Quantitation Report (Not Reviewed)

Data Path : Z:\svoasrv\HPCHEM1\BNA_N\Data\BN122722\
Data File : BN023486.D
Acq On : 27 Dec 2022 13:22
Operator : CG/JU
Sample : SSTDICC0.1
Misc :
ALS Vial : 3 Sample Multiplier: 1

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Quant Time: Dec 28 03:34:14 2022
Quant Method : Z:\svoasrv\HPCHEM1\BNA_N\Methods\8270-SIM-BN122722.M
Quant Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
QLast Update : Wed Dec 28 03:33:25 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) 1,4-Dichlorobenzene-d4	7.977	152	6286	0.400	ng		0.00
7) Naphthalene-d8	10.797	136	17614	0.400	ng		0.00
13) Acenaphthene-d10	14.624	164	10003	0.400	ng		0.00
19) Phenanthrene-d10	17.377	188	21406	0.400	ng		0.00
29) Chrysene-d12	21.567	240	17629	0.400	ng		0.00
35) Perylene-d12	24.008	264	15519	0.400	ng		0.00
System Monitoring Compounds							
4) 2-Fluorophenol	5.522	112	1460	0.084	ng		0.00
5) Phenol-d6	7.140	99	1745	0.084	ng		0.00
8) Nitrobenzene-d5	9.142	82	1349	0.095	ng		0.00
11) 2-Methylnaphthalene-d10	12.382	152	2347	0.078	ng		0.00
14) 2,4,6-Tribromophenol	16.124	330	433	0.115	ng		0.00
15) 2-Fluorobiphenyl	13.255	172	4096	0.099	ng		0.00
27) Fluoranthene-d10	19.406	212	4904	0.077	ng		0.00
31) Terphenyl-d14	20.000	244	4354	0.103	ng		0.00
Target Compounds							Qvalue
2) 1,4-Dioxane	3.377	88	640	0.078	ng		97
3) n-Nitrosodimethylamine	3.709	42	744	0.099	ng	#	95
6) bis(2-Chloroethyl)ether	7.399	93	1685	0.094	ng		97
9) Naphthalene	10.840	128	4427	0.084	ng		96
10) Hexachlorobutadiene	11.128	225	900	0.094	ng	#	100
12) 2-Methylnaphthalene	12.458	142	3360	0.096	ng		98
16) Acenaphthylene	14.346	152	3747	0.078	ng		100
17) Acenaphthene	14.688	154	2671	0.082	ng		98
18) Fluorene	15.671	166	3710	0.087	ng		100
20) 4,6-Dinitro-2-methylph...	15.751	198	205	0.075	ng	#	34
21) 4-Bromophenyl-phenylether	16.558	248	1220	0.098	ng		96
22) Hexachlorobenzene	16.682	284	1476	0.107	ng		99
23) Atrazine	16.831	200	915	0.093	ng		97
24) Pentachlorophenol	17.030	266	308	0.095	ng		96
25) Phenanthrene	17.415	178	5847	0.081	ng		99
26) Anthracene	17.501	178	4611	0.074	ng		99
28) Fluoranthene	19.435	202	6317	0.080	ng		100
30) Pyrene	19.798	202	6449	0.086	ng		99
32) Benzo(a)anthracene	21.549	228	5579	0.089	ng		98
33) Chrysene	21.603	228	5990	0.086	ng		98
34) Bis(2-ethylhexyl)phtha...	21.468	149	3826	0.108	ng		98
36) Indeno(1,2,3-cd)pyrene	26.551	276	5458	0.079	ng		98
37) Benzo(b)fluoranthene	23.259	252	5427	0.091	ng	#	79
38) Benzo(k)fluoranthene	23.309	252	5198	0.082	ng	#	78
39) Benzo(a)pyrene	23.897	252	4163	0.080	ng	#	70
40) Dibenzo(a,h)anthracene	26.572	278	4132	0.075	ng	#	88
41) Benzo(g,h,i)perylene	27.341	276	4924	0.081	ng	#	90

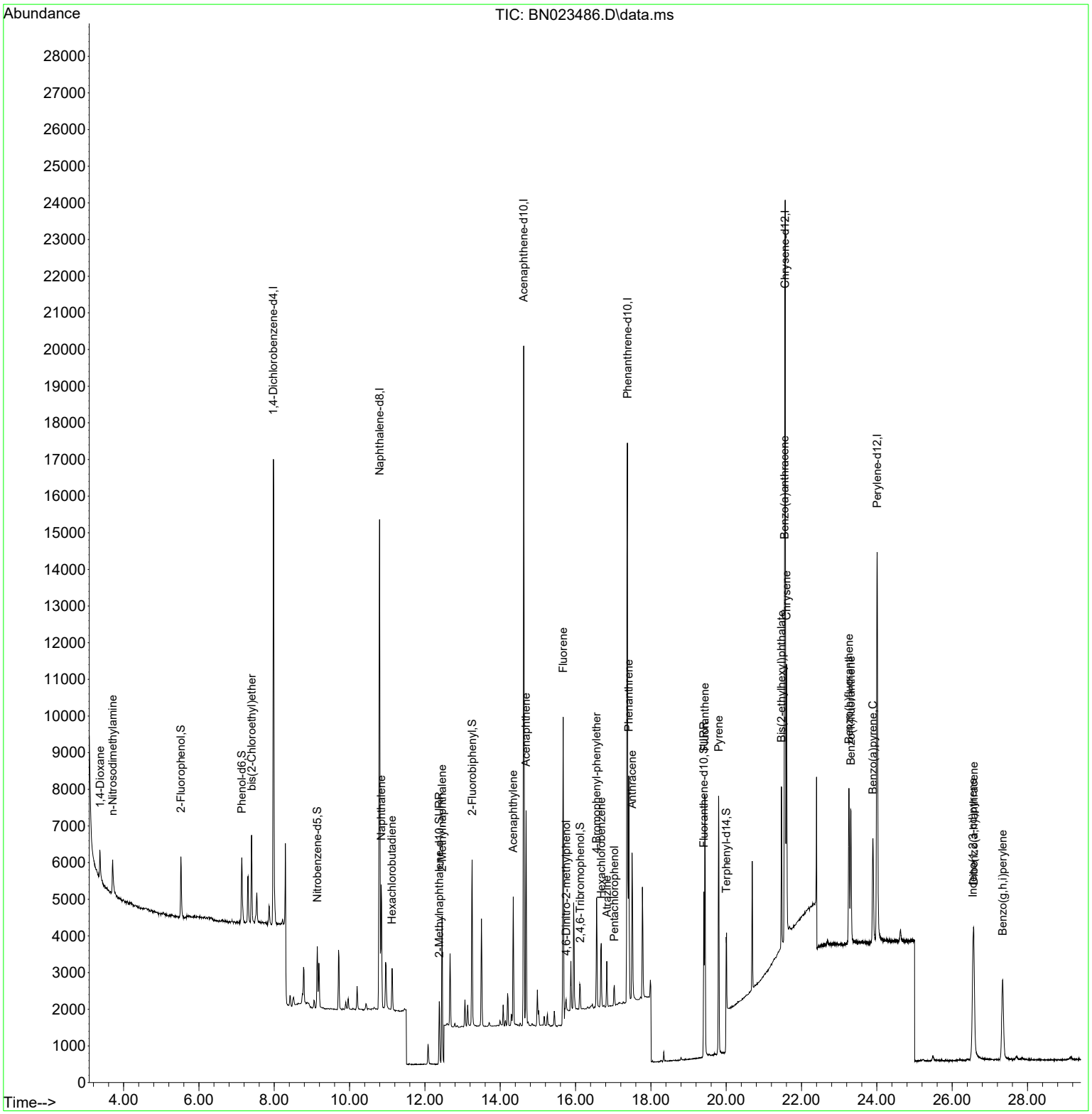
(#) = qualifier out of range (m) = manual integration (+) = signals summed

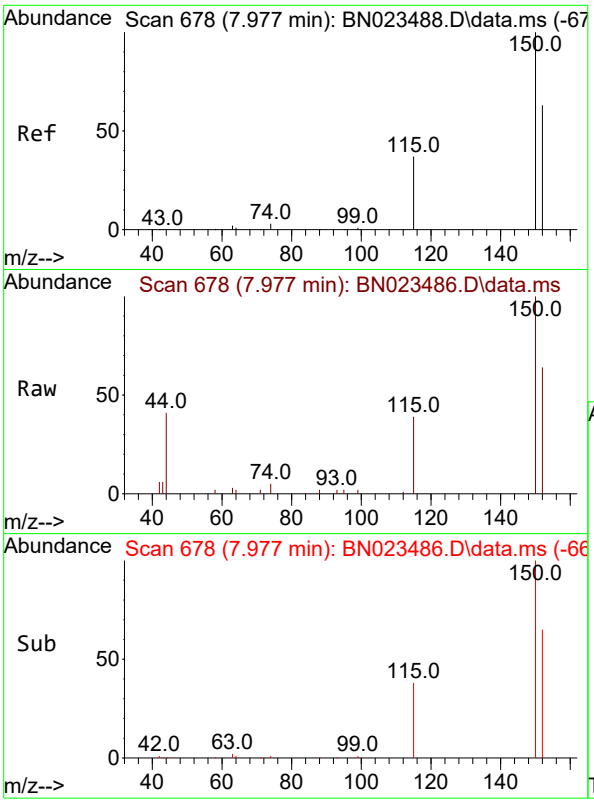
Quantitation Report (Not Reviewed)

Data Path : Z:\svoasrv\HPCHEM1\BNA_N\Data\BN122722\
Data File : BN023486.D
Acq On : 27 Dec 2022 13:22
Operator : CG/JU
Sample : SSTDICC0.1
Misc :
ALS Vial : 3 Sample Multiplier: 1

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Quant Time: Dec 28 03:34:14 2022
Quant Method : Z:\svoasrv\HPCHEM1\BNA_N\Methods\8270-SIM-BN122722.M
Quant Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
QLast Update : Wed Dec 28 03:33:25 2022
Response via : Initial Calibration



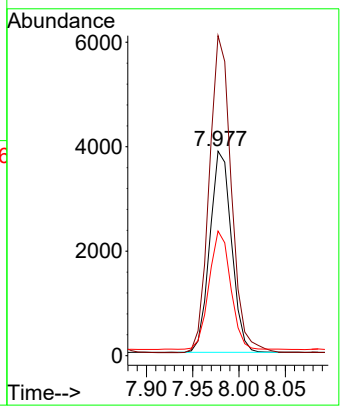


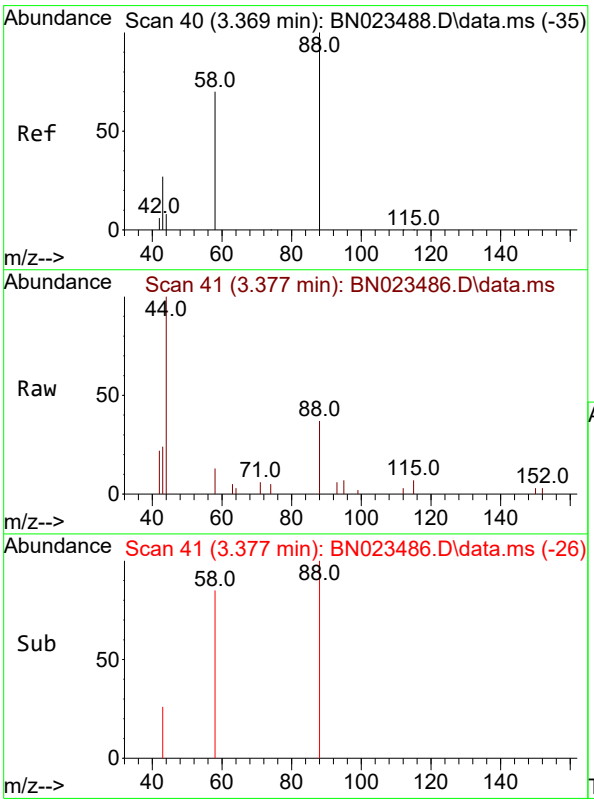
#1
1,4-Dichlorobenzene-d4
Concen: 0.400 ng
RT: 7.977 min Scan# 6
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:152 Resp: 6286

