



ANNEX I. Fentanyl-related substances with no currently known legitimate uses

No	Uses ^b	Common Substance Names*	Other / Alternative Substance Name(s) ^c	Abbreviations	CAS No. Base ^d	CAS No. Salt (HCl unless specified) ^d	Intl Ctrl. ^e
1	Unknown	2,2'-Difluorofentanyl	<i>N</i> -(1-(2-fluorophenethyl)piperidin-4-yl)- <i>N</i> -(2-fluorophenyl)propionamide; 2'- <i>ortho</i> -difluorofentanyl; 2'-fluoro <i>ortho</i> -fluorofentanyl			2748343-88-4	
2	Unknown	2-Fluorobutyl fentanyl	<i>N</i> -(2-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; <i>N</i> -(2-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-butanamide; <i>ortho</i> -fluoro butyrylfentanyl	2-FBF; 2F-BF; o-FBF	2163847-76-3	2306823-44-7	
3	No Known Uses	2-Fluorofentanyl	<i>N</i> -(2-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)propionamide; <i>ortho</i> -fluorofentanyl	2-FF; o-FF	910616-29-4	2749327-14-6	1961/I
4	Unknown	2-Furanylethyl fentanyl	<i>N</i> -[1-[2-(2-furanyl)ethyl]-4-piperidinyl]- <i>N</i> -phenyl-propanamide		802544-02-1	1443-49-8	
5	Unknown	2-Isopropylfuran fentanyl	2-isopropyl furanyl fentanyl; <i>ortho</i> -isopropyl furanyl fentanyl; <i>N</i> -(2-isopropylphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)furan-2-carboxamide; 2-Furanylfentanyl <i>ortho</i> -2-isopropylphenyl analogue	2-isopropyl Fu-F	2748591-50-4		
6	Unknown	2-Methoxy furanyl fentanyl	<i>N</i> -(2-methoxyphenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-2-furancarboxamide; 2-Furanylfentanyl <i>ortho</i> -2-methoxyphenyl analogue; <i>ortho</i> -methoxy furanyl fentanyl	2-methoxy FuF; 2-Meo-FuF	101343-50-4		
7	Unknown	2-Methyl furanyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -(<i>o</i> -tolyl)furan-2-carboxamide; <i>ortho</i> -methyl furanyl fentanyl	2-methyl FuF		2309383-08-0	
8	Unknown	3-allyl fentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-3-(prop-2-en-1-yl)piperidin-4-yl]propanamide		82208-84-2	81988-10-5	
9	Unknown	3-Fluoro butyrylfentanyl	<i>N</i> -(3-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; 3-fluoro butyrfentanyl; 3-fluoro butyrylfentanyl; <i>meta</i> -fluoro butyrfentanyl	3-FBF; 3F-BF; m-FBF	23060827-51-8	2306821-51-9	
10	Unknown	3-Fluorofentanyl	<i>N</i> -(3-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)propionamide; <i>N</i> -(3-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]propanamide; <i>meta</i> -fluorofentanyl; <i>m</i> -fluorofentanyl		90736-22-4	2309383-04-6	
11	Unknown	3-Furanyl fentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]furan-3-carboxamide; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylfuran-3-carboxamide		101343-82-2	2306823-47-0 (HCl); 101343-83-3 (oxalate)	
12	Unknown	3-Methyl butyr fentanyl	<i>N</i> -[3-methyl-1-(2-phenylethyl)piperidin-4-yl]- <i>N</i> -phenylbutanamide; 3-methyl butyrylfentanyl	3-MBF	97605-09-9	88641-20-7	
13	No Known Uses	3-Methylfentanyl	<i>N</i> -[3-methyl-1-(2-phenethyl)piperidin-4-yl]- <i>N</i> -phenylpropanamide; mefentanyl; <i>N</i> -(3-methylphenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide	3-MF; F7209	42045-86-3		1961/I,IV
14	No Known Uses	3-Methylthiofentanyl	<i>N</i> -(3-methyl-1-[2-(thiophen-2-yl)ethyl]piperidin-4-yl)- <i>N</i> -phenylpropanamide; <i>N</i> -[3-methyl-1-[2-(2-thienyl)ethyl]-4-piperidinyl]propionanilide		86052-04-2	742029-96-5 (cis); 131690-45-4 (cis, HCl)	1961/I,IV



15	Unknown	3-Phenylpropanoylfentanyl	<i>N</i> ,3-diphenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; 3-Phenylpropanoylfentanyl; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-benzenepropanamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]-3-phenylpropanamide; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> ,3-diphenylpropanamide; β '-phenyl fentanyl; hydrocinnamoyl fentanyl		79279-02-0		
16	Unknown	4'-Methyl acetylfentanyl	<i>N</i> -[1-[2-(4-methylphenyl)ethyl]-4-piperidinyl]- <i>N</i> -phenylacetamide; Acetyl fentanyl 4-methylphenethyl analogue; <i>para</i> -methylphenethylacetylfentanyl		90736-15-5	1071703-95-1	
17	Unknown	4-Chloro furanyl fentanyl	<i>N</i> -(4-chlorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)furan-2-carboxamide; <i>para</i> -chloro furanyl fentanyl; <i>p</i> -chloro furanyl fentanyl	4-chloro FuF	2748496-77-5		
18	No Known Uses	4-Fluorobutyrfentanyl	<i>N</i> -(4-Fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; <i>N</i> -(4-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]butanamide; 4-fluoro butyrylfentanyl; <i>p</i> -fluoro butyrylfentanyl; <i>para</i> -fluoro butyrylfentanyl	4-FBF; 4F-BF; p-FBF	244195-31-1	2306823-23-2	1961/I
19	No Known Uses	4-Fluoroisobutyrfentanyl	<i>N</i> -(4-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)isobutyramide; 4-fluoroisobutyrylfentanyl; <i>para</i> -Fluoroisobutyrfentanyl	4-FIBF, pFIBF, 4F-iBF	244195-32-2		1961/I
20	Unknown	4'-Methoxy fentanyl	<i>N</i> -(4-Methoxyphenyl)- <i>N</i> -(1-phenethyl-4-piperidyl)propanamide; 4-methoxy fentanyl; <i>p</i> -methoxy fentanyl		1688-41-1	23609-41-8	
21	Unknown	4''-Methoxy fentanyl	<i>N</i> -[1-[2-(4-methoxyphenyl)ethyl]piperidin-4-yl]- <i>N</i> -phenylpropanamide				
22	No Known Uses	4-Methoxybutyrylfentanyl	<i>N</i> -(4-methoxyphenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]butanamide; <i>N</i> -(4-methoxyphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; <i>para</i> -methoxybutyrfentanyl; <i>para</i> -methoxybutyrylfentanyl	4-MeO-BF	2088842-68-4	2306825-45-4	
23	Unknown	4-Methoxyfuranylfentanyl	<i>N</i> -(4-methoxyphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)furan-2-carboxamide; <i>para</i> -methoxy furanylfentanyl	4-methoxy Fu-F; <i>p</i> -methoxy Fu-F		2748591-41-3	
24	Unknown	4-Methoxymethyl fentanyl	<i>N</i> -[4-(methoxymethyl)-1-(2-phenylethyl)piperidin-4-yl]- <i>N</i> -phenylpropanamide	R-30490	60618-49-7		
25	Unknown	4-Phenylfentanyl	<i>N</i> -phenyl- <i>N</i> -[4-phenyl-1-(2-phenylethyl)piperidin-4-yl]propanamide		120448-97-7		
26	Unknown	Acetyl carfentanil	Methyl 4-[acetyl(phenyl)amino]-1-(2-phenylethyl)piperidine-4-carboxylate		131821-81-3		
27	No Known Uses	Acetylfentanyl	<i>N</i> -[1-(2-phenylethyl)-4-piperidyl]- <i>N</i> -phenylacetamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]acetamide; desmethyl fentanyl;	AF; MCV4848; NIH10485	3258-84-2	117332-89-5	1961/I,IV
28	Unknown	Acetylnorfentanyl*	<i>N</i> -phenyl- <i>N</i> -(piperidin-4-yl)acetamide		1607-68-7	22352-82-5	
29	No Known Uses	Acetyl- <i>alpha</i> -methylfentanyl	α -methylacetylfentanyl; <i>N</i> -phenyl- <i>N</i> -[1-(1-phenylpropan-2-yl)piperidin-4-yl]acetamide; <i>N</i> -[1-(α -methylphenethyl)-4-piperidyl]acetanilide; <i>alpha</i> -methyl acetyl fentanyl		101860-00-8		1961/I,IV
30	No Known Uses	Acrylfentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]prop-2-enamide; acryloylfentanyl		82003-75-6	79279-03-1	1961/I
31	Unknown	<i>alpha</i> -Methylbutyryl fentanyl	<i>N</i> -[1-(1-methyl-2-phenylethyl)-4-piperidinyl]- <i>N</i> -phenylbutanamide; <i>alpha</i> -methyl fentanyl butanamide analogue		244195-36-6		

