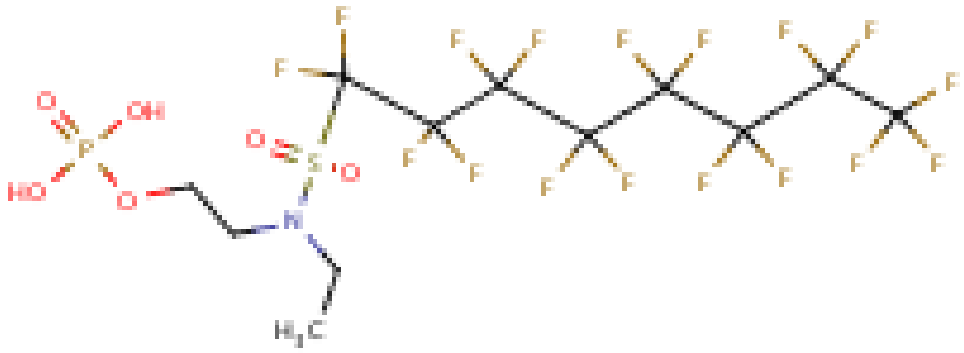
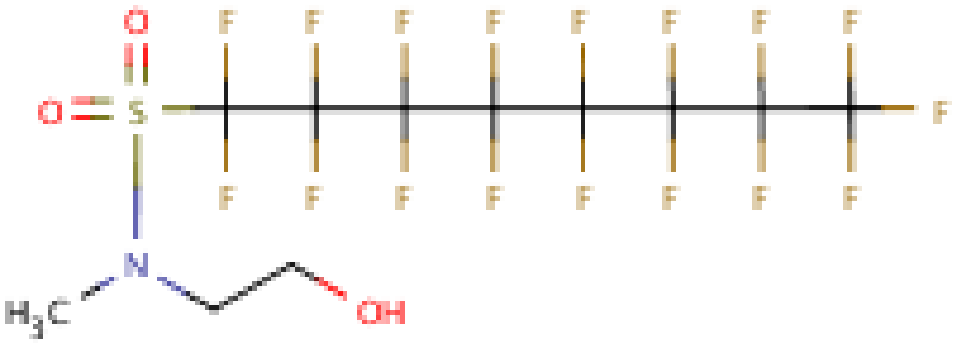
	
Molecular Formula	C12H11F17NO6PS
Molecular Weight	651.226

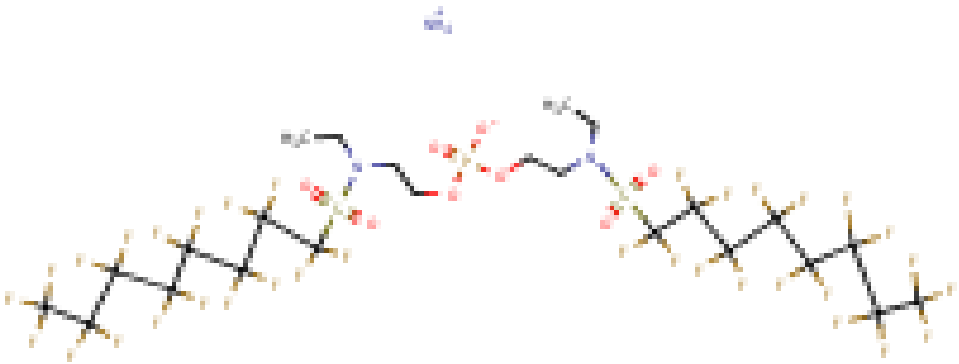
Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-** 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-1-octanesulfonamide N-methyl perfluoro-N-(2-hydroxyethyl)-1-octanesulfonamide N-MeFOSE N-methyl perfluorooctane sulfonamido ethanol
CAS Number	24448-09-7
Structural Formula	



Molecular Formula	C11H8F17NO3S
Molecular Weight	557.22

Chemical Name in the Inventory and Synonyms	**Poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-** polyethylene glycol N-ethyl perfluorooctanesulfonamide FC 170C (68%)
CAS Number	29117-08-6
Structural Formula	**No Structural Diagram Available**

Molecular Formula	(C2H4O)nC12H10F17NO3S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N,N'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt** N,N-[(hydroxyphosphinylidene)bis(oxy-2,1-ethanediyl) bis(N-ethyl-2-perfluorooctylsulfonaminoethyl)phosphate, ammonium salt;
CAS Number	30381-98-7
Structural Formula	
Molecular Formula	C24H19F34N2O8PS2.H3N
Molecular Weight	1221.49

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-** heptadecafluoro-N-methyloctanesulphonamide

	perfluorooctane sulfonamide heptadecafluoro-N-methyl-1-octanesulfonamide MeFOSA
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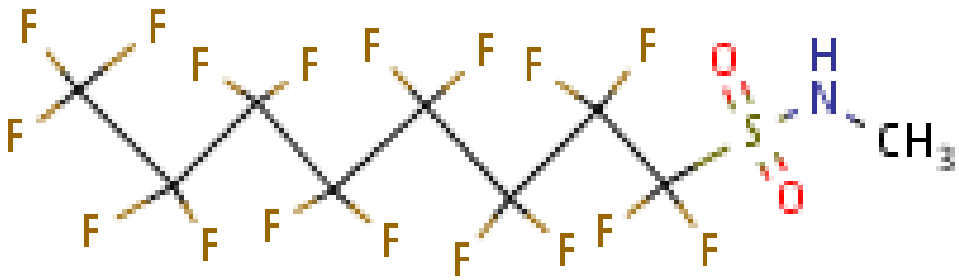
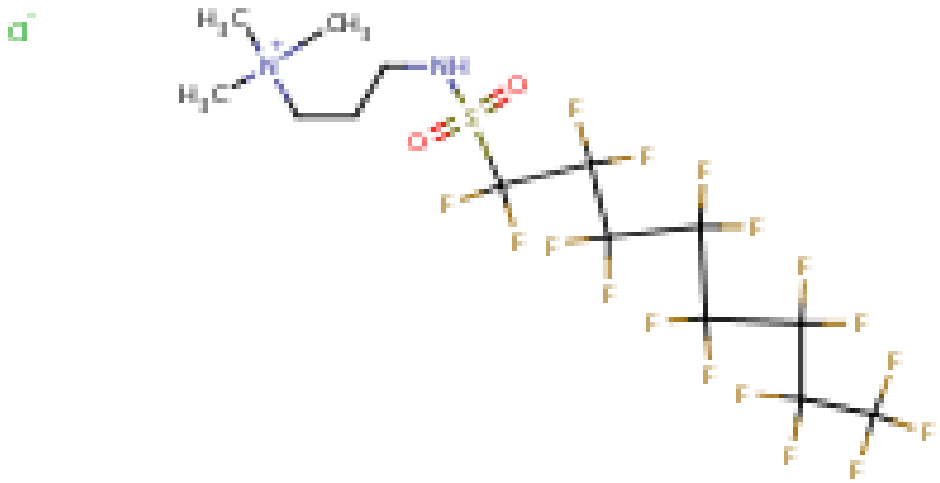
Structural Formula	
Molecular Formula	C9H4F17NO2S
Molecular Weight	513.168

