# Analyzing PCB Aroclors by Agilent's 7000B GCMS tandem quadrupole Mass Spectrometer

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Analyzing PCB Aroclors by Agilent's 7000B GCMS tandem quadrupole Mass Spectrometer

Providing positive identification of PCB Aroclors using the Agilent 7000B GC/MS/MS

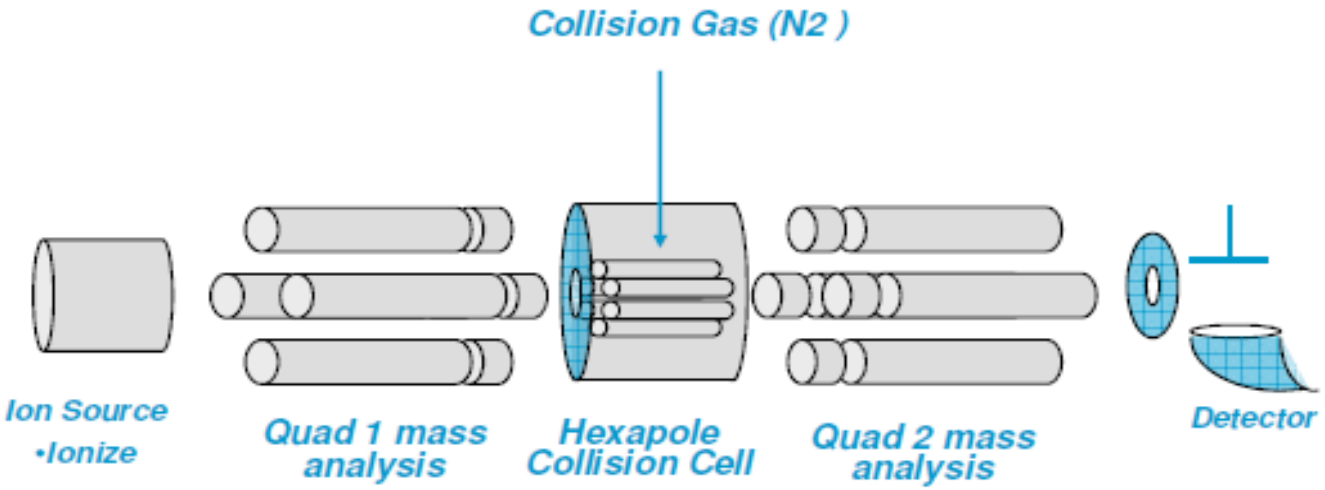
While maintaining ECD detection limits

Providing Positive identification in a single run

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Agilent 7000 GC/MS/MS

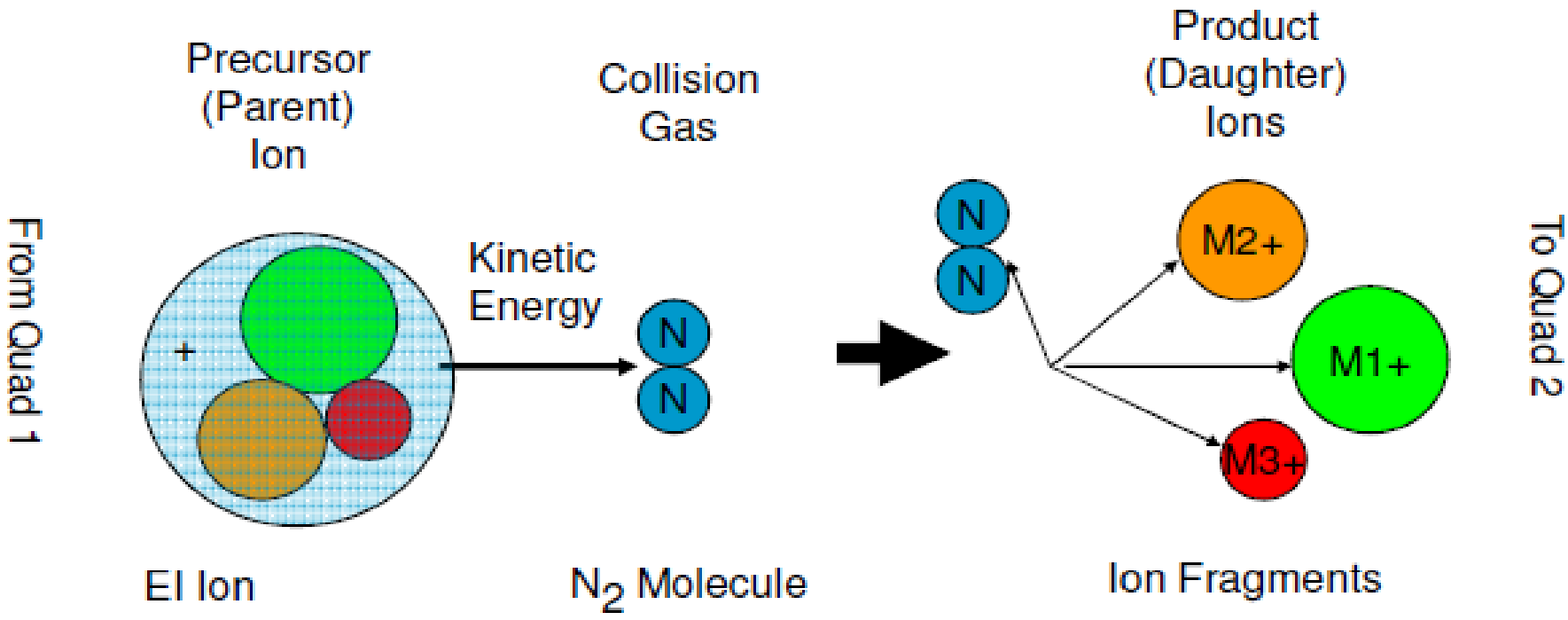



**No mass filtering in the collision cell**
**The hexapole field has excellent transmission efficiency for precursor and product ions**



Dale Walker
Agilent GCMS
Applications Engineer

# The MS/MS Process in the Collision Cell
## Collision Induced Dissociation (CID)



# Aroclor Patterns

Dale Walker
Agilent GCMS
Applications Engineer

## II. PCB Congener Composition of Aroclors

A detailed analyses of the PCB congener distributions present in Aroclors 1016, 1242, 1248, 1254, and 1260

Note that the most abundant homologue groups are the di- and tri-chlorinated biphenyls for the low chlorinated Aroclors (1016 and 1242)

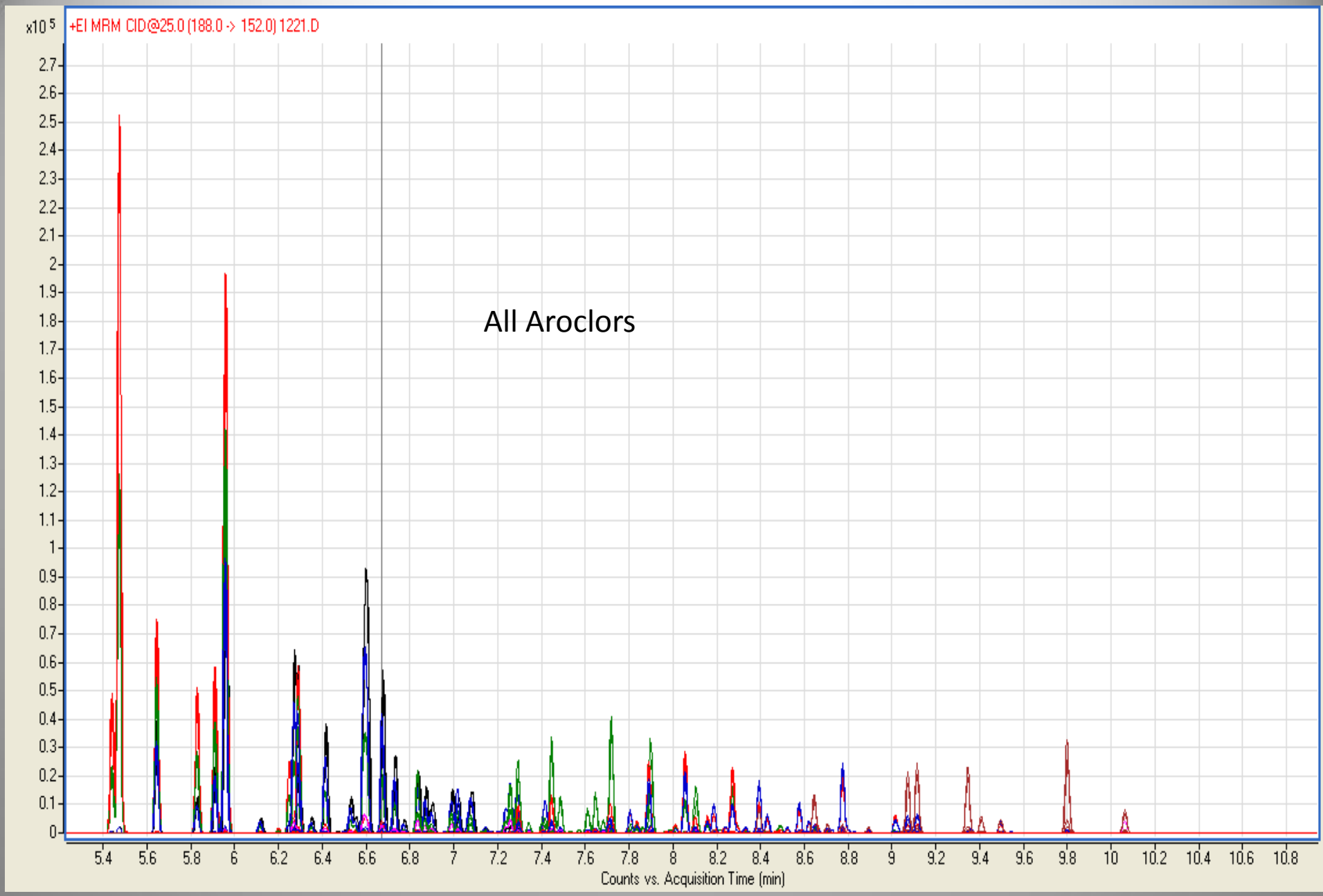
While penta-chlorinated biphenyls were more abundant in the higher chlorinated Aroclors (1248, 1254 and 1260).

Tetra-chlorinated biphenyls were abundant in both low chlorinated and higher chlorinated Aroclors.

| Aroclors PCB Homologue | Aroclor 1016 (%) | Aroclor 1242 (%) | Aroclor 1248 (%) | Aroclor 1254 (%) | Aroclor 1260 (%) |
|---|---|---|---|---|---|
| Mono-CB | 0.7 | 0.8 | 0 | 0 | 0 |
| Di-CB | 17.5 | 15.0 | 0.4 | 0.2 | 0.1 |
| Tri-CB | 54.7 | 44.9 | 22.0 | 1.3 | 0.2 |
| Tetra-CB | 26.6 | 32.6 | 56.6 | 16.4 | 0.5 |
| Penta-CB | 0.5 | 6.4 | 18.6 | 53.0 | 8.6 |
| Hexa-CB | 0 | 0.3 | 2.0 | 26.8 | 43.4 |
| Hepta-CB | 0 | 0 | 0.6 | 2.7 | 38.5 |
| Octa-CB | 0 | 0 | 0 | 0 | 8.3 |
| Nona-CB | 0 | 0 | 0 | 0 | 0.7 |
| Deca-CB | 0 | 0 | 0 | 0 | 0 |
| Percentage | 12.88 | 51.76 | 6.76 | 15.73 | 10.61 |

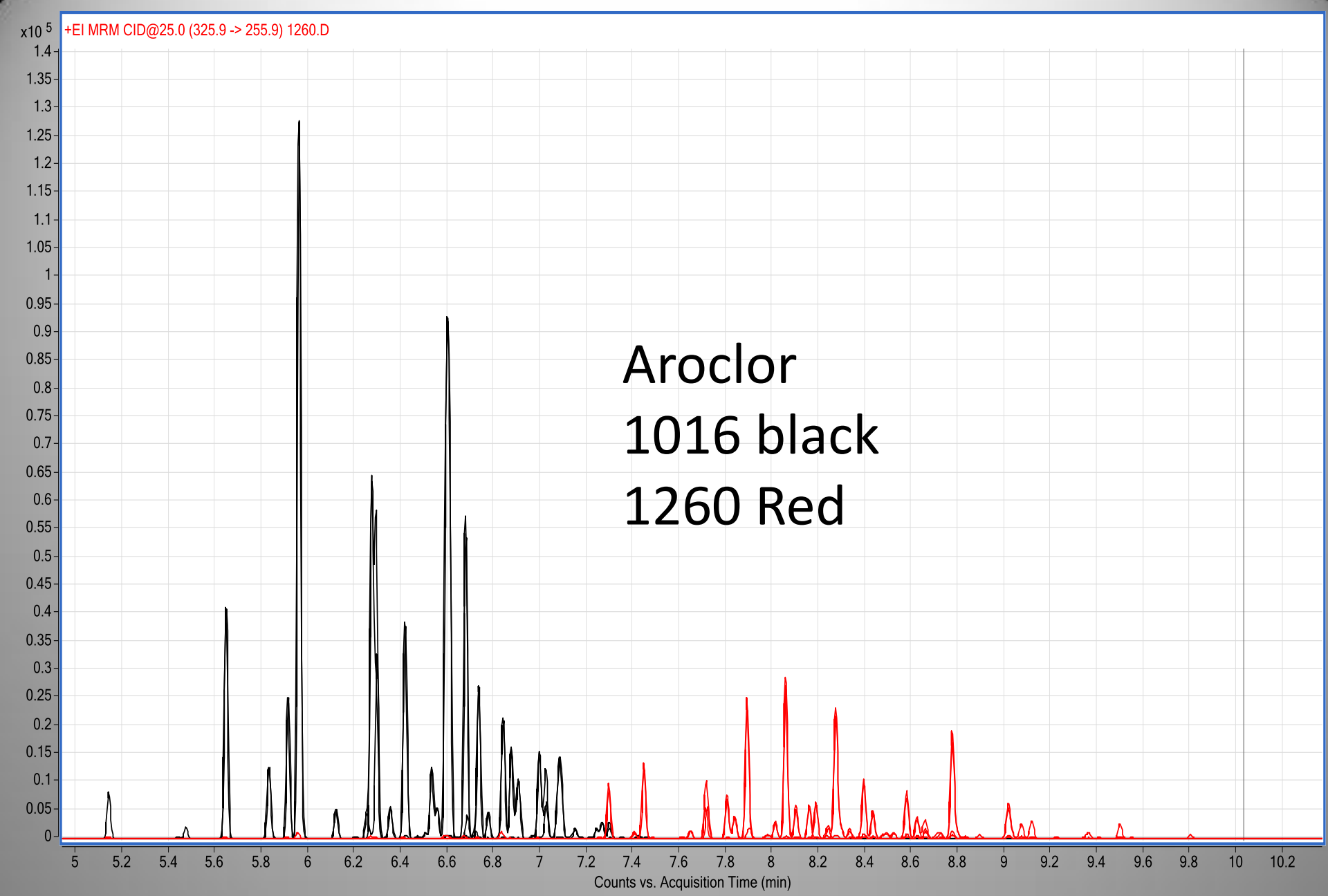
| | | | |
|---|---|---|---|
| Deca | 497.7 | Transitioning to → | 427.7 |
| Nona | 461.7 | Transitioning to → | 391.8 |
| Octa | 427.8 | Transitioning to → | 357.8 |
| Hepta | 393.8 | Transitioning to → | 323.9 |
| Hexa | 359.8 | Transitioning to → | 289.9 |
| Penta | 325.9 | Transitioning to → | 255.9 |
| Tetra | 291.9 | Transitioning to → | 222 |
| Tri | 258 | Transitioning to → | 186 |
| Di | 222 | Transitioning to → | 152 |
| Mono | 188 | Transitioning to → | 152 |
| Acenaphtene D10 | 164 | Transitioning to → | 160 |
| Acenaphtene D10 | 164 | Transitioning to → | 82 |