Ion	Ratio	Lower	Upper
152	100		
150	156.5	125.0	187.6
115	60.9	48.8	73.2

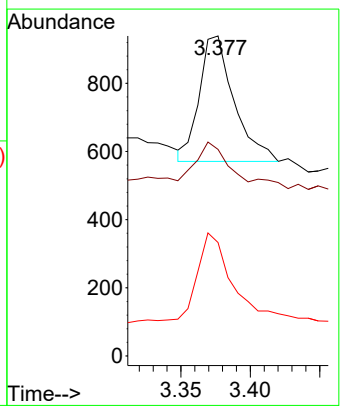


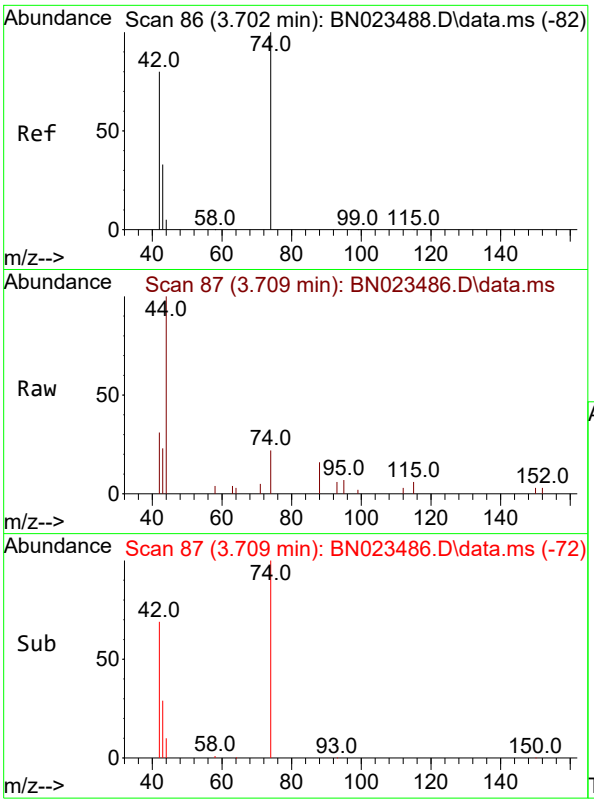


#2
1,4-Dioxane
Concen: 0.078 ng
RT: 3.377 min Scan# 41
Delta R.T. 0.008 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion: 88 Resp: 640

Ion	Ratio	Lower	Upper
88	100		
43	27.8	24.6	36.8
58	74.5	58.2	87.4



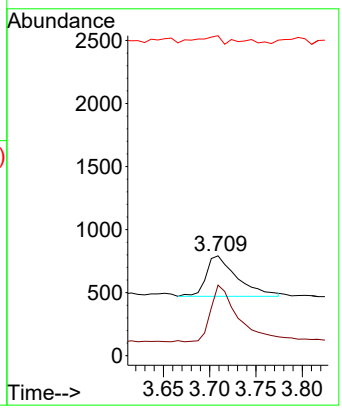


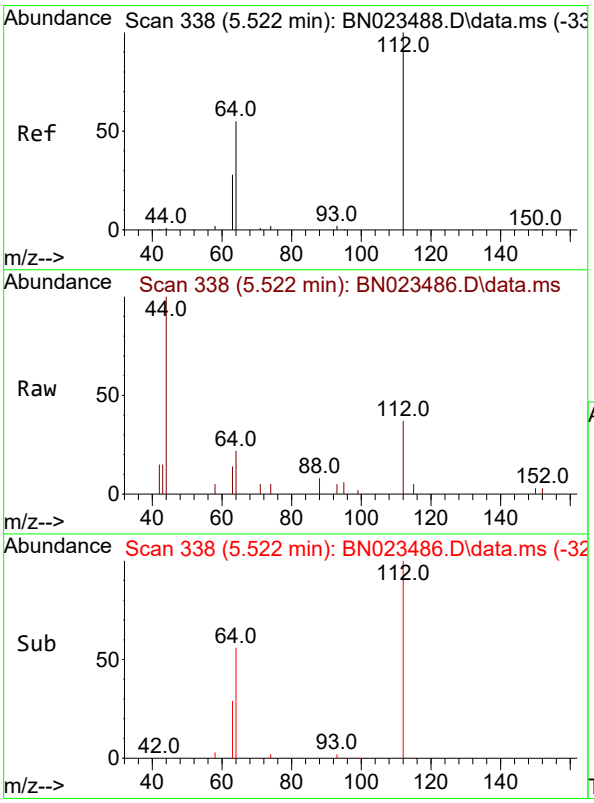
#3
n-Nitrosodimethylamine
Concen: 0.099 ng
RT: 3.709 min Scan# 8
Delta R.T. 0.007 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion: 42 Resp: 744

Ion	Ratio	Lower	Upper
42	100		
74	123.4	102.1	153.1
44	14.9	5.6	8.4#

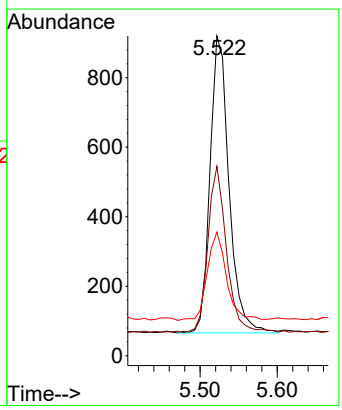


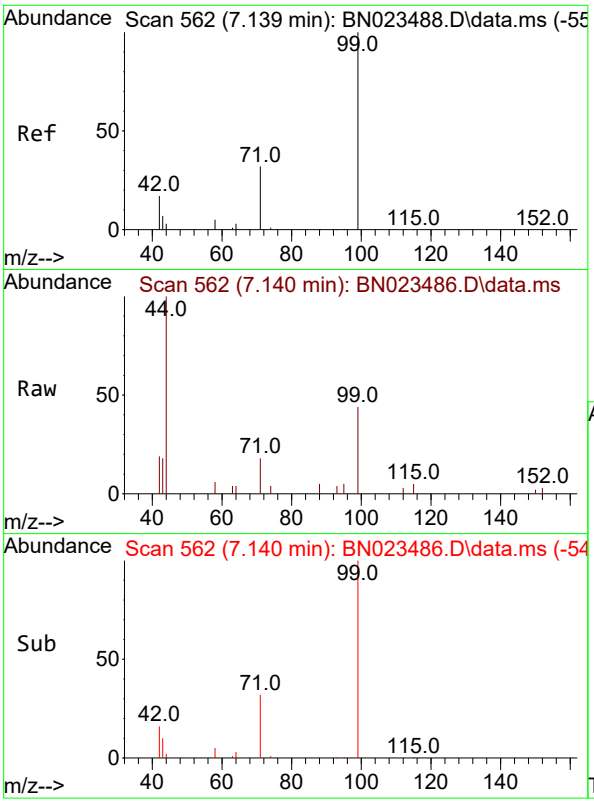


#4
2-Fluorophenol
Concen: 0.084 ng
RT: 5.522 min Scan# 338
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:112 Resp: 1460

Ion	Ratio	Lower	Upper
112	100		
64	54.7	44.3	66.5
63	29.9	23.8	35.6



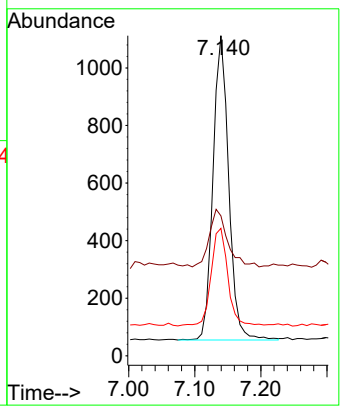


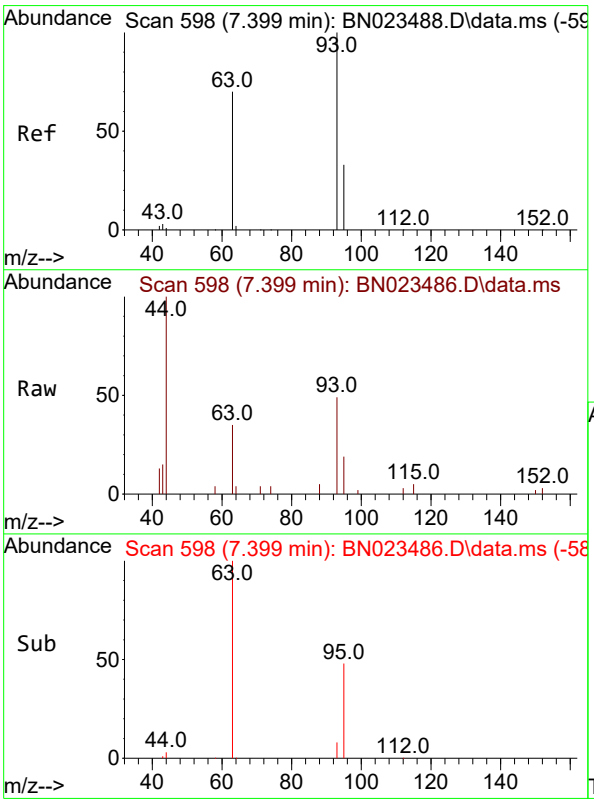
#5
Phenol-d6
Concen: 0.084 ng
RT: 7.140 min Scan# 5
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion: 99 Resp: 1745

Ion	Ratio	Lower	Upper
99	100		
42	21.7	16.8	25.2
71	34.0	27.0	40.4

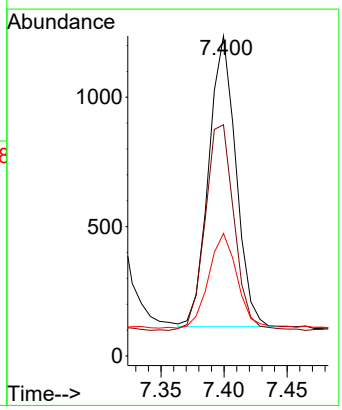


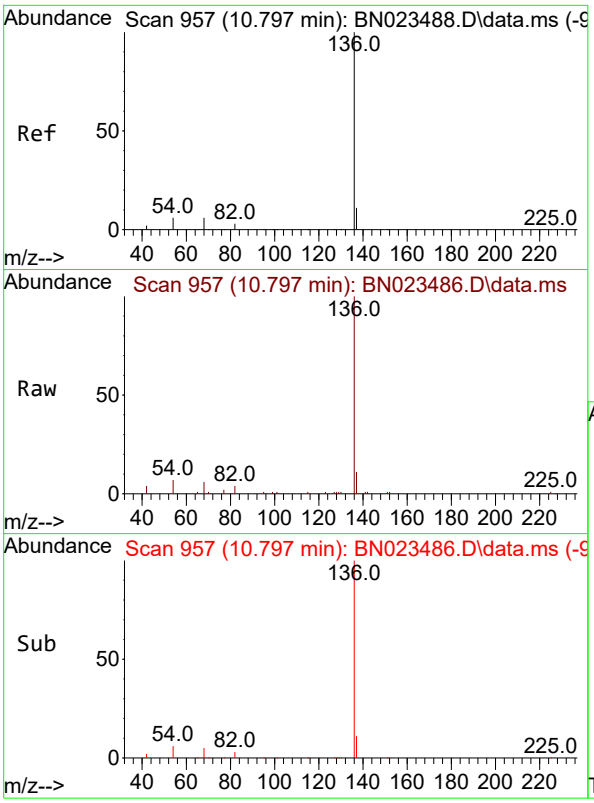


#6
bis(2-Chloroethyl)ether
Concen: 0.094 ng
RT: 7.399 min Scan# 598
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion: 93 Resp: 1685

Ion	Ratio	Lower	Upper
93	100		
63	75.4	58.9	88.3
95	34.7	26.1	39.1



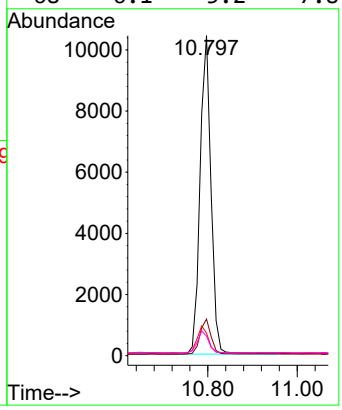


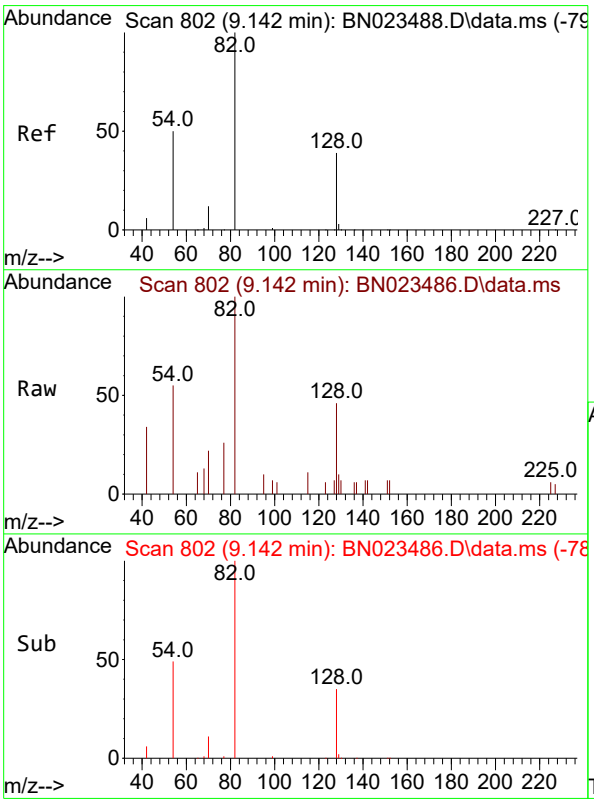
#7
Naphthalene-d8
Concen: 0.400 ng
RT: 10.797 min Scan# 9
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:136 Resp: 17614