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32	No Known Uses	<i>alpha</i> -Methylfentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(1-phenylpropan-2-yl)piperidin-4-yl]propanamide; <i>N</i> -[1-(α -methylphenethyl)-4-piperidyl]propionanilide; α -methylfentanyl		79704-88-4	1443-44-3	1961/I,IV
33	No Known Uses	<i>alpha</i> -Methylthiofentanyl	<i>N</i> -phenyl- <i>N</i> -[1-[1-(thiophen-2-yl)propan-2-yl]piperidin-4-yl]propanamide; <i>N</i> -[1-[1-methyl-2-(2-thienyl)ethyl]-4-piperidyl]propionanilide		103963-66-2	117332-94-2	1961/I,IV
34	Unknown	Benzodioxole fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbenzo[d][1,3]dioxole-5-carboxamide	benzodioxole-F, BZD-F	2306823-01-6		
35	Unknown	Benzoyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbenzamide; phenylfentanyl			2309383-16-0	
36	Unknown	Benzoylbenzyl fentanyl*	<i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -phenylbenzamide; Phenylbenzyl fentanyl; <i>N</i> -phenyl- <i>N</i> -[1-(phenylmethyl)-4-piperidinyl]-benzamide; Piperidine, 1-benzyl-4-(<i>N</i> -phenylbenzamido)-;		95869-86-6	2748592-16-5	
37	Unknown	Benzylfentanyl*	<i>N</i> -phenyl- <i>N</i> -[1-(phenylmethyl)-4-piperidinyl]-propanamide; <i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -phenylpropanamide; 1-Benzyl-4-(<i>N</i> -phenylpropion-amido)piperidine	R-4129	1474-02-8	5156-58-1	
38	Unknown	Benzylfuranyl fentanyl*	<i>N</i> -(1-benzyl-4-piperidyl)- <i>N</i> -phenyl-furan-2-carboxamide; <i>N</i> -Benzyl Furanyl Norfentanyl, Furanyl benzyl fentanyl; <i>N</i> -phenyl- <i>N</i> -[1-(phenylmethyl)-4-piperidinyl]-2-furancarboxamide	Benzyl FuF	497240-21-8	2711605-09-1	
39	No Known Uses	<i>beta</i> -Hydroxy-3-methylfentanyl	<i>N</i> -[1-(2-hydroxy-2-phenethyl)-3-methylpiperidin-4-yl]- <i>N</i> -phenylpropanamide; Ohmefentanyl		78995-14-9	135159-44-3	1961/I,IV
40	No Known Uses	<i>beta</i> -Hydroxyfentanyl	<i>N</i> -[1-(2-hydroxy-2-phenethyl)piperidin-4- <i>N</i> -phenylpropanamide; <i>N</i> -[1-(β -hydroxyphenethyl)-4-piperidyl]propionanilide		78995-10-5	1473-95-6	1961/I,IV
41	Unknown	<i>beta</i> -Methyl fentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylpropyl)-4-piperidinyl]-propanamide			1443-43-2	
42	Unknown	Brifentanil	<i>N</i> -[(3 <i>R</i> ,4 <i>S</i>)-1-[2-(4-ethyl-5-oxotetrazol-1-yl)ethyl]-3-methylpiperidin-4-yl]- <i>N</i> -(2-fluorophenyl)-2-methoxyacetamide; <i>N</i> -(1-(2-(4-ethyl-4,5-dihydro-5-oxo-1 <i>H</i> -tetrazol-1-yl)ethyl)-3-methyl-4-piperidinyl)- <i>N</i> -(2-fluorophenyl)-2-methoxy-acetamide; rel- <i>N</i> -[(3 <i>R</i> ,4 <i>S</i>)-1-[2-(4-ethyl-5-oxo-4,5-dihydro-1 <i>H</i> -tetrazol-1-yl)ethyl]-3-methylpiperidin-4-yl]- <i>N</i> -(2-fluorophenyl)-2-methoxyacetamide	A-3331	101345-71-5		
43	No Known Uses	Butyrfentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbutyramide; fentanyl butanamide analogue; butyrylfentanyl	BF; NIH-10486	1169-70-6	1443-52-3	1961/I
44	Unknown	Butyryl norfentanyl*	<i>N</i> -phenyl- <i>N</i> -4-piperidinyl-butanamide; Butyr norfentanyl			1432-03-7	
45	Unknown	Butyryl-F-fentanyl <i>N</i> -benzyl analogue*	<i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -(4-fluorophenyl)butyramide; benzyl <i>para</i> -fluoro butyryl fentanyl			1048466-07-4	
46	Unknown	Crotonyl fentanyl	(2 <i>E</i>)- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-2-butenamide; (<i>E</i>)- <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbut-2-enamide		760930-59-4	223500-23-0	1961/I
47	Unknown	Cyclohexyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylcyclohexanecarboxamide			2309383-14-8	
48	No Known Uses	Cyclopentyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylcyclopentanecarboxamide; cyclopentanoyl fentanyl	CP-F	2088918-01-6	2306824-94-0	
49	No Known Uses	Cyclopropyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylcyclopropanecarboxamide		1169-68-2	2749394-87-2 (citrate)	1961/I