Dale Walker
Agilent GCMS
Applications Engineer



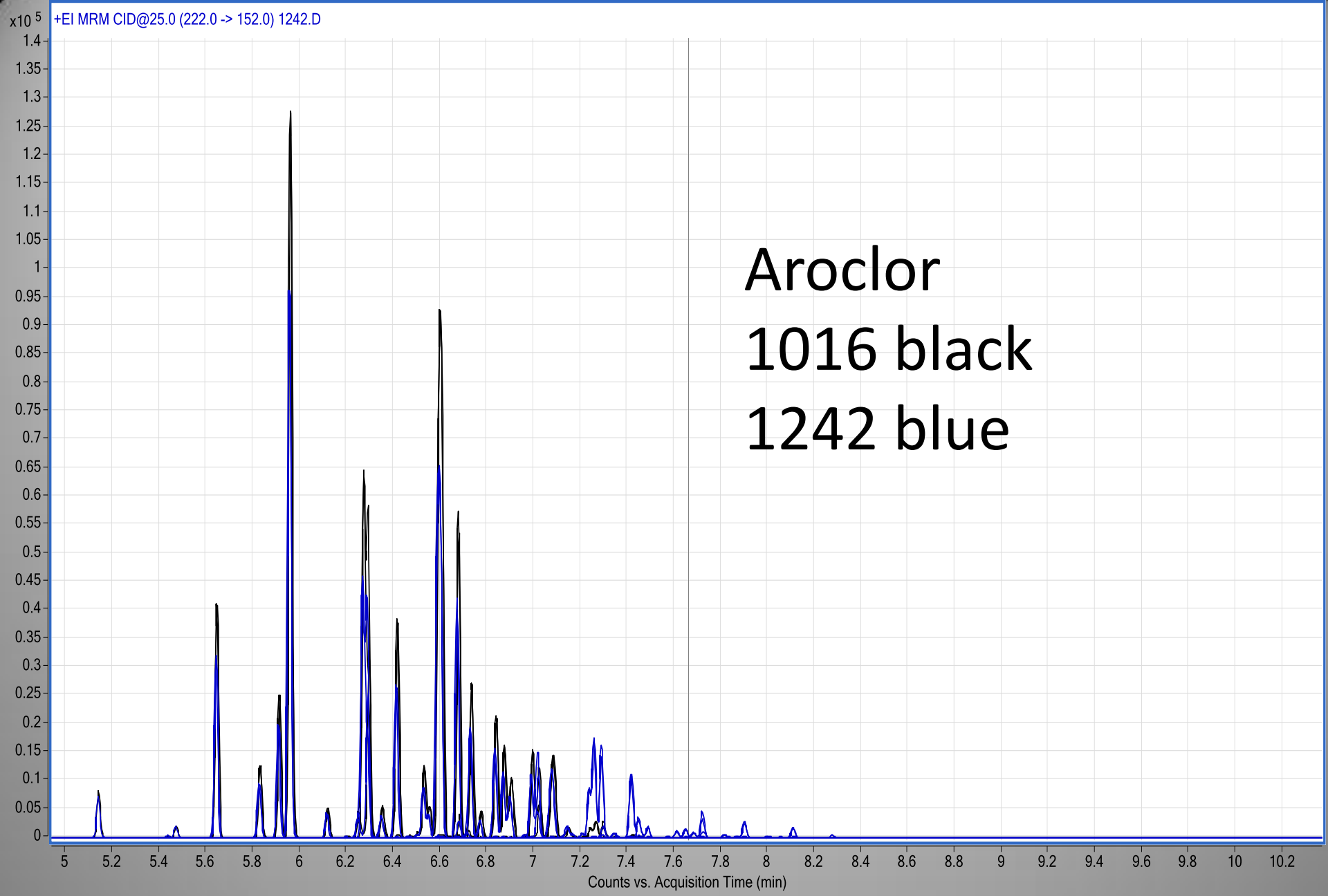

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



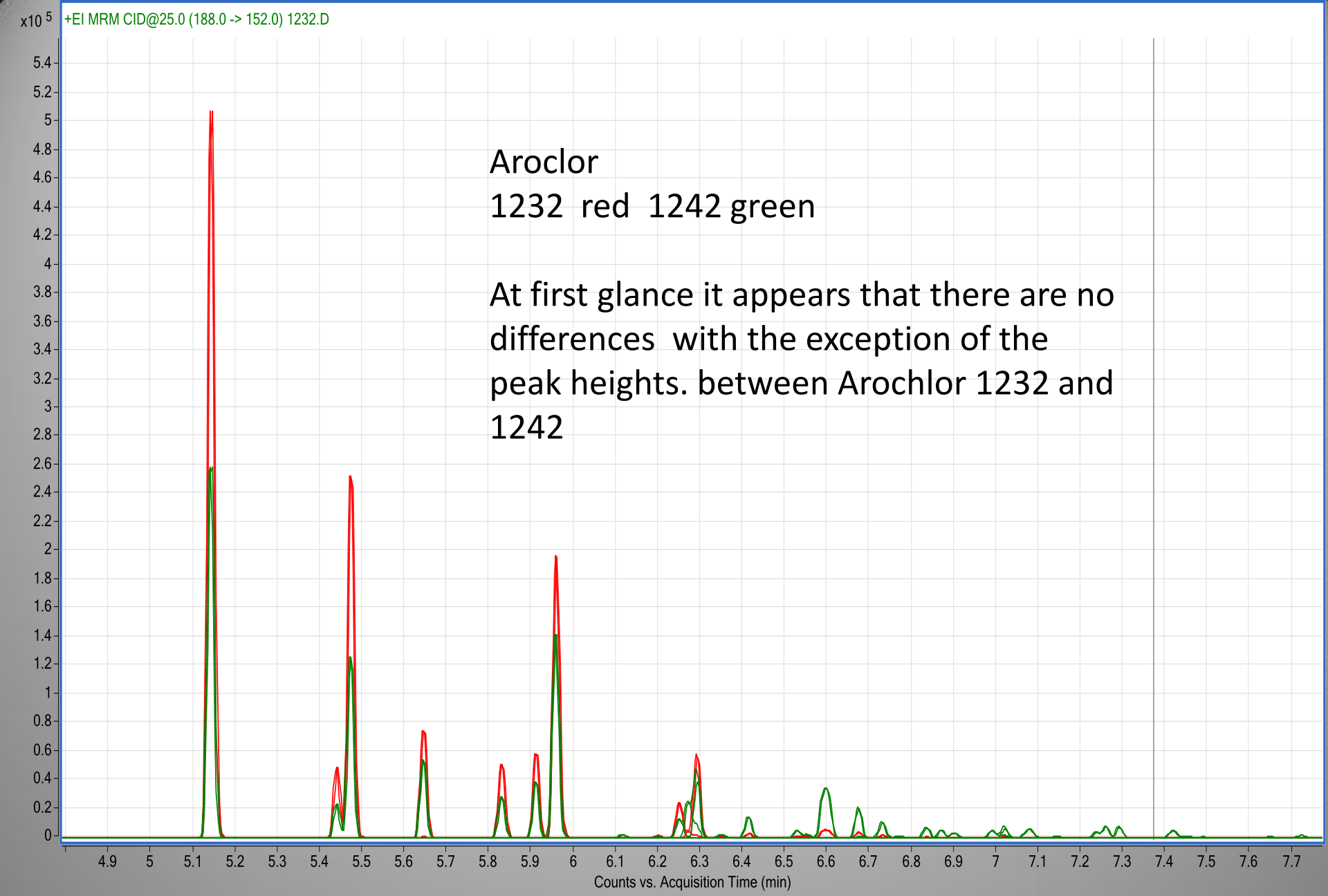

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



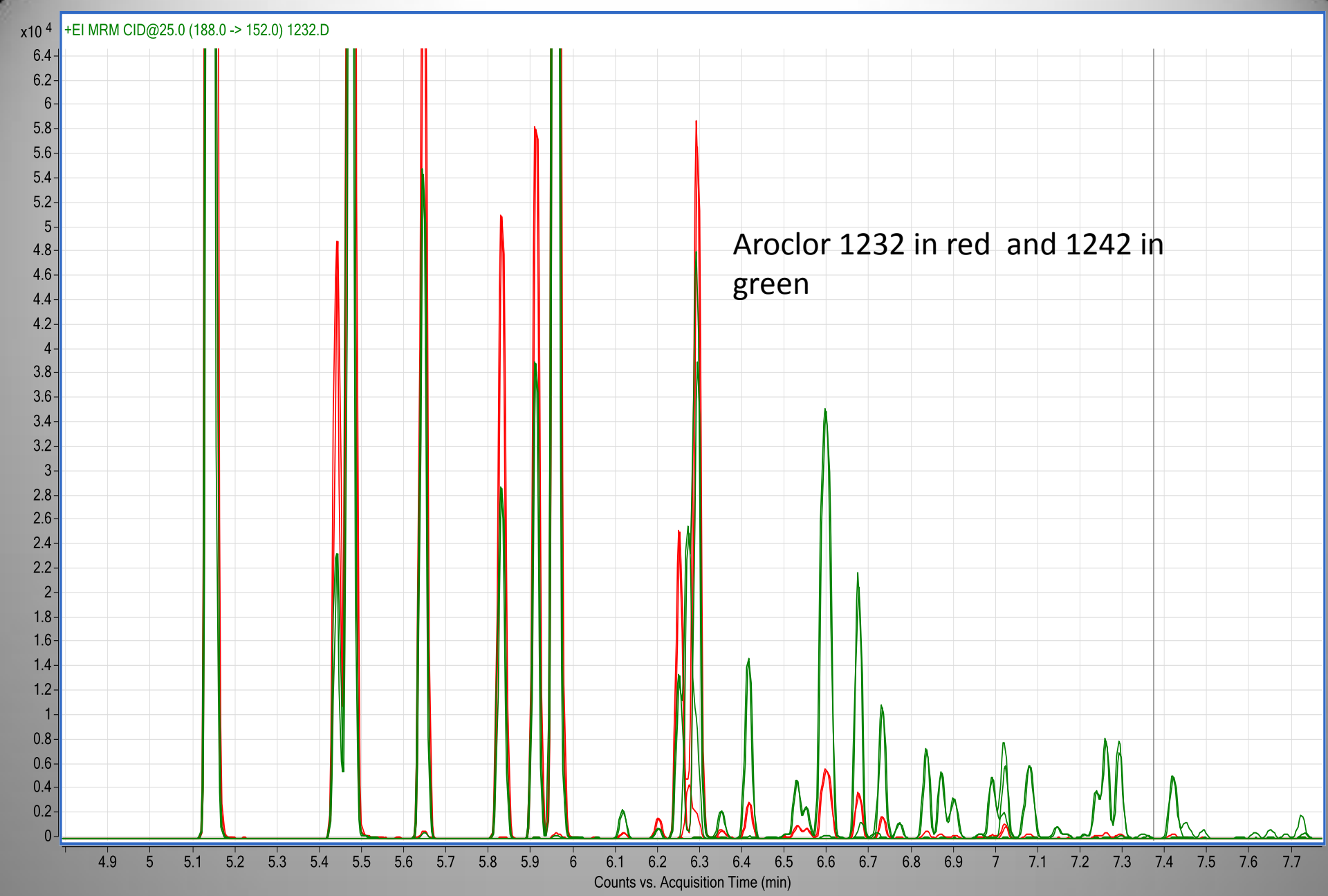

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



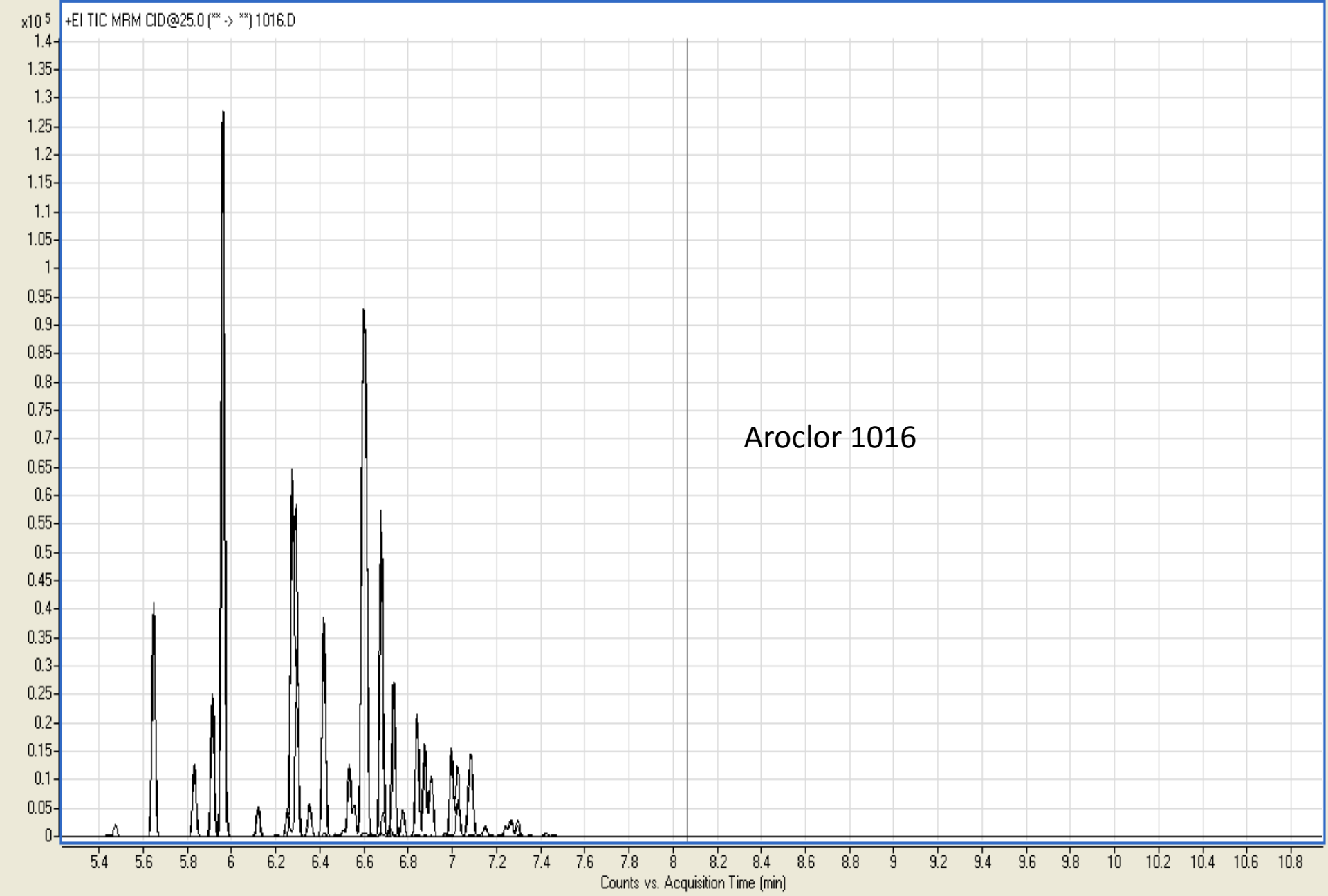

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



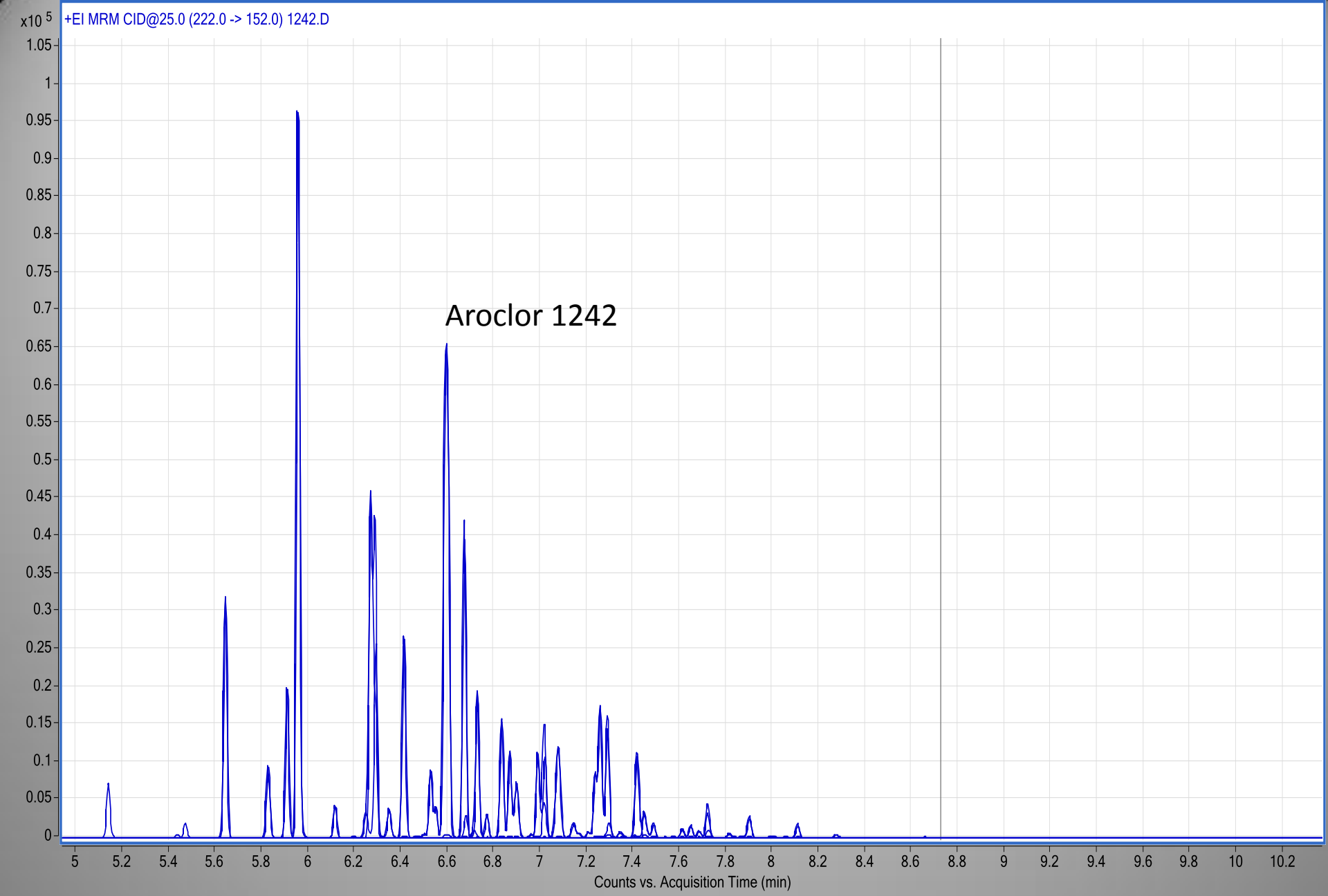

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



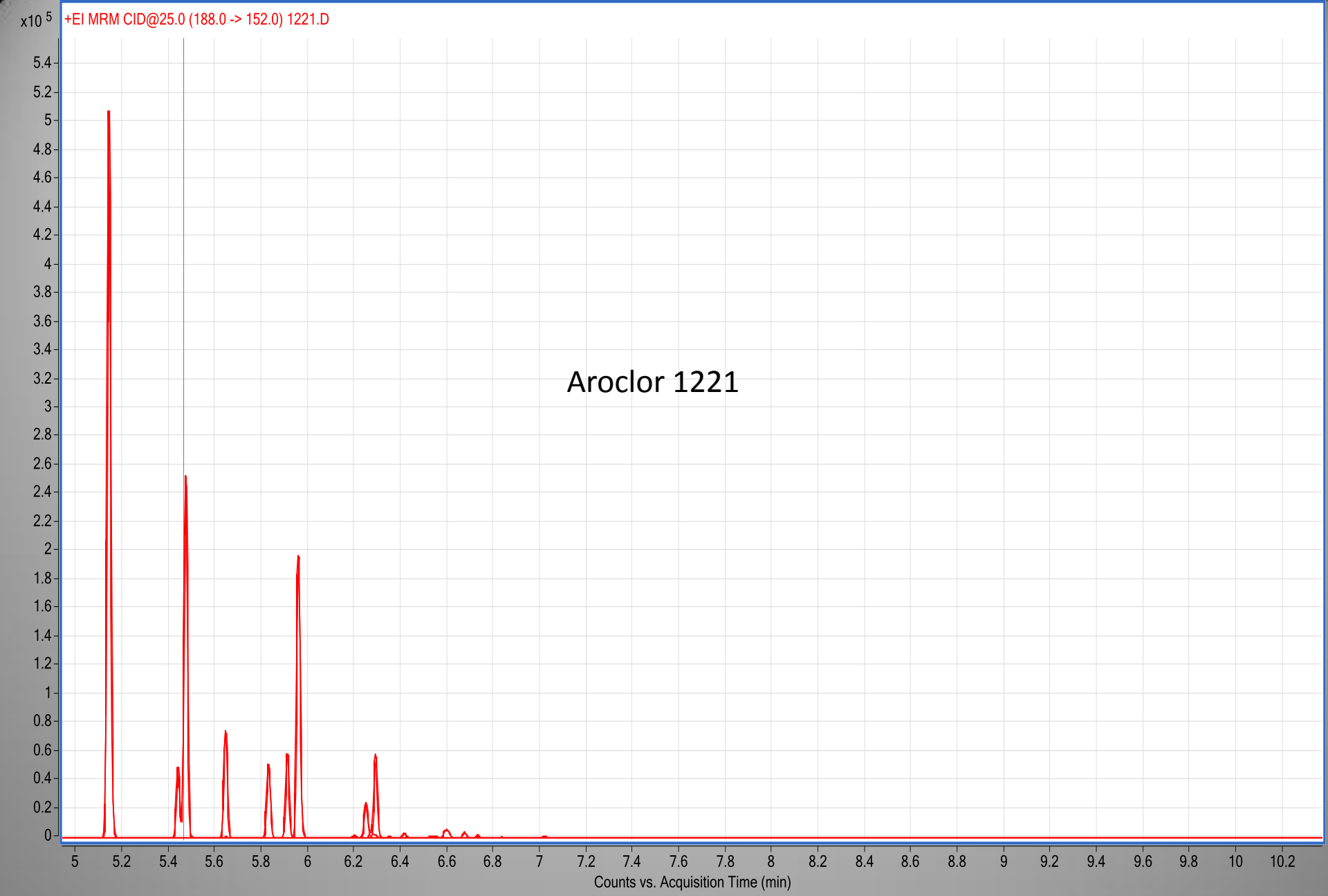

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



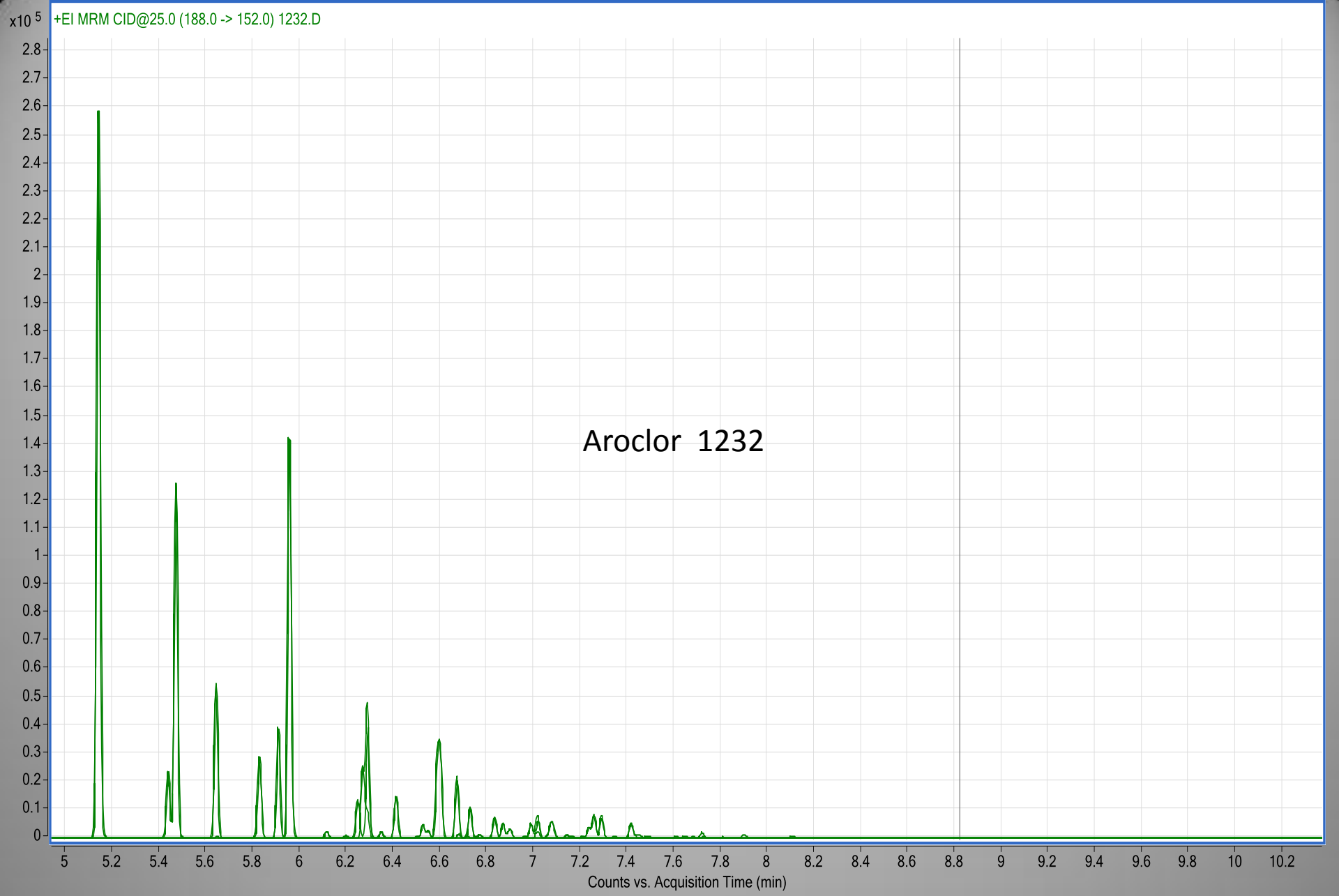

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



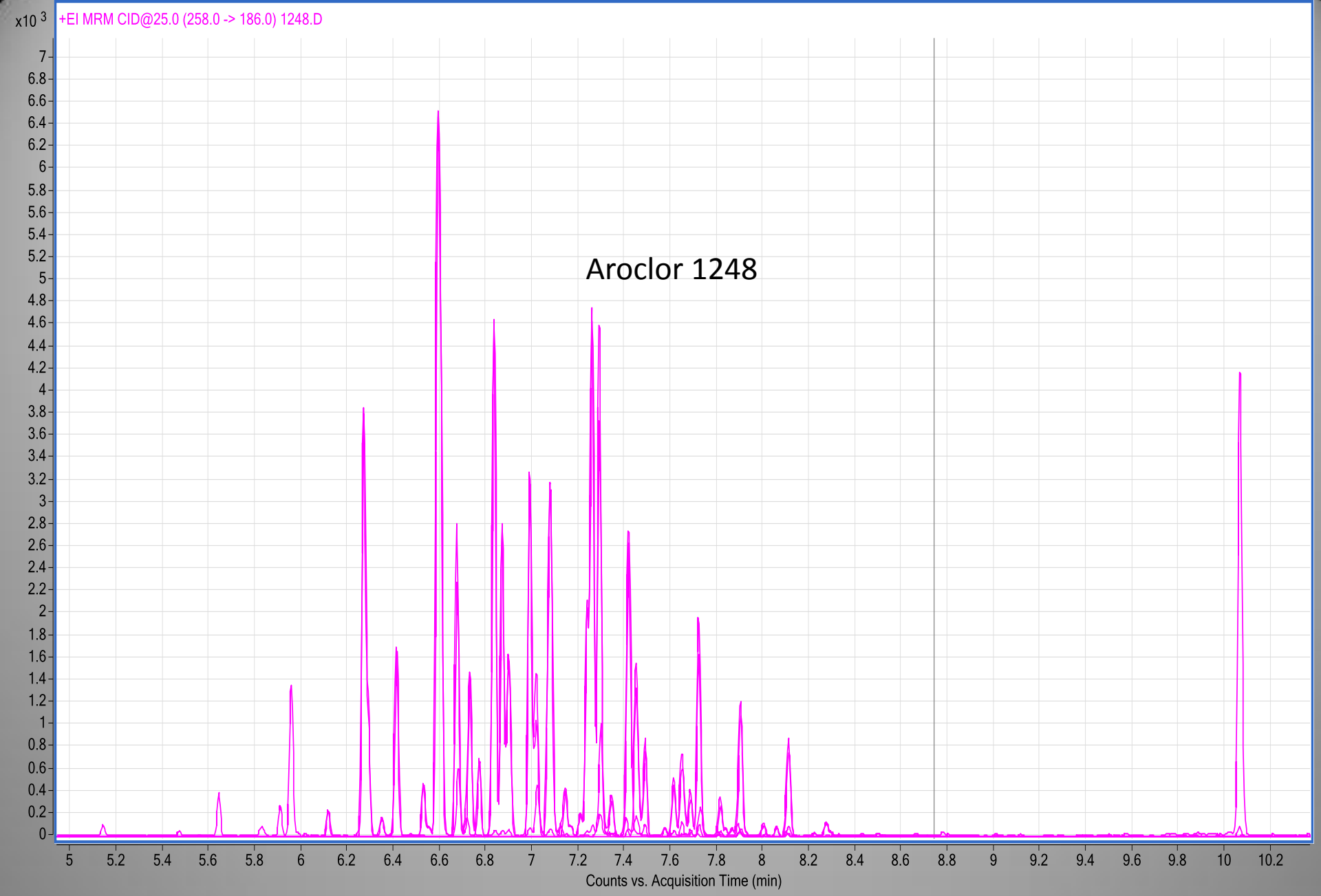

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