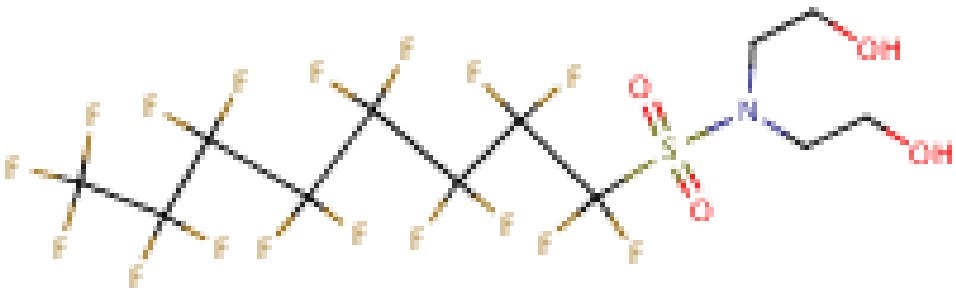
Chemical Name in the Inventory and Synonyms	**Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-** polypropylene glycol N-ethylperfluorooctanesulfonamide
CAS Number	37338-48-0
Structural Formula	

	No Structural Diagram Available
Molecular Formula	(C3H6O)nC12H10F17NO3S
Molecular Weight	

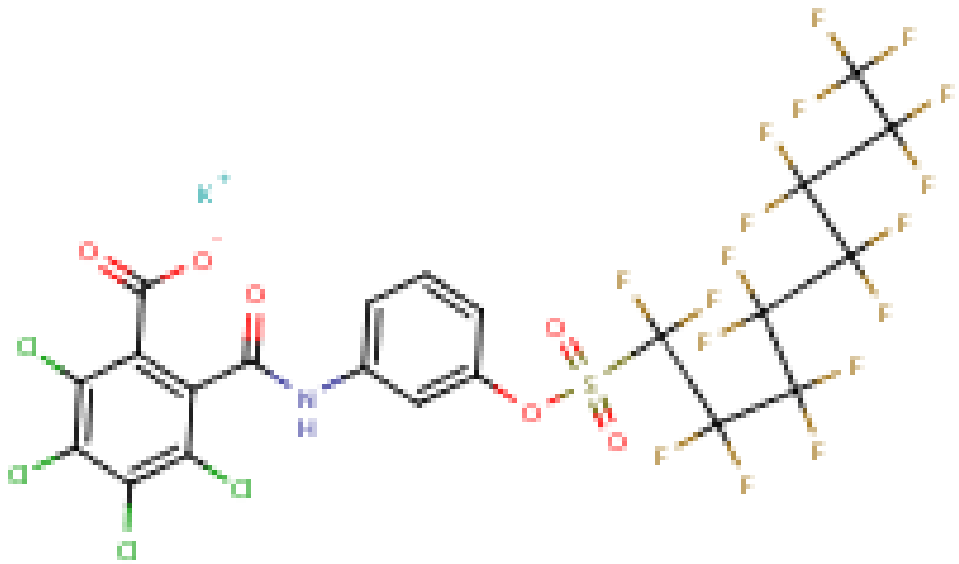
Chemical Name in the Inventory and Synonyms	**1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, chloride** 3-[[(heptadecafluorooctyl)sulfonyl)amino)-N,N,N-trimethyl-1-propanaminium chloride
CAS Number	38006-74-5
Structural Formula	

	
Molecular Formula	C14H16F17N2O2S.Cl
Molecular Weight	634.777

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N,N-bis(2-hydroxyethyl)-** heptadecafluoro-N,N-bis(2-hydroxyethyl)octanesulphonamide
CAS Number	40630-61-3
Structural Formula	

	
Molecular Formula	C12H10F17NO4S
Molecular Weight	587.246

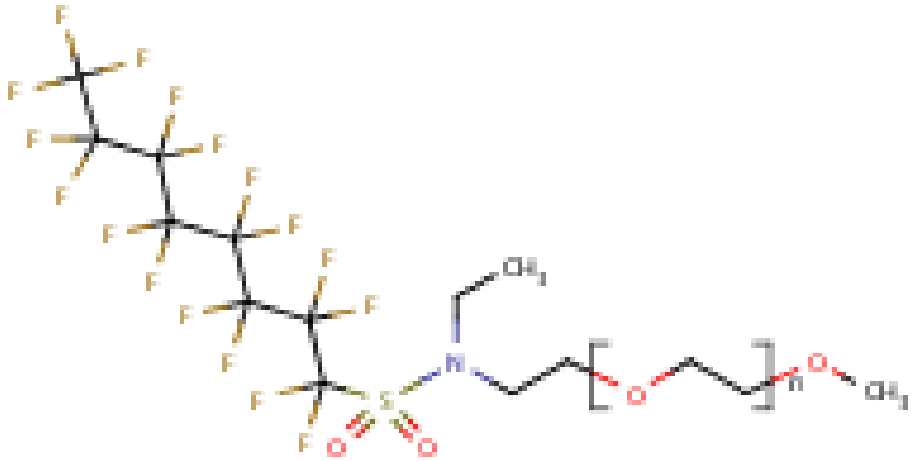
Chemical Name in the Inventory and Synonyms	**Benzoic acid, 2,3,4,5-tetrachloro-6-[[[3-[[(heptadecafluorooctyl)sulfonyl]oxy]phenyl]amino]carbonyl]-, monopotassium salt** 2,3,4,5-tetrachloro-6-((3-(heptadecafluorooctyl)sulfonyloxy)phenylaminocarbonyl)benzoic acid, potassium salt
CAS Number	57589-85-2
Structural Formula	