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50	Unknown	Despropionyl-2-fluorofentanyl*	<i>N</i> -(2-fluorophenyl)-1-phenethylpiperidin-4-amine; despropionyl <i>ortho</i> -fluorofentanyl	2F-ANPP; o-F-ANPP	864422-91-3		
51	Unknown	Despropionyl 3-Methylfentanyl*	3-methyl- <i>N</i> -phenyl-1-(2-phenylethyl)piperidin-4-amine; <i>N</i> -(3-methylphenyl)-1-(2-phenylethyl)piperidin-4-amine	3-Methyl 4-ANPP	144480-31-9		
52	Unknown	Despropionyl <i>ortho</i> -Methylfentanyl*	<i>N</i> -(<i>o</i> -tolyl)-1-(2-phenylethyl)piperidin-4-amine; despropionyl <i>o</i> -methylfentanyl; despropionyl 2-methylfentanyl; <i>ortho</i> -methyl 4-ANPP	<i>o</i> -Methyl-ANPP	28456-18-0	28456-19-1	
53	Unknown	Fentanyl 4- <i>N</i> -propyl analogue	<i>N</i> -(1-propyl-4-piperidinyl)propionanilide; <i>N</i> -(1-propyl-4-piperidinyl)- <i>N</i> -phenylpropanamide		1060694-93-0		
54	Unknown	Fentanyl isothiocyanate	<i>N</i> -(1-[2-(4-isothiocyanatophenyl)ethyl]piperidin-4-yl)- <i>N</i> -phenylpropanamide		85951-63-9		
55	Unknown	<i>meta</i> -Methyl acetylfentanyl	<i>N</i> -(3-methylphenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-acetamide; fentanyl <i>meta</i> -tolyl acetyl analogue; 3-methyl acetylfentanyl		1640-10-4	1443-51-2	
56	Unknown	<i>meta</i> -Methylfentanyl	<i>N</i> -(3-methylphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)propanamide; <i>N</i> -(3-Methylphenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]propanamide; fentanyl <i>meta</i> -tolyl analogue; 3-methylfentanyl		47480-47-7	1465-22-1	
57	Unknown	Fentanyl <i>N</i> -oxide	<i>N</i> -[1-oxido-1-(2-phenylethyl)piperidin-4-yl]- <i>N</i> -phenylpropanamide	Fentanyl impurity A		85893-37-4	
58	Unknown	<i>ortho</i> -Methyl acetylfentanyl	1-(2-phenylethyl)-4-(2-methyl- <i>N</i> -acetanilido)piperidine; <i>N</i> -(2-methylphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)acetamide; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -(<i>o</i> -tolyl)acetamide; 2-methyl acetylfentanyl; <i>o</i> -methyl acetyl fentanyl		90736-11-1		
59	Unknown	Fentanyl propyl acetyl analogue	<i>N</i> -phenyl- <i>N</i> -[1-(3-phenylpropyl)piperidin-4-yl]acetamide		90736-10-0	1089709-79-4	
60	Unknown	Fentanyl propyl analogue	<i>N</i> -Phenyl- <i>N</i> -[1-(3-phenylpropyl)-4-piperidinyl]propanamide		59708-54-2	117332-88-4	
61	No Known Uses	Furanylfentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]furan-2-carboxamide; 2-Furanyl fentanyl; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-2-furancarboxamide	FU-F	101345-66-8	101365-56-4	1961/I
62	Unknown	Furanyl norfentanyl	<i>N</i> -phenyl- <i>N</i> -4-piperidinyl-2-furancarboxamide; <i>N</i> -Phenyl- <i>N</i> -(4-piperidinyl)-2-furamide		1047187-49-4		
63	No Known Uses	Isobutyrylfentanyl	2-methyl- <i>N</i> -phenyl- <i>N</i> -[1-(1-phenylpropan-2-yl)piperidin-4-yl]propanamide; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylisobutyramide; isobutyrfentanyl		119618-70-1	117332-90-8	
64	Unknown	Isobutyryl-F-fentanyl <i>N</i> -benzyl analogue	<i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -(4-fluorophenyl)isobutyramide; 2-methyl- <i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -(4-fluorophenyl)propanamide; benzyl <i>para</i> -fluoro isobutyryl fentanyl		959295-10-4		
65	Unknown	Lofentanil	3-methyl carfentanil; methyl rel-(-)-(3 <i>R</i> ,4 <i>S</i>)-3-methyl-1-(2-phenylethyl)-4-[phenyl(propanoyl)amino]piperidine-4-carboxylate		61380-40-3		
66	No Known Uses	Methoxyacetylfentanyl	2-methoxy- <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylacetamide; 2-methoxy- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-acetamide			101365-54-2	1961/I
67	Unknown	Mirfentanil	<i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]- <i>N</i> -(pyrazin-2-yl)furan-2-carboxamide		117523-47-4		