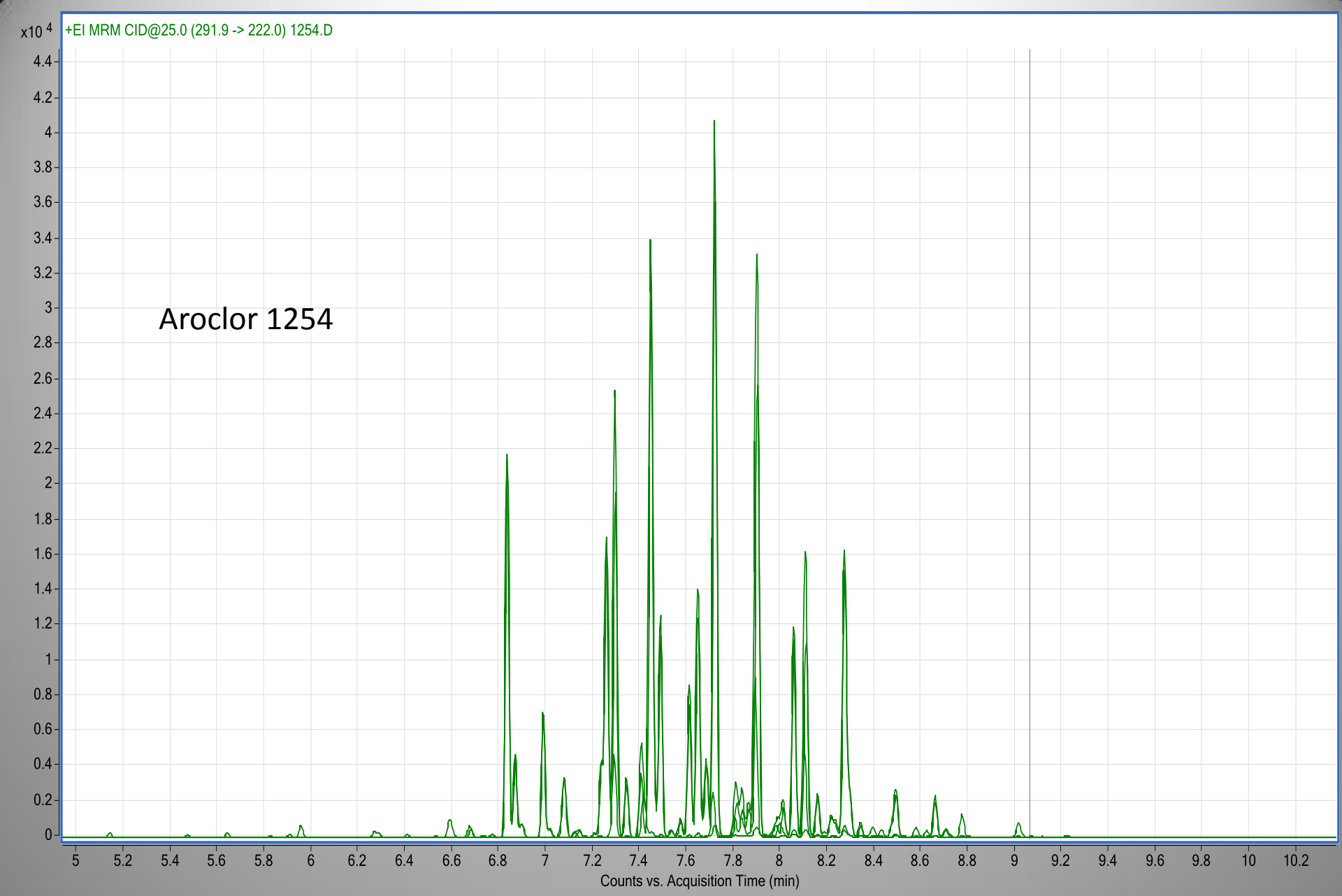

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



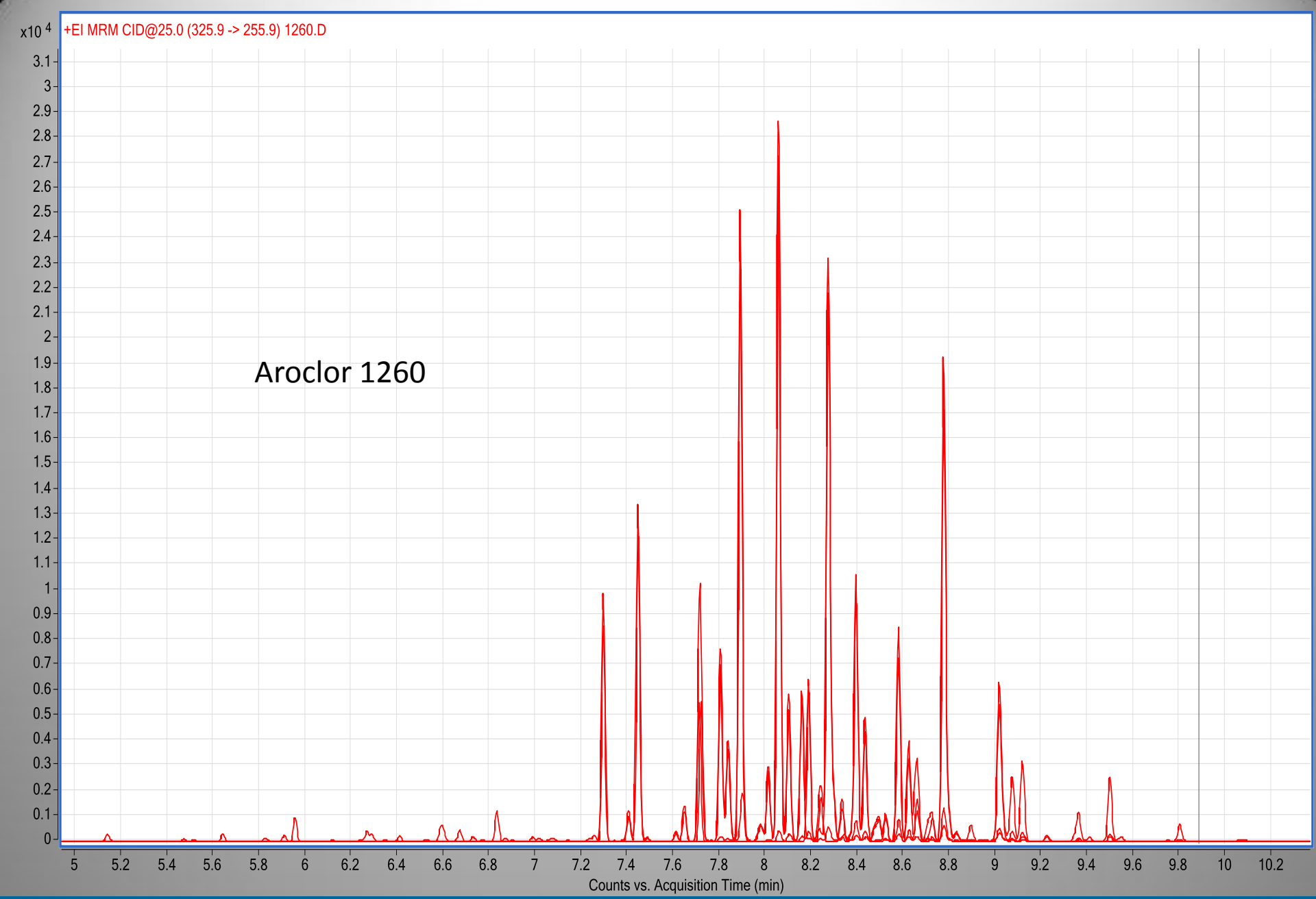

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



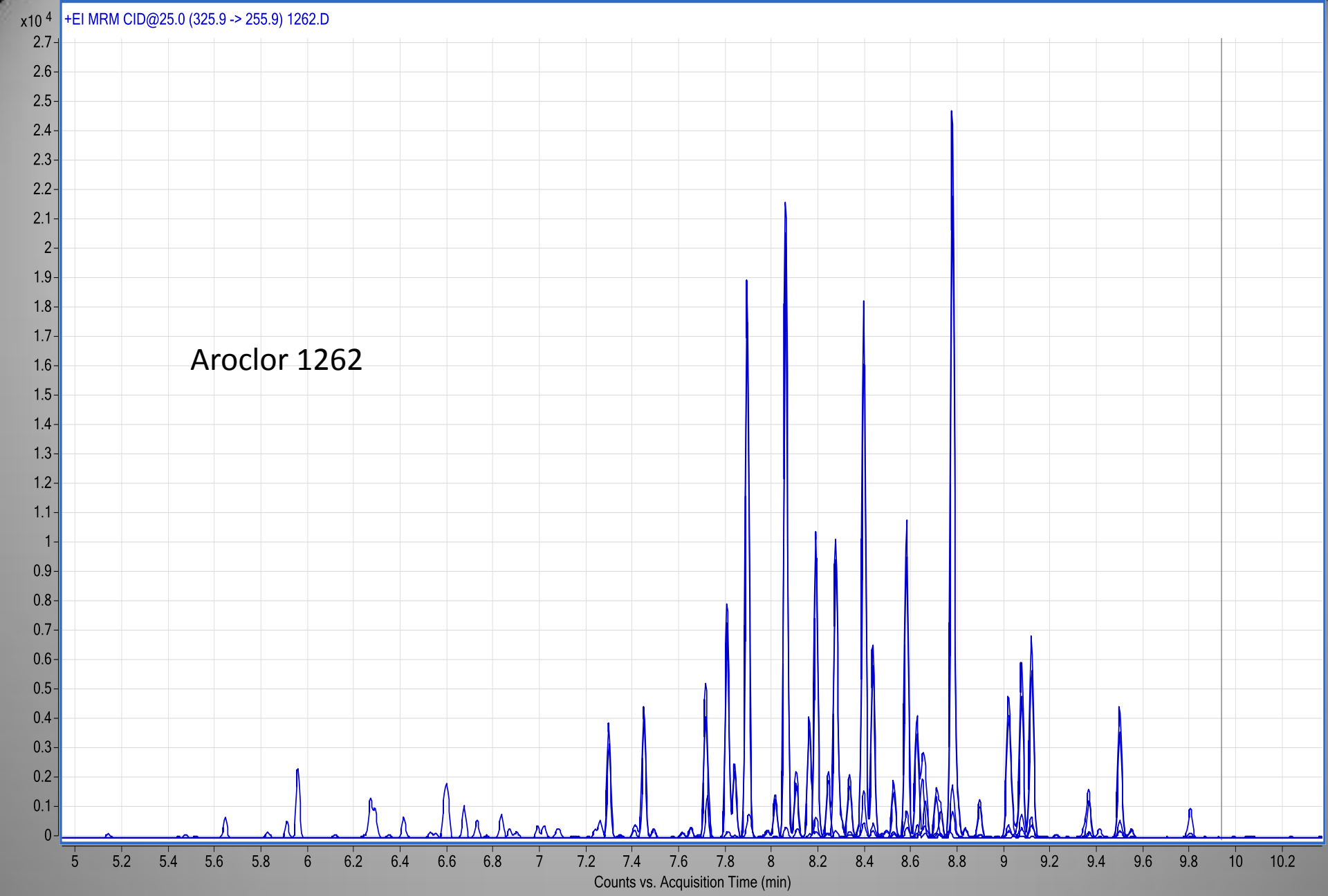

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



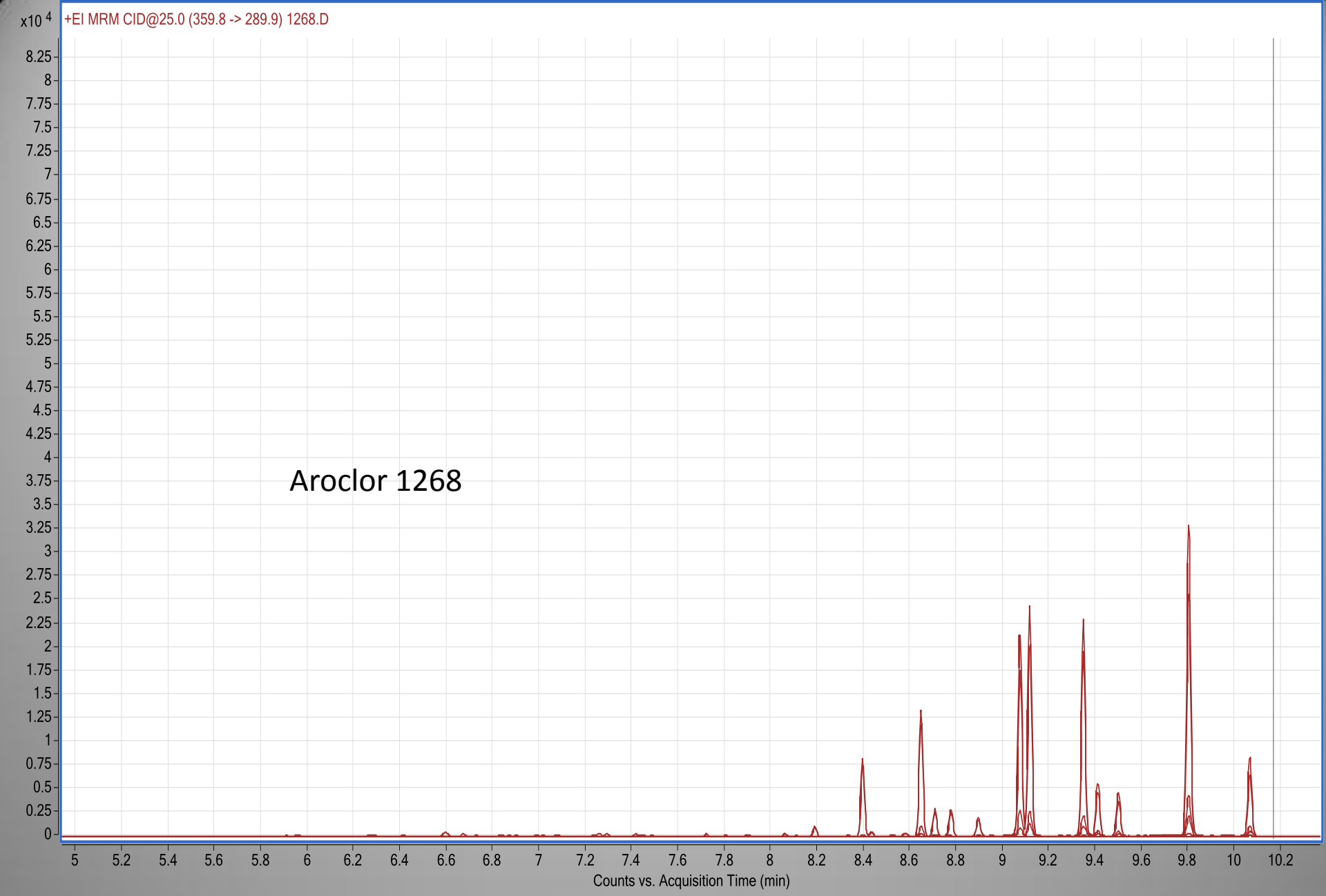

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

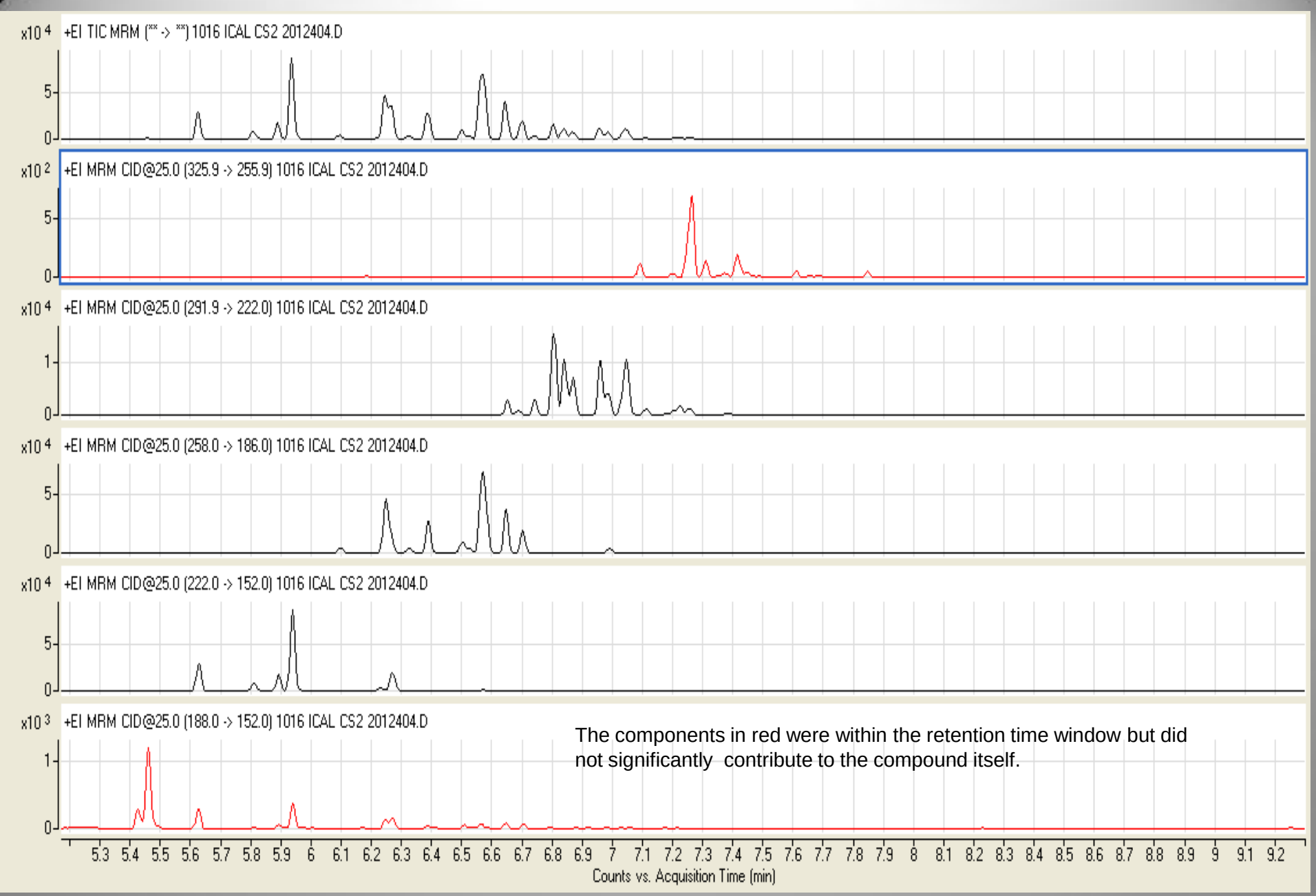



Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Lets take a closer look at what makes up the TIC patterns

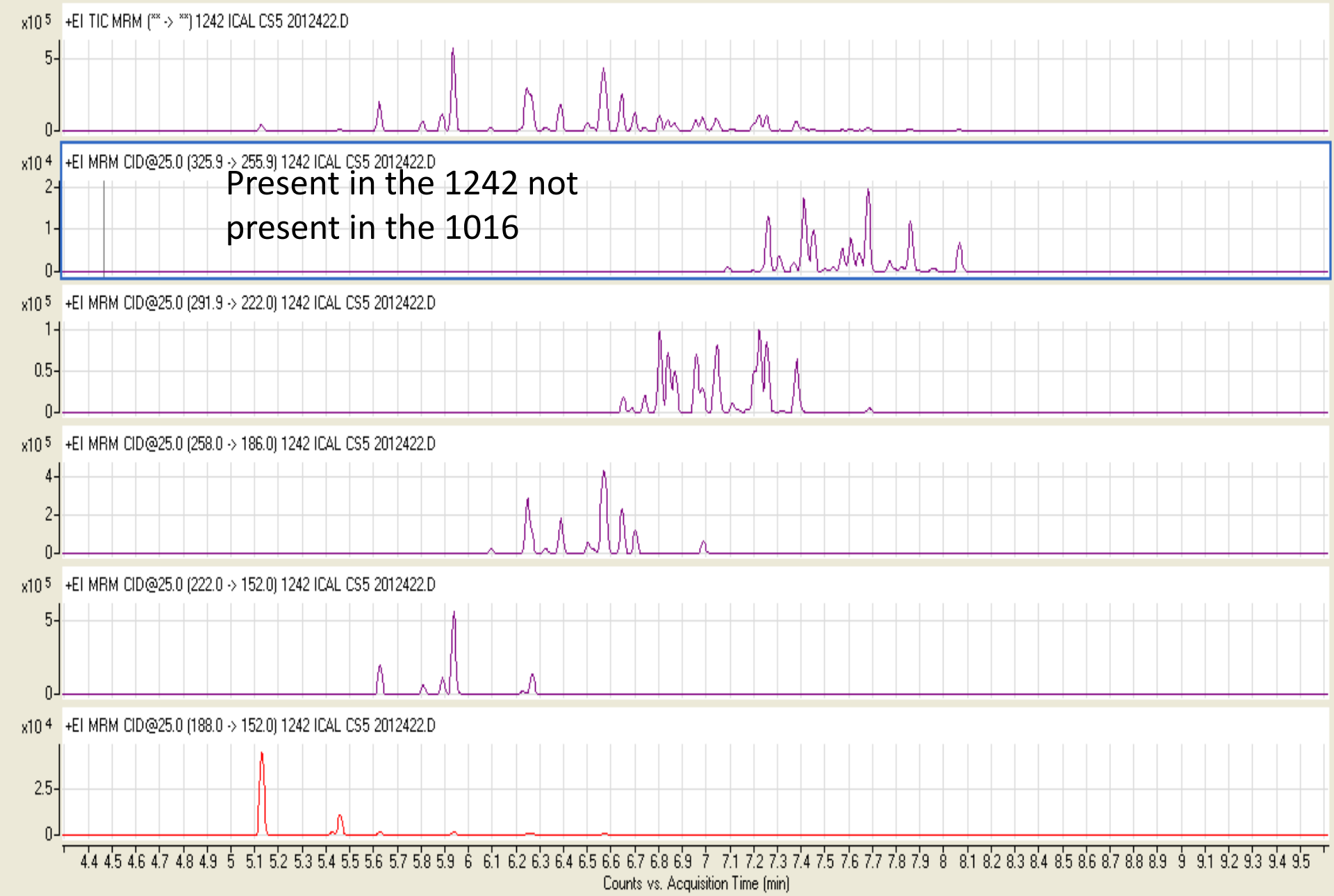
Dale Walker
Agilent GCMS
Applications Engineer




The components in red were within the retention time window but did not significantly contribute to the compound itself.

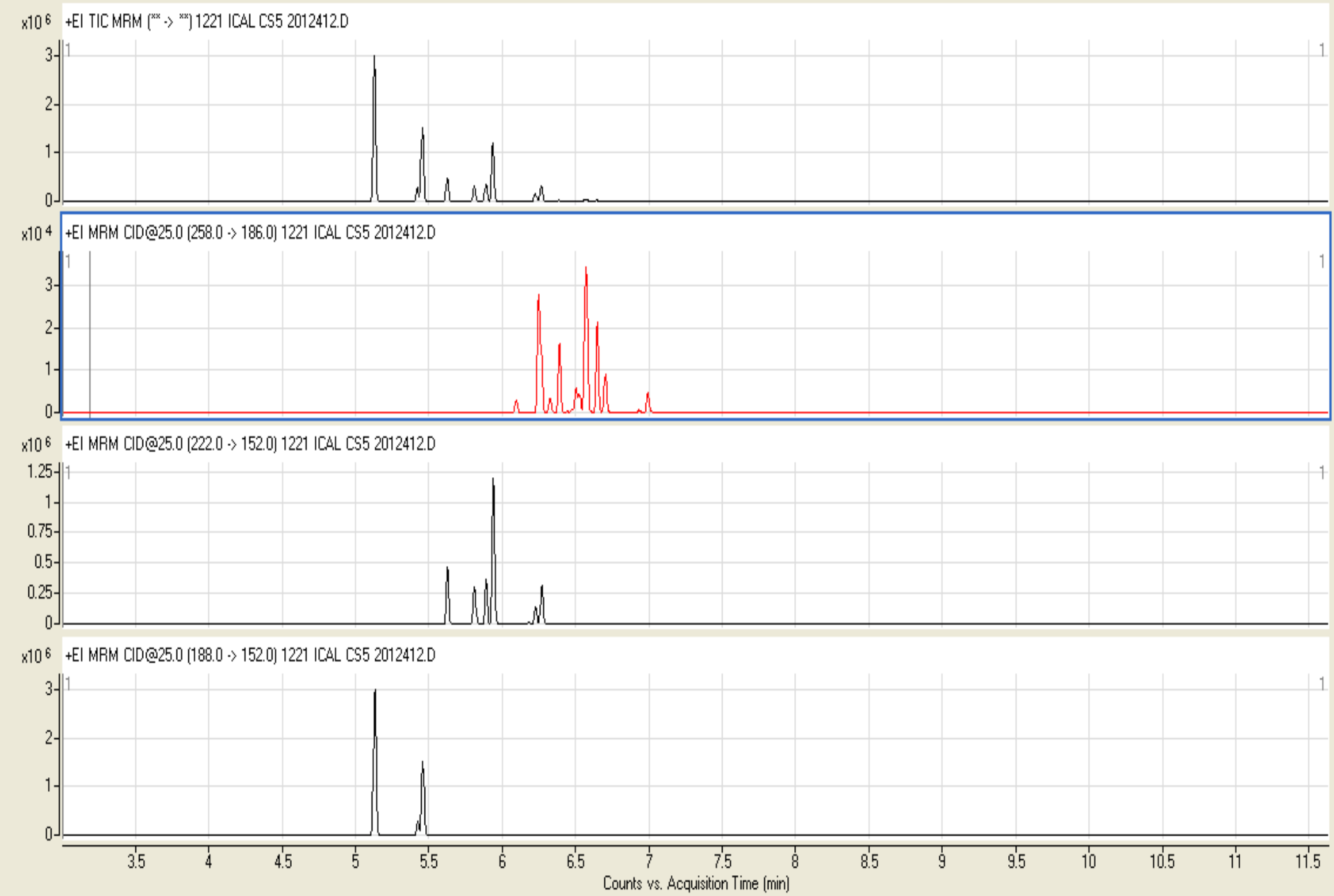
Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