	
Molecular Formula	C22H6Cl4F17NO6S.K
Molecular Weight	915.224

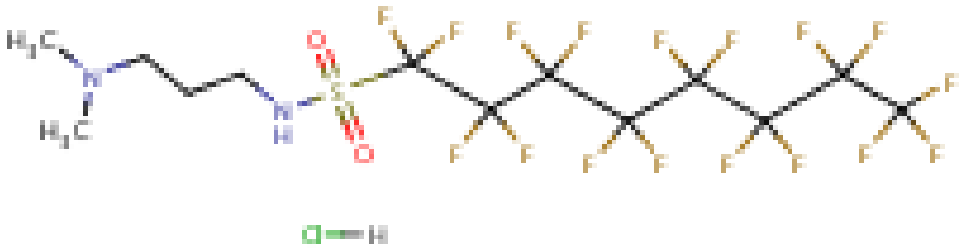
Chemical Name in the Inventory and Synonyms	**Carbamic acid, (4-methyl-1,3-phenylene)bis-, bis[2-[ethyl[(perfluoro-C4-8-alkyl)sulfonyl]amino]ethyl] ester** N-ethyl-N-perfluoro-C4-8-alkylsulfonyl-2-aminoethanol, 2,4-toluene diisocyanate adduct
CAS Number	68081-83-4
Structural Formula	

	No Structural Diagram Available
Molecular Formula	Unspecified
Molecular Weight	

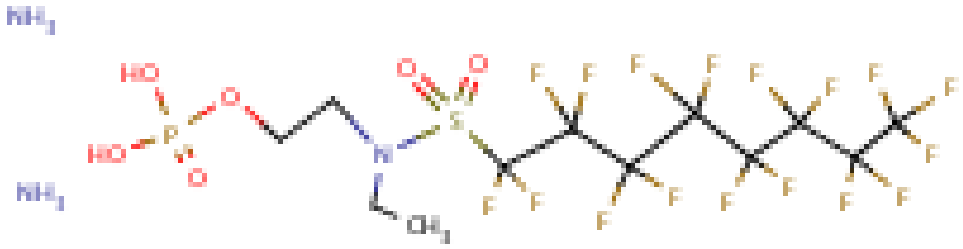
Chemical Name in the Inventory and Synonyms	**Poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-methoxy-** poly(oxy-1,2-ethanediyl), alpha-(2-(ethyl((1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl) FC-171
CAS Number	68958-61-2
Structural Formula	

	
Molecular Formula	(C2H4O)nC13H12F17NO3S
Molecular Weight	629.330

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, monohydrochloride** N-(3-(dimethylamino)propyl)-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonamide, hydrochloride
CAS Number	67939-88-2
Structural Formula	

	
Molecular Formula	C13H13F17N2O2S.ClH
Molecular Weight	620.751

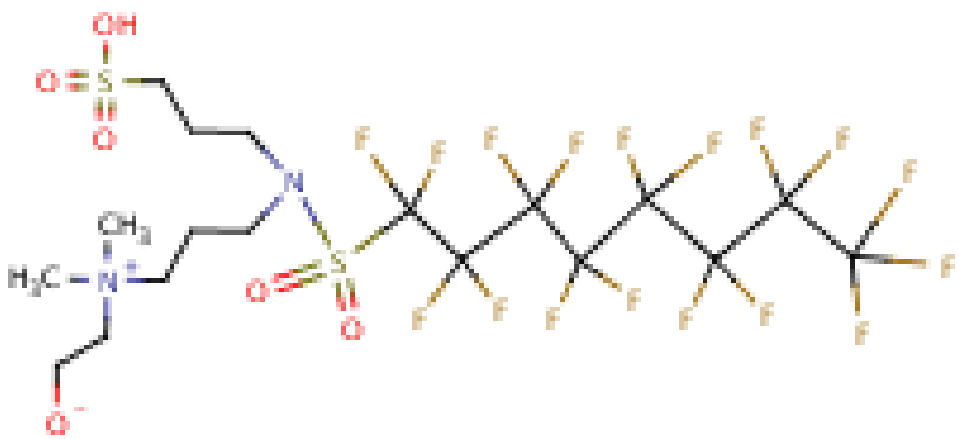
Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-, diammonium salt** N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl
CAS Number	67969-69-1
Structural Formula	

	
Molecular Formula	C12H11F17NO6PS.2H3N
Molecular Weight	685.287

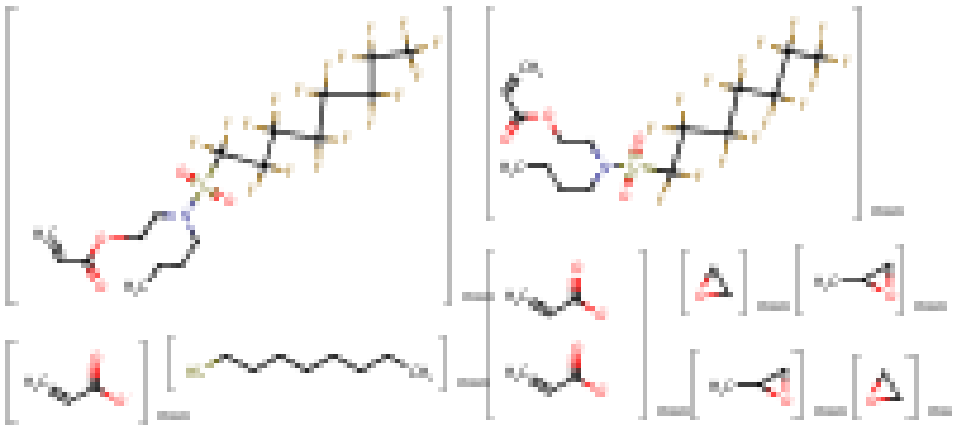
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, butyl ester, telomer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-hydroxypoly(oxy-1,4-butanediyl), .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,4-butanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate,2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol**
CAS Number	68227-96-3
Structural Formula	