Ion	Ratio	Lower	Upper
136	100		
137	11.5	9.0	13.4
54	7.1	5.8	8.8
68	6.1	5.2	7.8

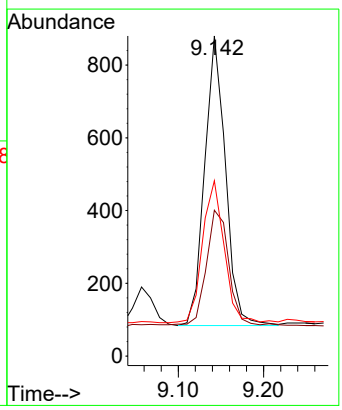


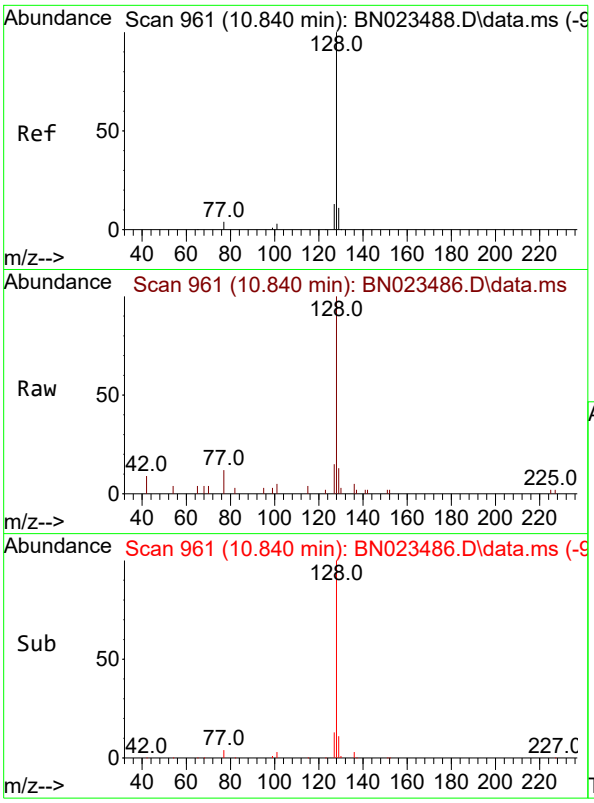


#8
Nitrobenzene-d5
Concen: 0.095 ng
RT: 9.142 min Scan# 802
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion: 82 Resp: 1349

Ion	Ratio	Lower	Upper
82	100		
128	45.6	32.6	49.0
54	54.8	41.4	62.0



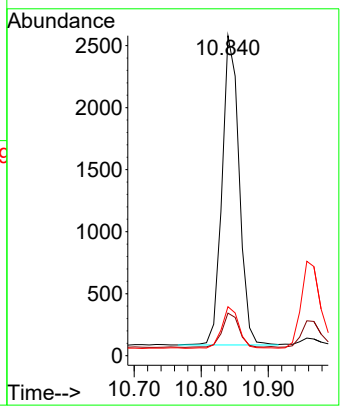


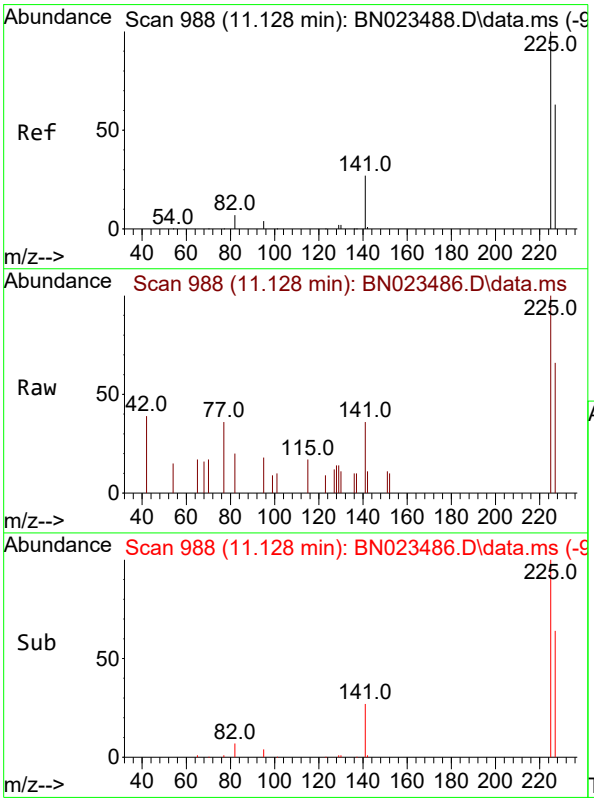
#9
Naphthalene
Concen: 0.084 ng
RT: 10.840 min Scan# 9
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:128 Resp: 4427

Ion	Ratio	Lower	Upper
128	100		
129	13.3	9.1	13.7
127	15.3	11.0	16.4

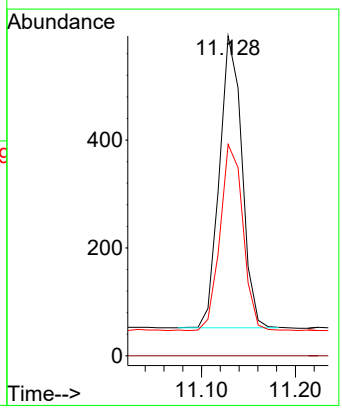


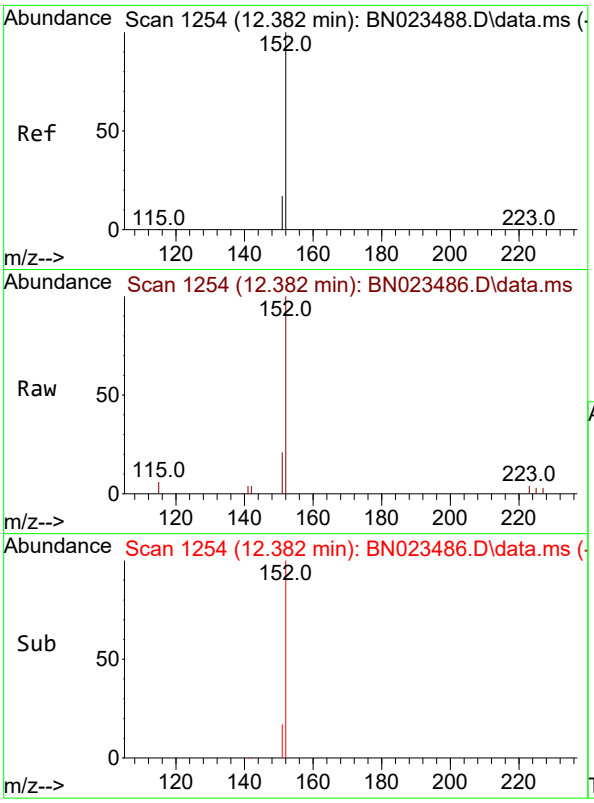


#10
Hexachlorobutadiene
Concen: 0.094 ng
RT: 11.128 min Scan# 988
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:225 Resp: 900

Ion	Ratio	Lower	Upper
225	100		
223	0.0	0.0	0.0
227	64.9	51.8	77.8



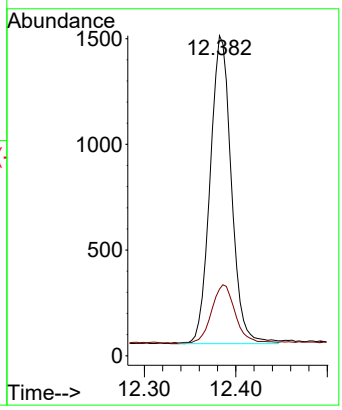


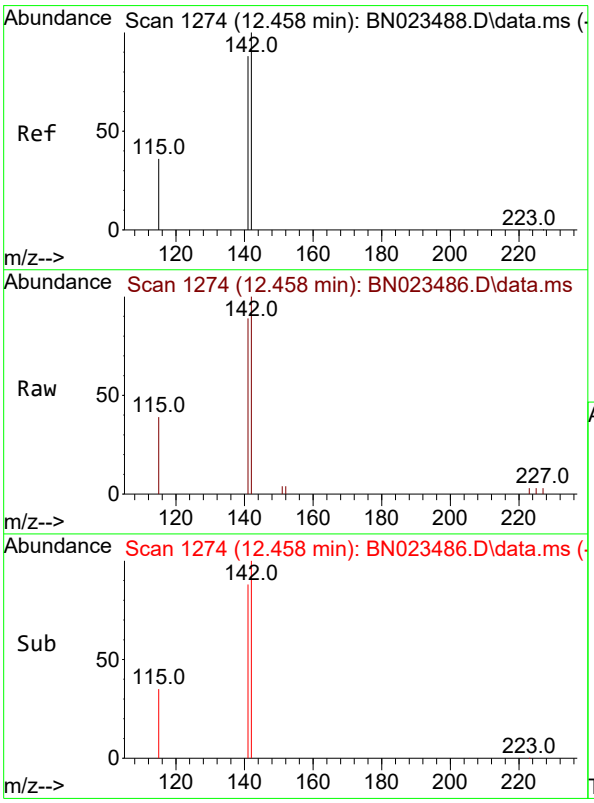
#11
2-Methylnaphthalene-d10
Concen: 0.078 ng
RT: 12.382 min Scan# 1
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:152 Resp: 2347

Ion	Ratio	Lower	Upper
152	100		
151	21.2	14.8	22.2

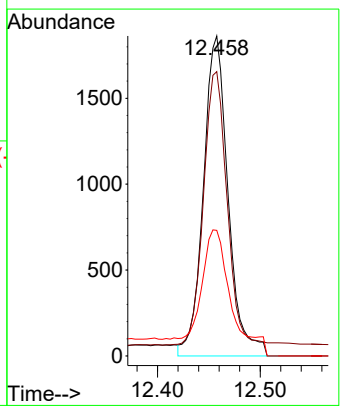


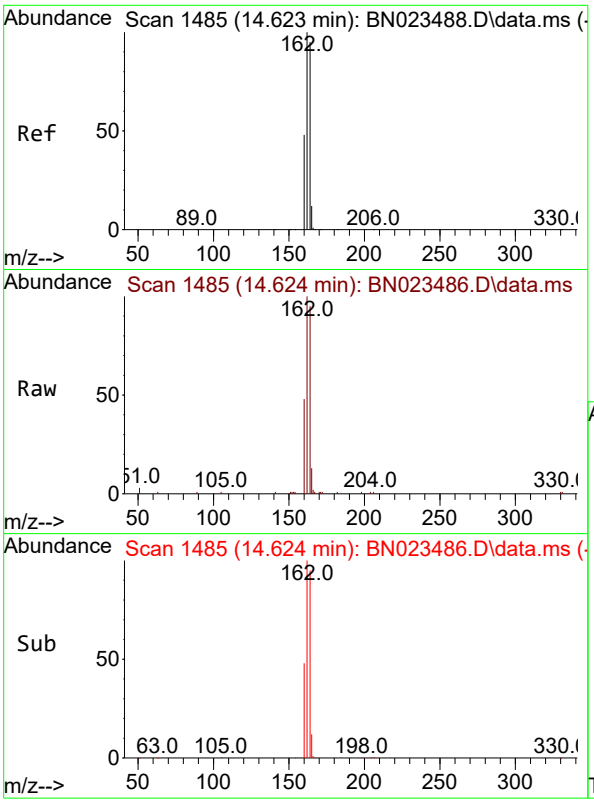


#12
2-Methylnaphthalene
Concen: 0.096 ng
RT: 12.458 min Scan# 1274
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:142 Resp: 3360