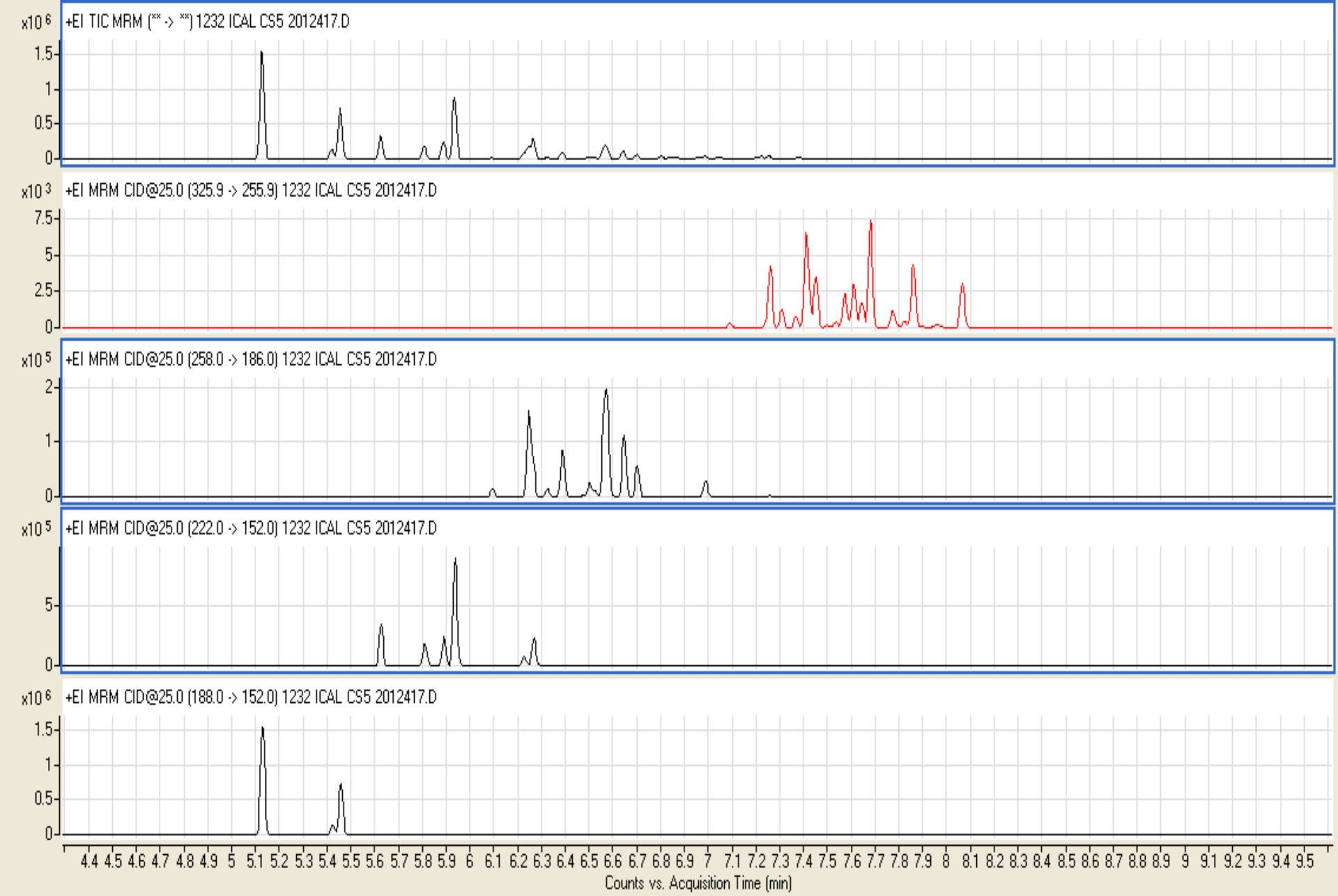

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

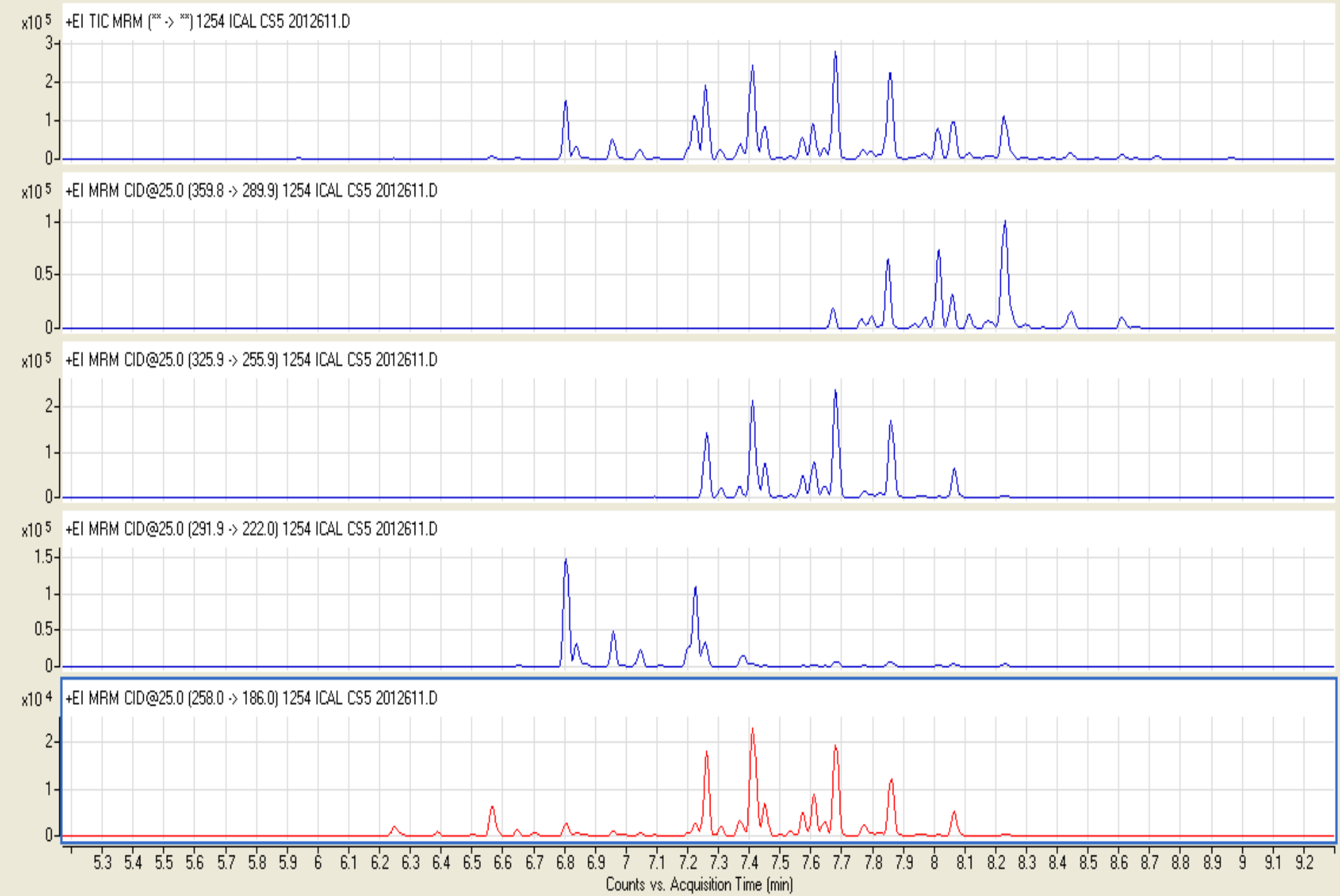



Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

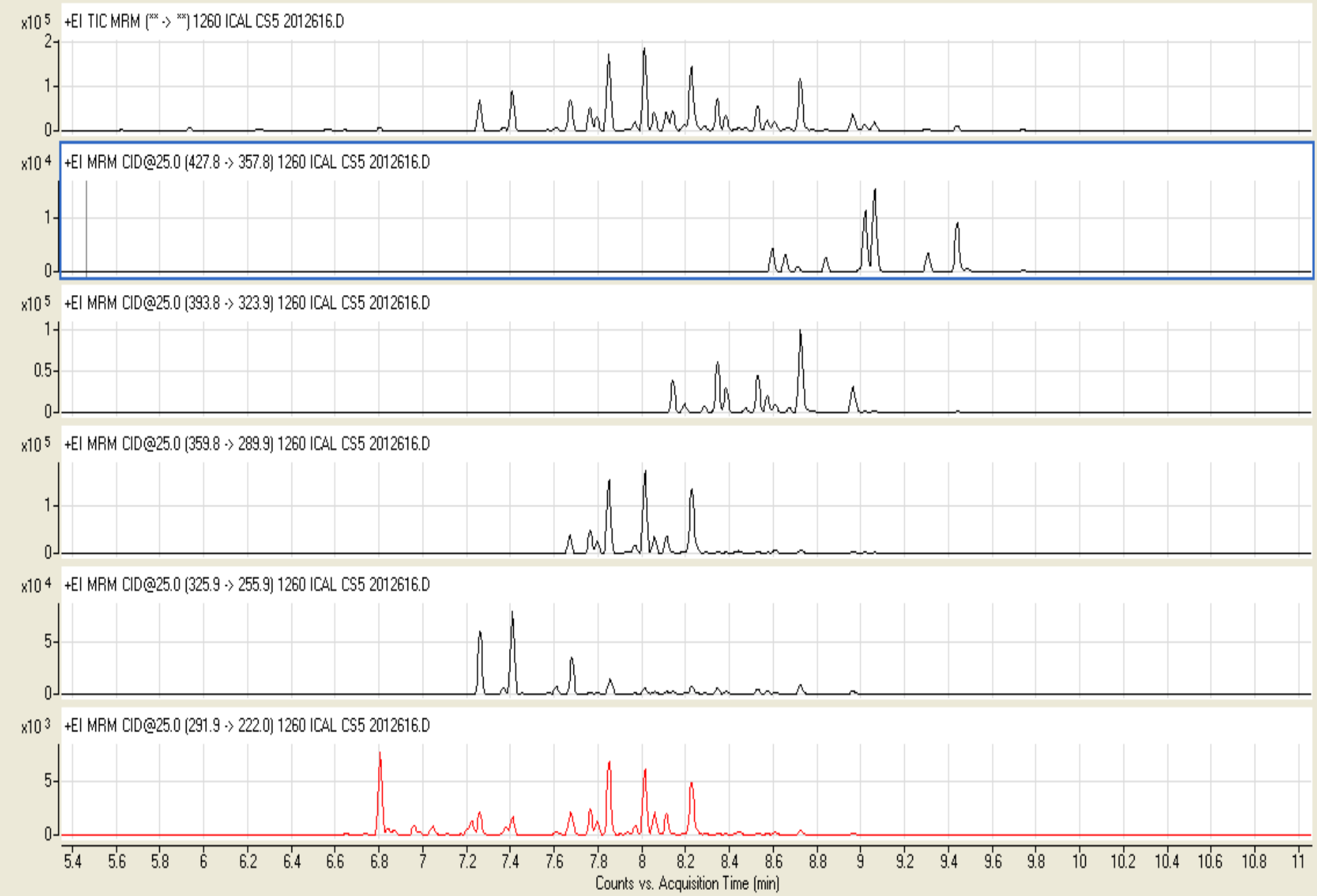

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



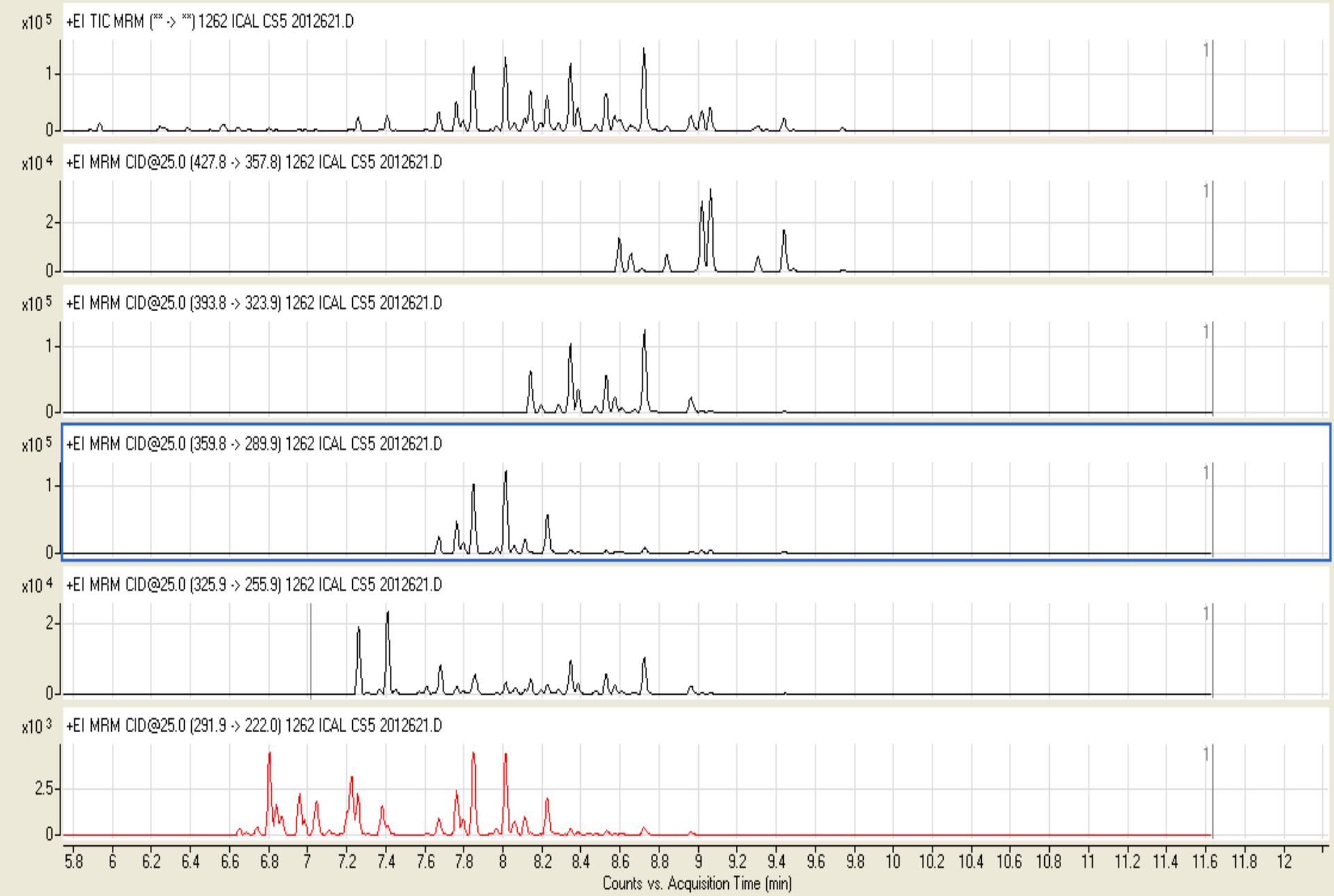

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



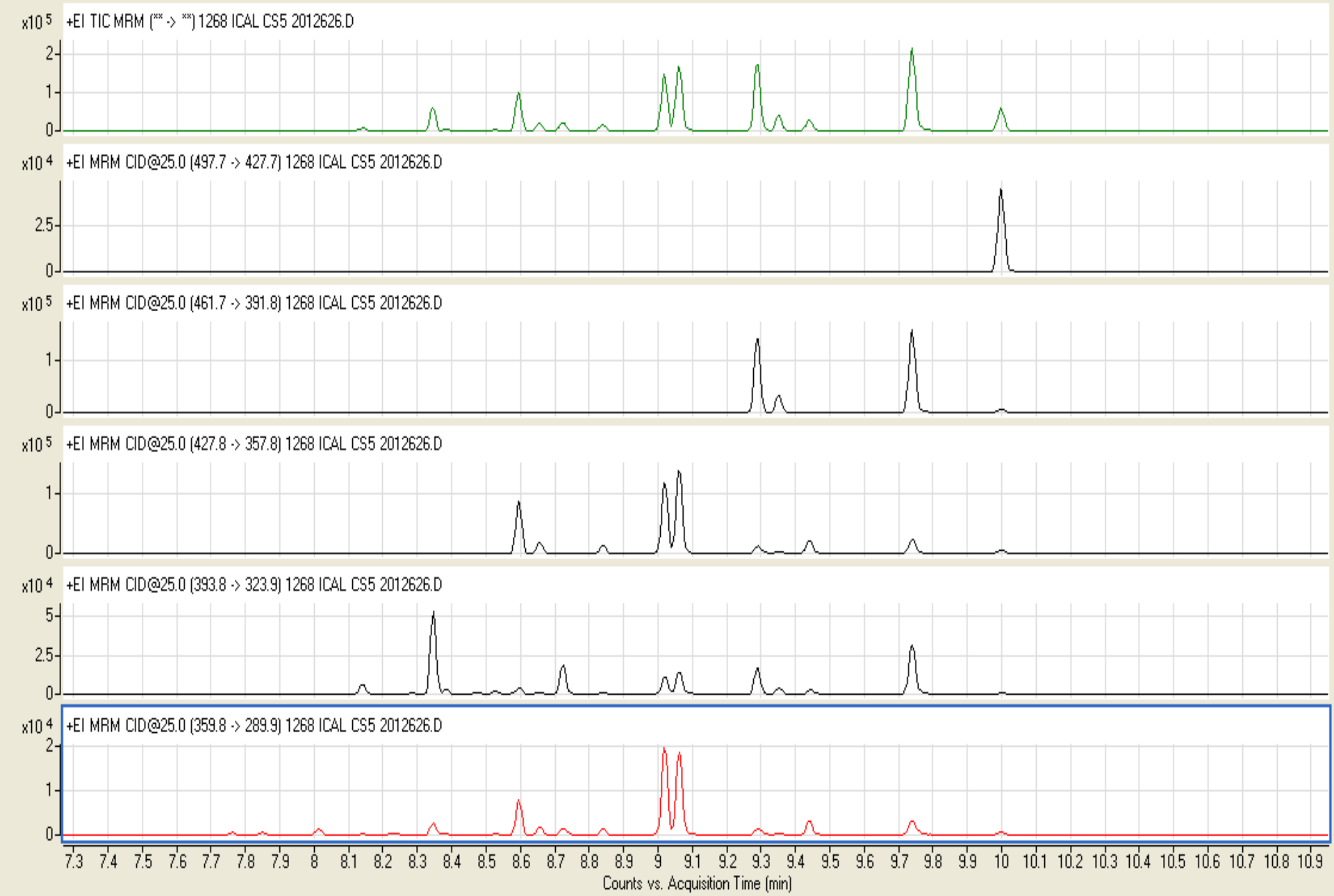

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

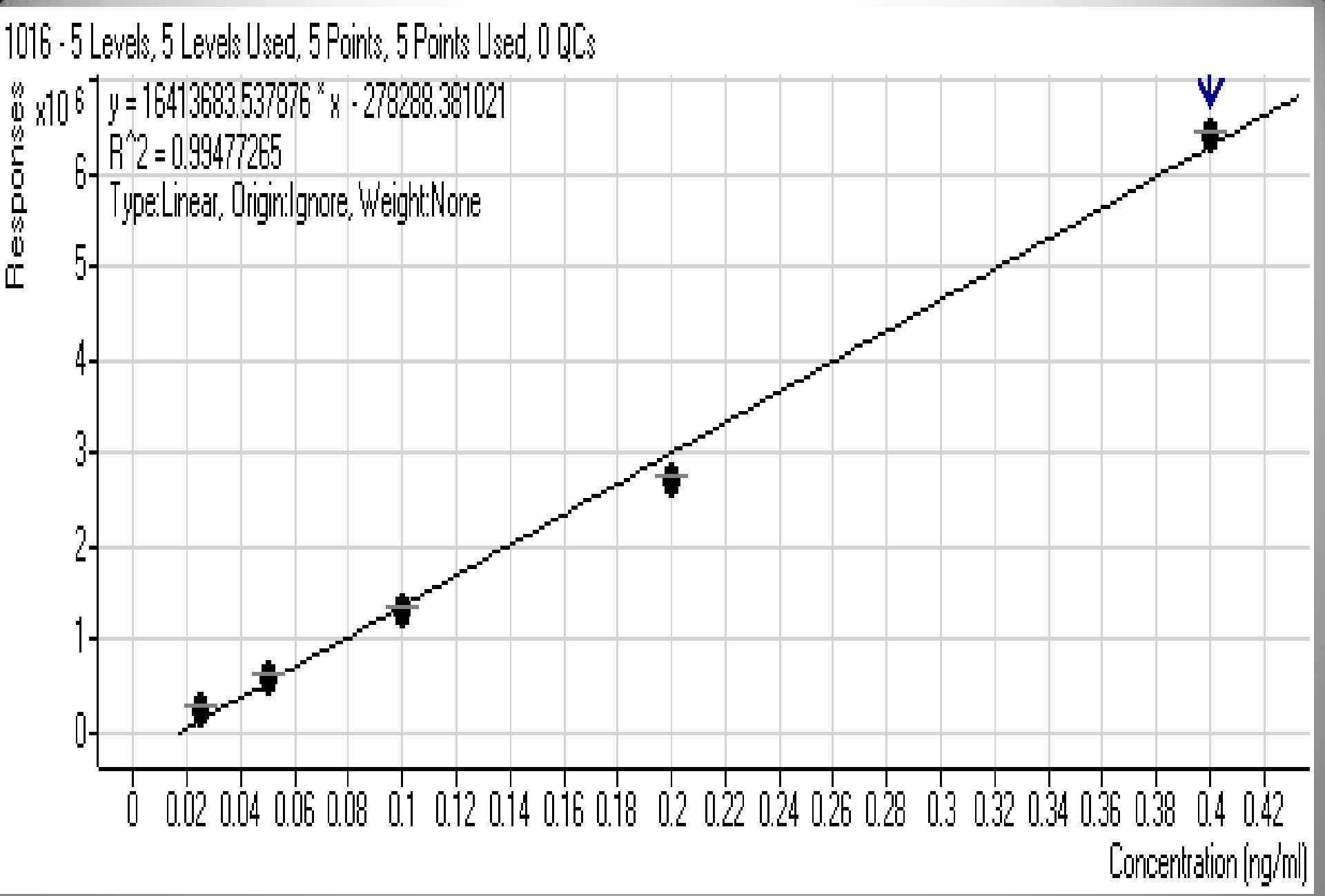
Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

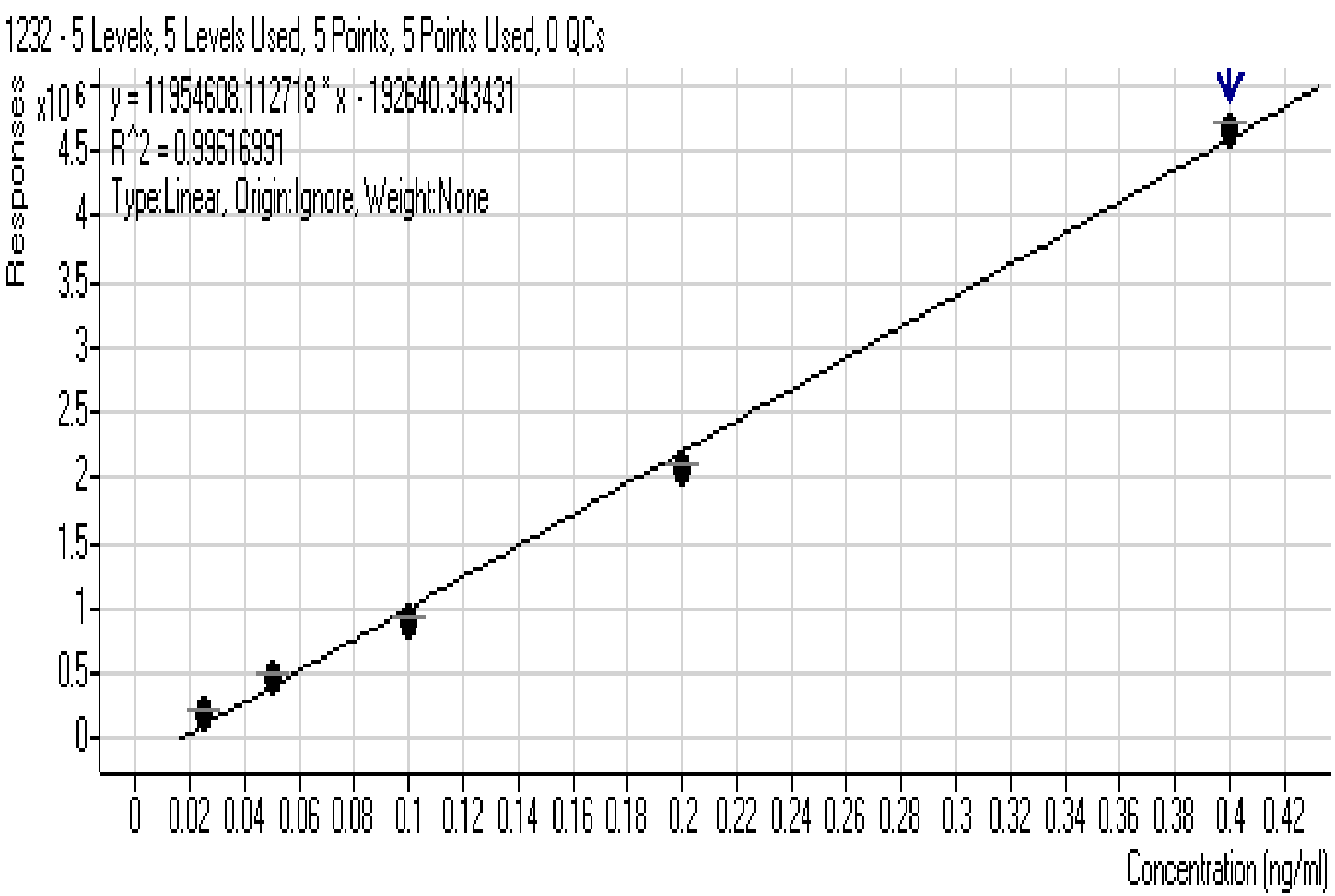
Agilent Technologies

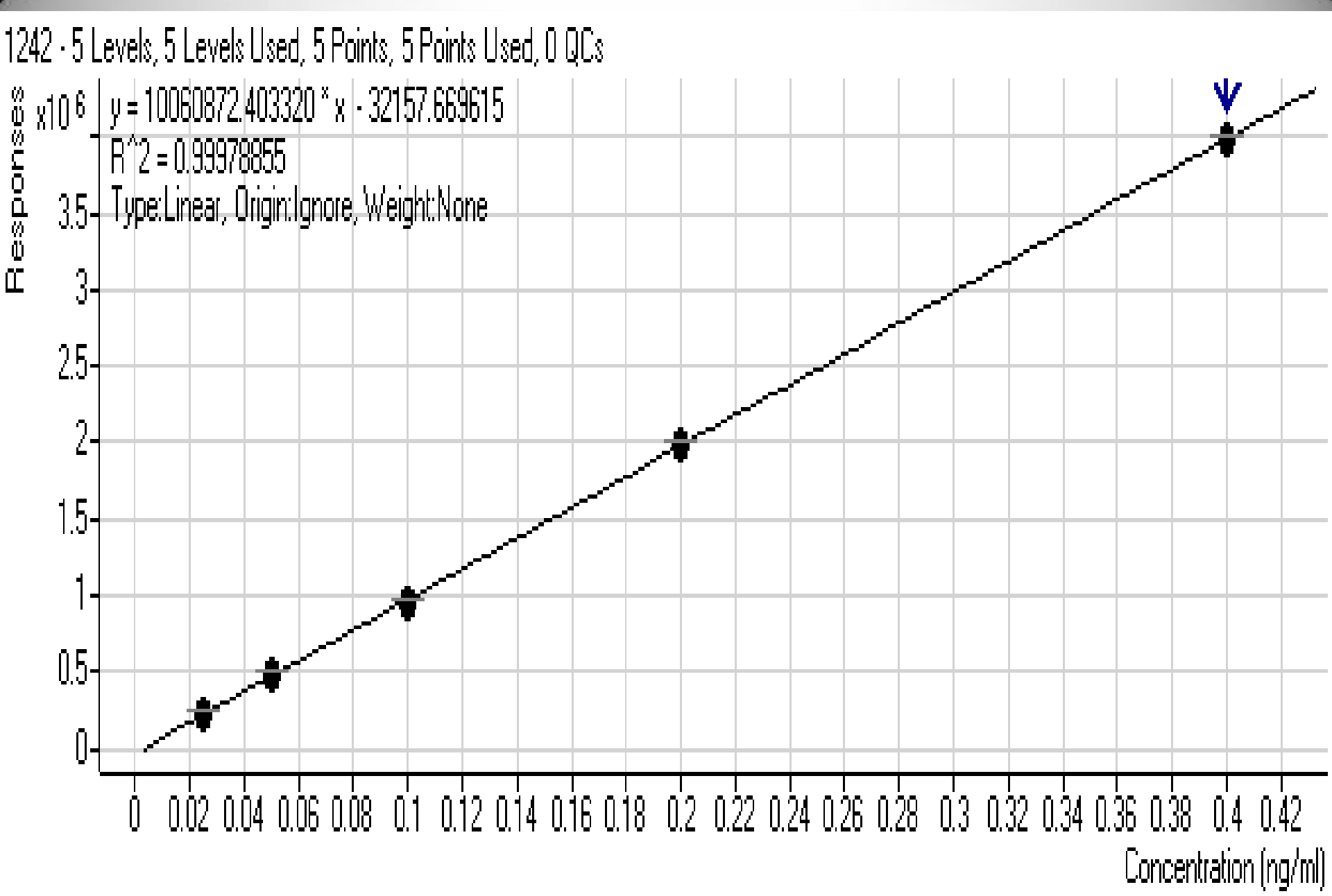
The process of identifying the compound of interest starts by first running each of the PCB's as an individual curve.