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68	Unknown	<i>N</i> -Ethyl carfentanil	1-ethyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; <i>N</i> -ethyl norcarfentanil; <i>N</i> -ethyl remifentanil; <i>N</i> -ethyl <i>nor</i> -remifentanil				
69	Unknown	Hexanoyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylhexanamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]hexanamide			2583550-67-6	
70	Unknown	<i>N</i> -Isopropyl carfentanil	1-isopropyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; <i>N</i> -isopropyl norcarfentanil; <i>N</i> -isopropyl remifentanil; <i>N</i> -isopropyl norremifentanil				
71	Unknown	<i>N</i> -Methyl carfentanil	1-methyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; <i>N</i> -methyl norcarfentanil; <i>N</i> -methyl remifentanil; <i>N</i> -methyl norremifentanil	R-32395	59708-50-8		
72	Unknown	<i>N</i> -Methyl norfentanyl*	<i>N</i> -(1-methyl-4-piperidyl)- <i>N</i> -phenyl-propanamide; <i>N</i> -(1-methyl-4-piperidinyl)- <i>N</i> -phenyl-propanamide; <i>N</i> -methylfentanyl; methyl 1-methyl-4-[phenyl(propanoyl)amino]piperidine-4-carboxylate		22261-99-0	24775-71-1	
73	Unknown	Norcarfentanil*	4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester		72996-78-2	61085-87-8	
74	Unknown	Norfentanyl*	<i>N</i> -phenyl- <i>N</i> -4-piperidinyl-propanamide; Desphenethylfentanyl; NSC 89293; 4-(<i>N</i> -Propionylaniline)piperidine	NSC89293	1609-66-1	22352-81-4	1988/I
75	Unknown	Norsufentanil*	<i>N</i> -[4-(methoxymethyl)-4-piperidinyl]- <i>N</i> -phenyl-propanamide	R30451	61086-18-8	84196-16-7	
76	Unknown	<i>N</i> -Propyl carfentanil	1-propyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; <i>N</i> -propyl norcarfentanil; <i>N</i> -propyl remifentanil; <i>N</i> -propyl norremifentanil		61086-29-1		
77	No Known Uses	Ocfentanil	Ocfentanyl; <i>N</i> -(2-Fluorophenyl)-2-methoxy- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]acetamide		101343-69-5	112964-97-3	1961/I
78	Unknown	<i>ortho</i> -Methyl acryl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -(<i>o</i> -tolyl)acrylamide; 2-methyl acrylfentanyl; <i>o</i> -methyl acryloylfentanyl			2749299-21-4	
79	no Known Uses	<i>ortho</i> -Methyl methoxyacetyl fentanyl	2-methoxy- <i>N</i> -(<i>o</i> -tolyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-acetamide; <i>o</i> -methyl methoxyacetylfentanyl; 2-Methyl Methoxyacetylfentanyl	<i>ortho</i> -Me-MeO-Ace-Fentanyl		2748485-23-4	
80	no Known Uses	<i>para</i> -Chloroisobutyrylfentanyl	<i>N</i> -(4-chlorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)isobutyramide; <i>N</i> -(4-chlorophenyl)-2-methyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]propanamide; 4-Chloroisobutyrylfentanyl; <i>para</i> -chloroisobutyrylfentanyl	4-Cl-iBF, 4Cl-iBF	244195-34-4	2306827-85-8	
81	no Known Uses	<i>para</i> -Fluorofentanyl	<i>N</i> -(4-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; 4'-fluoro- <i>N</i> -(1-phenethyl-4-piperidinyl)propionanilide; 4-fluoro fentanyl	4-FF; p-FF; NIH10491	90736-23-5	117332-92-0	1961/I,IV
82	no Known Uses	Tetrahydrofuranlyfentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]tetrahydrofuran-2-carboxamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]oxolane-2-carboxamide	THF-F	2142571-01-3		1961/I
83	Unknown	Tetramethylcyclopropanefentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]-2,2,3,3-tetramethylcyclopropane-1-carboxamide; Tetramethylcyclopropane-F	TMCP-fentanyl, TMCP-F			

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84	Unknown	Thienyl fentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(thiophen-2-ylmethyl)piperidin-4-yl]propanamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-thienylmethyl)-4-piperidinyl]-propanamide		122861-39-6	117332-93-1	
85	Unknown	2-Thiofuranyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylthiophene-2-carboxamide; thiofuranyl fentanyl; 2-thiophenoyl fentanyl; thiophene fentanyl			2306823-39-0	
86	No Known Uses	Thiofentanyl	<i>N</i> -phenyl- <i>N</i> -(1-[2-(thiophen-2-yl)ethyl]piperidin-4-yl)propanamide; <i>N</i> -[1-[2-(2-thienyl)ethyl]-4-piperidinyl]propionanilide		1165-22-6	79278-88-9	1961/I,IV
87	Unknown	Trefentanil	<i>N</i> -(1-[2-(4-ethyl-5-oxo-4,5-dihydro-1 <i>H</i> -tetrazol-1-yl)ethyl]-4-phenylpiperidin-4-yl)- <i>N</i> -(2-fluorophenyl)propanamide	A-3665	120656-74-8	120656-93-1	
88	Unknown	Valeryl fentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-pentanamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]pentanamide; pentanoyl fentanyl; Pentanyl fentanyl; NIH 10488	VF	122882-90-0	117332-91-9	1961/I
89	No Known Uses	<i>beta</i> -Hydroxythiofentanyl	<i>N</i> -(1-(2-hydroxy-2-(thiophen-2-yl)ethyl)piperidin-4-yl)- <i>N</i> -phenylpropionamide; β -hydroxythiofentanyl		1474-34-6		
90	Unknown	<i>omega</i> -hydroxyfentanyl	3-hydroxy- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; ω -hydroxyfentanyl		83708-11-6		
91	Unknown	<i>ortho</i> -Methylfentanyl	<i>N</i> -[2-methyl-1-(2-phenethyl)piperidin-4-yl]- <i>N</i> -phenylpropanamide; 2-methylfentanyl; <i>o</i> -methylfentanyl		2141-47-1	1443-53-4	
92	Unknown	<i>para</i> -Fluorocyclopropylbenzylfentanyl	<i>N</i> -(1-benzyl-4-piperidinyl)- <i>N</i> -(4-fluorophenyl)cyclopropanecarboxamide; <i>N</i> -benzyl <i>para</i> -fluoro Cyclopropyl norfentanyl				
93	Unknown	2-Fluoroisobutyrylfentanyl	<i>N</i> -(2-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)isobutyramide ; <i>N</i> -(2-fluorophenyl)-2-methyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; 2-fluoro isobutyrylfentanyl; <i>o</i> -fluoroisobutyrylfentanyl; <i>ortho</i> -Fluoroisobutyrylfentanyl	2-FIBF; <i>o</i> -FIBF	2351142-33-9		
94	Unknown	3,4-Dimethoxyfentanyl	<i>N</i> -(1-(3,4-dimethoxyphenethyl)piperidin-4-yl)- <i>N</i> -phenylpropionamide; 3,4-dimethoxyfentanyl				
95	Unknown	3-Methylcrotonyl fentanyl	3-methyl- <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbut-2-enamide; <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-3-methylbut-2-enamide; Seneciolyfentanyl; <i>beta</i> '-methyl crotonyl fentanyl				
96	Unknown	4-Hydroxybutyrylfentanyl	<i>N</i> -(4-hydroxyphenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-butanamide; <i>N</i> -(4-hydroxyphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; 4-hydroxybutyrylfentanyl; <i>p</i> -hydroxybutyrylfentanyl; <i>para</i> -hydroxybutyrylfentanyl	4-HO-BF			
97	Unknown	Acetylbenzylfentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(phenylmethyl)-4-piperidinyl]-acetamide; <i>N</i> -(1-benzyl-4-piperidinyl)- <i>N</i> -phenylacetamide		1237-52-1	1082674-73-4	
98	Unknown	Despropionyl 4-fluorofentanyl*	<i>N</i> -(4-fluorophenyl)-1-phenethylpiperidin-4-amine; <i>N</i> -(4-fluorophenyl)-1-(2-phenylethyl)-4-piperidinamine; despropionyl 4-FF; despropionyl <i>p</i> -FF; despropionyl <i>para</i> -fluorofentanyl; despropionyl <i>p</i> -fluorofentanyl; <i>para</i> -fluoro 4-ANPP	4F-4-ANPP	122861-41-0		
99	Unknown	<i>ortho</i> -Methylcyclopropylfentanyl	<i>N</i> -(2-methylphenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]cyclopropanecarboxamide; <i>N</i> -(1-phenethylpiperidin-4-yl)-			2749910-65-2	