	No Structural Diagram Available
Molecular Formula	(C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H12O2.(C4H8O)nC8H10O3.(C4H8O)nC4H6O2)x.C8H18S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl](3-sulfopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, inner salt** N,N-dimethyl-3-[[(heptadecafluorooctyl)sulfonyl[N-(3-sulfopropyl))amino)-N-(2-hydroxyethyl)-1-propanaminium hydroxide inner salt
CAS Number	68298-11-3
Structural Formula	

	
Molecular Formula	C18H23F17N2O6S2
Molecular Weight	750.486

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[butyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, methyloxirane polymer with oxirane di-2-propenoate, methyloxirane polymer with oxirane mono-2-propenoate and 1-octanethiol**
CAS Number	68298-62-4
Structural Formula	

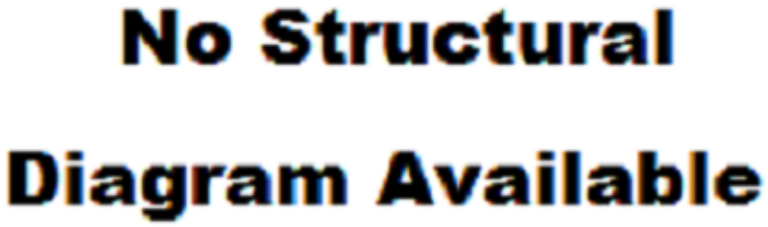


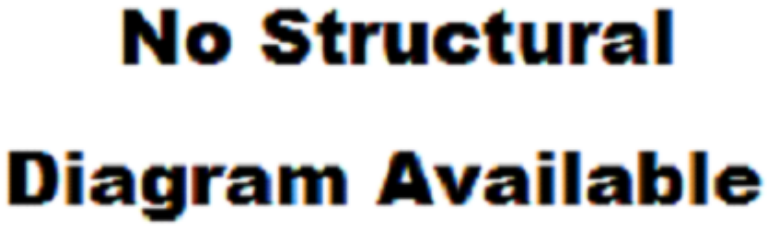
Molecular Formula	(C17H16F17NO4S.C16H16F15NO4S.(C3H6O.C2H4O)x.(C3H6O.C2H4O)x.2C3H4O2.C3H4O2)x.C8H18S
Molecular Weight	1820.41

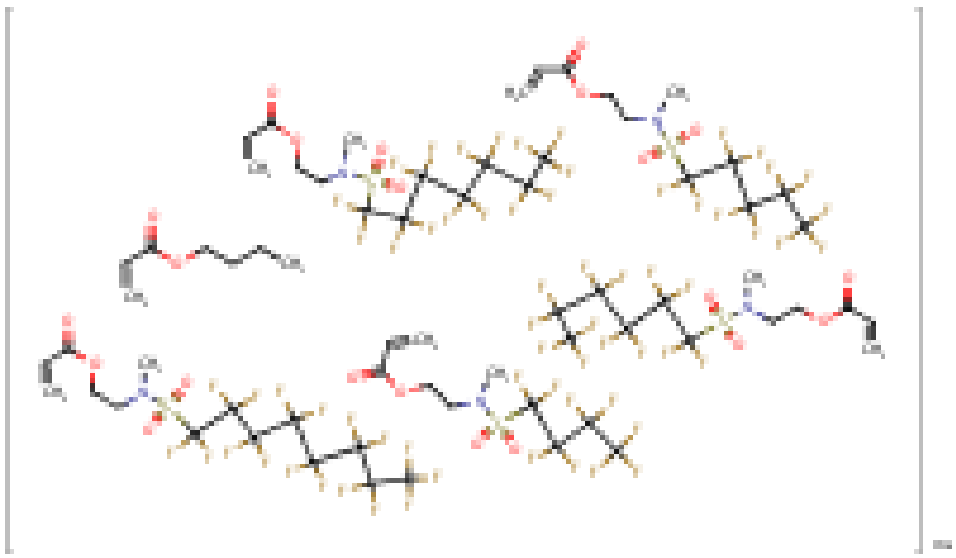
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl ester, telomer with butyl 2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[5-[[[2-[ethyl[(1,1,2,2,3,3,4,4,5,5,5-undecafluoropentyl)sulfonyl]amino]ethoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[(1,1,2,2** perfluoroalkyl polymers T-3499 The chemical name on AICS is not the complete chemical name. Contact NICNAS for more information.
CAS Number	68298-78-2

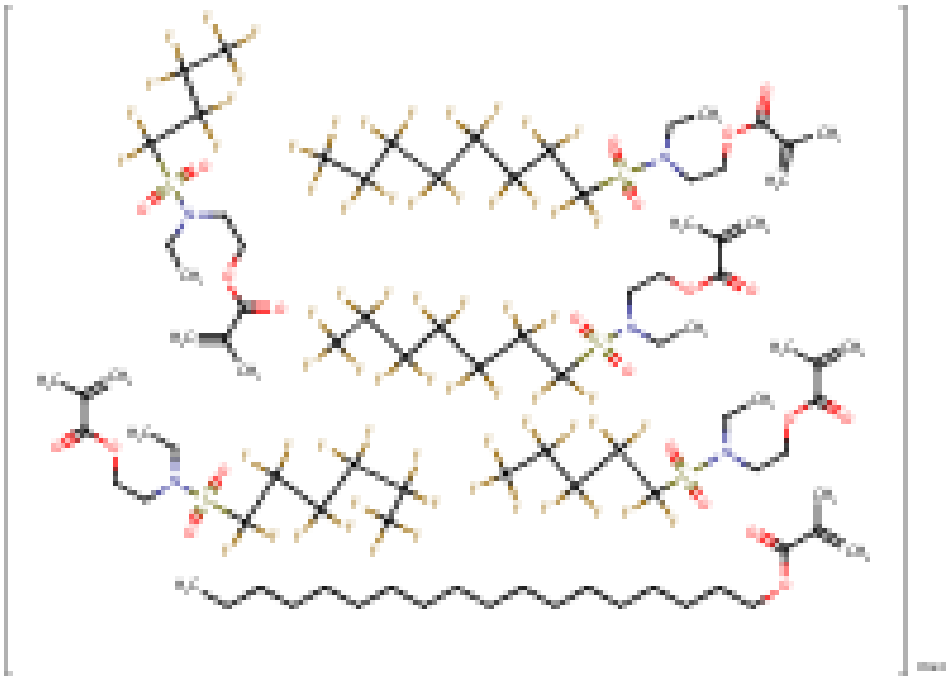
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C28H28F17N3O8S.C27H28F15N3O8S.C26H28F13N3O8S.C25H28F11N3O8S.C24H28F9N3O8S.C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H12O2)x.C8H18S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 4-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]butyl ester, telomer with butyl 2-propenoate, 2-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 4-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]butyl 2-methyl-2-propenoate, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propen-1-yl)-.omega.-hydroxypoly(oxy-1,4-butanediyl), .alpha.-(2-methyl-1-oxo-2-propen-1-yl)-.omega.-[(2-methyl-1-oxo-2-propen-1-yl)oxy]poly(oxy-1,4-butanediyl), 4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]butyl 2-methyl-2-propenoate, 2-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]butyl 2-me** perfluoroalkyl polymers T-3809 The chemical name on AICS is not the complete chemical name. Contact NICNAS for more information.
CAS Number	68299-39-8
Structural Formula	

