

*Table 2.* Table showing all the nitrogen containing volatiles reported in the literature that have been detected in faeces, urine, breath, skin secretions, milk, blood and saliva from healthy humans (alphabetical listing)

CAS-number	Compound name	Faeces	Urine	Breath	Skin	Milk	Blood	Saliva
60-35-5	acetamide	F		Br				
75-05-8	acetonitrile	F		Br			Bl	Sa
36357-38-7	5-acetyl-2-methylpyridine	F						
85213-22-5	2-acetyl-1-pyrroline		U					
ui	aliphatic amine ui				Sk			
3167-49-5	6-amino-3-pyridine carboxylic acid				Sk			
7664-41-7	ammonia	F <sup>B</sup>	U <sup>C</sup>	Br			Bl	
613-89-8	2-aminoacetophenone					M		
62-53-3	aniline					M		
105-60-2	1-aza-2-cycloheptanone			Br				
4025-37-0	2-(aziridin-1-yl)-ethanamine	F						
7782-79-8	azoimide			Br				
503-28-6	azomethane			Br				
623-26-7	1,4-benzenedicarbonitrile				Sk			
100-47-0	benzonitrile	F		Br		M		
95-16-9	1,3-benzothiazole			Br	Sk			
2440-22-4	2-((2H)-benzotriazol-2-yl)-4-methylphenol				Sk			
120-40-1	N,N-bis(2-hydroxyethyl)dodecanamide				Sk			
590-88-5	1,3-butanediamine				Sk			
110-60-1	1,4-butanediamine / putrescine			Br				
30273-11-1	4-sec-butylaniline				Sk			
3622-84-2	N-butyl-benzenesulfonamide	F						
111-36-4	butylisocyanate		U					
592-82-5	butylisothiocyanate		U					
589-33-3	1-butylpyrrole		U					
483-76-1	delta-cadinene							Sa
39029-41-9	gamma-cadinene							Sa
628-02-4	caproamide			Br				
108-42-9	3-chlorobenzeneamine				Sk			
18936-17-9	2-cyanobutane			Br				
4403-61-6	2-cyano-2-butene		U					
100-45-8	4-cyanocyclohexene				Sk			
78-82-0	1-cyano-1-methylethane			Br				
109-74-0	1-cyanopropane			Br				
126-98-7	2-cyano-1-propene			Br				
4786-20-3	1-cyano-1-propylene			Br				
2516-34-9	cyclobutylamine	F		Br				
766-93-8	cyclohexylformamide			Br				
3385-21-5	1,3-diaminocyclohexane			Br				
1563-90-2	N,N-dibutylacetamide					M		
761-65-9	N,N-dibutylformamide					M		
608-27-5	2,3-dichlorobenzeneamine				Sk			
4553-62-2	1,3-dicyanobutane			Br				
109-77-3	dicyanomethane			Br				

CAS-number	Compound name	Faeces	Urine	Breath	Skin	Milk	Blood	Saliva
55282-35-4	N,N-didodecylformamide				Sk			
685-91-6	N,N-diethylacetamide			Br				
617-84-5	N,N-diethylformamide			Br				
616-40-0	1,1-diethylhydrazine			Br				
134-62-3	N,N-diethyl-3-methylbenzamide / DEET				Sk			
634-95-7	1,1-diethylurea			Br				
59-48-3	1,3-dihydro-(2H)-indol-2-one	F						Sa
534-26-9	4,5-dihydro-2-methyl-(1H)-imidazole				Sk			
29926-41-8	1-(4,5-dihydro-2-thiazolyl)-ethanone	F						
1003-10-7	dihydro-2-(3H)-thiophenone	F	U					
127-19-5	N,N-dimethylacetamide			Br				
124-40-3	dimethylamine	F	U					
926-64-7	2-(dimethylamino)acetonitrile		U	Br				Sa
6970-60-1	2-Dimethylaminocyclohexanone			Br				
121-69-7	N,N-dimethylaniline			Br				
95-68-1	2,4-dimethylbenzenamine	F						
71126-69-7	N,N-dimethyl-3-benzyloxypropylamine				Sk			
71126-65-3	N,N-dimethyl-3-butoxypropylamine				Sk			
1467-79-4	dimethylcyanamide			Br				
4030-22-2	3,4-dimethyl-1,5-dihydro-(2H)-pyrrol-2-one			Br				
112-18-5	N,N-dimethyl-1-dodecanamine / N,N-dimethyl-1-dodecylamine				Sk			
108-00-9	N,N-dimethyl-1,2-ethanediamine				Sk			
68-12-2	N,N-dimethylformamide		U	Br				Sa
3002-57-1	N,N-dimethyl-1-heptadecanamine				Sk			
112-69-6	N,N-dimethyl-1-hexadecanamine / N,N-dimethyl-1-hexadecylamine				Sk			
124-28-7	N,N-dimethyl-1-octadecanamine / N,N-dimethyl-1-octadecylamine				Sk			
17678-60-3	N,N-dimethyl-1-pentadecanamine				Sk			
106-55-8	2,5-dimethylpiperazine				Sk			
5910-89-4	2,3-dimethylpyrazine		U					
123-32-0	2,5-dimethylpyrazine		U					
108-50-9	2,6-dimethylpyrazine		U		Sk			
1072-68-0	1,4-dimethylpyrazole			Br				
694-31-5	1,5-dimethyl-(1H)-pyrazole			Br	Sk			
67-51-6	(1H)-3,5-dimethylpyrazole			Br				
108-48-5	2,6-dimethylpyridine	F		Br				
874-14-6	1,3-dimethyl-2,4(1H,3H)-pyrimidinedione			Br				
600-28-2	2,3-dimethyl-(1H)-pyrrole			Br				
625-82-1	2,4-dimethyl-(1H)-pyrrole			Br				
625-84-3	2,5-dimethylpyrrole ui		U	Br				
112-75-4	N,N-dimethyl-1-tetradecanamine				Sk			
758-16-7	dimethylthioformamide			Br				
6972-05-0	N,N-dimethylthiourea				Sk			
60729-78-4	N,N-dimethyl-1-tridecanamine				Sk			
598-94-7	N,N-dimethylurea		U					