			<i>N</i> -(<i>o</i> - <i>tolyl</i>)cyclopropanecarboxamide; 2-methylcyclopropylfentanyl			
100	Unknown	<i>para</i> -Fluorofuranylfentanyl	<i>N</i> -(4-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidyl]furan-2-carboxamide; <i>N</i> -(4-Fluorophenyl)- <i>N</i> -(1-(2-phenylethyl)-4-piperidinyl)-2-furamide; 4-fluoro furanylfentanyl		1802489-71-9	2748623-32-5
101	Unknown	<i>para</i> -Methylfentanyl	<i>N</i> -(4-methylphenyl)- <i>N</i> -[1-(2-Phenylethyl)-4-piperidinyl]propanamide; 4-methylfentanyl; <i>para</i> -Tolyfentanyl		1838-67-1	1807-12-1
102	Unknown	<i>para</i> -Methyl cyclopropyl fentanyl	<i>N</i> -(4-Methylphenyl)- <i>N</i> -(1-(2-phenylethyl)piperidin-4-yl)cyclopropanecarboxamide; 4-methyl-cyclopropylfentanyl; 4'-methyl-cyclopropylfentanyl; <i>p</i> -methylcyclopropylfentanyl			2749910-43-6
103	Unknown	<i>para</i> -Fluoro benzyl fentanyl*	<i>N</i> -(4-fluorophenyl)- <i>N</i> -[1-(phenylmethyl)-4-piperidinyl]propanamide; <i>N</i> -[1-(benzyl)-4-piperidyl]- <i>N</i> -(4-fluorophenyl)propionamide; <i>N</i> -benzyl-4-F-norfentanyl; <i>p</i> -fluorobenzylorfenfentanyl		202859-28-7	2748624-34-0
104	Unknown	<i>N</i> -Methyl Cyclopropyl norfentanyl*	<i>N</i> -(1-methylpiperidin-4-yl)- <i>N</i> -phenylcyclopropanecarboxamide; <i>N</i> -methyl norcyclopropyl fentanyl			2703474-67-1
105	Unknown	Benzylacrylfentanyl*	<i>N</i> -(1-benzylpiperidin-4-yl)- <i>N</i> -phenylprop-2-enamide			1956368-29-8
106	Unknown	<i>para</i> -Fluoro crotonyl fentanyl	(<i>E</i>)- <i>N</i> -(4-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)but-2-enamide; 4-fluoro Crotonyl fentanyl; <i>p</i> -fluoro Crotonyl fentanyl			
107	Unknown	<i>para</i> -Methyl cyclopentyl fentanyl	<i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -(<i>p</i> - <i>tolyl</i>)cyclopentanecarboxamide; 4-methyl Cyclopentyl fentanyl; <i>p</i> -methyl Cyclopentyl fentanyl			2748409-68-7
108	Unknown	Despropionyl 2,2'-difluorofentanyl*	1-(2-fluorophenethyl)- <i>N</i> -(2-fluorophenyl)piperidin-4-amine; 2'-fluoro <i>ortho</i> -fluoro ANPP; Despropionyl 2'-fluoro 2-FF; Despropionyl 2'-fluoro- <i>ortho</i> -Fluorofentanyl			
109	Unknown	Tetrahydrofuranfentanyl 3-tetrahydrofurancarboxamide	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]oxolane-3-carboxamide; 3-THF fentanyl; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenyltetrahydrofuran-3-carboxamide; Tetrahydro-3-furanylfentanyl; Tetrahydrofuranfentanyl 3-THF;			
110	Unknown	w-1-HydroxyFentanyl	<i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-2-hydroxypropanamide; 2-Hydroxy- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]propanamide; <i>omega</i> -1-HydroxyFentanyl		99624-68-7 (base)	
111	Unknown	3-Fluoromethoxyacetylfentanyl	<i>N</i> -(3-fluorophenyl)-2-methoxy- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]acetamide; <i>meta</i> -fluoro methoxyacetylfentanyl			
112	Unknown	4-Anilino-1-benzylpiperidine*	<i>N</i> -phenyl-1-(phenylmethyl)-4-piperidinamine; 1-benzyl-4-(phenylamino)piperidine; 1-benzyl-4-anilinopiperidine; USP Fentanyl Related Compound D	4-ANBP; NSC 76613	1155-56-2	
113	Unknown	3-Methyl-4-piperidone*	3-Methylpiperidin-4-one		5773-58-0	4629-78-1
114	No Use	1-Phenethylpiperidin-4-ylidenephénylamine*	<i>N</i> -Phenyl-1-(2-phenylethyl)piperidin-4-imine; 1-phenethyl-4-phenyliminopiperidine; <i>N</i> -(1-Phenethylpiperidine-4-ylidene)aniline		57958-48-2	
115	No Use	1-Phenethylpiperidin-4-yl propionate*	[1-(2-phenylethyl)piperidin-4-yl] propanoate; 1-Phenethyl-4-propionyloxypiperidine		1462260-87-2	
116	Unknown	1-(1-Phenylpropan-2-yl)piperidin-4-one*	1-(1-methyl-2-phenylethyl)-4-piperidinone		16771-90-7	