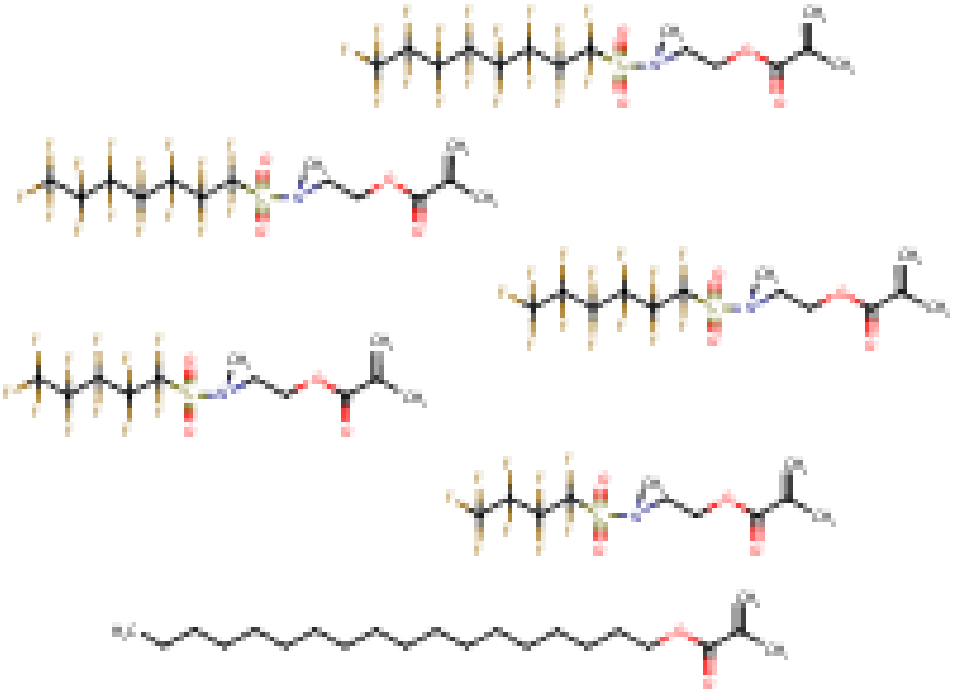
	
Molecular Formula	(C17H16F17NO4S.C16H16F15NO4S.C15H16F13NO4S.C14H16F11NO4S.C14H10F17NO4S.C13H16F9NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H12O2.(C4H8O)nC8H10O3.(C4H8O)nC4H6O2)x.C8H18S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, eicosyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, hexadecyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and octadecyl 2-propenoate**
CAS Number	68329-56-6
Structural Formula	
Molecular Formula	(C23H44O2.C21H40O2.C19H36O2.C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S)x
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, butyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl2-propenoate** 2-propenoic acid, butyl ester, polymer with 2-(((heptadecafluorooctyl)sulfonyl)methylamino)ethyl 2-propenoate, 2-(methyl((nonafluorobutyl)sulfonyl)amino)ethyl 2-propenoate, 2-(methyl((pentadecafluoroheptyl)sulfonyl)amino)ethyl 2-propenoate, 2-(methyl((tridecafluorohexyl)sulfonyl)amino)ethyl 2-propenoateand 2-(methyl((undecafluoropentyl)sulfonyl)amino)ethyl 2-propenoate
CAS Number	68555-90-8
Structural Formula	
Molecular Formula	(C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H12O2)x
Molecular Weight	2684.aa

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate**
CAS Number	68555-91-9
Structural Formula	
Molecular Formula	(C22H42O2.C16H14F17NO4S.C15H14F15NO4S.C14H14F13NO4S.C13H14F11NO4S.C12H14F9NO4S)x
Molecular Weight	3035.11

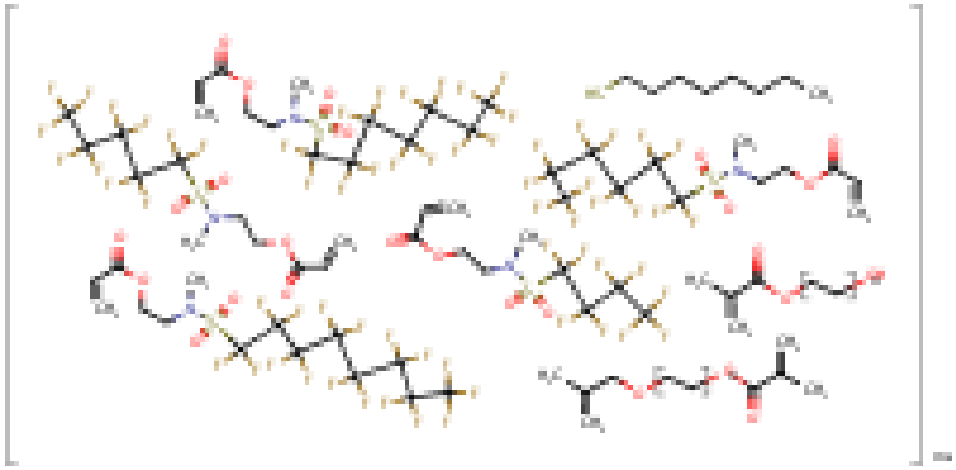
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate**