Ion	Ratio	Lower	Upper
142	100		
141	88.8	70.5	105.7
115	39.2	29.5	44.3



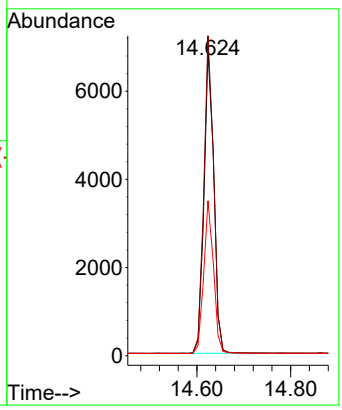


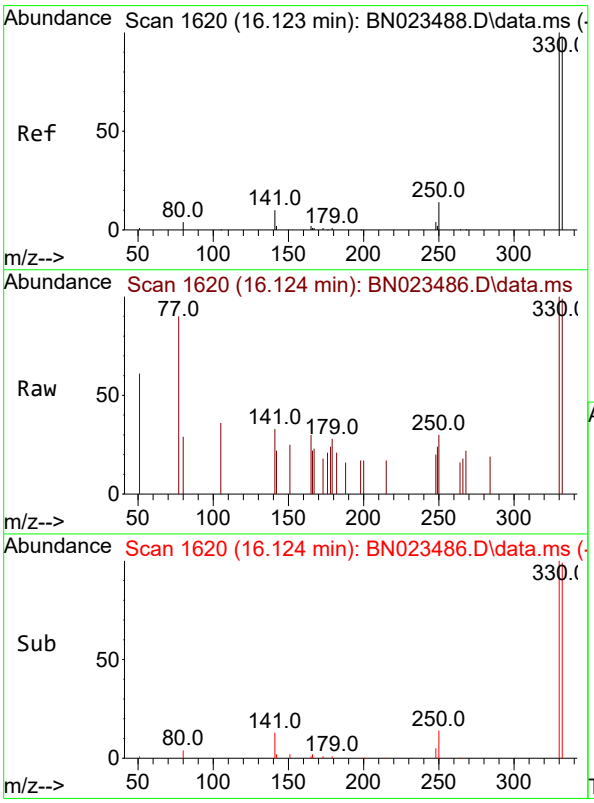
#13
Acenaphthene-d10
Concen: 0.400 ng
RT: 14.624 min Scan# 14
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:164 Resp: 10003

Ion	Ratio	Lower	Upper
164	100		
162	104.9	83.9	125.9
160	50.8	40.9	61.3

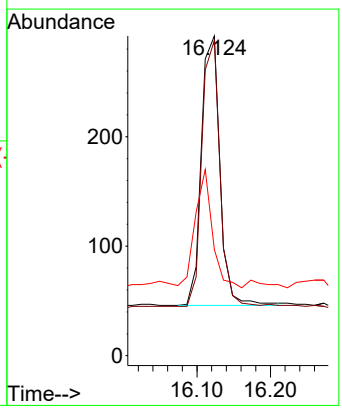


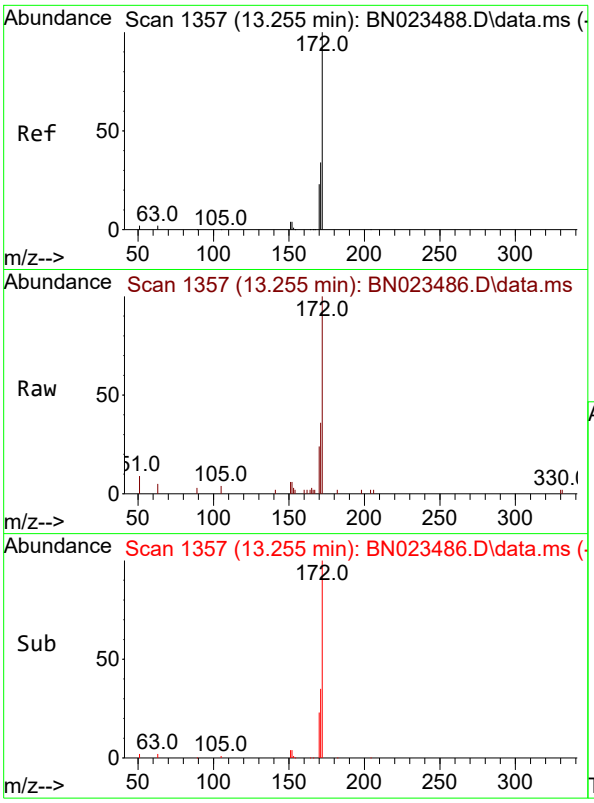


#14
2,4,6-Tribromophenol
Concen: 0.115 ng
RT: 16.124 min Scan# 1620
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:330 Resp: 433

Ion	Ratio	Lower	Upper
330	100		
332	96.1	76.7	115.1
141	40.2	29.8	44.6



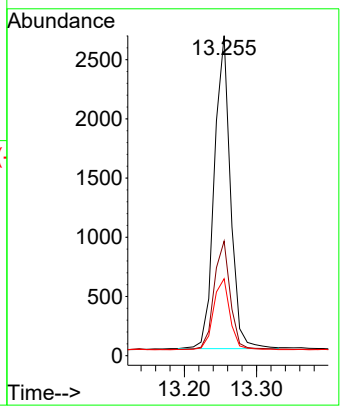


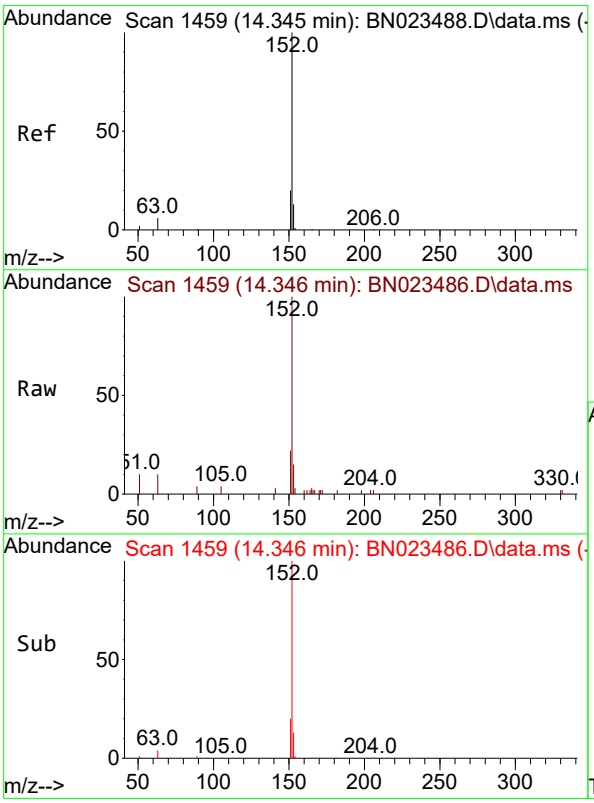
#15
2-Fluorobiphenyl
Concen: 0.099 ng
RT: 13.255 min Scan# 1
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:172 Resp: 4096

Ion	Ratio	Lower	Upper
172	100		
171	35.8	27.6	41.4
170	24.1	18.7	28.1

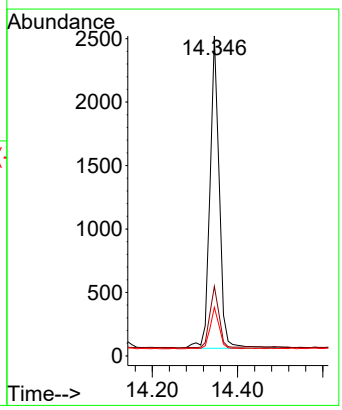


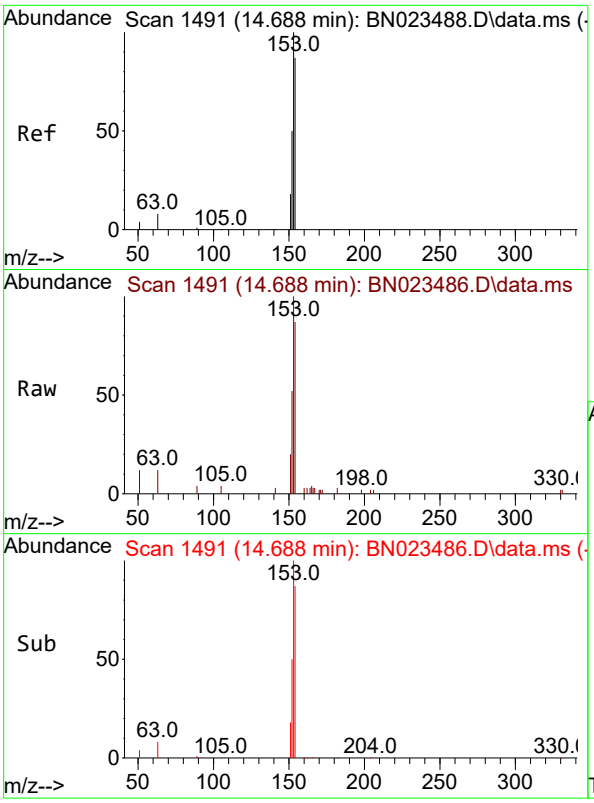


#16
Acenaphthylene
Concen: 0.078 ng
RT: 14.346 min Scan# 1459
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:152 Resp: 3747

Ion	Ratio	Lower	Upper
152	100		
151	19.5	15.4	23.2
153	13.1	10.3	15.5



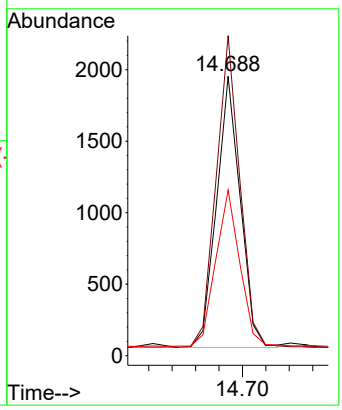


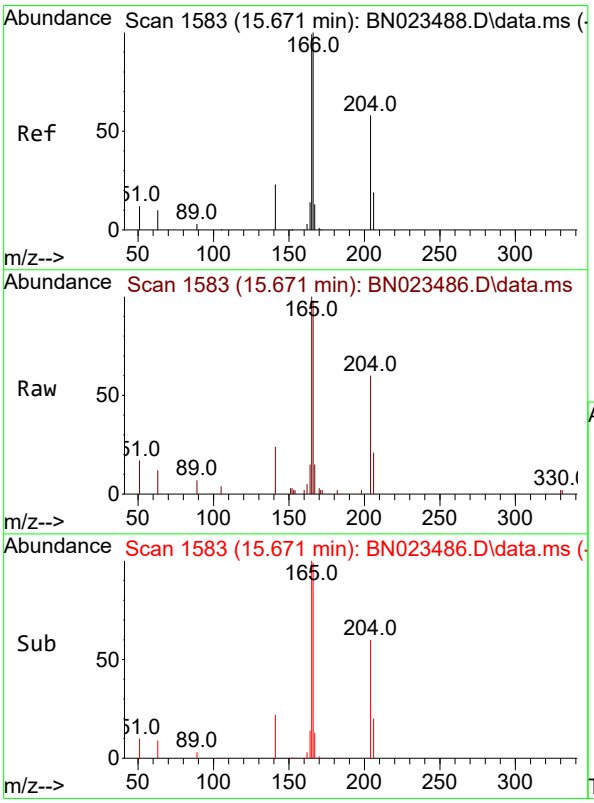
#17
Acenaphthene
Concen: 0.082 ng
RT: 14.688 min Scan# 14
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:154 Resp: 2671

Ion	Ratio	Lower	Upper
154	100		
153	115.1	90.8	136.2
152	59.9	46.3	69.5

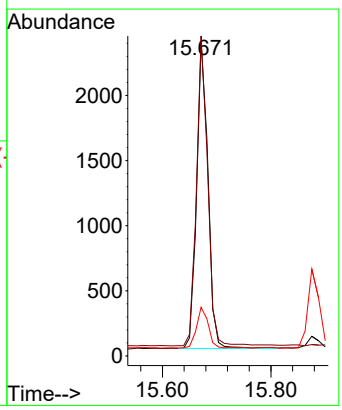


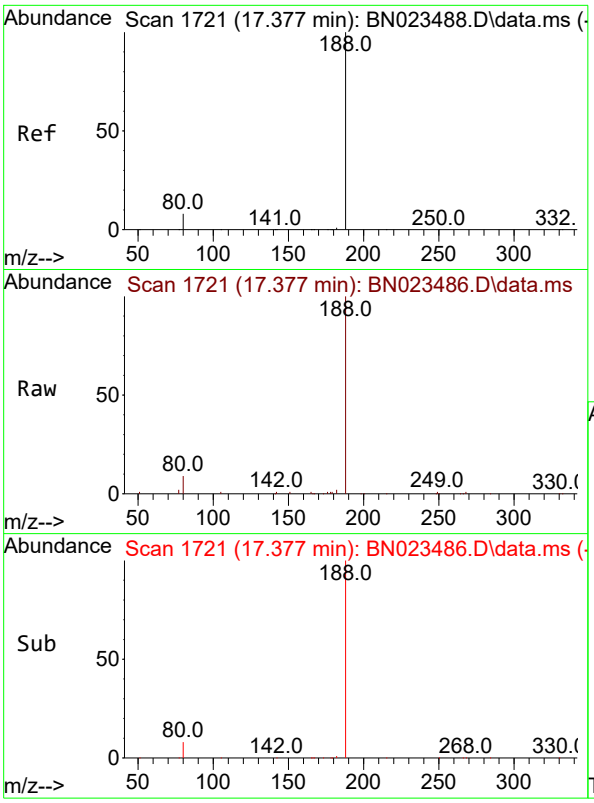


#18
Fluorene
Concen: 0.087 ng
RT: 15.671 min Scan# 1583
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:166 Resp: 3710