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117	Unknown	<i>N</i> -(3-Methyl-4-piperidinyl)aniline*	3-methyl- <i>N</i> -phenylpiperidin-4-amine; <i>N</i> -phenyl-(3-methylpiperidin-4-yl)amine; 4-anilino-3-methylpyridine		53757-54-3 (cis); 57444-99-2 (trans)		
118	Unknown	3-Methyl benzylfentanyl*	<i>N</i> -(3-methyl-1-(phenylmethyl)piperidin-4-yl)- <i>N</i> -phenylpropanamide; <i>N</i> -(3-methyl-1-benzylpiperidin-4-yl)- <i>N</i> -phenylpropanamide; 1-benzyl-3-methyl-4-(<i>N</i> -propananilido)piperidine; <i>N</i> -benzyl 3-methyl norfentanyl	isofentanyl	79278-40-3		
119	Unknown	3-Methyl norfentanyl*	<i>N</i> -(3-methylpiperidin-4-yl)- <i>N</i> -phenylpropanamide; <i>N</i> -(3-methyl-4-piperidinyl)propionanilide; <i>Nor</i> -3-methylfentanyl		33794-42-2		
120	Unknown	3-Methyl-1-phenethyl-4-piperidone*	3-Methyl-1-(2-phenylethyl)-4-piperidone; 3-Methyl-1-phenethylpiperidin-4-one; 1-benzyl-3-methyl-4-piperidone	3-methyl NPP	82003-82-5	108897-28-5	
121	Unknown	Despropionyl 3-fluorofentanyl*	<i>N</i> -(3-fluorophenyl)-1-phenethylpiperidin-4-amine; <i>N</i> -(3-fluorophenyl)-1-(2-phenylethyl)-4-piperidinamine; despropionyl 3-FF; despropionyl <i>m</i> -FF; despropionyl <i>meta</i> -fluorofentanyl; despropionyl <i>m</i> -fluorofentanyl; <i>meta</i> -fluoro 4-ANPP	3F-ANPP	416881-38-4		
122	Unknown	<i>para</i> -Fluoro cyclopropyl norfentanyl*	<i>N</i> -(4-piperidyl)- <i>N</i> -(4-fluorophenyl)cyclopropanecarboxamide				
123	Unknown	Cyclopropyl norfentanyl*	<i>N</i> -(4-piperidyl)- <i>N</i> -phenylcyclopropanecarboxamide		802543-92-6	1432-04-8	
124	Unknown	Isobutyryl norfentanyl*	2-methyl- <i>N</i> -phenyl- <i>N</i> -piperidin-4-ylpropanamide; <i>N</i> -phenyl- <i>N</i> -4-piperidinyl-isobutyramide; 2-methyl- <i>N</i> -phenyl- <i>N</i> -(4-piperidinyl)propanamide		1046436-53-6		
125	Unknown	Valeryl norfentanyl*	<i>N</i> -phenyl- <i>N</i> -4-piperidinyl-pentanamide				
126	Unknown	4-(Phenylamino)-1-benzyl-4-piperidinecarbonitrile*	4-anilino-1-benzylpiperidine-4-carbonitrile; 1-benzyl-4-cyano-4-(phenylamino)piperidine;		968-86-5		
127	Unknown	Despropionyl carfentanil*	Methyl 4-anilino-1-(2-phenylethyl)piperidine-4-carboxylate; 4-(phenylamino)-1-(2-phenylethyl)-4-piperidinecarboxylic acid methyl ester; methyl 4-(phenylamino)-1-(2-phenylethyl)-4-piperidinecarboxylate		61085-55-0		
128	Unknown	Benzyl carfentanil*	methyl 1-(phenylmethyl)-4-(phenylpropanoylamino)piperidine-4-carboxylate; methyl 1-benzyl-4-(<i>N</i> -phenylpropionamido)piperidine-4-carboxylate; 4-(1-oxopropyl-phenylamino)-1-(phenylmethyl)-4-piperidinecarboxylic acid methyl ester; benzyl remifentanil		61085-72-1		
129	Unknown	Norocfentanil*	<i>N</i> -(2-fluorophenyl)-2-methoxy- <i>N</i> -piperidin-4-ylacetamide; <i>N</i> -(2-fluorophenyl)-2-methoxy- <i>N</i> -piperidin-4-yl-ethanamide; norocfentanil		132896-22-1		
130	No Use	1-Phenethylpiperidin-4-ol*	1-(2-phenylethyl)piperidin-4-ol; 1-phenethyl-4-hydroxypiperidine		3518-76-1		
131	Unknown	1-Benzyl-3-(methoxycarbonyl)-4-piperidone*	4-oxo-1-(phenylmethyl)-3-piperidinecarboxylic acid methyl ester; methyl-1-benzyl-4-oxo-3-piperidinecarboxylate; <i>N</i> -benzyl-3-methoxycarbonyl-4-piperidone; <i>N</i> -benzyl-4-oxonipeptic acid methyl ester;		57611-47-9		
132	Unknown	2-(2-Chloroethyl)-1,4-dimethoxybenzene*			51016-50-3		
133	Unknown	2,5-Dimethoxyfentanyl	<i>N</i> -[1-[2-(2,5-dimethoxyphenyl)ethyl]-4-piperidyl]- <i>N</i> -phenylpropanamide; 2',5'-dimethoxy fentanyl; <i>N</i> -(2C-H) Fentanyl				
134	Unknown	<i>para</i> -Fluoro 4-ANBP*		<i>p</i> -F-4-ANBP	131587-27-4		

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			4-fluoro 4-ANBP; despropionyl <i>N</i> -benzyl para-fluoro norfentanyl; <i>N</i> -(4- fluorophenyl)-1-(phenylmethyl)-4-piperidinamine; 1-Benzyl- <i>N</i> -(4-fluorophenyl)piperidin-4-amine				
135	Unknown	4-Anilinopiperidine- <i>t</i> -BOC*	tert-butyl 4-(phenylamino)piperidine-1-carboxylate; 4-(phenylamino-1-piperidinecarboxylic acid 1,1-dimethylethyl ester; tert-butyl-4-anilinopiperidine-1-carboxylate; 1-Boc-4-(phenylamino)piperidine; 4-Anilino-1-Boc-piperidine	4-AP- <i>t</i> -BOC	125541-22-2		1988/I
136	Unknown	Isovalerylfentanyl	3-Methyl- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]butanamide; β '-methylbutyrylfentanyl		2583550-97-2	2583550-98-3	
137	Unknown	<i>meta</i> -Fluoro furanyl fentanyl	<i>N</i> -(3-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidyl]furan-2-carboxamide; 3-fluoro furanylfentanyl				
138	Unknown	<i>ortho</i> -Fluoro furanyl fentanyl	<i>N</i> -(2-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidyl]furan-2-carboxamide; 2-fluoro furanylfentanyl		101343-73-1	2749619-19-8 (HCl); 101343-74-2 (oxalate)	
139	Unknown	Phenethyl 4-ANPP	<i>N</i> ,1-diphenethyl- <i>N</i> -phenylpiperidin-4-amine; <i>N</i> -Phenyl- <i>N</i> ,1-bis(2-phenylethyl)-4-piperidinamine; <i>N</i> , <i>N</i> -phenethyl-phenyl-1-(2-phenylethyl)piperidin-4-amine,		2712312-12-2		
140	Unknown	Fentanyl carbamate	ethyl <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]carbamate; ethylformate fentanyl; ethylformate 4-ANPP; phenyl[1-(2-phenylethyl)-4-piperidinyl]-carbamic acid, ethyl ester		1465-20-9		
141	Unknown	2-Fluoro acrylfentanyl	<i>N</i> -(2-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]prop-2-enamide; <i>N</i> -(2-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)acrylamide; <i>ortho</i> -Fluoro acrylfentanyl; <i>o</i> -fluoro acrylfentanyl		2309383-09-1		
142	Unknown	3'-Methyl-4-fluoroisobutyrylfentanyl	<i>N</i> -(4-fluorophenyl)- <i>N</i> -(1-(3-methylphenethyl)piperidin-4-yl)isobutyramide; 3'-Methyl-4-fluoroisobutyrylfentanyl	3-Me'-4F-iBF			
143	Unknown	3-Fluoroisobutyrylfentanyl	<i>N</i> -(3-fluorophenyl)-2-methyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; <i>Meta</i> -fluoro isobutyrylfentanyl; <i>N</i> -(3-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)isobutyramide; <i>meta</i> -Fluoroisobutyrylfentanyl	3-FiBF; <i>m</i> -FiBF	2306827-88-1	2306827-89-2	
144	Unknown	4-(<i>p</i> -Fluoroanilino)-1-Boc-piperidine*	<i>tert</i> -butyl 4-(4-fluoroanilino)piperidine-1-carboxylate; 1-(<i>tert</i> -butoxycarbonyl)-4-[(4-fluorophenyl)amino]piperidine; 4-(4-fluoro-phenylamino)-piperidine-1-carboxylic acid <i>tert</i> -butyl ester; 1-Boc-4-(4-fluorophenylamino)-piperidine; 4-(<i>p</i> -Fluoroanilino)-1-Boc-piperidine; 1-Boc- <i>para</i> -fluoro-4-anilinopiperidine; <i>tert</i> -butyl 4-[(4-fluorophenyl)amino]piperidine-1-carboxylate; 1-Boc- <i>para</i> -fluoro-4-AP; <i>para</i> -fluoro- <i>t</i> -boc-4-AP; 4-(<i>para</i> -Fluoroanilino)-1-Boc-piperidine		288573-56-8	911103-09-8	