CAS Number	68555-92-0
Structural Formula	
Molecular Formula	(C22H42O2.C15H12F17NO4S.C14H12F15NO4S.C13H12F13NO4S.C12H12F11NO4S.C11H12F9NO4S)x
Molecular Weight	2964.98

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-chloro-1,3-butadiene, 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate**
CAS Number	68568-77-4

Structural Formula	
Molecular Formula	(C16H14F17NO4S.C15H14F15NO4S.C14H14F13NO4S.C13H14F11NO4S.C12H14F9NO4S.C4H5Cl)x
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, telomer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-hydroxypoly(oxy-1,2-ethanediyl), .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol**
CAS Number	68586-14-1
Structural Formula	



Molecular Formula	(C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.(C2H4O)nC8H10O3.(C2H4O)nC4H6O2)x.C8H18S
Molecular Weight	3016.94

Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,3-diisocyanatomethylbenzene polymer** sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N(hydroxyethyl), reaction products with TDI
CAS Number	68608-13-9
Structural Formula	

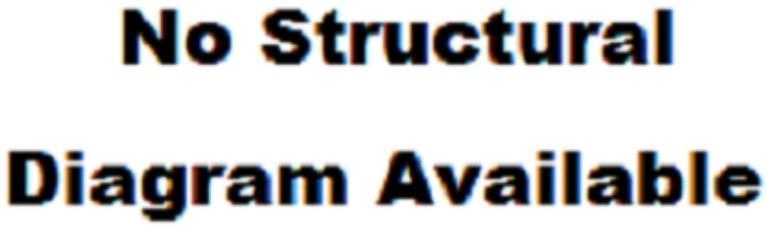
	No Structural Diagram Available
Molecular Formula	C9H6N2O2.
Molecular Weight	

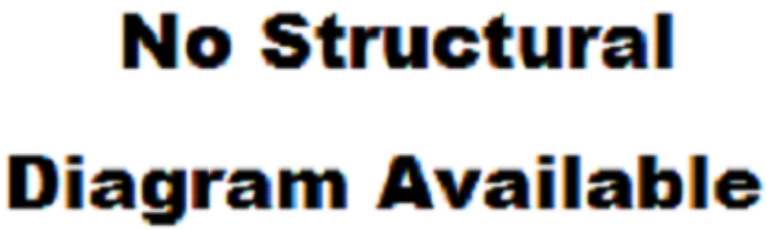
Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,1'-methylenebis[4-isocyanatobenzene]**
CAS Number	68608-14-0
Structural Formula	No Structural Diagram Available
Molecular Formula	C15H10N2O2.
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-, reaction products with N-ethyl-1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-1-butanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-**

	hydroxyethyl)-1-heptanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-1-hexanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,5-undecafluoro-N-(2-hydroxyethyl)-1-pentanesulfonamide, polymethylenepolyphenylene isocyanate and stearyl alcohol
CAS Number	68649-26-3
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C18H38O.C12H10F17NO3S.C11H10F15NO3S.C10H10F13NO3S.C9H10F11NO3S.C8H10F9NO3S.)x
Molecular Weight	

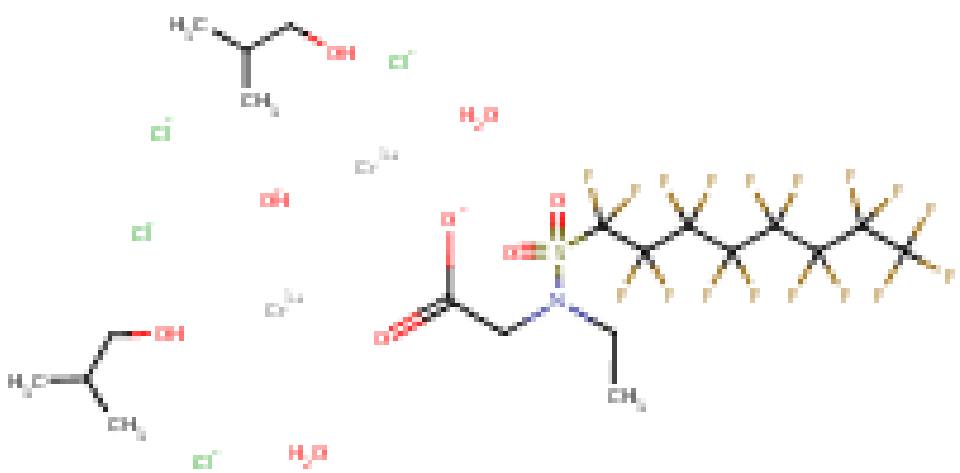
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-propenoate** 2-propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl
CAS Number	68797-76-2
Structural Formula	

	
Molecular Formula	(C14H10F17NO4S.C13H10F15NO4S.C12H22O2.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H10O3)x
Molecular Weight	

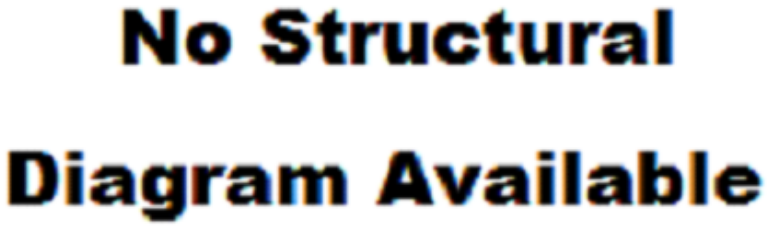
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)**
CAS Number	68867-60-7
Structural Formula	
Molecular Formula	(C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.(C2H4O)nC4H6O2)x
Molecular Weight	

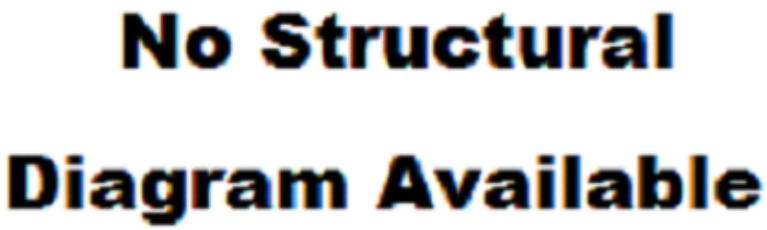
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 1-octanethiol and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)**
CAS Number	68867-62-9
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C16H14F17NO4S.C15H14F15NO4S.C14H14F13NO4S.C13H14F11NO4S.C12H14F9NO4S.(C2H4O)nC4H6O2)x.C8H18S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Chromium, diaquatetrachloro[.mu.-[N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]glycinato-O1:O1']]-.mu.-hydroxybis[2-methylpropanol]di-** diaquatetrachloro(mu-(N-ethyl-N-((heptadecafluorooctyl)sulphonyl)glycinato-O1:O1'))-mu-hydroxybis(2-methylpropanol)dichromium
CAS Number	68891-96-3
Structural Formula	