Ion	Ratio	Lower	Upper
166	100		
165	99.3	79.0	118.6
167	13.5	10.6	16.0



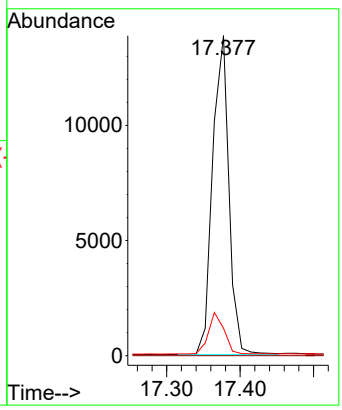


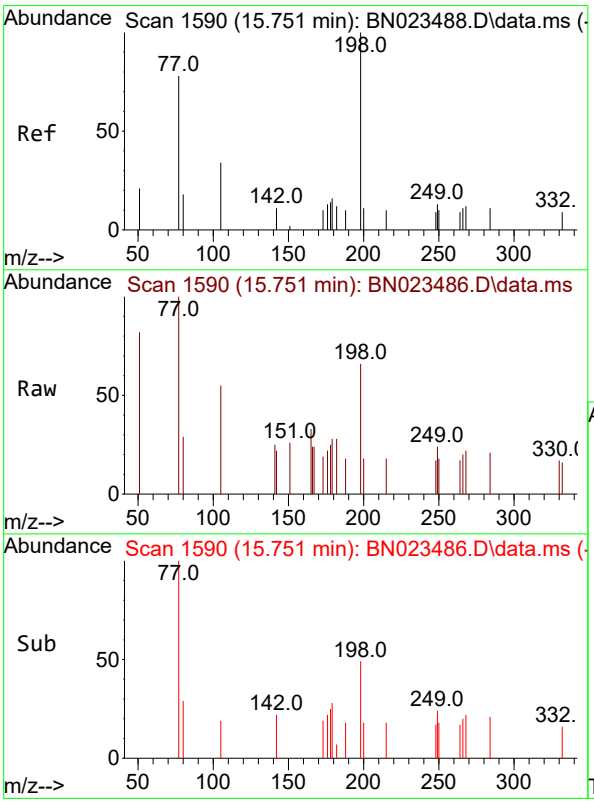
#19
Phenanthrene-d10
Concen: 0.400 ng
RT: 17.377 min Scan# 1
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:188 Resp: 21406

Ion	Ratio	Lower	Upper
188	100		
94	0.0	0.0	0.0
80	8.6	6.7	10.1

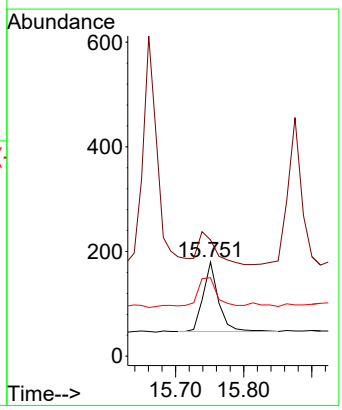


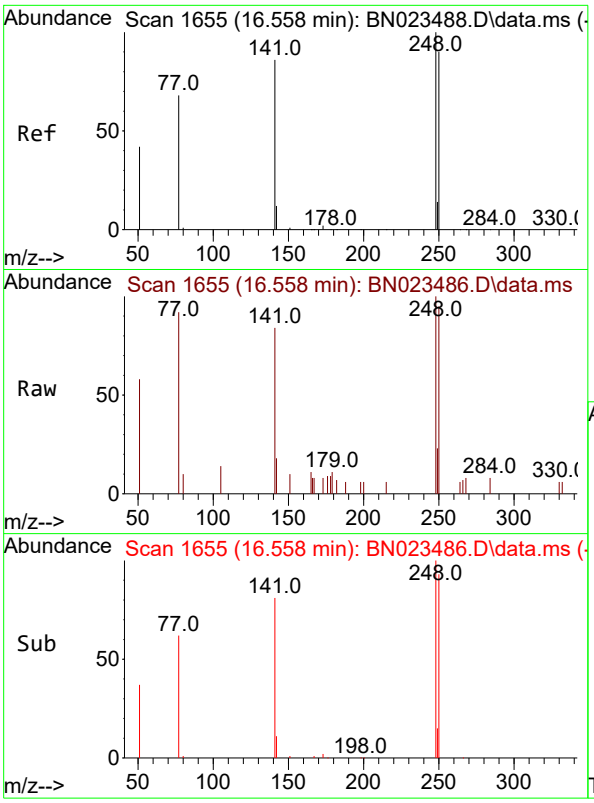


#20
4,6-Dinitro-2-methylphenol
Concen: 0.075 ng
RT: 15.751 min Scan# 1590
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:198 Resp: 205

Ion	Ratio	Lower	Upper
198	100		
51	123.3	48.2	72.4#
105	83.3	41.0	61.4#



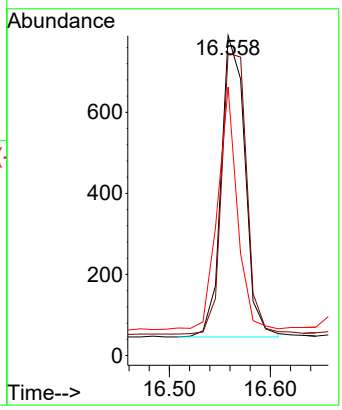


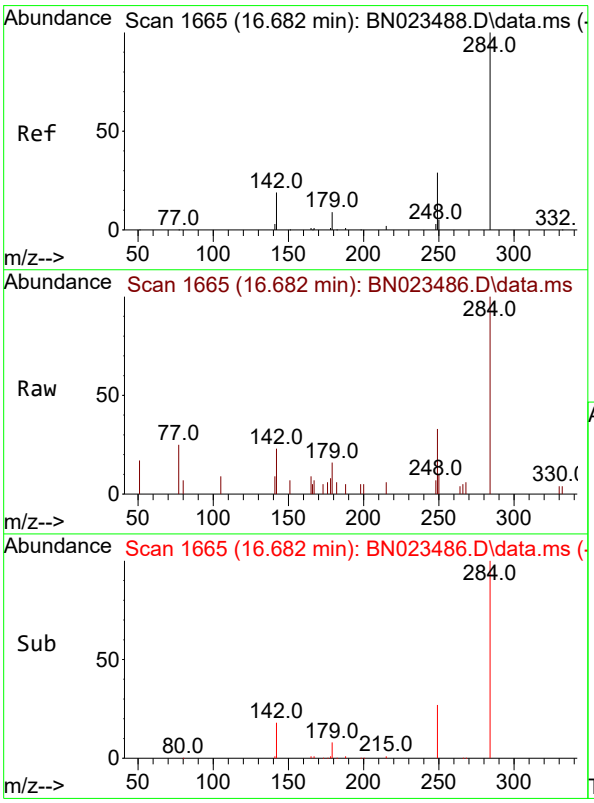
#21
4-Bromophenyl-phenylether
Concen: 0.098 ng
RT: 16.558 min Scan# 1
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:248 Resp: 1220

Ion	Ratio	Lower	Upper
248	100		
250	94.6	72.6	108.8
141	83.9	69.4	104.0

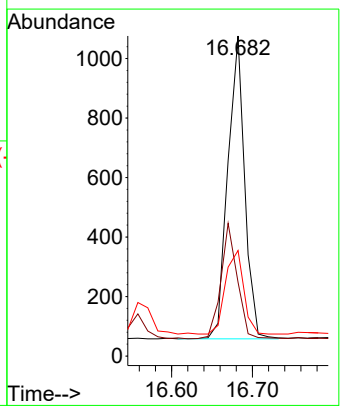


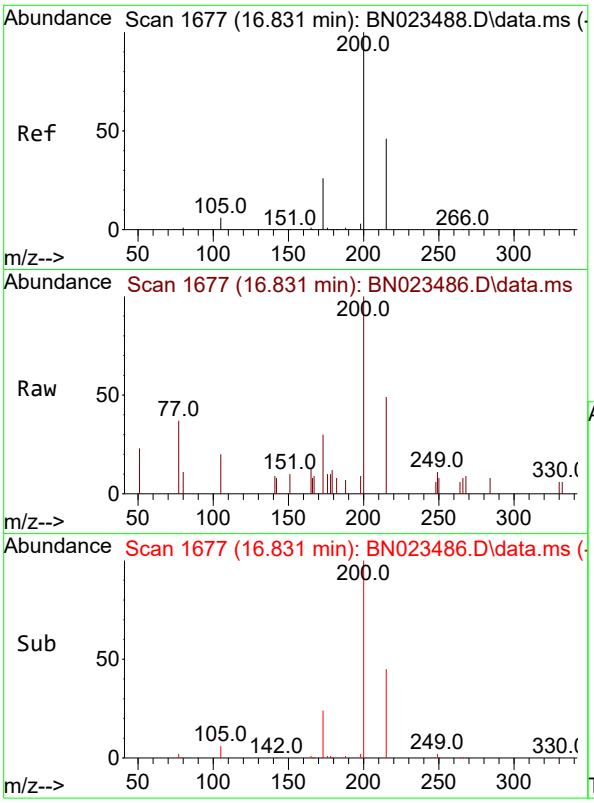


#22
Hexachlorobenzene
Concen: 0.107 ng
RT: 16.682 min Scan# 1665
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:284 Resp: 1476

Ion	Ratio	Lower	Upper
284	100		
142	37.1	29.0	43.6
249	30.0	24.5	36.7



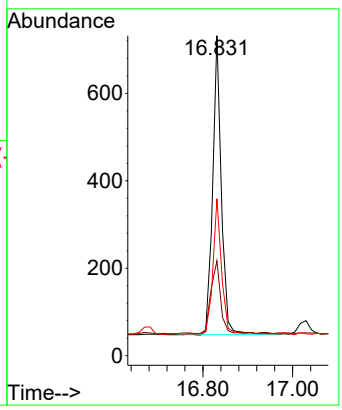


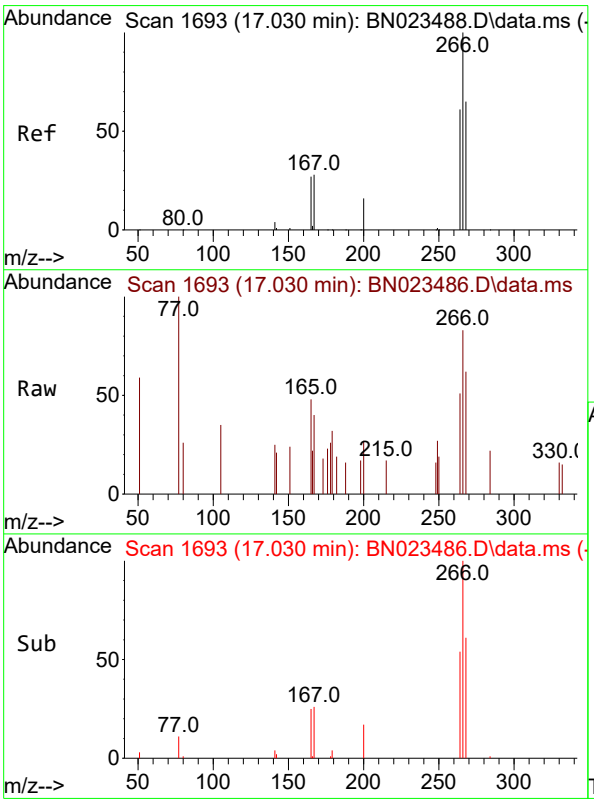
#23
Atrazine
Concen: 0.093 ng
RT: 16.831 min Scan# 1(
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:200 Resp: 915

Ion	Ratio	Lower	Upper
200	100		
173	29.6	22.1	33.1
215	49.0	38.2	57.2

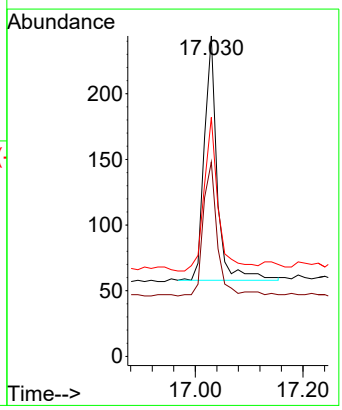


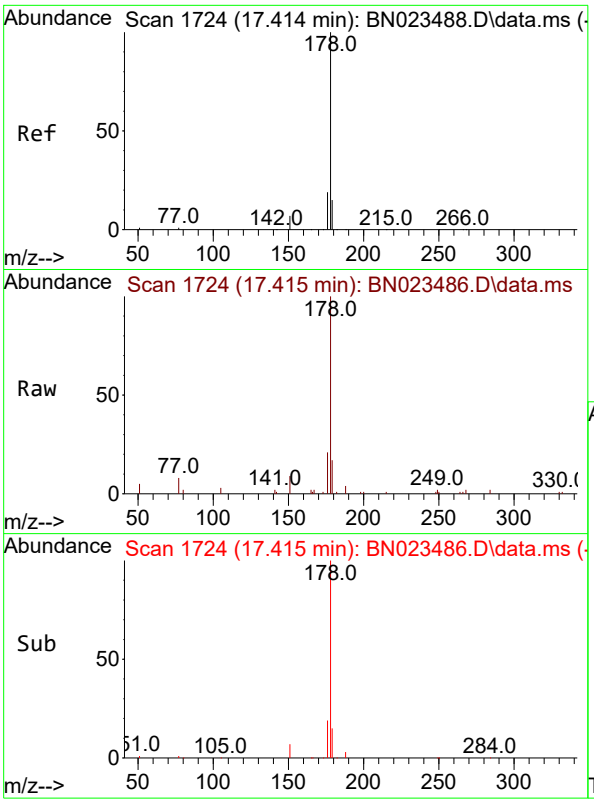


#24
Pentachlorophenol
Concen: 0.095 ng
RT: 17.030 min Scan# 1693
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:266 Resp: 308