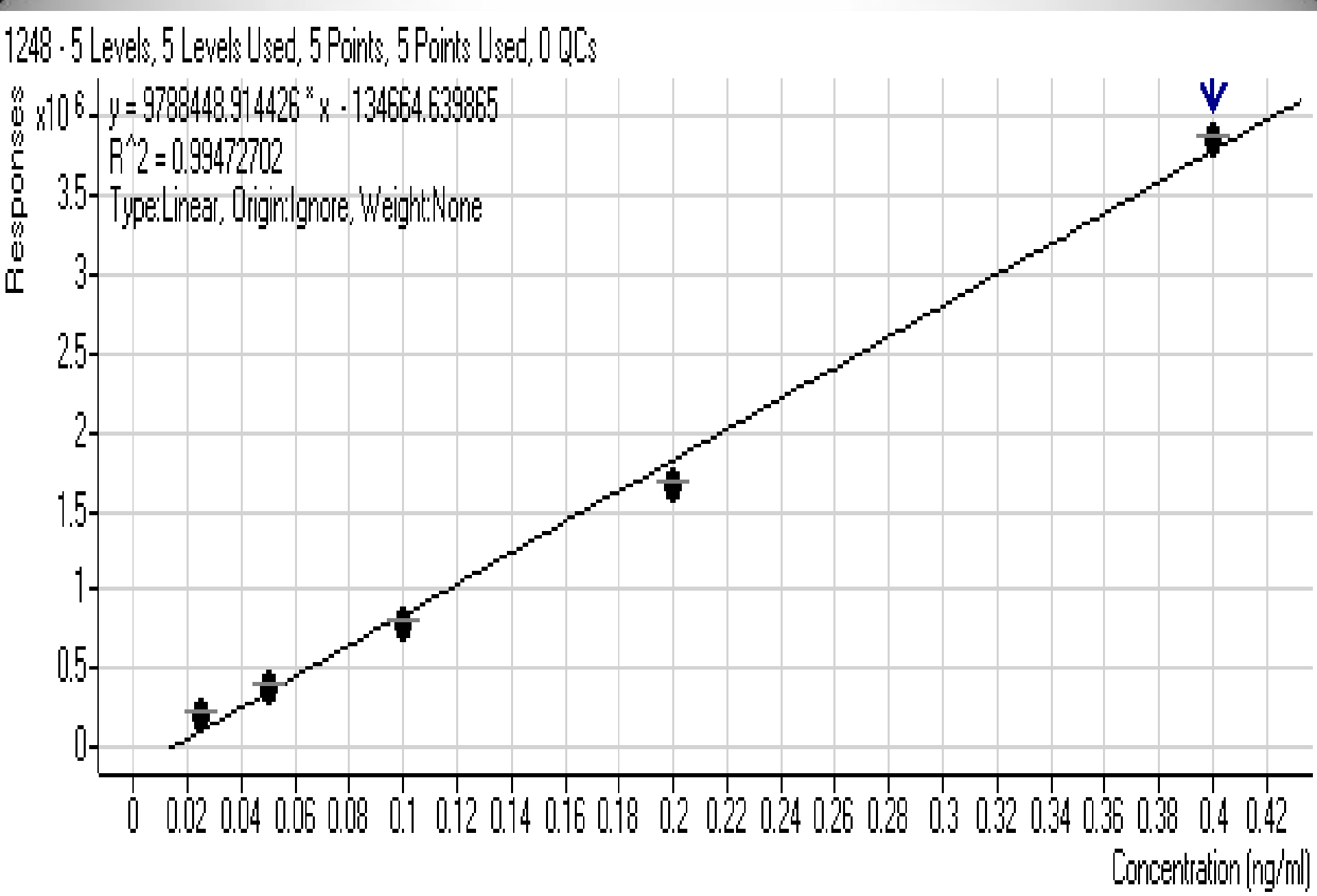

Dale Walker
Agilent GCMS
Applications Engineer

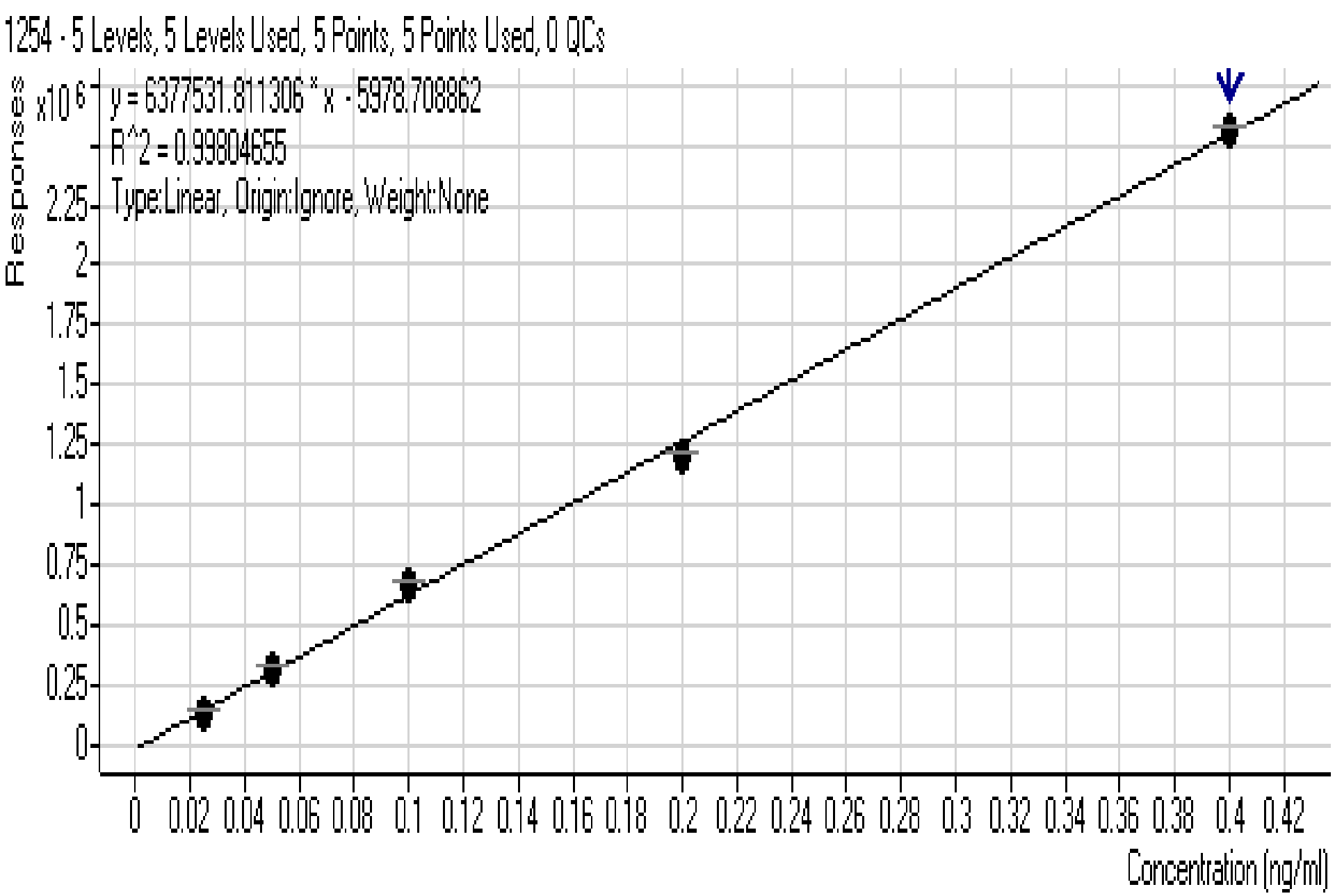
Agilent Technologies

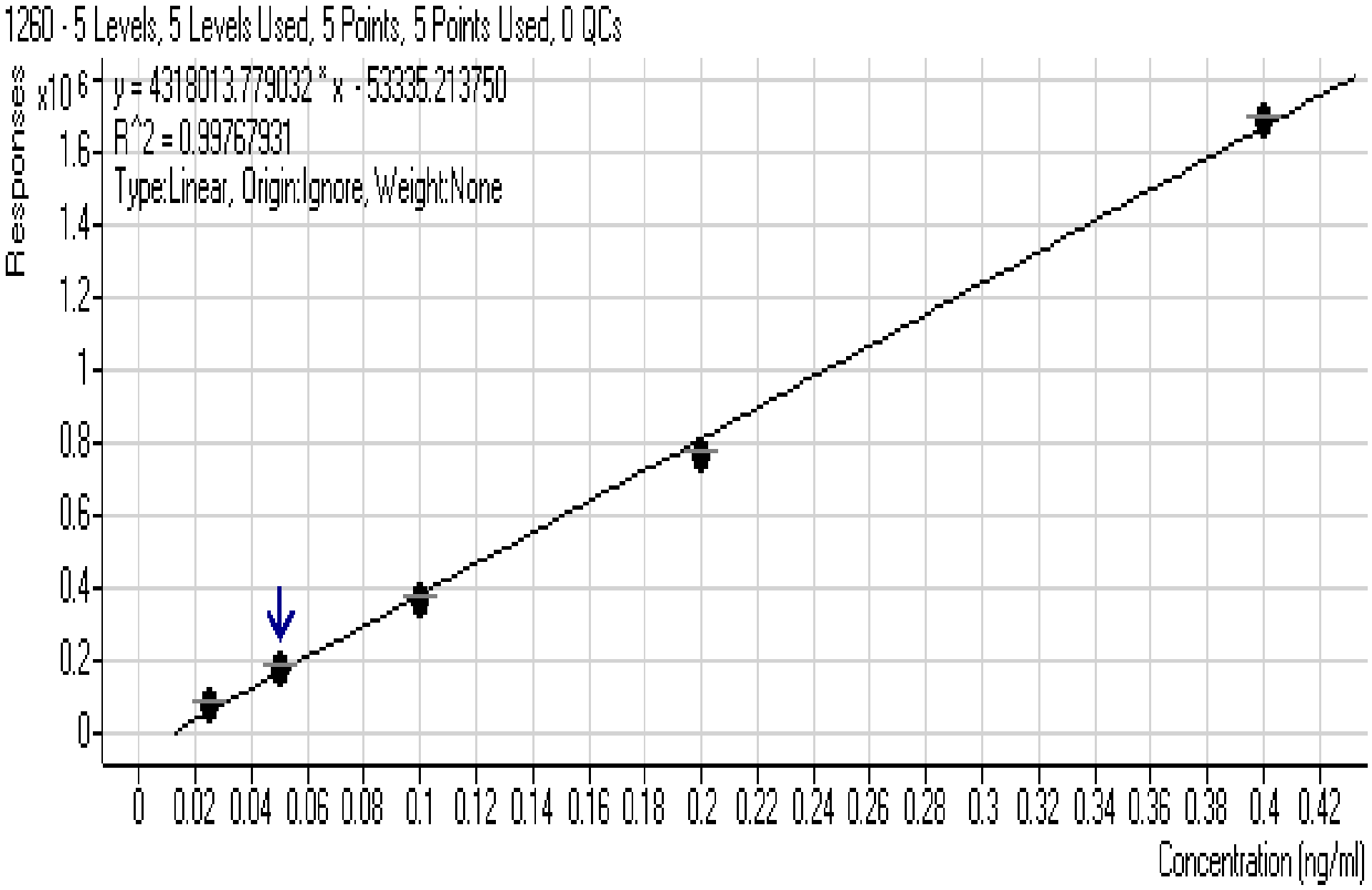

1232 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 11954608.112718 * x - 192640.343431
R^2 = 0.99616991
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)

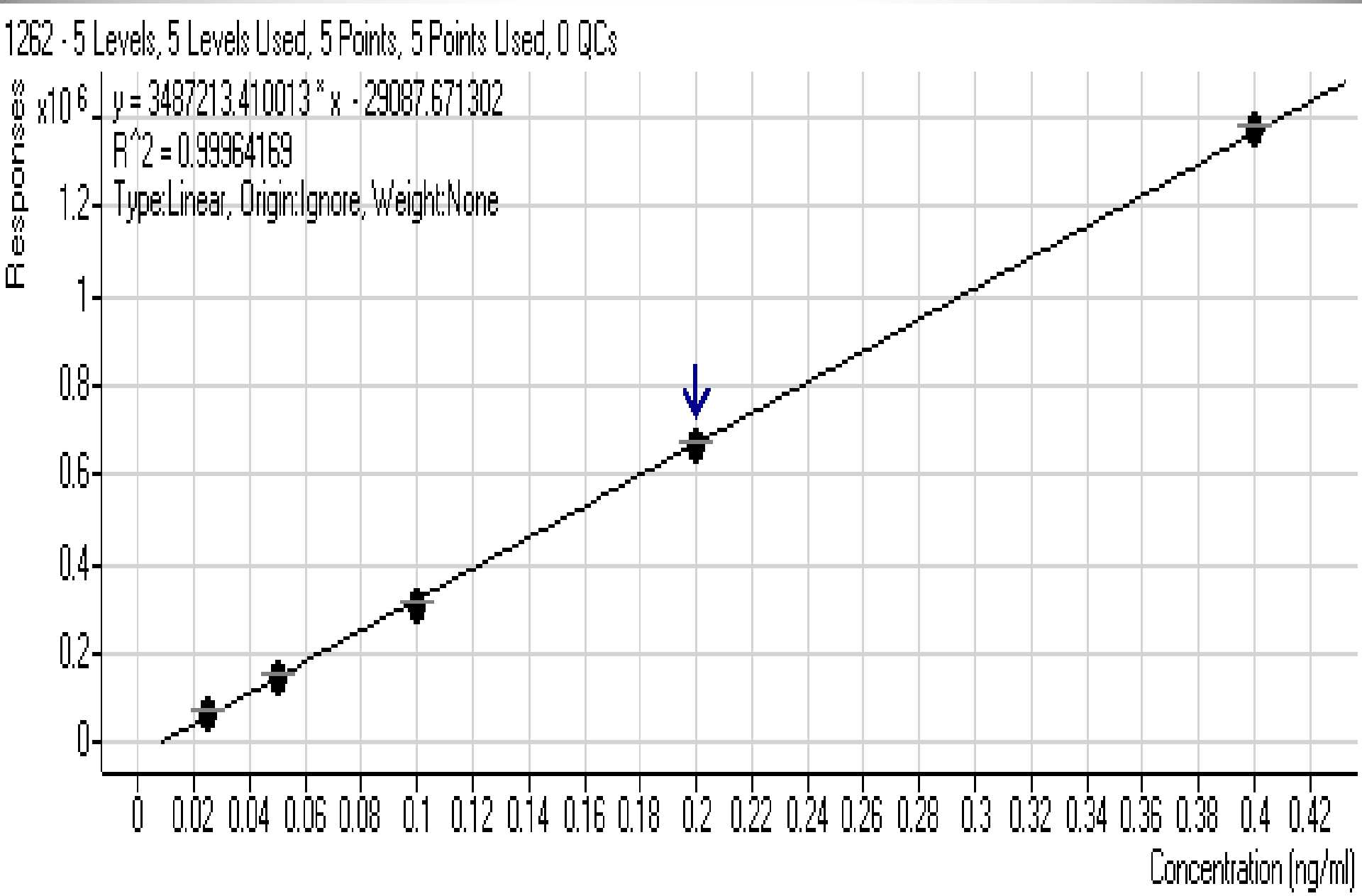


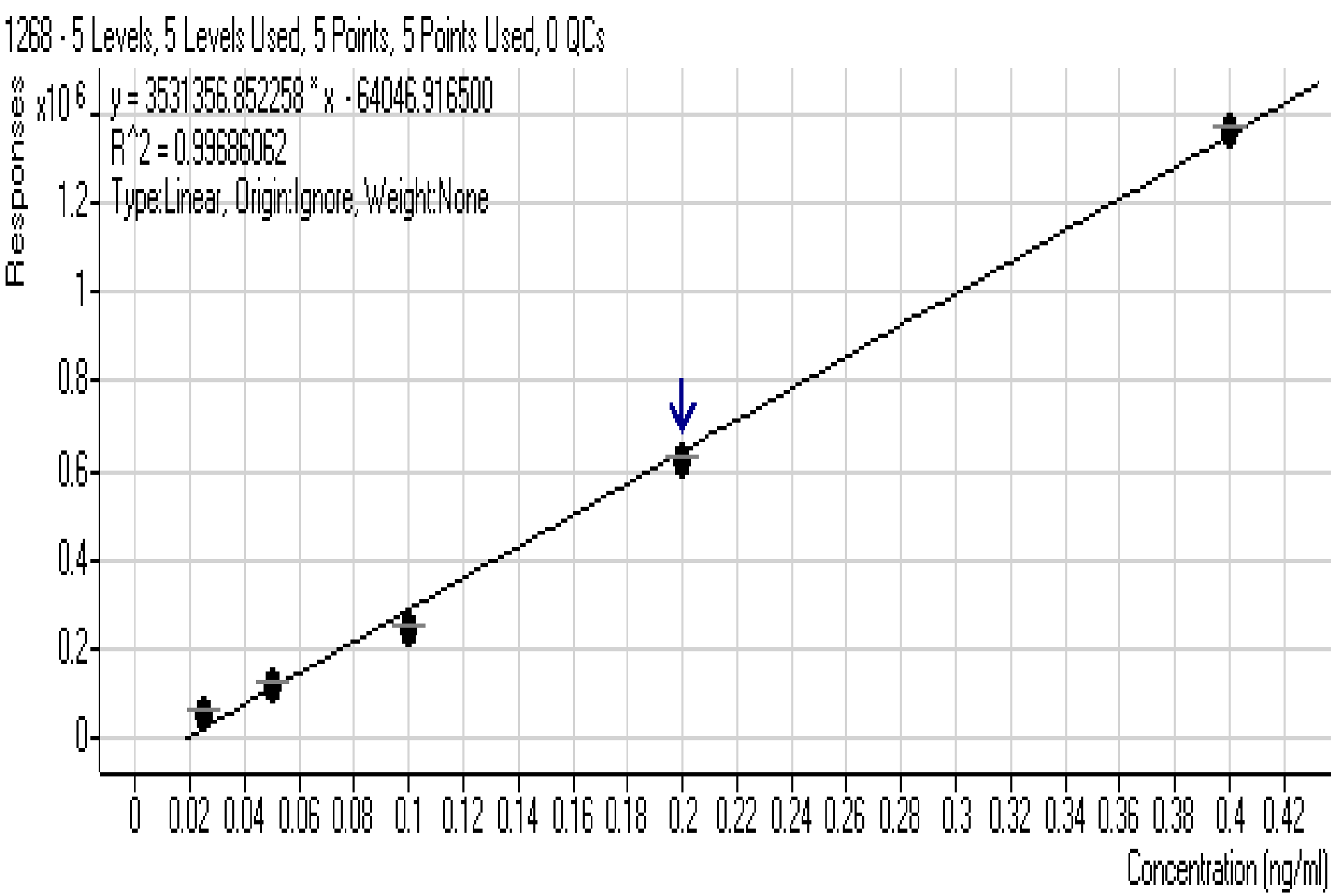

Dale Walker
Agilent GCMS
Applications Engineer


1248 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 9788448.914426 * x - 134664.639865
R^2 = 0.99472702
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
3.5
3
2.5
2
1.5
1
0.5
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)


1254 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 6377531.811306 * x - 5978.708862
R^2 = 0.99804655
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)


1260 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 4318013.779032 * x - 53335.213750
R^2 = 0.99767931
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)


1262 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 3487213.410013 * x - 29087.671302
R^2 = 0.99964169
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
1.2
1
0.8
0.6
0.4
0.2
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)


1268 - 5 Levels, 5 Levels Used, 5 Points, 5 Points Used, 0 QCs
y = 3531356.852258 * x - 64046.916500
R^2 = 0.99686062
Type:Linear, Origin:Ignore, Weight:None
Response
x10 6
1.2
1
0.8
0.6
0.4
0.2
0
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38 0.4 0.42
Concentration (ng/ml)

Once all of the curves have been run you can then combine all of the curves into a single batch. This allows you to quickly determine which PCB's may be present in the sample.

Those compounds which clearly fail to meet the criteria from the combined curve may be eliminated.

If the PCB is present it will meet the criteria and fall within the quantitation parameters for the particular PCB.

Agilent MassHunter Quantitative Analysis - EPA Region IV - temp airochlor all plus tacoma

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

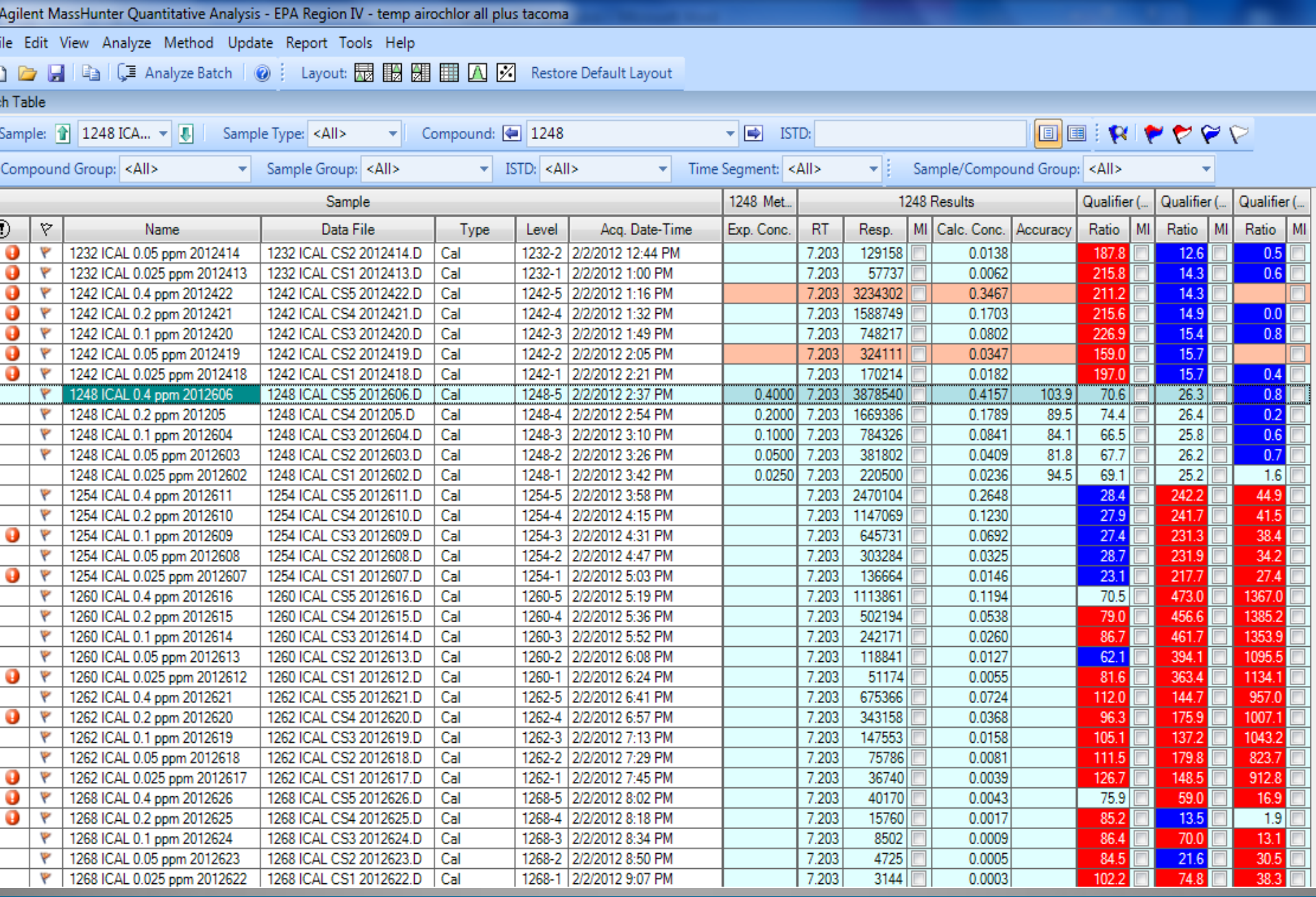
Sample: 1232 ICA... | Sample Type: <All> | Compound: 1232 | ISTD:

Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

| Sample | | | | | | | 1232 Met.. | 1232 Results | | | | | Qualifier.. | | Qualifier.. | | Qualifier (.. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Accuracy | Ratio | MI | Ratio | MI | Ratio | MI |
| | | 1016 ICAL 0.4 ppm 2012407 | 1016 ICAL CS5 2012407.D | Cal | 1016-5 | 2/2/2012 9:13 AM | | 6.168 | 6460191 | | 0.5618 | | 1.7 | | 161.6 | | 43.4 | |
| | | 1016 ICAL 0.2 ppm 2012406 | 1016 ICAL CS4 2012406.D | Cal | 1016-4 | 2/2/2012 9:29 AM | | 6.168 | 2730485 | | 0.2439 | | 1.6 | | 156.2 | | 40.2 | |
| | | 1016 ICAL 0.1 ppm 2012405 | 1016 ICAL CS3 2012405.D | Cal | 1016-3 | 2/2/2012 9:45 AM | | 6.168 | 1301690 | | 0.1222 | | 1.6 | | 158.0 | | 39.4 | |
| | | 1016 ICAL 0.05 ppm 2012404 | 1016 ICAL CS2 2012404.D | Cal | 1016-2 | 2/2/2012 10:01 AM | | 6.168 | 612526 | | 0.0635 | | 1.6 | | 156.1 | | 40.2 | |
| | | 1016 ICAL 0.025 ppm 2012403 | 1016 ICAL CS1 2012403.D | Cal | 1016-1 | 2/2/2012 10:18 AM | | 6.168 | 277257 | | 0.0349 | | 2.0 | | 153.2 | | 37.6 | |
| | | 1221 ICAL 0.4 ppm 2012412 | 1221 ICAL CS5 2012412.D | Cal | 1221-5 | 2/2/2012 10:34 AM | | 6.168 | 5814787 | | 0.5068 | | 62.6 | | 5.5 | | 0.4 | |
| | | 1221 ICAL 0.2 ppm 2012411 | 1221 ICAL CS4 2012411.D | Cal | 1221-4 | 2/2/2012 10:50 AM | | 6.168 | 2776648 | | 0.2479 | | 62.3 | | 5.4 | | 0.5 | |
| | | 1221 ICAL 0.05 ppm 2012409 | 1221 ICAL CS2 2012409.D | Cal | 1221-2 | 2/2/2012 11:23 AM | | 6.168 | 655272 | | 0.0671 | | 60.6 | | 5.2 | | 0.5 | |
| | | 1221 ICAL 0.025 ppm 2012408 | 1221 ICAL CS1 2012408.D | Cal | 1221-1 | 2/2/2012 11:39 AM | | 6.168 | 317639 | | 0.0383 | | 62.2 | | 5.5 | | 0.6 | |
| ▶ | | 1232 ICAL 0.4 ppm 2012417 | 1232 ICAL CS5 2012417.D | Cal | 1232-5 | 2/2/2012 11:55 AM | 0.4000 | 6.168 | 4670343 | | 0.4093 | 102.3 | 44.5 | | 42.5 | | 8.4 | |
| | | 1232 ICAL 0.2 ppm 2012416 | 1232 ICAL CS4 2012416.D | Cal | 1232-4 | 2/2/2012 12:11 PM | 0.2000 | 6.168 | 2062603 | | 0.1870 | 93.5 | 43.3 | | 43.4 | | 9.1 | |
| | | 1232 ICAL 0.1 ppm 2012415 | 1232 ICAL CS3 2012415.D | Cal | 1232-3 | 2/2/2012 12:28 PM | 0.1000 | 6.168 | 894648 | | 0.0875 | 87.5 | 44.5 | | 46.7 | | 9.7 | |
| | | 1232 ICAL 0.05 ppm 2012414 | 1232 ICAL CS2 2012414.D | Cal | 1232-2 | 2/2/2012 12:44 PM | 0.0500 | 6.168 | 462255 | | 0.0507 | 101.3 | 44.1 | | 45.2 | | 8.8 | |
| | | 1232 ICAL 0.025 ppm 2012413 | 1232 ICAL CS1 2012413.D | Cal | 1232-1 | 2/2/2012 1:00 PM | 0.0250 | 6.168 | 211770 | | 0.0293 | 117.2 | 43.5 | | 40.7 | | 9.4 | |
| | | 1242 ICAL 0.4 ppm 2012422 | 1242 ICAL CS5 2012422.D | Cal | 1242-5 | 2/2/2012 1:16 PM | | 6.168 | 4011945 | | 0.3532 | | 1.7 | | 152.9 | | 38.9 | |
| | | 1242 ICAL 0.2 ppm 2012421 | 1242 ICAL CS4 2012421.D | Cal | 1242-4 | 2/2/2012 1:32 PM | | 6.168 | 1988394 | | 0.1807 | | 1.7 | | 148.9 | | 37.0 | |
| | | 1242 ICAL 0.1 ppm 2012420 | 1242 ICAL CS3 2012420.D | Cal | 1242-3 | 2/2/2012 1:49 PM | | 6.168 | 939287 | | 0.0913 | | 1.9 | | 145.5 | | 35.2 | |
| | | 1242 ICAL 0.05 ppm 2012419 | 1242 ICAL CS2 2012419.D | Cal | 1242-2 | 2/2/2012 2:05 PM | | 6.168 | 489190 | | 0.0529 | | 1.8 | | 143.0 | | 35.3 | |
| | | 1242 ICAL 0.025 ppm 2012418 | 1242 ICAL CS1 2012418.D | Cal | 1242-1 | 2/2/2012 2:21 PM | | 6.168 | 235012 | | 0.0313 | | 1.9 | | 144.6 | | 32.6 | |
| | | 1248 ICAL 0.4 ppm 2012606 | 1248 ICAL CS5 2012606.D | Cal | 1248-5 | 2/2/2012 2:37 PM | | 6.168 | 2674569 | | 0.2392 | | 3.3 | | 458.9 | | 377.0 | |
| | | 1248 ICAL 0.2 ppm 201205 | 1248 ICAL CS4 201205.D | Cal | 1248-4 | 2/2/2012 2:54 PM | | 6.168 | 1169025 | | 0.1109 | | 3.8 | | 459.6 | | 367.3 | |
| | | 1248 ICAL 0.1 ppm 2012604 | 1248 ICAL CS3 2012604.D | Cal | 1248-3 | 2/2/2012 3:10 PM | | 6.168 | 574236 | | 0.0602 | | 4.0 | | 449.6 | | 349.9 | |
| | | 1248 ICAL 0.05 ppm 2012603 | 1248 ICAL CS2 2012603.D | Cal | 1248-2 | 2/2/2012 3:26 PM | | 6.168 | 278080 | | 0.0350 | | 2.6 | | 443.7 | | 351.0 | |
| | | 1248 ICAL 0.025 ppm 2012602 | 1248 ICAL CS1 2012602.D | Cal | 1248-1 | 2/2/2012 3:42 PM | | 6.168 | 160073 | | 0.0249 | | 4.9 | | 467.8 | | 360.6 | |
| | | 1254 ICAL 0.4 ppm 2012611 | 1254 ICAL CS5 2012611.D | Cal | 1254-5 | 2/2/2012 3:58 PM | | 6.168 | 352243 | | 0.0413 | | 11.0 | | 264.8 | | 3642.1 | |
| | | 1254 ICAL 0.2 ppm 2012610 | 1254 ICAL CS4 2012610.D | Cal | 1254-4 | 2/2/2012 4:15 PM | | 6.168 | 169664 | | 0.0257 | | 9.4 | | 220.7 | | 2971.4 | |
| | | 1254 ICAL 0.1 ppm 2012609 | 1254 ICAL CS3 2012609.D | Cal | 1254-3 | 2/2/2012 4:31 PM | | 6.168 | 102100 | | 0.0200 | | 17.5 | | 243.6 | | 3174.9 | |
| | | 1254 ICAL 0.05 ppm 2012608 | 1254 ICAL CS2 2012608.D | Cal | 1254-2 | 2/2/2012 4:47 PM | | 6.168 | 47355 | | 0.0153 | | 16.5 | | 212.8 | | 2339.2 | |
| | | 1254 ICAL 0.025 ppm 2012607 | 1254 ICAL CS1 2012607.D | Cal | 1254-1 | 2/2/2012 5:03 PM | | 6.168 | 22652 | | 0.0132 | | 47.5 | | 158.1 | | 2491.7 | |
| | | 1260 ICAL 0.4 ppm 2012616 | 1260 ICAL CS5 2012616.D | Cal | 1260-5 | 2/2/2012 5:19 PM | | 6.168 | 48935 | | 0.0154 | | 9.0 | | 124.9 | | 87.7 | |
| | | 1260 ICAL 0.2 ppm 2012615 | 1260 ICAL CS4 2012615.D | Cal | 1260-4 | 2/2/2012 5:36 PM | | 6.168 | 22863 | | 0.0132 | | 8.5 | | 126.1 | | 91.3 | |
| | | 1260 ICAL 0.1 ppm 2012614 | 1260 ICAL CS3 2012614.D | Cal | 1260-3 | 2/2/2012 5:52 PM | | 6.168 | 11170 | | 0.0122 | | 14.2 | | 120.4 | | 71.5 | |

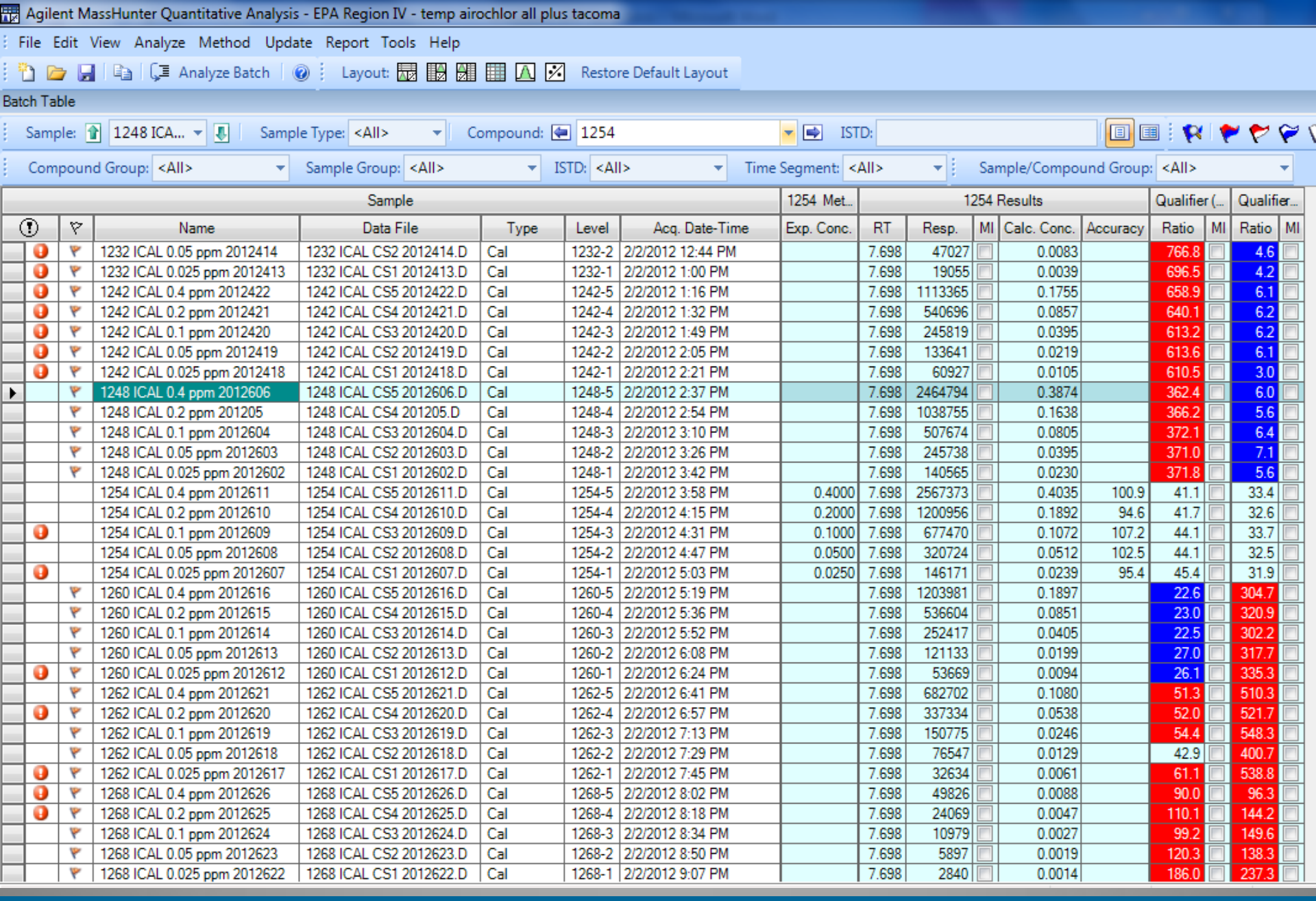
Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

Agilent MassHunter Quantitative Analysis - EPA Region IV - temp airochlor all plus tacoma

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

Sample: 1248 ICA... | Sample Type: <All> | Compound: 1260 | ISTD:

Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

| Sample | | | | | | 1260 Met... | 1260 Results | | | | | Qualifier (3... | | Qualifier... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 1232 ICAL 0.05 ppm 2012414 | 1232 ICAL CS2 2012414.D | Cal | 1232-2 | 2/2/2012 12:44 PM | | 8.193 | 5451 | | 0.0099 | | 2069.3 | | | |
| | | 1232 ICAL 0.025 ppm 2012413 | 1232 ICAL CS1 2012413.D | Cal | 1232-1 | 2/2/2012 1:00 PM | | 8.193 | 2310 | | 0.0091 | | 2032.5 | | 26.2 | |
| | | 1242 ICAL 0.4 ppm 2012422 | 1242 ICAL CS5 2012422.D | Cal | 1242-5 | 2/2/2012 1:16 PM | | 8.193 | 151081 | | 0.0441 | | 1588.0 | | 2.0 | |
| | | 1242 ICAL 0.2 ppm 2012421 | 1242 ICAL CS4 2012421.D | Cal | 1242-4 | 2/2/2012 1:32 PM | | 8.193 | 75594 | | 0.0263 | | 1578.1 | | 3.1 | |
| | | 1242 ICAL 0.1 ppm 2012420 | 1242 ICAL CS3 2012420.D | Cal | 1242-3 | 2/2/2012 1:49 PM | | 8.193 | 34873 | | 0.0168 | | 1512.5 | | 1.7 | |
| | | 1242 ICAL 0.05 ppm 2012419 | 1242 ICAL CS2 2012419.D | Cal | 1242-2 | 2/2/2012 2:05 PM | | 8.193 | 19178 | | 0.0131 | | 1564.4 | | 1.1 | |
| | | 1242 ICAL 0.025 ppm 2012418 | 1242 ICAL CS1 2012418.D | Cal | 1242-1 | 2/2/2012 2:21 PM | | 8.193 | 8713 | | 0.0106 | | 3901.0 | | 17.6 | |
| ▶ | | 1248 ICAL 0.4 ppm 2012606 | 1248 ICAL CS5 2012606.D | Cal | 1248-5 | 2/2/2012 2:37 PM | | 8.193 | 558218 | | 0.1397 | | 1626.2 | | 13.3 | |
| | | 1248 ICAL 0.2 ppm 201205 | 1248 ICAL CS4 201205.D | Cal | 1248-4 | 2/2/2012 2:54 PM | | 8.193 | 230671 | | 0.0628 | | 1621.2 | | 15.3 | |
| | | 1248 ICAL 0.1 ppm 2012604 | 1248 ICAL CS3 2012604.D | Cal | 1248-3 | 2/2/2012 3:10 PM | | 8.193 | 112108 | | 0.0349 | | 1541.2 | | 13.0 | |
| | | 1248 ICAL 0.05 ppm 2012603 | 1248 ICAL CS2 2012603.D | Cal | 1248-2 | 2/2/2012 3:26 PM | | 8.193 | 53598 | | 0.0212 | | 1348.1 | | 14.9 | |
| | | 1248 ICAL 0.025 ppm 2012602 | 1248 ICAL CS1 2012602.D | Cal | 1248-1 | 2/2/2012 3:42 PM | | 8.193 | 30652 | | 0.0158 | | 1442.2 | | 7.1 | |
| | | 1254 ICAL 0.4 ppm 2012611 | 1254 ICAL CS5 2012611.D | Cal | 1254-5 | 2/2/2012 3:58 PM | | 8.193 | 2007985 | | 0.4803 | | 286.9 | | 3.6 | |
| | | 1254 ICAL 0.2 ppm 2012610 | 1254 ICAL CS4 2012610.D | Cal | 1254-4 | 2/2/2012 4:15 PM | | 8.193 | 935050 | | 0.2282 | | 297.2 | | 4.5 | |
| | | 1254 ICAL 0.1 ppm 2012609 | 1254 ICAL CS3 2012609.D | Cal | 1254-3 | 2/2/2012 4:31 PM | | 8.193 | 523609 | | 0.1316 | | 284.7 | | 4.7 | |
| | | 1254 ICAL 0.05 ppm 2012608 | 1254 ICAL CS2 2012608.D | Cal | 1254-2 | 2/2/2012 4:47 PM | | 8.193 | 249164 | | 0.0671 | | 290.7 | | 3.0 | |
| | | 1254 ICAL 0.025 ppm 2012607 | 1254 ICAL CS1 2012607.D | Cal | 1254-1 | 2/2/2012 5:03 PM | | 8.193 | 112861 | | 0.0351 | | 294.8 | | 7.3 | |
| | | 1260 ICAL 0.4 ppm 2012616 | 1260 ICAL CS5 2012616.D | Cal | 1260-5 | 2/2/2012 5:19 PM | 0.4000 | 8.193 | 1698743 | | 0.4076 | 101.9 | 36.7 | | 49.2 | |
| | | 1260 ICAL 0.2 ppm 2012615 | 1260 ICAL CS4 2012615.D | Cal | 1260-4 | 2/2/2012 5:36 PM | 0.2000 | 8.193 | 760797 | | 0.1873 | 93.7 | 36.9 | | 47.4 | |
| | | 1260 ICAL 0.1 ppm 2012614 | 1260 ICAL CS3 2012614.D | Cal | 1260-3 | 2/2/2012 5:52 PM | 0.1000 | 8.193 | 364795 | | 0.0943 | 94.3 | 35.9 | | 49.1 | |
| | | 1260 ICAL 0.05 ppm 2012613 | 1260 ICAL CS2 2012613.D | Cal | 1260-2 | 2/2/2012 6:08 PM | 0.0500 | 8.193 | 176785 | | 0.0501 | 100.2 | 38.5 | | 50.4 | |
| | | 1260 ICAL 0.025 ppm 2012612 | 1260 ICAL CS1 2012612.D | Cal | 1260-1 | 2/2/2012 6:24 PM | 0.0250 | 8.193 | 78665 | | 0.0271 | 108.3 | 39.3 | | 46.0 | |
| | | 1262 ICAL 0.4 ppm 2012621 | 1262 ICAL CS5 2012621.D | Cal | 1262-5 | 2/2/2012 6:41 PM | | 8.193 | 1351530 | | 0.3261 | | 26.3 | | 106.8 | |
| | | 1262 ICAL 0.2 ppm 2012620 | 1262 ICAL CS4 2012620.D | Cal | 1262-4 | 2/2/2012 6:57 PM | | 8.193 | 663395 | | 0.1644 | | 27.0 | | 101.7 | |
| | | 1262 ICAL 0.1 ppm 2012619 | 1262 ICAL CS3 2012619.D | Cal | 1262-3 | 2/2/2012 7:13 PM | | 8.193 | 302685 | | 0.0797 | | 27.1 | | 101.0 | |
| | | 1262 ICAL 0.05 ppm 2012618 | 1262 ICAL CS2 2012618.D | Cal | 1262-2 | 2/2/2012 7:29 PM | | 8.193 | 145861 | | 0.0429 | | 28.1 | | 98.0 | |
| | | 1262 ICAL 0.025 ppm 2012617 | 1262 ICAL CS1 2012617.D | Cal | 1262-1 | 2/2/2012 7:45 PM | | 8.193 | 66062 | | 0.0241 | | 29.0 | | 94.5 | |
| | | 1268 ICAL 0.4 ppm 2012626 | 1268 ICAL CS5 2012626.D | Cal | 1268-5 | 2/2/2012 8:02 PM | | 8.193 | 243690 | | 0.0658 | | 33.5 | | 200.2 | |
| | | 1268 ICAL 0.2 ppm 2012625 | 1268 ICAL CS4 2012625.D | Cal | 1268-4 | 2/2/2012 8:18 PM | | 8.193 | 120255 | | 0.0368 | | 34.9 | | 211.5 | |
| | | 1268 ICAL 0.1 ppm 2012624 | 1268 ICAL CS3 2012624.D | Cal | 1268-3 | 2/2/2012 8:34 PM | | 8.193 | 46863 | | 0.0196 | | 34.7 | | 193.2 | |
| | | 1268 ICAL 0.05 ppm 2012623 | 1268 ICAL CS2 2012623.D | Cal | 1268-2 | 2/2/2012 8:50 PM | | 8.193 | 24544 | | 0.0144 | | 30.4 | | 203.0 | |
| | | 1268 ICAL 0.025 ppm 2012622 | 1268 ICAL CS1 2012622.D | Cal | 1268-1 | 2/2/2012 9:07 PM | | 8.193 | 13063 | | 0.0117 | | 33.6 | | 179.9 | |

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

Agilent MassHunter Quantitative Analysis - EPA Region IV - temp airochlor all plus tacoma

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

Sample: 1248 ICA... | Sample Type: <All> | Compound: 1262 | ISTD:

Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

| Sample | | | | | | | 1262 Met... | 1262 Results | | | | | Qualifier... | | Qualifier (3... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 1232 ICAL 0.05 ppm 2012414 | 1232 ICAL CS2 2012414.D | Cal | 1232-2 | 2/2/2012 12:44 PM | | 8.204 | 5490 | | 0.0099 | | 8.7 | | 2078.2 | |
| | | 1232 ICAL 0.025 ppm 2012413 | 1232 ICAL CS1 2012413.D | Cal | 1232-1 | 2/2/2012 1:00 PM | | 8.204 | 2636 | | 0.0091 | | 26.9 | | 2356.5 | |
| | | 1242 ICAL 0.4 ppm 2012422 | 1242 ICAL CS5 2012422.D | Cal | 1242-5 | 2/2/2012 1:16 PM | | 8.204 | 152012 | | 0.0519 | | 2.0 | | 1598.5 | |
| | | 1242 ICAL 0.2 ppm 2012421 | 1242 ICAL CS4 2012421.D | Cal | 1242-4 | 2/2/2012 1:32 PM | | 8.204 | 72847 | | 0.0292 | | 3.1 | | 1516.6 | |
| | | 1242 ICAL 0.1 ppm 2012420 | 1242 ICAL CS3 2012420.D | Cal | 1242-3 | 2/2/2012 1:49 PM | | 8.204 | 35139 | | 0.0184 | | 1.7 | | 1525.5 | |
| | | 1242 ICAL 0.05 ppm 2012419 | 1242 ICAL CS2 2012419.D | Cal | 1242-2 | 2/2/2012 2:05 PM | | 8.204 | 19389 | | 0.0139 | | 1.0 | | 1581.7 | |
| | | 1242 ICAL 0.025 ppm 2012418 | 1242 ICAL CS1 2012418.D | Cal | 1242-1 | 2/2/2012 2:21 PM | | 8.204 | 8715 | | 0.0108 | | 17.6 | | 3929.1 | |
| ▶ | | 1248 ICAL 0.4 ppm 2012606 | 1248 ICAL CS5 2012606.D | Cal | 1248-5 | 2/2/2012 2:37 PM | | 8.204 | 548026 | | 0.1655 | | 13.3 | | 1594.4 | |
| | | 1248 ICAL 0.2 ppm 201205 | 1248 ICAL CS4 201205.D | Cal | 1248-4 | 2/2/2012 2:54 PM | | 8.204 | 229287 | | 0.0741 | | 15.3 | | 1611.0 | |
| | | 1248 ICAL 0.1 ppm 2012604 | 1248 ICAL CS3 2012604.D | Cal | 1248-3 | 2/2/2012 3:10 PM | | 8.204 | 109151 | | 0.0396 | | 13.0 | | 1498.0 | |
| | | 1248 ICAL 0.05 ppm 2012603 | 1248 ICAL CS2 2012603.D | Cal | 1248-2 | 2/2/2012 3:26 PM | | 8.204 | 54764 | | 0.0240 | | 14.9 | | 1380.3 | |
| | | 1248 ICAL 0.025 ppm 2012602 | 1248 ICAL CS1 2012602.D | Cal | 1248-1 | 2/2/2012 3:42 PM | | 8.204 | 31082 | | 0.0173 | | 7.0 | | 1463.7 | |
| | | 1254 ICAL 0.4 ppm 2012611 | 1254 ICAL CS5 2012611.D | Cal | 1254-5 | 2/2/2012 3:58 PM | | 8.204 | 2017033 | | 0.5867 | | 6.0 | | 287.1 | |
| | | 1254 ICAL 0.2 ppm 2012610 | 1254 ICAL CS4 2012610.D | Cal | 1254-4 | 2/2/2012 4:15 PM | | 8.204 | 936145 | | 0.2768 | | 6.4 | | 295.7 | |
| | | 1254 ICAL 0.1 ppm 2012609 | 1254 ICAL CS3 2012609.D | Cal | 1254-3 | 2/2/2012 4:31 PM | | 8.204 | 527191 | | 0.1595 | | 6.5 | | 286.7 | |
| | | 1254 ICAL 0.05 ppm 2012608 | 1254 ICAL CS2 2012608.D | Cal | 1254-2 | 2/2/2012 4:47 PM | | 8.204 | 252481 | | 0.0807 | | 6.7 | | 287.7 | |
| | | 1254 ICAL 0.025 ppm 2012607 | 1254 ICAL CS1 2012607.D | Cal | 1254-1 | 2/2/2012 5:03 PM | | 8.204 | 113041 | | 0.0408 | | 7.3 | | 295.5 | |
| | | 1260 ICAL 0.4 ppm 2012616 | 1260 ICAL CS5 2012616.D | Cal | 1260-5 | 2/2/2012 5:19 PM | | 8.204 | 1737603 | | 0.5066 | | 52.3 | | 36.6 | |
| | | 1260 ICAL 0.2 ppm 2012615 | 1260 ICAL CS4 2012615.D | Cal | 1260-4 | 2/2/2012 5:36 PM | | 8.204 | 779490 | | 0.2319 | | 51.4 | | 36.7 | |
| | | 1260 ICAL 0.1 ppm 2012614 | 1260 ICAL CS3 2012614.D | Cal | 1260-3 | 2/2/2012 5:52 PM | | 8.204 | 370903 | | 0.1147 | | 51.8 | | 36.6 | |
| | | 1260 ICAL 0.05 ppm 2012613 | 1260 ICAL CS2 2012613.D | Cal | 1260-2 | 2/2/2012 6:08 PM | | 8.204 | 179287 | | 0.0598 | | 52.0 | | 38.5 | |
| | | 1260 ICAL 0.025 ppm 2012612 | 1260 ICAL CS1 2012612.D | Cal | 1260-1 | 2/2/2012 6:24 PM | | 8.204 | 81024 | | 0.0316 | | 51.6 | | 39.3 | |
| | | 1262 ICAL 0.4 ppm 2012621 | 1262 ICAL CS5 2012621.D | Cal | 1262-5 | 2/2/2012 6:41 PM | 0.4000 | 8.204 | 1368635 | | 0.4008 | 100.2 | 107.6 | | 26.7 | |
| | | 1262 ICAL 0.2 ppm 2012620 | 1262 ICAL CS4 2012620.D | Cal | 1262-4 | 2/2/2012 6:57 PM | 0.2000 | 8.204 | 669054 | | 0.2002 | 100.1 | 102.7 | | 26.9 | |
| | | 1262 ICAL 0.1 ppm 2012619 | 1262 ICAL CS3 2012619.D | Cal | 1262-3 | 2/2/2012 7:13 PM | 0.1000 | 8.204 | 302894 | | 0.0952 | 95.2 | 100.8 | | 26.3 | |
| | | 1262 ICAL 0.05 ppm 2012618 | 1262 ICAL CS2 2012618.D | Cal | 1262-2 | 2/2/2012 7:29 PM | 0.0500 | 8.204 | 148037 | | 0.0508 | 101.6 | 101.2 | | 28.1 | |
| | | 1262 ICAL 0.025 ppm 2012617 | 1262 ICAL CS1 2012617.D | Cal | 1262-1 | 2/2/2012 7:45 PM | 0.0250 | 8.204 | 68532 | | 0.0280 | 112.0 | 102.9 | | 29.0 | |
| | | 1268 ICAL 0.4 ppm 2012626 | 1268 ICAL CS5 2012626.D | Cal | 1268-5 | 2/2/2012 8:02 PM | | 8.204 | 240816 | | 0.0774 | | 200.6 | | 33.0 | |
| | | 1268 ICAL 0.2 ppm 2012625 | 1268 ICAL CS4 2012625.D | Cal | 1268-4 | 2/2/2012 8:18 PM | | 8.204 | 118681 | | 0.0424 | | 204.3 | | 34.6 | |
| | | 1268 ICAL 0.1 ppm 2012624 | 1268 ICAL CS3 2012624.D | Cal | 1268-3 | 2/2/2012 8:34 PM | | 8.204 | 48587 | | 0.0223 | | 182.1 | | 32.1 | |
| | | 1268 ICAL 0.05 ppm 2012623 | 1268 ICAL CS2 2012623.D | Cal | 1268-2 | 2/2/2012 8:50 PM | | 8.204 | 24695 | | 0.0154 | | 204.2 | | 31.2 | |
| | | 1268 ICAL 0.025 ppm 2012622 | 1268 ICAL CS1 2012622.D | Cal | 1268-1 | 2/2/2012 9:07 PM | | 8.204 | 10901 | | 0.0115 | | 186.4 | | 43.3 | |