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145	Unknown	<i>ortho</i> -Chlorofentanyl	<i>N</i> -(2-chlorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-propanamide; 2-chlorofentanyl; <i>o</i> -chlorofentanyl; <i>N</i> -(2-chlorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; <i>N</i> -(2-chlorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)propionamide		88796-96-7	77463-24-2	
146	Unknown	<i>para</i> -Chlorofentanyl	<i>N</i> -(4-chlorophenyl)- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-propanamide; 2-chlorofentanyl; <i>p</i> -chlorofentanyl; <i>N</i> -(4-chlorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]propanamide; <i>N</i> -(4-chlorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)propionamide		117994-22-6	117994-27-1	
147	Unknown	<i>alpha</i> '-Methyl butyryl fentanyl	2-methyl- <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenylbutanamide; 2-Methyl- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]butanamide; (2-Methyl) Butyryl fentanyl			2748591-35-5	
148	Unknown	<i>beta</i> -Methyl acetyl fentanyl	<i>N</i> -phenyl- <i>N</i> -(1-(2-phenylpropyl)piperidin-4-yl)acetamide; <i>N</i> -phenyl- <i>N</i> -[1-(1-phenyl-2-propyl)-4-piperidinyl]-acetamide		90736-19-9	2749910-75-4	
149	Unknown	<i>ortho</i> -Methoxybutyryl fentanyl	<i>N</i> -(2-methoxyphenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)butyramide; <i>N</i> -(2-methoxyphenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]butanamide; <i>o</i> -methoxybutyrylfentanyl; 2-methoxybutyrfentanyl; 2-methoxybutyrylfentanyl		1648274-07-0	2749433-35-8	
150	Unknown	<i>para</i> -Fluoro acrylfentanyl	<i>N</i> -(4-fluorophenyl)- <i>N</i> -[1-(2-phenylethyl)piperidin-4-yl]prop-2-enamide; <i>N</i> -(4-fluorophenyl)- <i>N</i> -(1-phenethylpiperidin-4-yl)acrylamide; 4-Fluoro acrylfentanyl; <i>p</i> -fluoro acrylfentanyl		2306823-27-6		
151	Unknown	<i>para</i> -Fluoro 4-anilino-piperidine*	<i>N</i> -(4-fluorophenyl)piperidin-4-amine; <i>para</i> -fluoro 4-AP; <i>p</i> -fluoro 4-AP; <i>N</i> -(4-fluorophenyl)-4-piperidinamine; (4-Fluorophenyl)-piperidin-4-yl-amine; (4-fluorophenyl)-4-piperidylamine		38043-08-2	2093571-14-1; 1193389-70-6 (2HCl)	
152	Unknown	<i>ortho</i> -chloro 4-anilino- <i>N</i> -phenethylpiperidine*	<i>N</i> -(2-chlorophenyl)-1-phenethylpiperidin-4-amine; <i>ortho</i> -chloro-ANPP; <i>N</i> -(2-chlorophenyl)-1-(2-phenylethyl)piperidin-4-amine; despropionyl <i>ortho</i> -chlorofentanyl; despropionyl 2-chlorofentanyl		101365-53-1		
153	Unknown	<i>para</i> -Bromo 4-ANPP*	<i>N</i> -(4-bromophenyl)-1-(2-phenylethyl)-4-piperidinamine; <i>p</i> -bromo 4-ANPP; Despropionyl <i>p</i> -Bromofentanyl; Despropionyl <i>para</i> -Bromofentanyl	<i>p</i> -bromo 4-ANPP			
154	Unknown	<i>ortho</i> -Methyl Boc-4-AP*	<i>ortho</i> -Methyl 4-Anilino-1-Boc-piperidine; 4-(<i>ortho</i> -tolylamino)-1-Boc-piperidine; 4-(<i>o</i> -tolylamino)-1-Boc-piperidine; tert-butyl 4-(2-methylanylino)piperidine-1-carboxylate; 4-[(2-methylphenyl)amino]-1-piperidinecarboxylic acid, 1,1-dimethylethyl ester		1154101-90-2		
155	Unknown	Fentanyl Methyl Carbamate	methyl (1-phenethylpiperidin-4-yl)(phenyl)carbamate; Carbamic acid, <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-, methyl ester		2706537-37-1		
157	Unknown	Tetrahydrothiophene fentanyl	Tetrahydrothiofuranyl fentanyl; THF thiophene fentanyl; tetrahydro- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-2-thiophenecarboxamide; 2-Thiophenecarboxamide, tetrahydro- <i>N</i> -phenyl- <i>N</i> -[1-(2-phenylethyl)-4-piperidinyl]-; DEA NO. 9869; <i>N</i> -(1-phenethylpiperidin-4-yl)- <i>N</i> -phenyltetrahydrothiophene-2-carboxamide;		2748301-41-7		