Ion	Ratio	Lower	Upper
266	100		
264	61.7	49.7	74.5
268	69.8	51.4	77.0



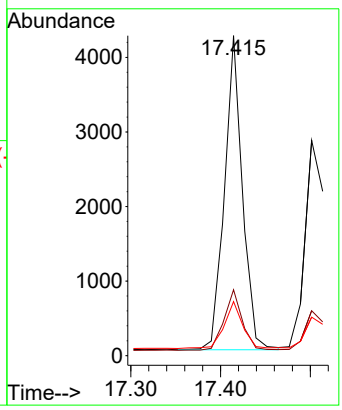


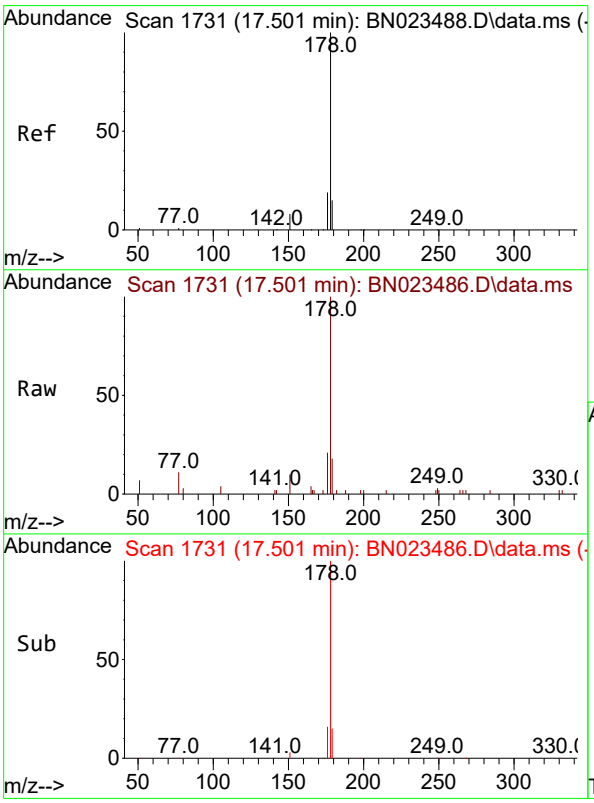
#25
Phenanthrene
Concen: 0.081 ng
RT: 17.415 min Scan# 1
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:178 Resp: 5847

Ion	Ratio	Lower	Upper
178	100		
176	19.8	15.7	23.5
179	16.3	12.2	18.4

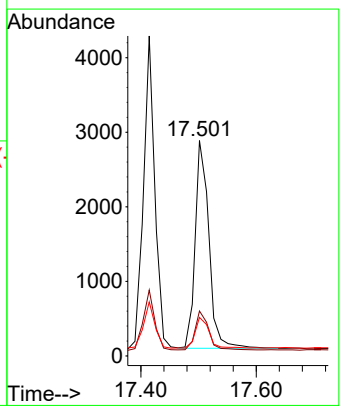


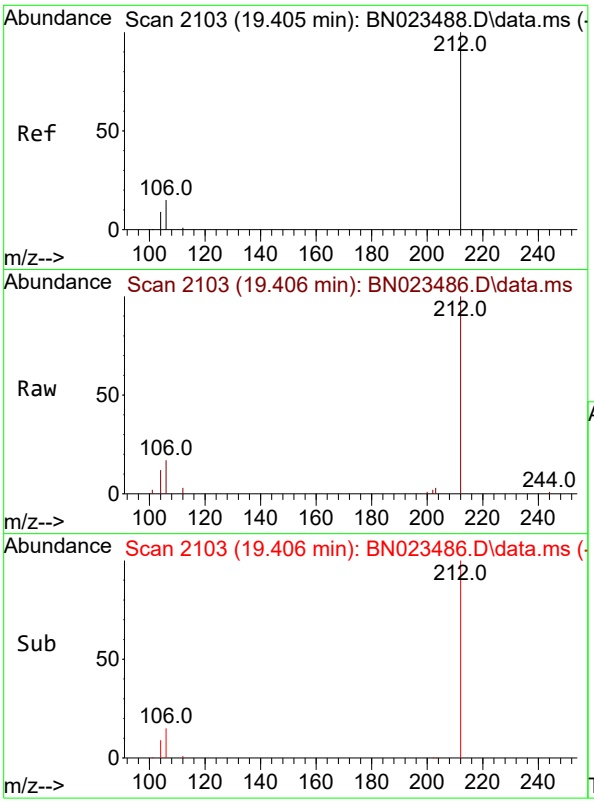


#26
Anthracene
Concen: 0.074 ng
RT: 17.501 min Scan# 1731
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:178 Resp: 4611

Ion	Ratio	Lower	Upper
178	100		
176	18.2	15.0	22.6
179	14.9	12.3	18.5



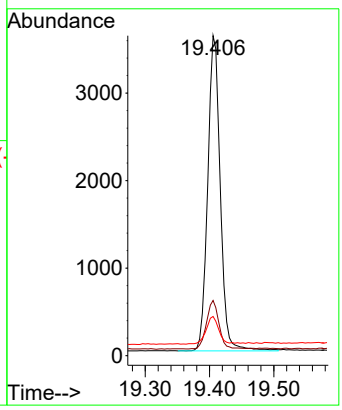


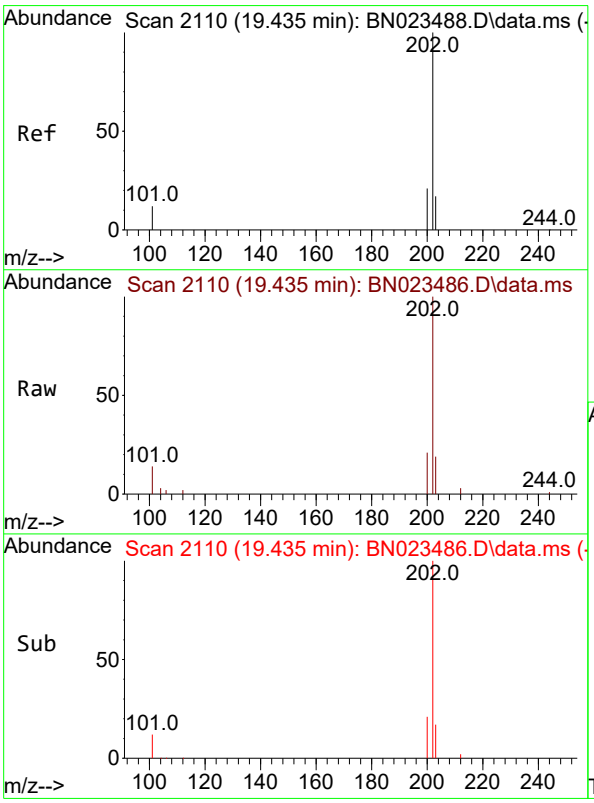
#27
Fluoranthene-d10
Concen: 0.077 ng
RT: 19.406 min Scan# 21
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:212 Resp: 4904

Ion	Ratio	Lower	Upper
212	100		
106	15.2	12.3	18.5
104	9.0	6.8	10.2

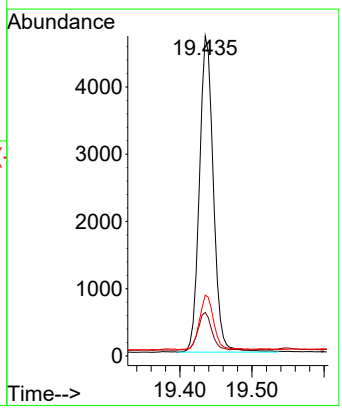


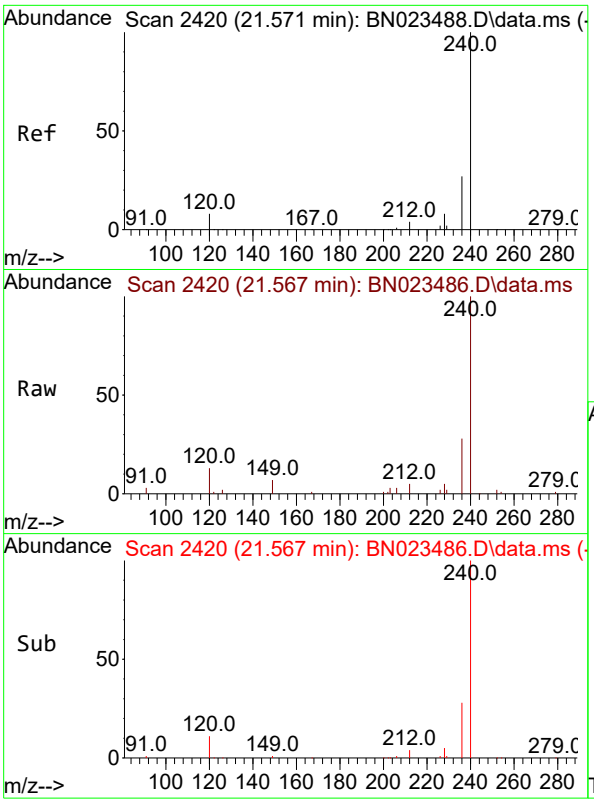


#28
Fluoranthene
Concen: 0.080 ng
RT: 19.435 min Scan# 2110
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:202 Resp: 6317

Ion	Ratio	Lower	Upper
202	100		
101	12.0	9.6	14.4
203	17.4	13.8	20.8



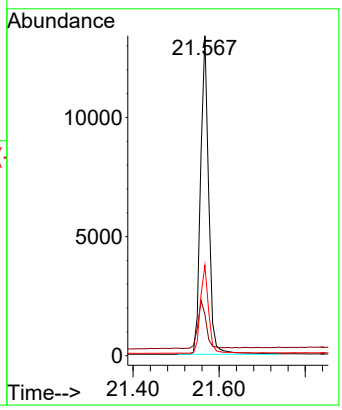


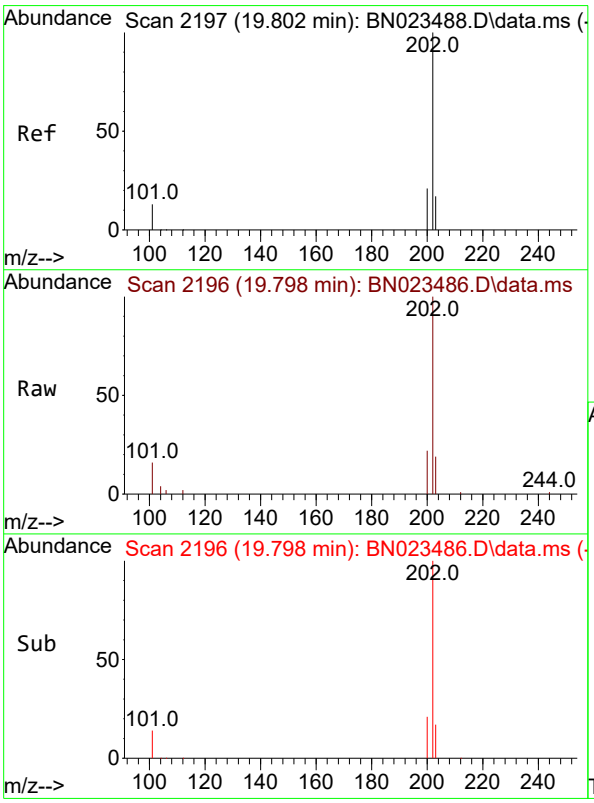
#29
Chrysene-d12
Concen: 0.400 ng
RT: 21.567 min Scan# 24
Delta R.T. -0.005 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:240 Resp: 17629