Agilent MassHunter Quantitative Analysis - EPA Region IV - temp airochlor all plus tacoma

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

Sample: 1248 ICA... | Sample Type: <All> | Compound: 1268 | ISTD:

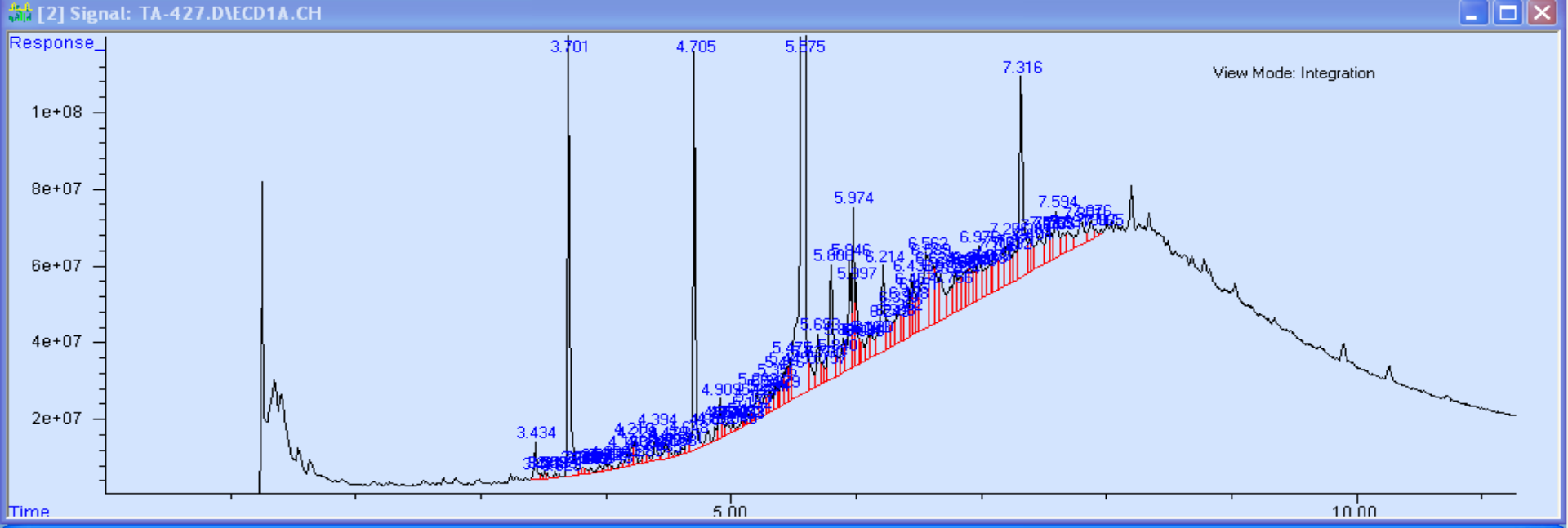
Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

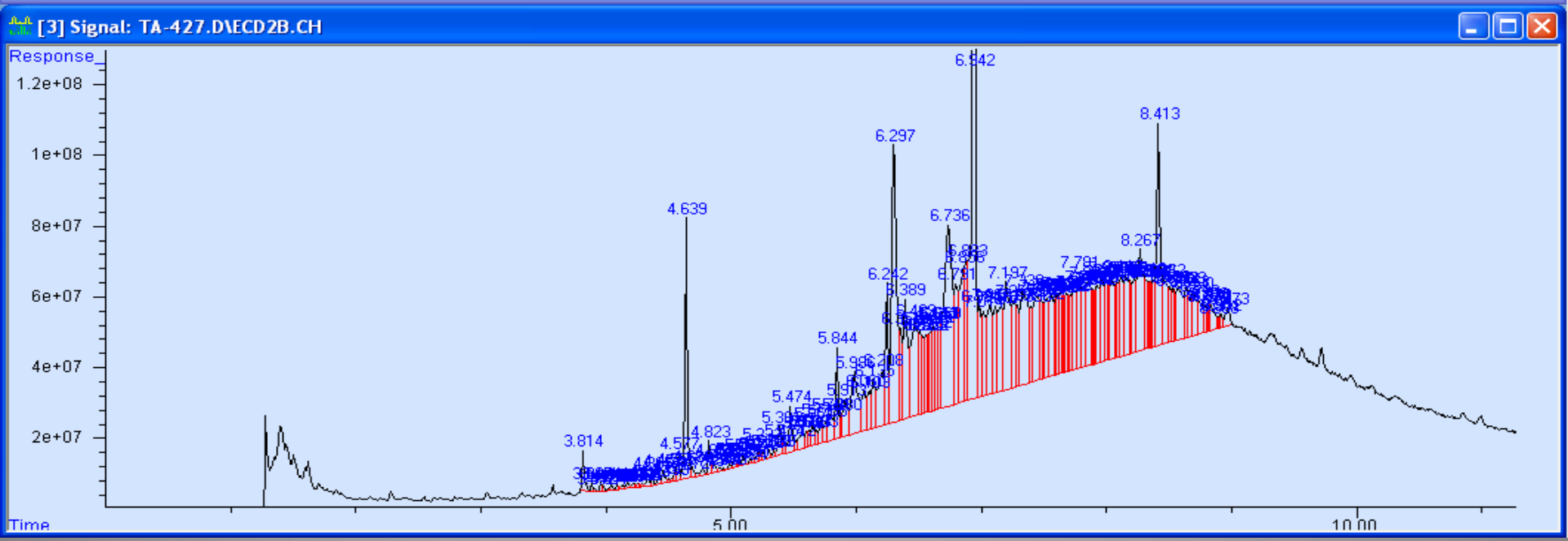
| Sample | | | | | | | 1268 Met... | 1268 Results | | | | | Qualifier... | | Qualifier (... | | Qualifier... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Accuracy | Ratio | MI | Ratio | MI | Ratio | MI |
| | | 1232 ICAL 0.05 ppm 2012414 | 1232 ICAL CS2 2012414.D | Cal | 1232-2 | 2/2/2012 12:44 PM | | 9.199 | 56 | | 0.0046 | | 64.6 | | 116.9 | | | |
| | | 1232 ICAL 0.025 ppm 2012413 | 1232 ICAL CS1 2012413.D | Cal | 1232-1 | 2/2/2012 1:00 PM | | 9.199 | 36 | | 0.0045 | | | | 189.8 | | | |
| | | 1242 ICAL 0.4 ppm 2012422 | 1242 ICAL CS5 2012422.D | Cal | 1242-5 | 2/2/2012 1:16 PM | | 9.199 | 249 | | 0.0046 | | 17.9 | | 422.4 | | 55.9 | |
| | | 1242 ICAL 0.2 ppm 2012421 | 1242 ICAL CS4 2012421.D | Cal | 1242-4 | 2/2/2012 1:32 PM | | 9.199 | 175 | | 0.0046 | | | | 727.9 | | 85.0 | |
| | | 1242 ICAL 0.1 ppm 2012420 | 1242 ICAL CS3 2012420.D | Cal | 1242-3 | 2/2/2012 1:49 PM | | 9.199 | 106 | | 0.0046 | | | | 140.5 | | 65.9 | |
| | | 1242 ICAL 0.05 ppm 2012419 | 1242 ICAL CS2 2012419.D | Cal | 1242-2 | 2/2/2012 2:05 PM | | 9.199 | 88 | | 0.0046 | | 187.5 | | 189.3 | | 268.8 | |
| | | 1242 ICAL 0.025 ppm 2012418 | 1242 ICAL CS1 2012418.D | Cal | 1242-1 | 2/2/2012 2:21 PM | | 9.199 | 59 | | 0.0046 | | | | 107.5 | | 3.4 | |
| ▶ | | 1248 ICAL 0.4 ppm 2012606 | 1248 ICAL CS5 2012606.D | Cal | 1248-5 | 2/2/2012 2:37 PM | | 9.199 | 5499 | | 0.0066 | | 12.4 | | 404.9 | | 4.1 | |
| | | 1248 ICAL 0.2 ppm 201205 | 1248 ICAL CS4 201205.D | Cal | 1248-4 | 2/2/2012 2:54 PM | | 9.199 | 2593 | | 0.0055 | | 6.8 | | 392.2 | | 2.1 | |
| | | 1248 ICAL 0.1 ppm 2012604 | 1248 ICAL CS3 2012604.D | Cal | 1248-3 | 2/2/2012 3:10 PM | | 9.199 | 977 | | 0.0049 | | 79.3 | | 1498.6 | | 7.4 | |
| | | 1248 ICAL 0.05 ppm 2012603 | 1248 ICAL CS2 2012603.D | Cal | 1248-2 | 2/2/2012 3:26 PM | | 9.199 | 726 | | 0.0048 | | 10.1 | | 381.4 | | 12.2 | |
| | | 1248 ICAL 0.025 ppm 2012602 | 1248 ICAL CS1 2012602.D | Cal | 1248-1 | 2/2/2012 3:42 PM | | 9.199 | 261 | | 0.0046 | | 18.0 | | 171.1 | | 2.9 | |
| | | 1254 ICAL 0.4 ppm 2012611 | 1254 ICAL CS5 2012611.D | Cal | 1254-5 | 2/2/2012 3:58 PM | | 9.199 | 31777 | | 0.0162 | | 4.2 | | 3601.8 | | 1.5 | |
| | | 1254 ICAL 0.2 ppm 2012610 | 1254 ICAL CS4 2012610.D | Cal | 1254-4 | 2/2/2012 4:15 PM | | 9.199 | 15101 | | 0.0101 | | 1.1 | | 6907.3 | | 10.3 | |
| | | 1254 ICAL 0.1 ppm 2012609 | 1254 ICAL CS3 2012609.D | Cal | 1254-3 | 2/2/2012 4:31 PM | | 9.199 | 8999 | | 0.0078 | | 11.0 | | 3291.2 | | 1.7 | |
| | | 1254 ICAL 0.05 ppm 2012608 | 1254 ICAL CS2 2012608.D | Cal | 1254-2 | 2/2/2012 4:47 PM | | 9.199 | 4105 | | 0.0060 | | 2.4 | | 3716.7 | | 5.8 | |
| | | 1254 ICAL 0.025 ppm 2012607 | 1254 ICAL CS1 2012607.D | Cal | 1254-1 | 2/2/2012 5:03 PM | | 9.199 | 2170 | | 0.0053 | | 14.3 | | 1920.2 | | | |
| | | 1260 ICAL 0.4 ppm 2012616 | 1260 ICAL CS5 2012616.D | Cal | 1260-5 | 2/2/2012 5:19 PM | | 9.199 | 564852 | | 0.1893 | | 6.7 | | 710.3 | | 0.6 | |
| | | 1260 ICAL 0.2 ppm 2012615 | 1260 ICAL CS4 2012615.D | Cal | 1260-4 | 2/2/2012 5:36 PM | | 9.199 | 252599 | | 0.0925 | | 7.1 | | 690.0 | | 0.6 | |
| | | 1260 ICAL 0.1 ppm 2012614 | 1260 ICAL CS3 2012614.D | Cal | 1260-3 | 2/2/2012 5:52 PM | | 9.199 | 119647 | | 0.0475 | | 6.9 | | 711.1 | | 0.8 | |
| | | 1260 ICAL 0.05 ppm 2012613 | 1260 ICAL CS2 2012613.D | Cal | 1260-2 | 2/2/2012 6:08 PM | | 9.199 | 56785 | | 0.0252 | | 6.8 | | 633.4 | | 0.2 | |
| | | 1260 ICAL 0.025 ppm 2012612 | 1260 ICAL CS1 2012612.D | Cal | 1260-1 | 2/2/2012 6:24 PM | | 9.199 | 25813 | | 0.0140 | | 6.4 | | 630.8 | | 1.6 | |
| | | 1262 ICAL 0.4 ppm 2012621 | 1262 ICAL CS5 2012621.D | Cal | 1262-5 | 2/2/2012 6:41 PM | | 9.199 | 804841 | | 0.2571 | | 6.3 | | 411.4 | | 0.1 | |
| | | 1262 ICAL 0.2 ppm 2012620 | 1262 ICAL CS4 2012620.D | Cal | 1262-4 | 2/2/2012 6:57 PM | | 9.199 | 383790 | | 0.1345 | | 6.1 | | 411.0 | | | |
| | | 1262 ICAL 0.1 ppm 2012619 | 1262 ICAL CS3 2012619.D | Cal | 1262-3 | 2/2/2012 7:13 PM | | 9.199 | 173147 | | 0.0659 | | 4.7 | | 406.6 | | 0.3 | |
| | | 1262 ICAL 0.05 ppm 2012618 | 1262 ICAL CS2 2012618.D | Cal | 1262-2 | 2/2/2012 7:29 PM | | 9.199 | 84129 | | 0.0350 | | 6.1 | | 394.3 | | 0.1 | |
| | | 1262 ICAL 0.025 ppm 2012617 | 1262 ICAL CS1 2012617.D | Cal | 1262-1 | 2/2/2012 7:45 PM | | 9.199 | 38565 | | 0.0186 | | 7.0 | | 422.6 | | 0.2 | |
| | | 1268 ICAL 0.4 ppm 2012626 | 1268 ICAL CS5 2012626.D | Cal | 1268-5 | 2/2/2012 8:02 PM | 0.4000 | 9.199 | 1364261 | | 0.3990 | 99.8 | 79.1 | | 40.0 | | 10.8 | |
| | | 1268 ICAL 0.2 ppm 2012625 | 1268 ICAL CS4 2012625.D | Cal | 1268-4 | 2/2/2012 8:18 PM | 0.2000 | 9.199 | 625459 | | 0.2069 | 103.4 | 77.4 | | 41.2 | | 10.7 | |
| | | 1268 ICAL 0.1 ppm 2012624 | 1268 ICAL CS3 2012624.D | Cal | 1268-3 | 2/2/2012 8:34 PM | 0.1000 | 9.199 | 247385 | | 0.0907 | 90.7 | 75.1 | | 38.9 | | 9.8 | |
| | | 1268 ICAL 0.05 ppm 2012623 | 1268 ICAL CS2 2012623.D | Cal | 1268-2 | 2/2/2012 8:50 PM | 0.0500 | 9.199 | 118517 | | 0.0471 | 94.1 | 76.8 | | 41.0 | | 10.1 | |
| | | 1268 ICAL 0.025 ppm 2012622 | 1268 ICAL CS1 2012622.D | Cal | 1268-1 | 2/2/2012 9:07 PM | 0.0250 | 9.199 | 60946 | | 0.0267 | 106.9 | 73.2 | | 41.6 | | 10.3 | |

Now that we have identified the process what can we do with the system. Lets follow the data from two experiments.

**Experiment 1:**

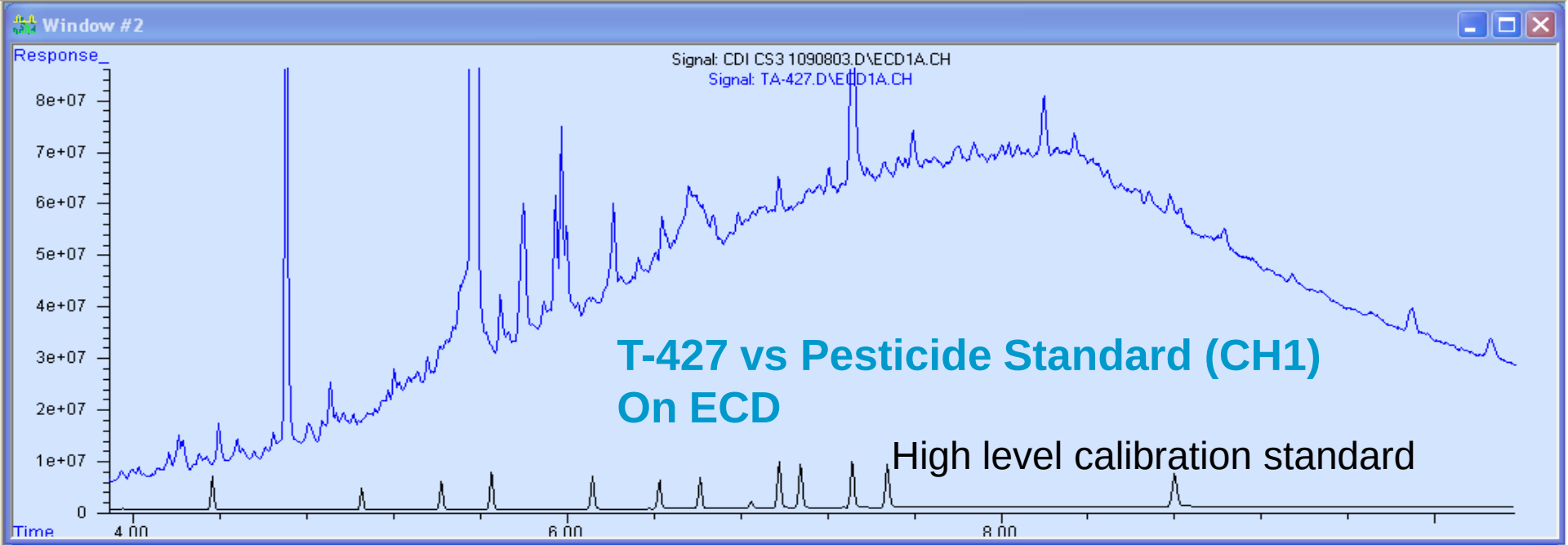
Experiment examine an unknown sample received from an environmental site. For pesticides and Aroclors