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158	Unknown	<i>ortho</i> -Fluoroacetyl fentanyl	2-Fluoroacetyl fentanyl; <i>o</i> -Fluoroacetyl fentanyl; N-(2-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-acetamide			
159	Unknown	<i>para</i> -Chlorobutyryl fentanyl	4-Chlorobutyryl fentanyl; <i>p</i> -Chlorobutyryl fentanyl; N-(4-chlorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-butanamide; 4'-Chloro butanoyl fentanyl; Butanamide, N-(4-Chlorophenyl)-N-(1-(2-Phenylethyl)-4-piperidinyl)-;	244195-33-3	2306823-72-1	
160	Unknown	Methacrylfentanyl	Methacrylic fentanyl; 2-methyl-N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-2-propenamide; N-(1-phenethylpiperidin-4-yl)-N-phenylmethacrylamide; 2-Propenamide, 2-methyl-N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-	2361296-62-8	2585190-73-2	
161	Unknown	Phenylacetyl fentanyl	N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-benzeneacetamide; enzeneacetamide, N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-; Phenacetyl fentanyl	117994-41-9	2749618-58-2	
162	Unknown	<i>para</i> -fluoro Cyclopentyl fentanyl	<i>p</i> -fluoro Cyclopentanoyl fentanyl; <i>para</i> -fluoro Cyclopentanoyl fentanyl; <i>p</i> -fluoro Cyclopentyl fentanyl; N-(4-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-cyclopentanecarboxamide; Cyclopentanecarboxamide, N-(4-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-	2749394-70-3	2749394-71-4	
163	Unknown	<i>para</i> -methoxy Tetrahydrofuran fentanyl	<i>p</i> -methoxy Tetrahydrofuran fentanyl; <i>p</i> -methoxy THF fentanyl; <i>para</i> -methoxy THF fentanyl; tetrahydro-N-(4-methoxyphenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-2-furancarboxamide; 2-Furancarboxamide, tetrahydro-N-(4-methoxyphenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-	2713391-48-9	2749299-32-7	
164	Unknown	<i>para</i> -chloro Cyclobutyl fentanyl	4-chloro Cyclobutyl fentanyl; <i>p</i> -chloro Cyclobutyl fentanyl; N-(4-chlorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-cyclobutanecarboxamide; Cyclobutanecarboxamide, N-(4-chlorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-;	2748289-99-6	2748290-00-6	
165	Unknown	Senecioyl fentanyl	3-methyl Crotonyl fentanyl; β'-methyl Crotonyl fentanyl; 3-methyl-N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-2-butenamide; 3-methyl-N-(1-phenethylpiperidin-4-yl)-N-phenylbut-2-enamide	2630378-28-6		
166	Unknown	<i>para</i> -chloro Cyclopropyl fentanyl	4-chloro Cyclopropyl fentanyl; 4-chloro Cyclopropyl fentanyl; <i>p</i> -chloro Cyclopropyl fentanyl; N-(4-chlorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-cyclopropanecarboxamide; Cyclopropanecarboxamide, N-(4-chlorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-	2748591-60-6	2748591-61-7	
167	Unknown	<i>para</i> -chloro Methoxyacetyl fentanyl	4-chloro Methoxyacetyl fentanyl; <i>p</i> -chloro Methoxyacetyl fentanyl; N-(4-chlorophenyl)-2-methoxy-N-[1-(2-phenylethyl)-4-piperidinyl]-acetamide; Acetamide, N-(4-chlorophenyl)-2-methoxy-N-[1-(2-phenylethyl)-4-piperidinyl]-	735227-59-5	101345-75-9	
168	Unknown	Tetramethylfentanyl	2,2,6,6-Tetramethylfentanyl; TMF; 2,2,6,6-TMF; N-phenyl-N-[2,2,6,6-tetramethyl-1-(2-phenylethyl)-4-piperidyl]propanamide			TMF
169	Unknown	Tetramethyl-4-AP*	4-Anilino-2,2,6,6-Tetramethylpiperidine; 2,2,6,6-Tetramethyl-4-phenylaminopiperidine; 2,2,6,6-Tetramethyl-N-phenyl-4-piperidinamine;	52098-50-7		
170	Unknown	Bromofentanyl	N-(4-bromophenyl)-N-[1-(2-phenylethyl)-4-piperidyl]propenamide; N-(bromophenyl)-N-[1-(2-	117994-23-7		

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			phenylethyl)-4-piperidiny]-propanamide; p-Bromofentanyl; para-Bromofentanyl			
171	Unknown	meta-Fluoroacetylfentanyl	3-Fluoroacetyl Fentanyl; N-(3-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidiny]-acetamide			
172	Unknown	para-Fluoroacetylfentanyl	N-(4-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidiny]-acetamide; p-Fluoroacetyl fentanyl; NIH 10022			104818-37-3
173	Unknown	Heptanoyl Fentanyl	N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]heptanamide; N-(1-phenethylpiperidin-4-yl)-N-phenylheptanamide			2749326-85-8
174	Unknown	meta-Chlorofentanyl	N-(3-chlorophenyl)-N-[1-(2-phenylethyl)piperidin-4-yl]propenamide			
175	Unknown	para-Methylacetyl Fentanyl	N-(1-phenethylpiperidin-4-yl)-N-(p-tolyl)acetamide; 4-methyl Acetyl fentanyl; p-methyl Acetyl fentanyl			2748496-88-8
176	Unknown	Fluoro-Norfentanyl*	N-(4-fluorophenyl)-N-4-piperidiny]-propanamide; para-Fluoro-Norfentanyl;			202859-51-6
177	Unknown	Methyl-N-Boc-Norfentanyl*	tert-butyl 4-(N-(o-tolyl)propionamido)piperidine-1-carboxylate			
178	Unknown	N-Boc 4-Fluoro Norfentanyl*	tert-butyl 4-(N-(4-fluorophenyl)propionamido)piperidine-1-carboxylate			
179	Unknown	N-propionyl para-Fluoronorfentanyl*	N-(4-fluorophenyl)-N-(1-propionylpiperidin-4-yl)propionamide; N-propionyl p-fluoro Norfentanyl			
180	Unknown	N-propionyl Norfentanyl*	N-phenyl-N-(1-propanoylpiperidin-4-yl)propenamide; N-phenyl-N-(1-propanoylpiperidin-4-yl)propenamide; N-[1-(1-oxopropyl)-4-piperidiny]-N-phenylpropanamide; N-[1-(1-oxopropyl)-4-piperidiny]-N-phenyl-propanamide			1890117-32-4
181	Unknown	t-Boc-Norfentanyl*	4-[(1-oxopropyl)phenylamino]-1-piperidinecarboxylic acid, 1,1-dimethylethyl ester; tert-butyl 4-(N-propanoylanilino)piperidine-1-carboxylate; N-Boc Norfentanyl			2665695-47-4
182	Unknown	meta-Chloro ANPP*	N-(3-chlorophenyl)-1-(2-phenylethyl)-4-piperidinamine; m-chloro 4-ANPP; meta-chloro 4-ANPP; Despropionyl m-Chlorofentanyl; Despropionyl meta-Chlorofentanyl			1307806-90-1
183	Unknown	para-Chloro ANPP*	N-(4-chlorophenyl)-1-(2-phenylethyl)-4-piperidinamine; p-chloro 4-ANPP; para-chloro 4-ANPP; Despropionyl p-Chlorofentanyl; Despropionyl para-Chlorofentanyl			2818387-94-7

* Denotes a possible precursor of a fentanyl-related substance

a Fentanyl-related substances include those with a chemical structure related to fentanyl.

b No known uses is defined as one or more Governments or regional or international organizations having had reviewed the substance and found no legitimate use. Unknown refers to substances for which the Board is unaware of any Governments or regional or international organizations having reviewed or identified any legitimate use for the substance.

c Different chemicals names are separated by a semi-colon (;).

d Chemical Abstract Services (CAS) registry numbers may not currently be available for all substances. CAS numbers are unique for every form of a substance (e.g., salts and isomers). Therefore, there may be more than one CAS number.

e International control refers to the appropriate United Nations Conventions and schedule which the substance is listed. Not all substances under international control have legitimate uses.