CAS-number	Compound name	Faeces	Urine	Breath	Skin	Milk	Blood	Saliva
122-39-4	diphenylamine							Sa
75-04-7	ethylamine		U					
51-79-6	ethyl carbamate				Sk			
45592-46-9	ethylcyclopentamine				Sk			
13360-65-1	3-ethyl-2,5-dimethylpyrazine				Sk			
624-80-6	1-ethylhydrazine			Br				
100-74-3	4-ethylmorpholine				Sk			
3665-80-3	N-ethyl-4-nitroaniline						Bl	
13961-37-0	2-ethylpiperazine				Sk			
1484-80-6	2-ethylpiperidine				Sk			
536-78-7	3-ethylpyridine			Br				
1551-06-0	2-ethylpyrrole			Br				
1551-16-2	3-ethyl-(1H)-pyrrole			Br				
617-92-5	1-ethyl-(1H)-pyrrole		U	Br				
24050-09-7	2-ethyl-1,3-thiazolidine			Br				
640-19-7	2-fluoroacetamide						Bl	
628-73-9	hexanenitrile	F						
302-01-2	hydrazine			Br				
74-90-8	hydrogen cyanide			Br				
ui	hydroxy acetanilide ui				Sk			Sa
2043-43-8	2-hydroxypropanamide			Br				
120-72-9	indole	F	U		Sk			Sa
ui	indole substituted				Sk			
24683-00-9	3-isobutyl-2-methoxypyrazine					M		
85665-88-9	2-isobutyl-4-methylpyridine			Br				
3173-53-3	isocyanatocyclohexane			Br				
109-90-0	isocyanato-ethane			Br				
3173-56-6	isocyanato-3-methylbenzene				Sk			
3386-97-8	4-isothiocyanato-1-butene		U					
1122-82-3	isothiocyanatocyclohexane			Br				
56601-42-4	isothiocyanatocyclopropane		U					Sa
556-61-6	isothiocyanatomethane	F						
57-06-7	3-isothiocyanato-1-propene	F	U	Br				Sa
4786-19-0	methallyl cyanide		U	Br				
75-12-7	methanamide	F		Br				
74-89-5	methanamine / methylamine			Br				
100-97-0	methenamine			Br				
1117-97-1	N-methoxymethylamine			Br				
79-16-3	methyl acetamide					M		
100-61-8	N-methyl aniline					M		
95-53-4	o-methyl aniline / o-toluidine					M		
85-91-6	N-methylantranilic acid, methyl ester / methyl-N-methylantranilate				Sk			
625-28-5	2-methylbutane secondary mononitrile			Br				
16529-56-9	2-methyl-3-butenenitrile			Br				
82000-09-7	methyl cinnoline					M		
5053-43-0	2-methyl-1,3-diazine			Br				
624-78-2	N-methyl ethanamide			Br				