Ion	Ratio	Lower	Upper
240	100		
120	12.9	8.9	13.3
236	28.3	22.5	33.7

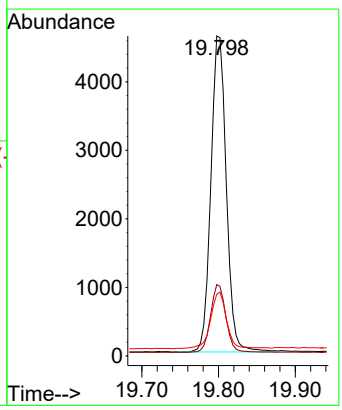


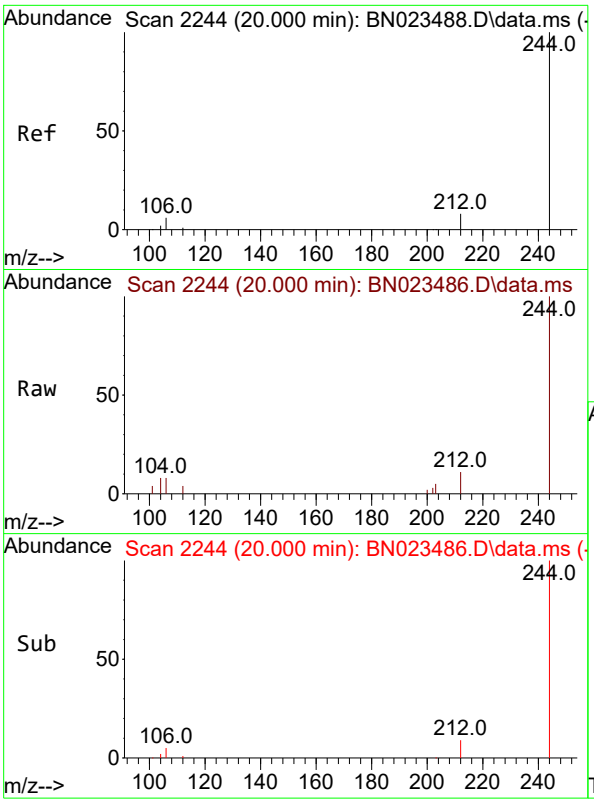


#30
Pyrene
Concen: 0.086 ng
RT: 19.798 min Scan# 2196
Delta R.T. -0.004 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:202 Resp: 6449

Ion	Ratio	Lower	Upper
202	100		
200	21.3	17.0	25.4
203	18.4	14.4	21.6



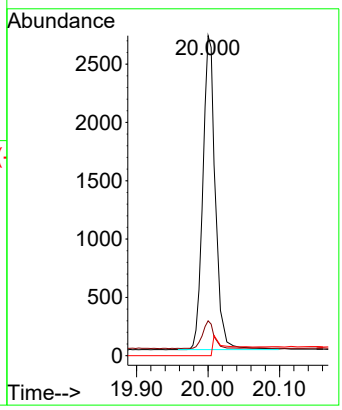


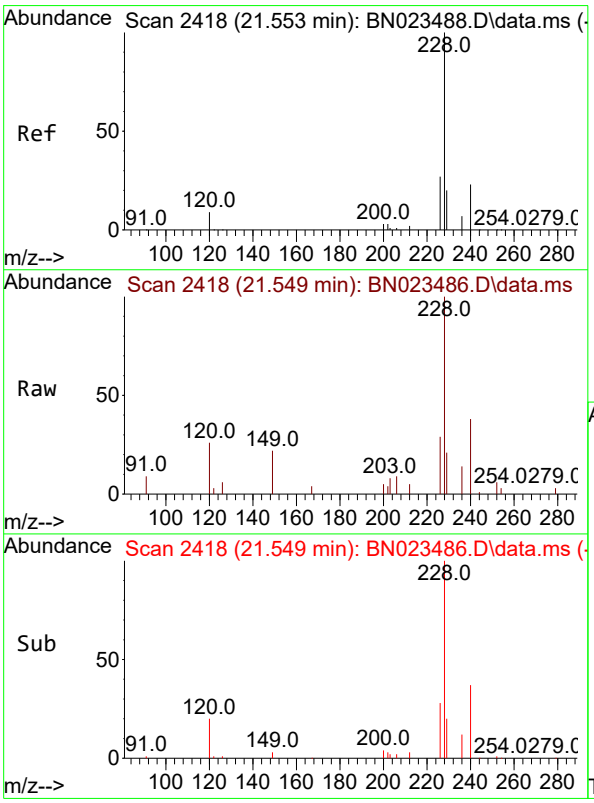
#31
Terphenyl-d14
Concen: 0.103 ng
RT: 20.000 min Scan# 2
Delta R.T. 0.000 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:244 Resp: 4354

Ion	Ratio	Lower	Upper
244	100		
212	10.9	7.4	11.0
122	0.0	0.0	0.0

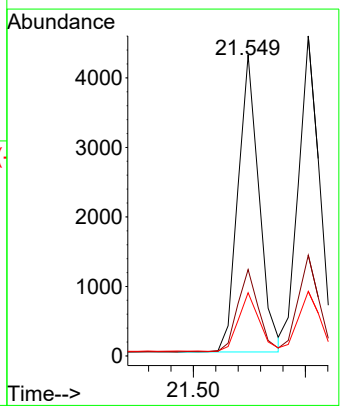


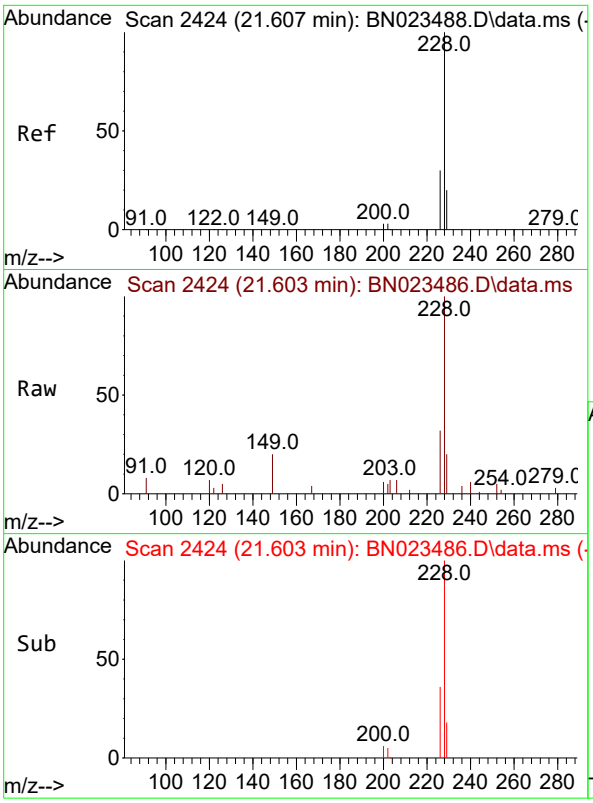


#32
Benzo(a)anthracene
Concen: 0.089 ng
RT: 21.549 min Scan# 2418
Delta R.T. -0.005 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:228 Resp: 5579

Ion	Ratio	Lower	Upper
228	100		
226	28.7	21.8	32.8
229	21.0	16.0	24.0



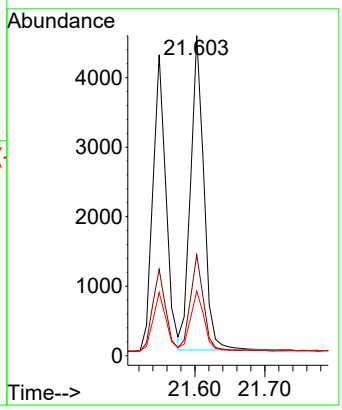


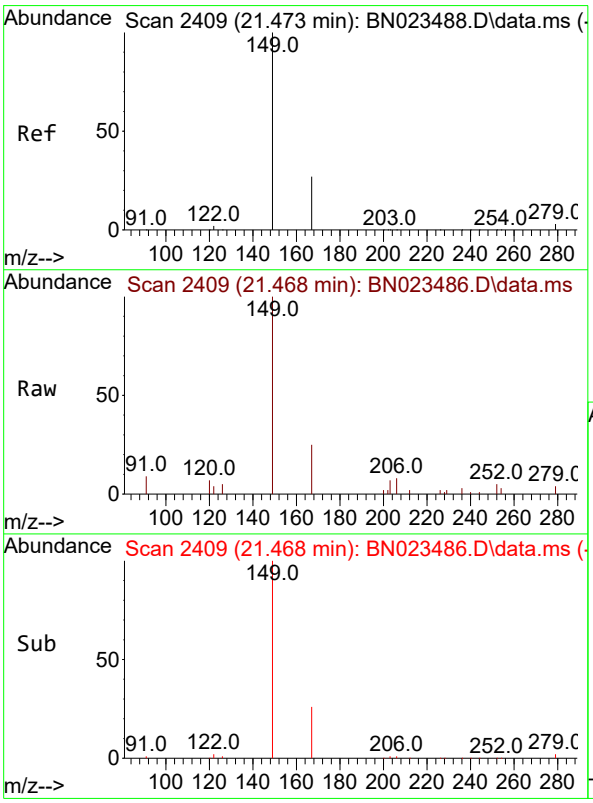
#33
Chrysene
Concen: 0.086 ng
RT: 21.603 min Scan# 24
Delta R.T. -0.005 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:228 Resp: 5990

Ion	Ratio	Lower	Upper
228	100		
226	31.5	24.1	36.1
229	20.2	16.0	24.0

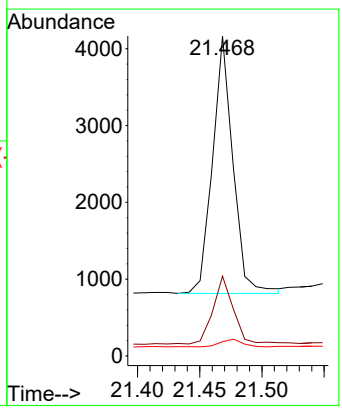


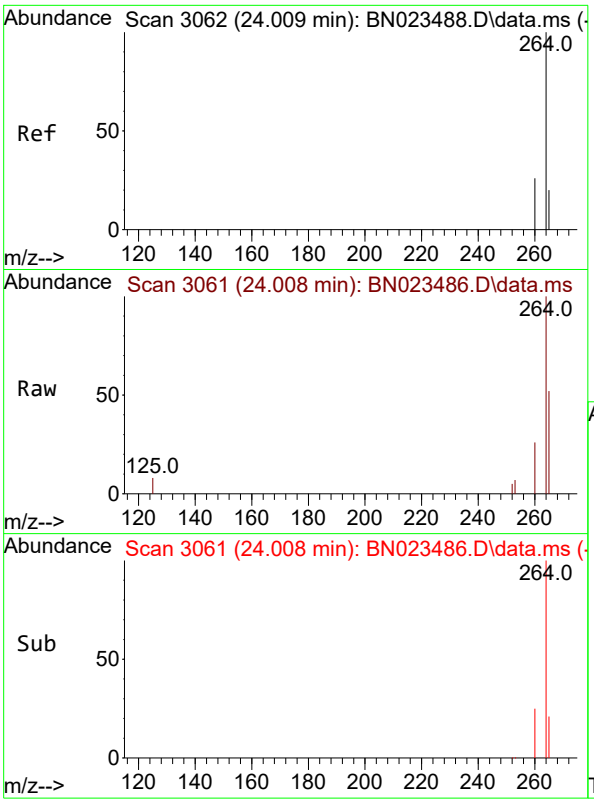


#34
Bis(2-ethylhexyl)phthalate
Concen: 0.108 ng
RT: 21.468 min Scan# 2409
Delta R.T. -0.005 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:149 Resp: 3826

Ion	Ratio	Lower	Upper
149	100		
167	27.4	21.0	31.6
279	3.2	2.2	3.4



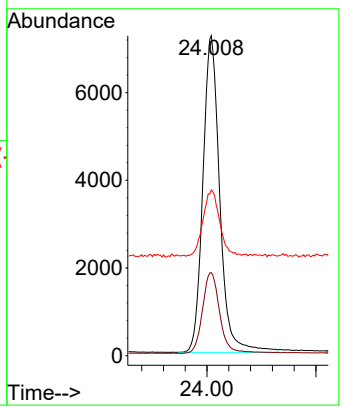


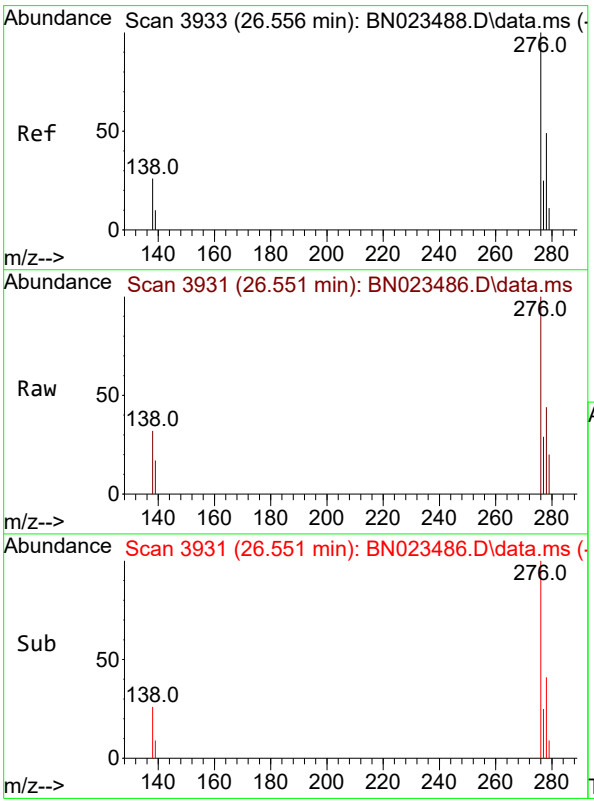
#35
Perylene-d12
Concen: 0.400 ng
RT: 24.008 min Scan# 3
Delta R.T. -0.001 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:264 Resp: 15519