	
Molecular Formula	C18H28Cl4Cr2F17NO9S
Molecular Weight	1031.311

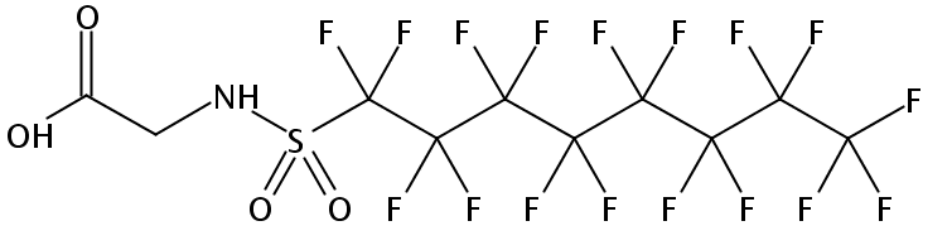
Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, eicosyl ester, polymer with branched octyl 2-propenoate, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate, octadecyl 2-propenoate and .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)**
CAS Number	68909-15-9
Structural Formula	

	
Molecular Formula	(C23H44O2.C21H40O2.C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.(C2H4O)nC4H6O2.)x
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 1,1-dichloroethene, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate**
CAS Number	70776-36-2
Structural Formula	
Molecular Formula	(C22H42O2.C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C4H7NO2.C2H2Cl2)x
Molecular Weight	3092.89

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, 2-[[[[5-[[[4-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]butoxy]carbonyl]amino]-2-methylphenyl]amino]carbonyl]oxy]propyl ester, telomer with butyl 2-propenoate, 2-[[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoroheptyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]butoxy]carbonyl]amino]phenyl]amino]carbonyl]oxy]propyl 2-methyl-2-propenoate, 2-[[[[2-methyl-5-[[[4-[methyl[(1,1,2,2,3,3,4,4,5,5,5-undecafluoropentyl** The chemical name on AICS is not the complete chemical name. Contact NICNAS for more information.
CAS Number	70900-40-2
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C29H30F17N3O8S.C28H30F15N3O8S.C27H30F13N3O8S.C26H30F11N3O8S.C25H30F9N3O8S.C14H10F17NO4S.C13H10F15NO4S.C12H10F13NO4S.C11H10F11NO4S.C10H10F9NO4S.C7H12O2)x.C8H18S
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Glycine, N-[(heptadecafluoroctyl)sulfonyl]-, monopotassium salt** glycine, N-?[(1,?1,?2,?2,?3,?3,?4,?4,?5,?5,?6,?6,?7,?7,?8,?8,?8-?heptadecafluorooctyl?)?sulfonyl]?-?, potassium salt (1:1)
CAS Number	75260-69-4
Structural Formula	

	 • K
Molecular Formula	C10H4F17NO4S.K
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Fatty acids, C18-unsatd., trimers, reaction products with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8 heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-1-octanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-1-butanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-N-methyl-1-heptanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-N-methyl-1-hexanesulfonamide and 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-N-(2-hydroxyethyl)-N-methyl-1-pentanesulfonamide**
CAS Number	161074-58-4
Structural Formula	**No Structural Diagram Available**
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8 -alkane, perfluoro, N-(hydroxyethyl)- N-methyl, reaction products with 12-hydroxystearic acid and 2,4 -TDI, ammonium salts** ammonium carboxylate containing fluorochemical urethane
CAS Number	306973-47-7
Structural Formula	**No Structural Diagram Available**
Molecular Formula	Unspecified
Molecular Weight	

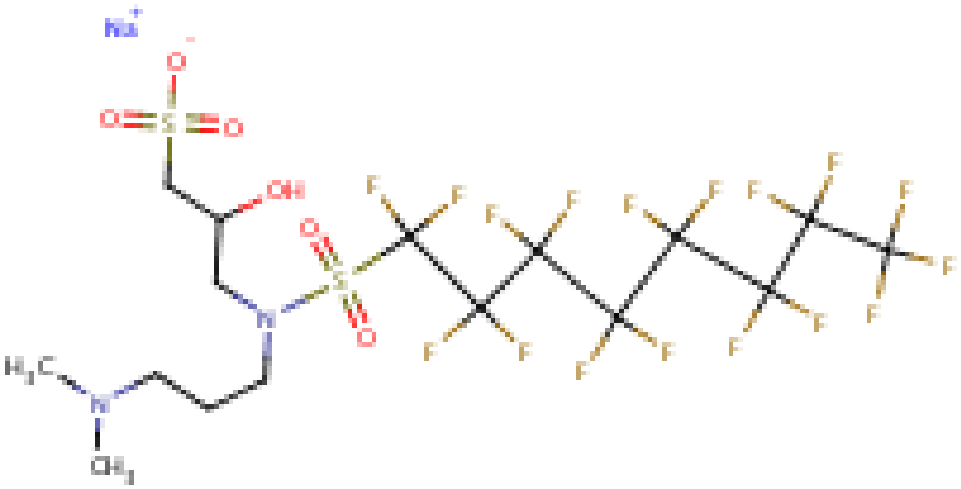
Chemical Name in the Inventory and Synonyms	**Propanoic acid, 3-hydroxy- 2-(hydroxymethyl) -2-methyl-, polymer with 2-ethyl -2-(hydroxymethyl) -1,3-propanediol and N, N', 2-tris(6-isocyanatohexyl) imidodicarbonic diamide reaction products with N-ethyl- 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8 heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide and N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulfonamide, compds. with triethylamine** 1-octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-, polymer with 1-heptanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7-pentadecafluoro-N-(2-hydroxyethyl)-, imidodicarbonic diamide, N,N,2-tris (6-isocyanatohexyl)-, 1,3-propanediol, 2-ethyl-2-(hydroxymethyl)-, propanoic acid, 3-hydroxy-2-(hydroxymethyl)-2-methyl- and ethanamine, N,N-diethyl- fluorochemical anionic urethane perfluoroalkyl substituted polyurethane
CAS Number	306975-56-4
Structural Formula	