CAS-number	Compound name	Faeces	Urine	Breath	Skin	Milk	Blood	Saliva
38239-27-9	N-methylene-ethenamine			Br				
13925-03-6	2-methyl-6-ethyl-pyrazine		U					
123-39-7	N-methylformamide		U					Sa
95-20-5	2-methyl indole			Br				
83-34-1	3-methyl-indole	F	U			M		Sa
614-96-0	5-methyl indole			Br				
933-67-5	7-methyl indole			Br				
146420-36-2	methylisothiazole				Sk			
693-97-0	5-methylisothiazole		U					
4747-21-1	N-methyl-2-methylpropanamine			Br				
20651-30-3	5-methyl-2-methylthio-4(1H)-pyrimidinone				Sk			
625-74-1	2-methyl-1-nitropropane		U					
55090-44-3	N-methyl-N-nitroso-1-dodecanamine				Sk			
542-54-1	4-methylpentanenitrile			Br				
5961-33-1	3-methyl-3-phenyl-azetidine							Sa
109-01-3	1-methylpiperazine				Sk			
931-20-4	1-methyl-2-piperidinone		U					
75-66-1	2-methyl-2-propanethiol		U					
109-08-0	2-methylpyrazine	F	U	Br				
1453-58-3	3-methyl-(1H)-pyrazole	F		Br				
109-06-8	2-methylpyridine				Sk			Sa
108-99-6	3-methylpyridine		U	Br				Sa
695-34-1	4-methylpyridinamine				Sk			
636-41-9	2-methyl-(1H)-pyrrole		U	Br	Sk			
616-43-3	3-methyl-(1H)-pyrrole	F	U	Br	Sk			
96-54-8	1-methyl-pyrrole	F	U	Br				
1192-58-1	1-methyl-(1H)-pyrrole-2-carbaldehyde			Br				
3581-87-1	2-methylthiazole			Br				
59121-24-3	4-methylthiobutane nitrile		U					
556-64-9	methyl thiocyanate	F	U					
598-52-7	1-methyl-2-thiourea			Br				
598-50-5	methylurea				Sk			
1119-29-5	4-methyl-N-valeramide			Br				
13925-09-2	2-methyl-6-vinylpyrazine		U					
5807-02-3	2-(N-morpholino)acetonitrile			Br				
1696-20-4	1-morpholin-4-yl-ethanone			Br				
54-11-5	nicotine				Sk			
10102-43-9	nitric oxide			Br			Bl	
1122-60-7	nitrocyclohexane			Br				
75-52-5	nitromethane			Br		M		
616-45-5	2-oxopyrrolidine			Br				
462-94-2	1,5-pentanediamine / cadaverine			Br				
1551-12-8	2-pentylpyrrole				Sk			
37421-04-8	2-phenoxyethylmethylamine				Sk			
948-65-2	2-phenylindole						Bl	
4620-54-6	1-phenyl-3-(1-piperidiny)-2-buten-1-one				Sk			
108-89-4	p-picoline			Br				
1333-41-1	picoline		U					

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110-89-4	piperidine		U					
3040-44-6	1-piperidineethanol				Sk			
62985-38-0	1-piperidinemethanamine				Sk			
27154-43-4	piperidinone ui		U					
675-20-7	2-piperidinone	F		Br	Sk			
79-05-0	propanamide	F		Br	Sk			
75-31-0	propan-2-amine						Bl	
107-12-0	propanenitrile			Br				
18328-90-0	2-propen-1-amine, N-ethyl-2-methyl-			Br				
107-13-1	2-propenenitrile			Br				
10546-70-0	n-propylbenzamide				Sk	M		Sa
290-37-9	pyrazine		U	Br	Sk			
105-20-4	(1H)-pyrazole-3-ethanamine / betazole	F						
25016-16-4	1- ((1H)-pyrazol-4-yl)ethanone		U					
462-08-8	3-pyridinamine				Sk			
504-24-5	4-pyridinamine				Sk			
110-86-1	pyridine	F	U	Br	Sk			
100-54-9	3-pyridinecarbonitrile	F						
108-96-3	4(1H)-pyridinone				Sk			
289-95-2	pyrimidine			Br				
109-97-7	pyrrole	F	U	Br		M		Sa
123-75-1	pyrrolidine			Br				
635-46-1	1,2,3,4-tetrahydroquinoline				Sk			
1187-03-7	1,1,3,3-tetraethylurea			Br				
2782-91-4	1,1,3,3-tetramethyl-2-thiourea			Br				
632-22-4	tetramethylurea			Br				
51410-11-8	1-tetrazol-2-yl-ethanone	F						
288-47-1	1,3-thiazole			Br				Sa
504-78-9	thiazolidine				Sk			
62-56-6	thiourea				Sk			
75-50-3	trimethylamine		U	Br				
1184-78-7	trimethylamine-N-oxide			Br				
2199-41-9	2,3,5-trimethyl-(1H)-pyrrole			Br				
930-87-0	1,2,5-trimethyl-(1H)-pyrrole			Br				
ui	trimethylpyrazine				Sk			
14667-55-1	2,3,5-trimethylpyrazine		U					
3855-78-5	2,3,4-trimethyl-(1H)-pyrrole			Br				
2437-72-1	2,3,4-trimethylquinoline				Sk			
57-13-6	urea				Sk			
3718-04-5	4-vinyl imidazole				Sk			
4177-16-6	2-vinylpyrazine		U					

NOTES      ui    unidentified isomer  
                  B    seen in illness  
                  C    unpublished data