Ion	Ratio	Lower	Upper
264	100		
260	26.0	21.1	31.7
265	51.8	48.9	73.3

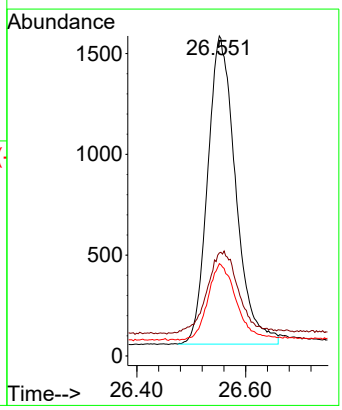


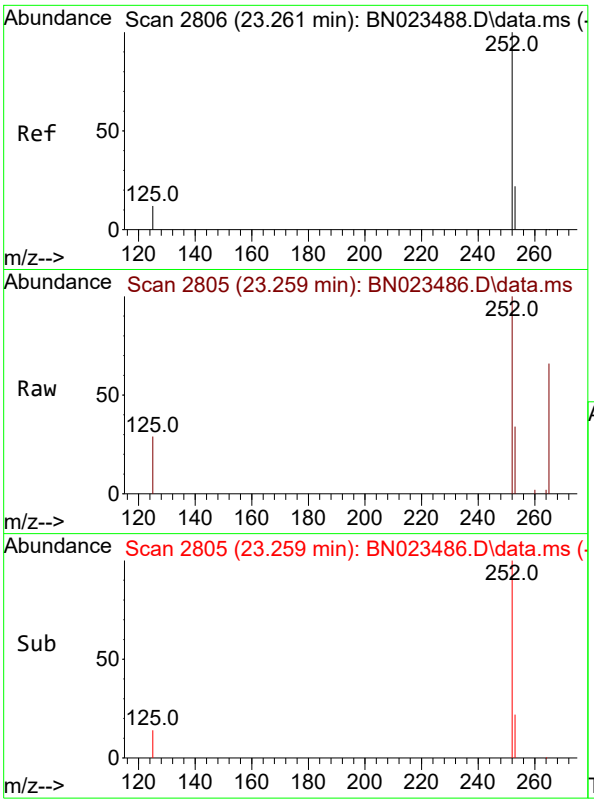


#36
Indeno(1,2,3-cd)pyrene
Concen: 0.079 ng
RT: 26.551 min Scan# 3931
Delta R.T. -0.004 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:276 Resp: 5458

Ion	Ratio	Lower	Upper
276	100		
138	29.7	23.0	34.6
277	25.4	19.5	29.3



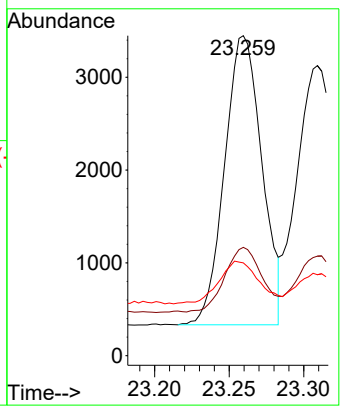


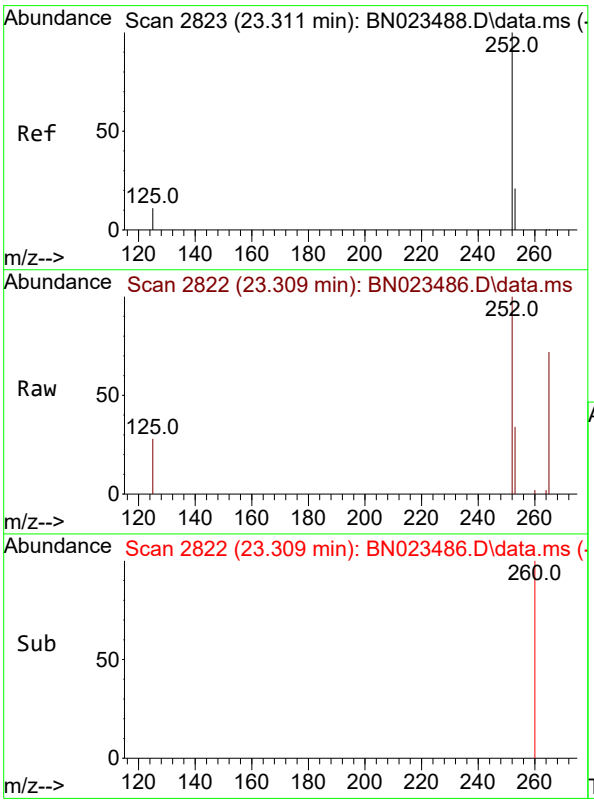
#37
Benzo(b)fluoranthene
Concen: 0.091 ng
RT: 23.259 min Scan# 2
Delta R.T. -0.001 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:252 Resp: 5427

Ion	Ratio	Lower	Upper
252	100		
253	33.8	20.7	31.1#
125	29.0	13.4	20.2#

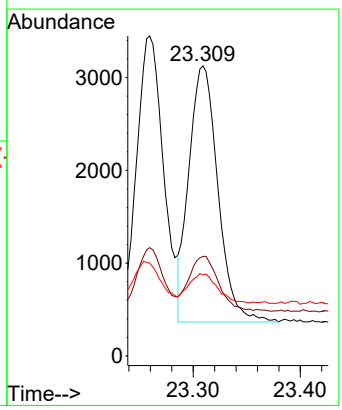


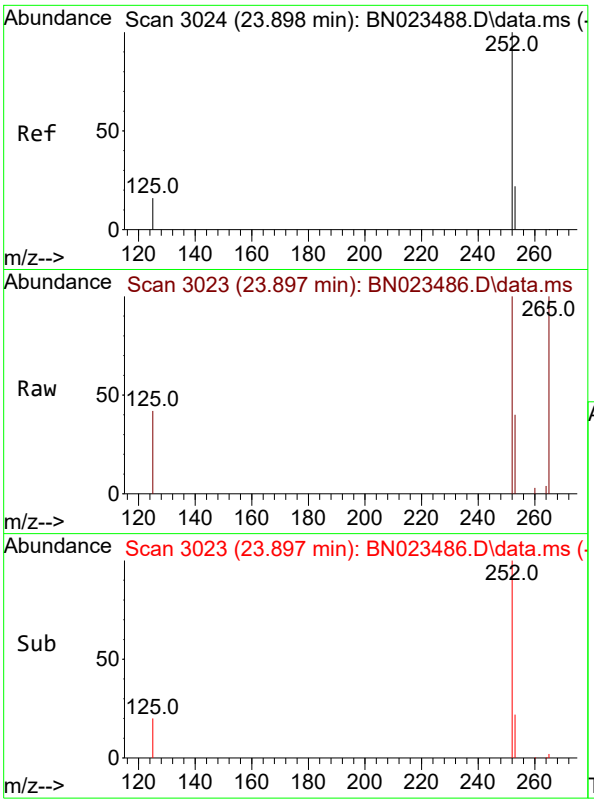


#38
Benzo(k)fluoranthene
Concen: 0.082 ng
RT: 23.309 min Scan# 2822
Delta R.T. -0.001 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:252 Resp: 5198

Ion	Ratio	Lower	Upper
252	100		
253	34.3	20.2	30.4#
125	27.9	13.0	19.6#



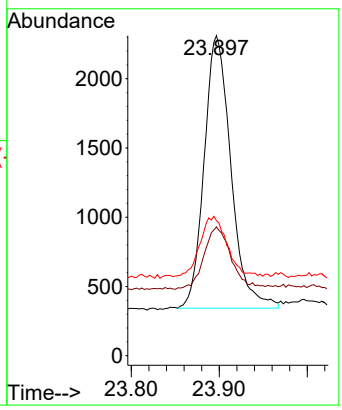


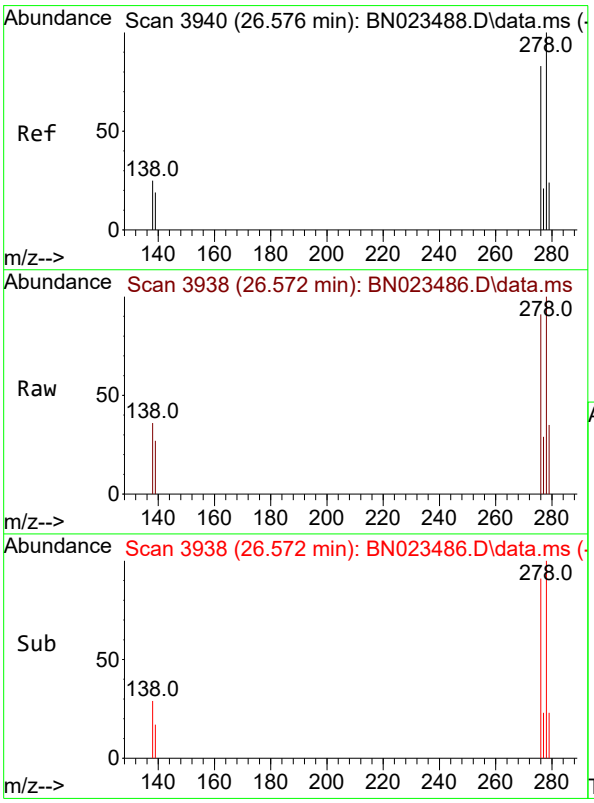
#39
Benzo(a)pyrene
Concen: 0.080 ng
RT: 23.897 min Scan# 3
Delta R.T. -0.001 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:252 Resp: 4163

Ion	Ratio	Lower	Upper
252	100		
253	40.2	22.3	33.5#
125	42.2	18.7	28.1#

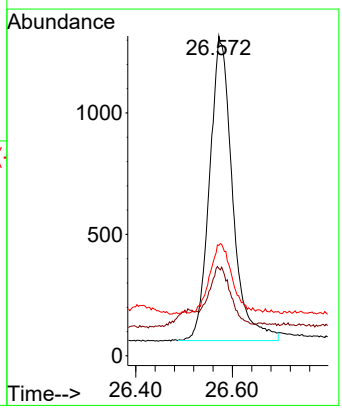


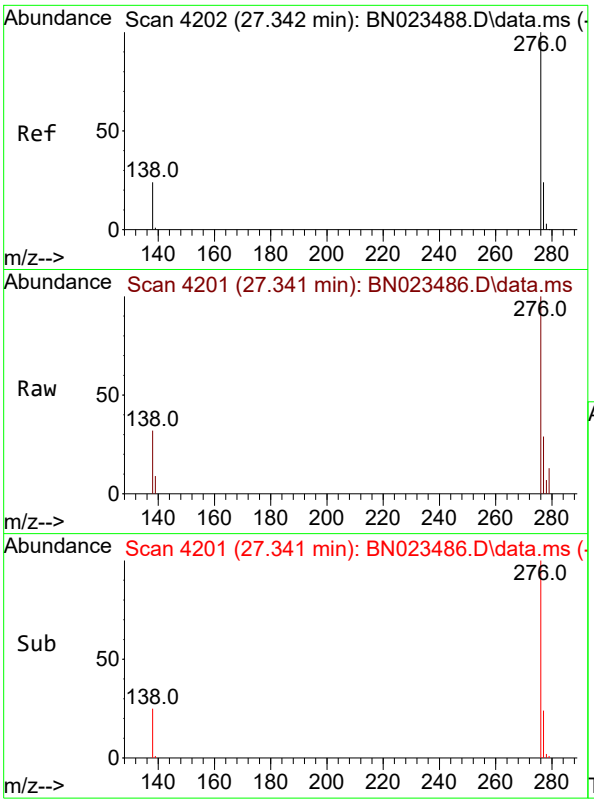


#40
Dibenzo(a,h)anthracene
Concen: 0.075 ng
RT: 26.572 min Scan# 3938
Delta R.T. -0.004 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Tgt Ion:278 Resp: 4132

Ion	Ratio	Lower	Upper
278	100		
139	27.3	17.7	26.5#
279	34.5	22.2	33.2#





#41
Benzo(g,h,i)perylene
Concen: 0.081 ng
RT: 27.341 min Scan# 4
Delta R.T. -0.001 min
Lab File: BN023486.D
Acq: 27 Dec 2022 13:22

Instrument :
BNA_N
ClientSampleId :
SSTDICC0.1

Tgt Ion:276 Resp: 4924

Ion	Ratio	Lower	Upper
276	100		
277	28.6	20.0	30.0
138	31.8	20.6	31.0#