	
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with epichlorohydrin, adipates (esters)** epichlorohydrin, N-methyl-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide, N-methyl-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulfonamide, N-methyl-tridecafluoro-N-(2-hydroxyethyl)-1-hexanesulfonamide, N-methyl-undecafluoro-N-(2-hydroxyethyl)-1-pentanesulfonamide, N-methyl-nonafluoro-N-(2-hydroxyethyl)-1-butanesulfonamide, oligomers, reaction products (esters) with adipic acid
CAS Number	91081-99-1
Structural Formula	
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-ethoxyethyl 2-propenoate, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-propenoate**
CAS Number	92265-81-1
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C14H10F17NO4S.C9H18NO2.C7H12O3.C7H10O3.Cl)x
Molecular Weight	

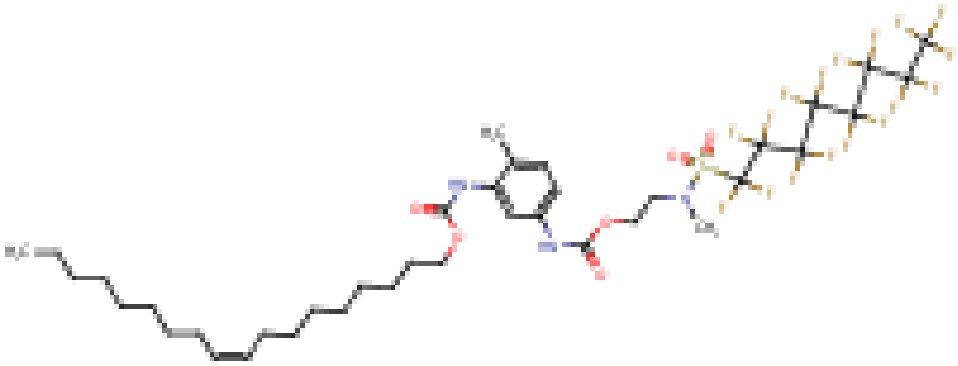
Chemical Name in the Inventory and Synonyms	**1-Propanesulfonic acid, 3-[[3-(dimethylamino)propyl][(heptadecafluorooctyl)sulfonyl]amino]-2-hydroxy-, monosodium salt** 3-((3-(dimethylamino)propyl)((heptadecafluorooctyl)sulfonyl)amino)-2-hydroxy-1-propanesulfonic acid, sodium salt
CAS Number	94133-90-1
Structural Formula	

	
Molecular Formula	C16H19F17N2O6S2.Na
Molecular Weight	744.414

Chemical Name in the Inventory and Synonyms	**1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl](2-hydroxy-3-sulfopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, monosodium salt**
CAS Number	94133-91-2
Structural Formula	

	No Structural Diagram Available
Molecular Formula	C18H24F17N2O7S2.HO.Na
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Carbamic acid, [5-[[[2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethoxy]carbonyl]amino]-2-methylphenyl]-, 9-octadecenyl ester, (Z)-** (Z)-octadec-9-enyl (5-(((2-(((perfluorooctyl)sulphonyl)methylamino)ethoxy)carbonyl)amino)-o-tolyl)carbamate
CAS Number	94313-84-5
Structural Formula	

	
Molecular Formula	C38H50F17N3O6S
Molecular Weight	999.86

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, 2-methyl-, polymers with butyl methacrylate, lauryl methacrylate and 2-[methyl[(perfluoro-C4-8-alkyl)sulfonyl]amino]ethyl methacrylate** 2-propenoic acid, 2-methyl-, polymers with Bu methacrylate, lauryl methacrylate and 2-(methyl((perfluoro-C4-8-alkyl)sulfonyl)amino)ethyl methacrylate
CAS Number	127133-66-8
Structural Formula	

	
Molecular Formula	(C16H30O2.C8H14O2.C4H6O2)x
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**9-Octadecenoic acid (Z)-, reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulfonamide** 306-62-7A
CAS Number	185630-90-4
Structural Formula	
Molecular Formula	Unspecified
Molecular Weight	

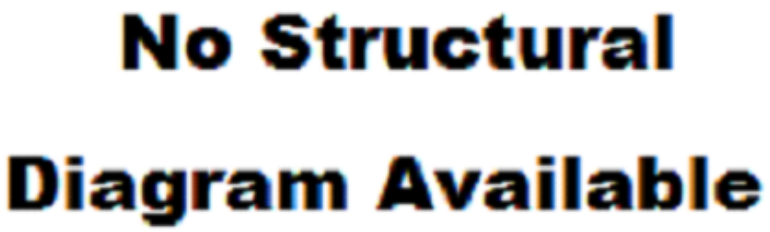
Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8-alkane, perfluoro, N-[3-(dimethylamino)propyl], reaction products with acrylic acid** reaction product of 2-propenoic acid and n-[3-(dimethylamino) propyl]

	perfluoroalkane sulfonamides
CAS Number	192662-29-6
Structural Formula	
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, reaction products with succinic anhydride monopolyisobutylene derivs.** 306-67-2A
CAS Number	253682-96-1
Structural Formula	
Molecular Formula	
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**2-Propenoic acid, butyl ester, polymer with 2[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl 2-propenoate and 2-methylpropyl 2-propenoate** copolymer of n-butyl acrylate, iso-butylacrylate and 2-(n-butylperfluorooctanesulfonamido)ethylacrylate
CAS Number	594864-11-6
Structural Formula	**No Structural Diagram Available**
Molecular Formula	(C17H16F17NO4S. C7H12O2. C7H12O2)x
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Sulfonamides, C4-8-alkane, perfluoro, N-[4,7-dimethyl-4-[[(1-methylpropylidene)amino]oxy]-3,5-dioxa-6-aza-4-silanon-6-en-1-yl]-N-ethyl** perfluoroalkylsulfonamide (C4-8), N-([bis(2-butanoneoximo)methylsilyl]oxy)-ethyl-N-ethyl
CAS Number	944578-05-6
Structural Formula	

	
Molecular Formula	Unspecified
Molecular Weight	

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