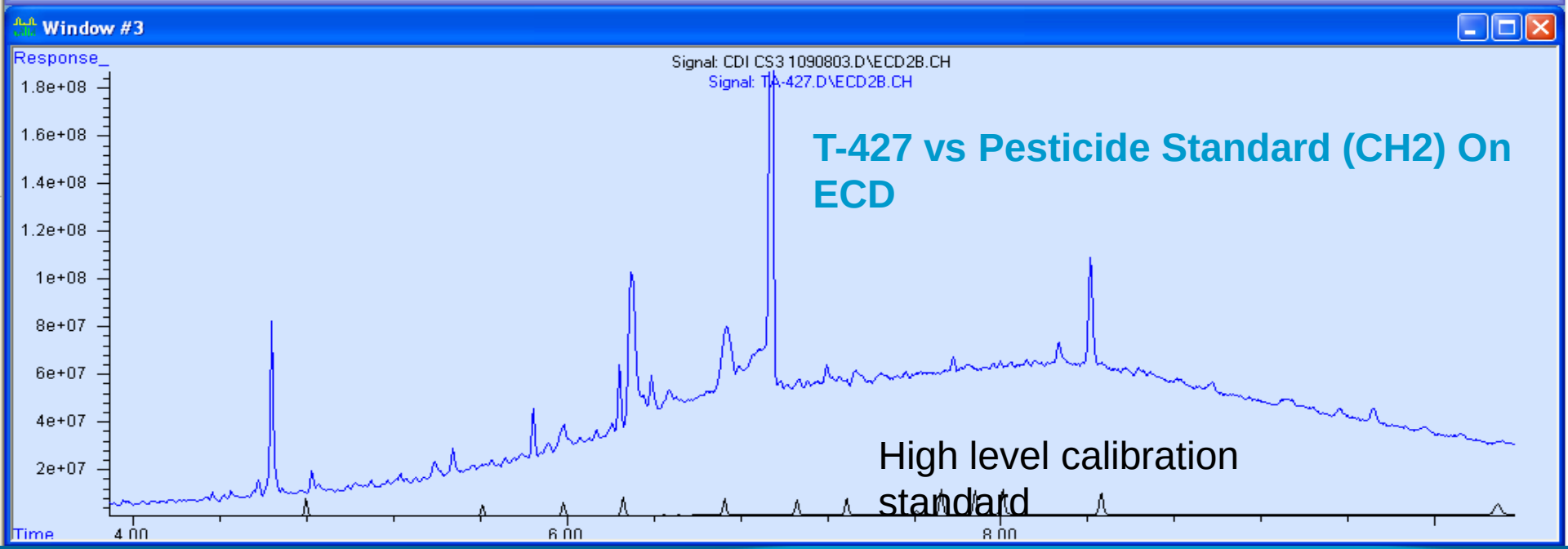



Dale Walker
Agilent GCMS
Applications Engineer

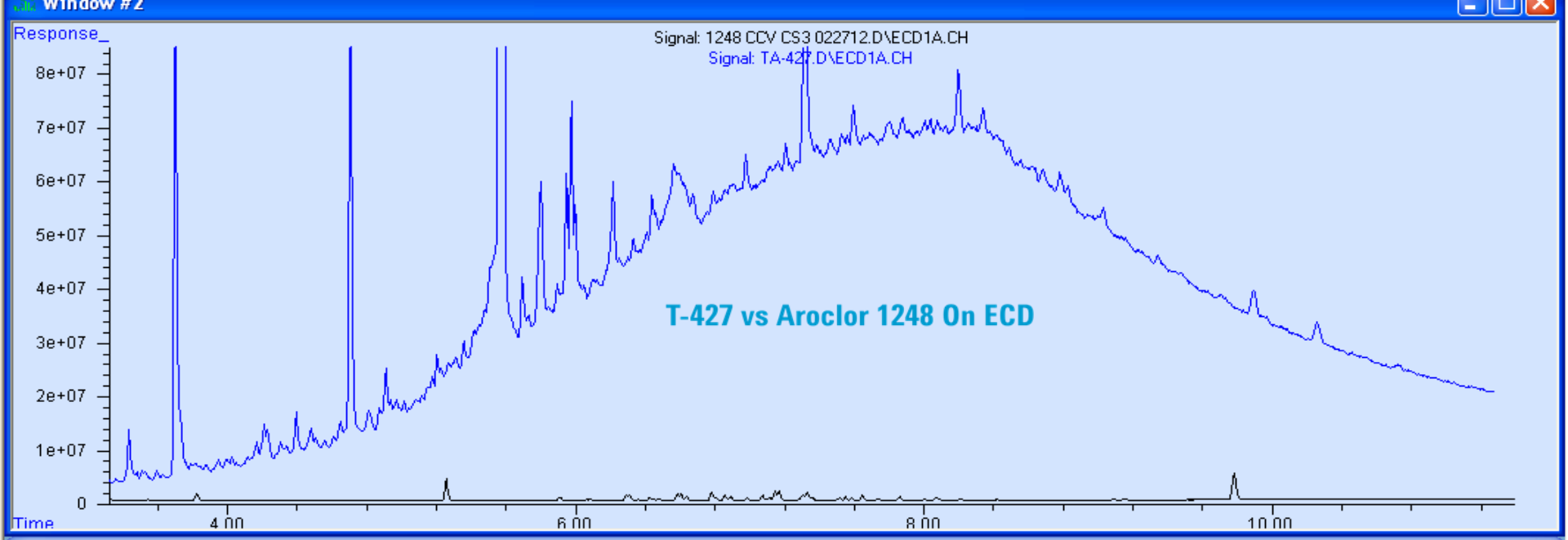
Agilent Technologies

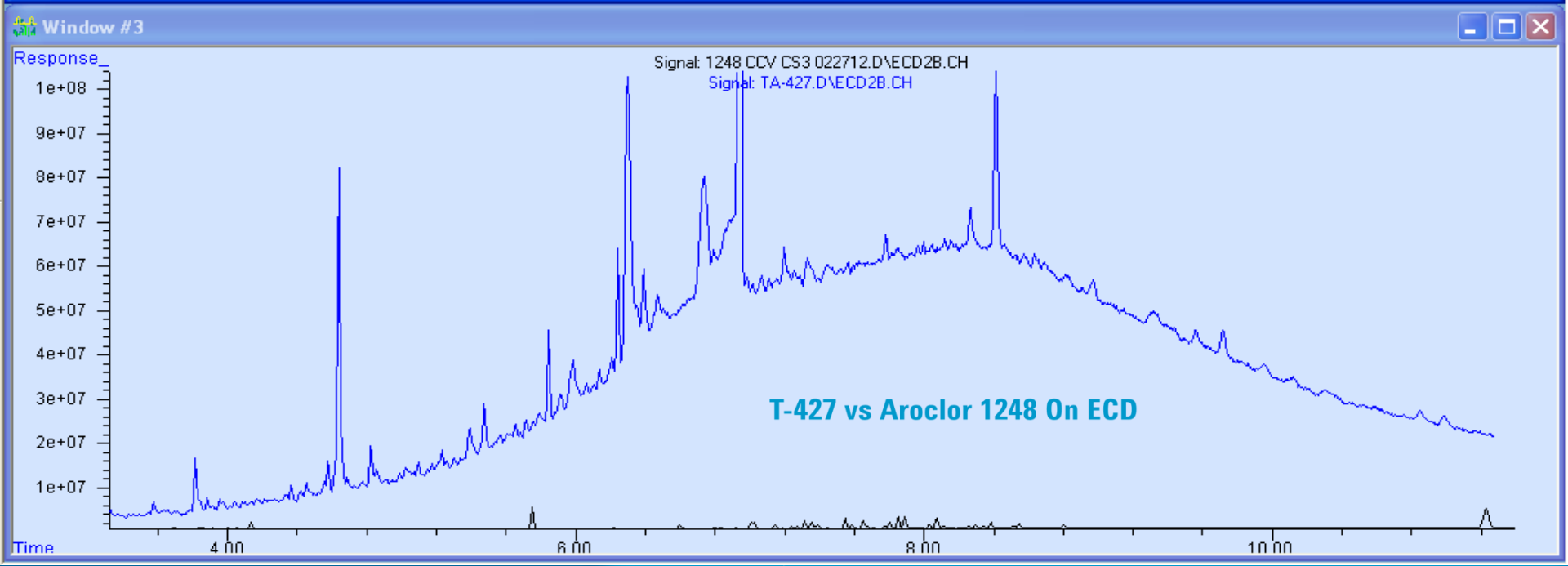



Dale Walker
Agilent GCMS
Applications Engineer

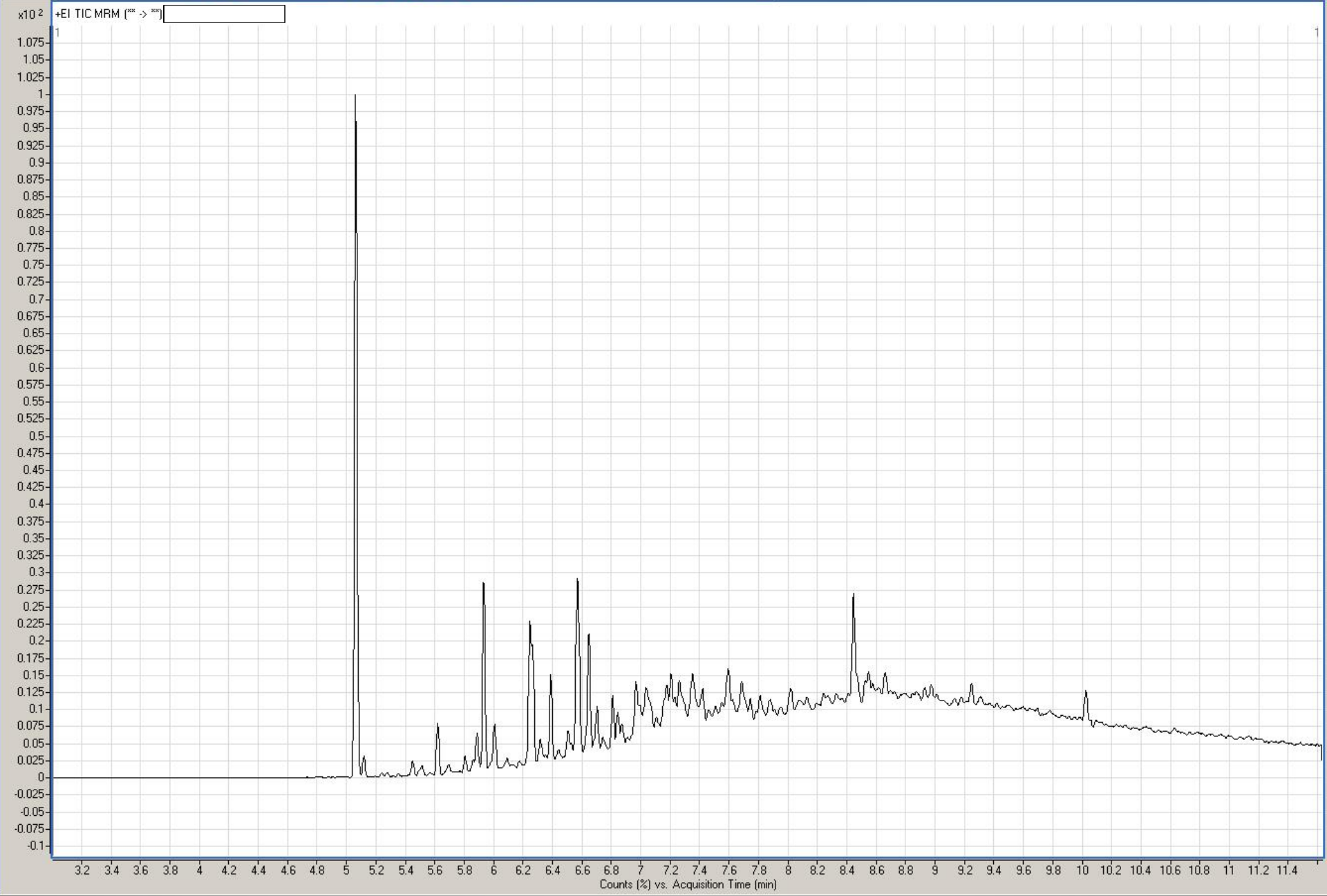
Agilent Technologies



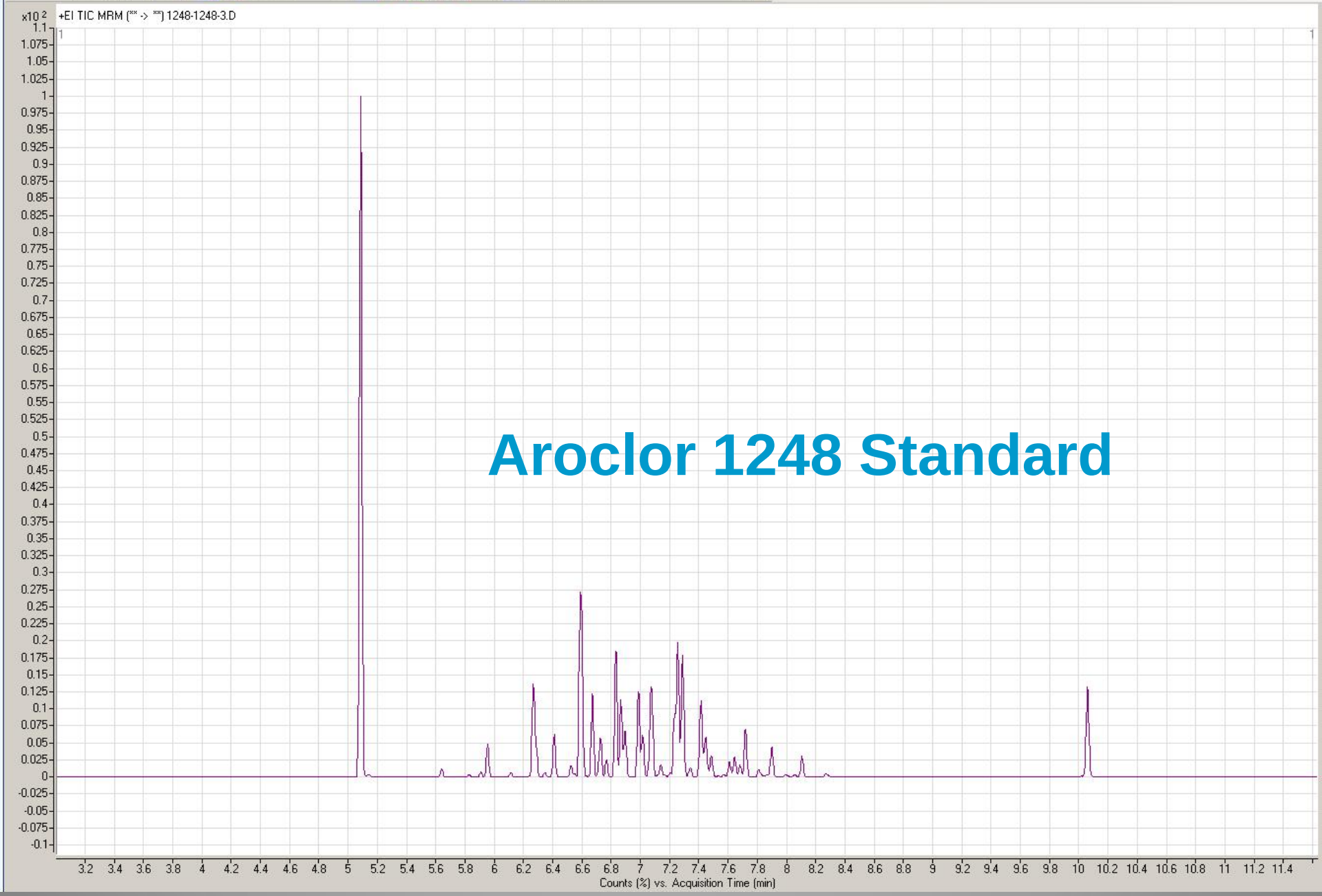

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

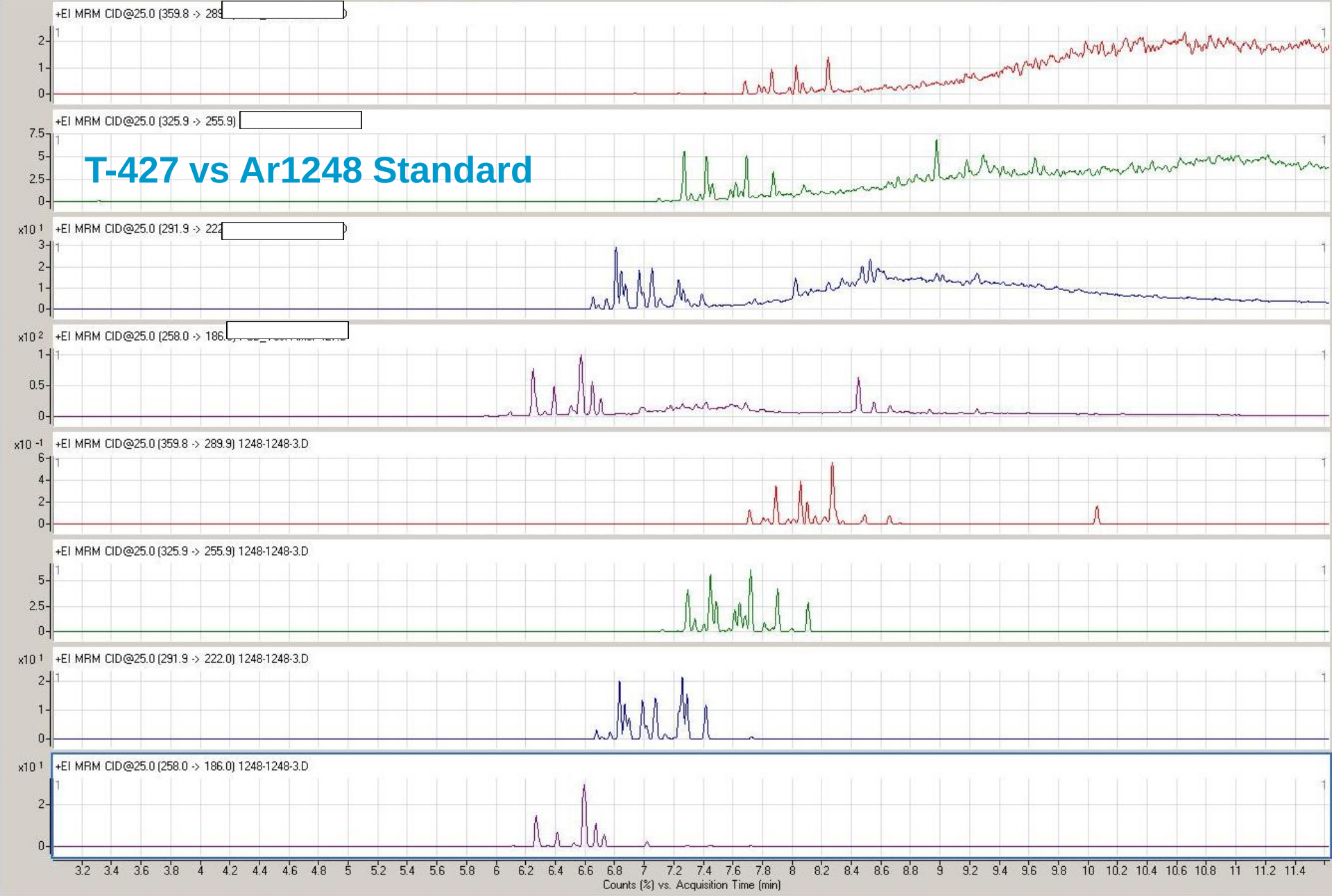
Agilent Technologies




# Aroclor 1248 Standard

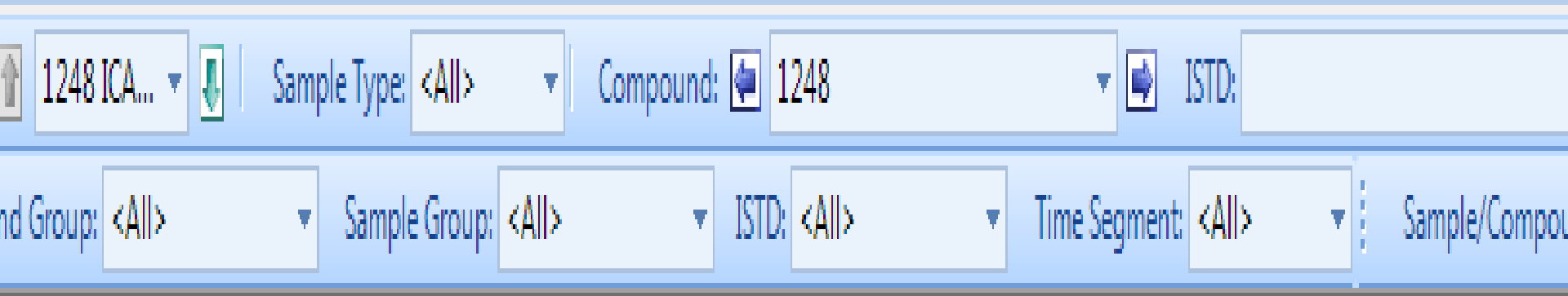
Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




| Sample | | | | | 1248 Met... | 1248 Results | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. |
| 1248 ICAL 0.4 ppm 2012606 | 1248 ICAL CS5 2012606.D | Cal | 1248-5 | 2/2/2012 2:37 PM | 0.4000 | 7.203 | 3878540 | | 0.4087 |
| 1248 ICAL 0.2 ppm 201205 | 1248 ICAL CS4 201205.D | Cal | 1248-4 | 2/2/2012 2:54 PM | 0.2000 | 7.203 | 1669386 | | 0.1838 |
| 1248 ICAL 0.1 ppm 2012604 | 1248 ICAL CS3 2012604.D | Cal | 1248-3 | 2/2/2012 3:10 PM | 0.1000 | 7.203 | 784326 | | 0.0937 |
| 1248 ICAL 0.05 ppm 2012603 | 1248 ICAL CS2 2012603.D | Cal | 1248-2 | 2/2/2012 3:26 PM | 0.0500 | 7.203 | 381802 | | 0.0527 |
| 1248 ICAL 0.025 ppm 2012602 | 1248 ICAL CS1 2012602.D | Cal | 1248-1 | 2/2/2012 3:42 PM | 0.0250 | 7.203 | 220500 | | 0.0362 |
| | | | | /13/2012 10:32 AM | | 7.203 | 41902 | | 0.0181 |
| | | | | /13/2012 11:05 AM | | 7.203 | 4012 | | 0.0142 |

# Dilution

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Conclusion Experiment 1:

Experiment examine an unknown sample received from an environmental site. The sample was analyzed using the method as previously outlined.

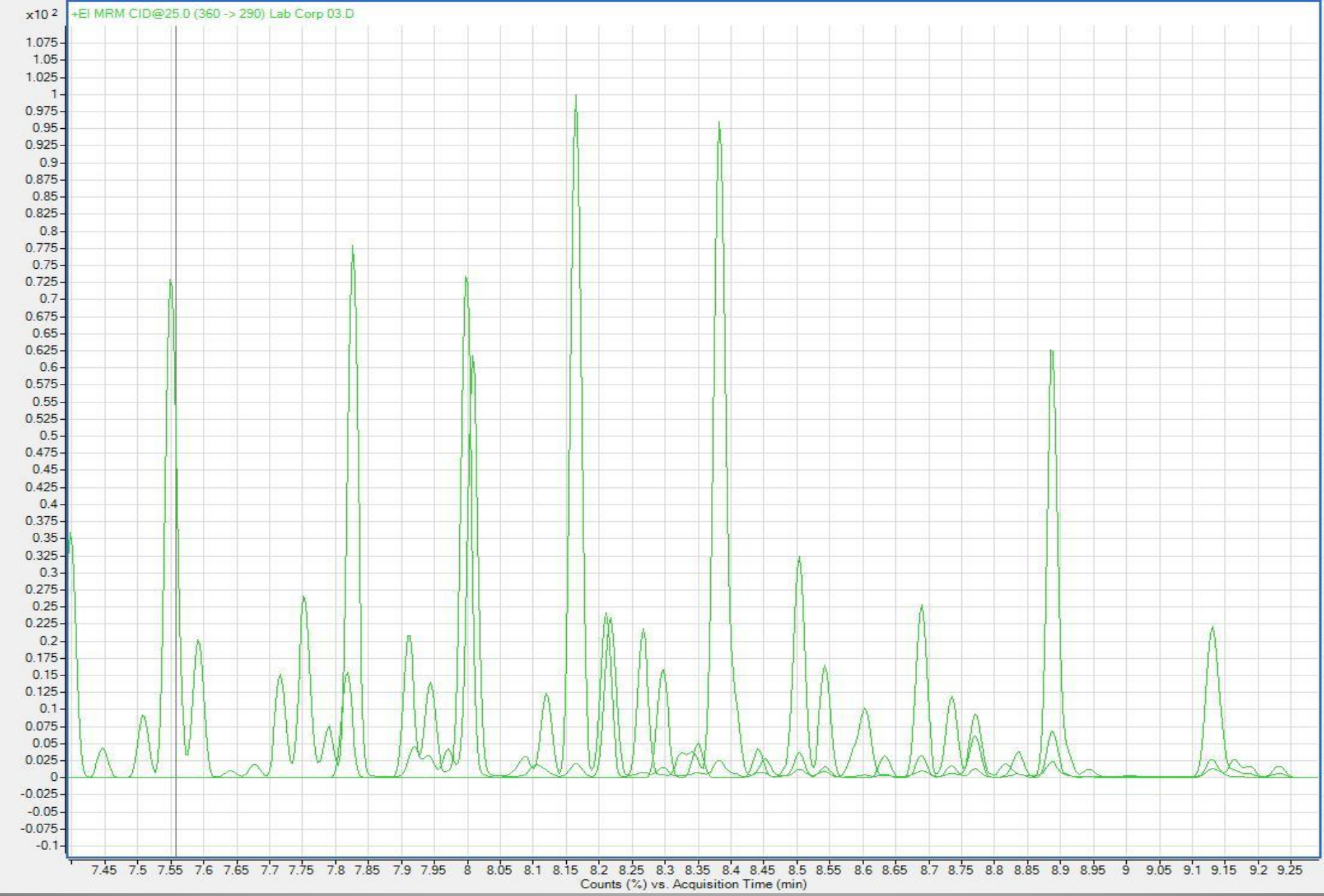
The ECD showed heavy interferences so much so that it was not possible to make a positive identification.

While there was heavy matrix and interferences within the sample a positive identification was made utilizing an MS/MS experiment

# Experiment 2:

Experiment one was to examine an unknown sample in blood matrix.

For PCB Arochlors




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

Sa [redacted] Sample Type: <All> Compound: 1254 ISTD:

Compound Group: <All> Sample Group: <All> ISTD: <All> Time Segment: <All> Sample/Compound Group: <All>

| Sample | | | | | | | 1254 Met... | 1254 Results | | | | | | Qualifier... | | Qualifier... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Compound Group | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Final Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 05022012-01 | arochlor 1248-1.D | Cal | 1248-1 | 5/2/2012 9:57 AM | | 8.048 | 5830 | | 4.8941 | 4.8941 | | 13.7 | | 359.2 | |
| | ! | 05022012-02 | arochlor 1248-2.D | Cal | 1248-2 | 5/2/2012 10:11 AM | | 7.615 | 11930 | ✓ | 10.0147 | 10.0147 | | 4.8 | ✓ | 331.8 | |
| | | 05022012-03 | arochlor 1248-3.D | Cal | 1248-3 | 5/2/2012 10:26 AM | | 8.048 | 28725 | | 24.1128 | 24.1128 | | 4.9 | | 362.9 | |
| | | 05022012-04 | arochlor 1248-4.D | Cal | 1248-4 | 5/2/2012 10:41 AM | | 8.048 | 58259 | | 48.9050 | 48.9050 | | 4.5 | | 362.9 | |
| | | 05022012-05 | arochlor 1248-5.D | Cal | 1248-5 | 5/2/2012 10:56 AM | | 8.048 | 128444 | | 107.8213 | 107.8213 | | 4.8 | | 391.1 | |
| | | 05022012-06 | arochlor 1254-1.D | Cal | 1254-1 | 5/2/2012 11:11 AM | 5.0000 | 8.048 | 10841 | | 9.1002 | 9.1002 | 182.0 | 24.4 | | 41.1 | |
| | | 05022012-07 | arochlor 1254-2.D | Cal | 1254-2 | 5/2/2012 11:26 AM | 10.0000 | 8.048 | 14319 | | 12.0197 | 12.0197 | 120.2 | 27.5 | | 45.7 | |
| | | 05022012-08 | arochlor 1254-3.D | Cal | 1254-3 | 5/2/2012 11:40 AM | 25.0000 | 8.048 | 37575 | | 31.5416 | 31.5416 | 126.2 | 28.6 | | 43.7 | |
| | | 05022012-09 | arochlor 1254-4.D | Cal | 1254-4 | 5/2/2012 11:55 AM | 50.0000 | 8.048 | 58467 | | 49.0796 | 49.0796 | 98.2 | 28.7 | | 45.0 | |
| | | 05022012-10 | arochlor 1254-5.D | Cal | 1254-5 | 5/2/2012 12:10 PM | 100.0000 | 8.048 | 117242 | | 98.4178 | 98.4178 | 98.4 | 28.2 | | 44.3 | |
| | | 05022012-18 | arochlor 1260-1.D | Cal | 1260-1 | 5/2/2012 12:25 PM | | 8.048 | 5235 | | 4.3945 | 4.3945 | | 192.1 | | 19.9 | |
| | | 05022012-20 | arochlor 1260-3.D | Cal | 1260-3 | 5/2/2012 12:55 PM | | 8.048 | 25406 | | 21.3267 | 21.3267 | | 201.9 | | 24.1 | |
| | | 05022012-21 | arochlor 1260-4.D | Cal | 1260-4 | 5/2/2012 1:10 PM | | 8.048 | 43591 | | 36.5920 | 36.5920 | | 165.0 | | 25.3 | |
| | | 05022012-22 | arochlor 1260-5.D | Cal | 1260-5 | 5/2/2012 1:25 PM | | 8.048 | 106875 | | 89.7154 | 89.7154 | | 255.8 | ✓ | 24.4 | |
| | | 05022012-23.D | arochlor1260-02a.D | Cal | 1260-2 | 5/2/2012 1:40 PM | | 8.048 | 8726 | | 7.3246 | 7.3246 | | 188.6 | | 21.0 | |
| | | [redacted] | | | 1 | 5/14/2012 5:00 PM | | 8.048 | 232 | | 0.1952 | 0.1952 | | 333.6 | | 30.9 | |
| | | | | | 1254-1 | 5/14/2012 5:15 PM | 5.0000 | 7.825 | 5276 | ✓ | 4.4286 | 4.4286 | 88.6 | 114.1 | ✓ | 24.4 | ✓ |
| ▶ | | | | | 1254-4 | 5/14/2012 5:30 PM | 50.0000 | 8.048 | 53976 | | 45.3098 | 45.3098 | 90.6 | 109.3 | | 24.0 | |

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

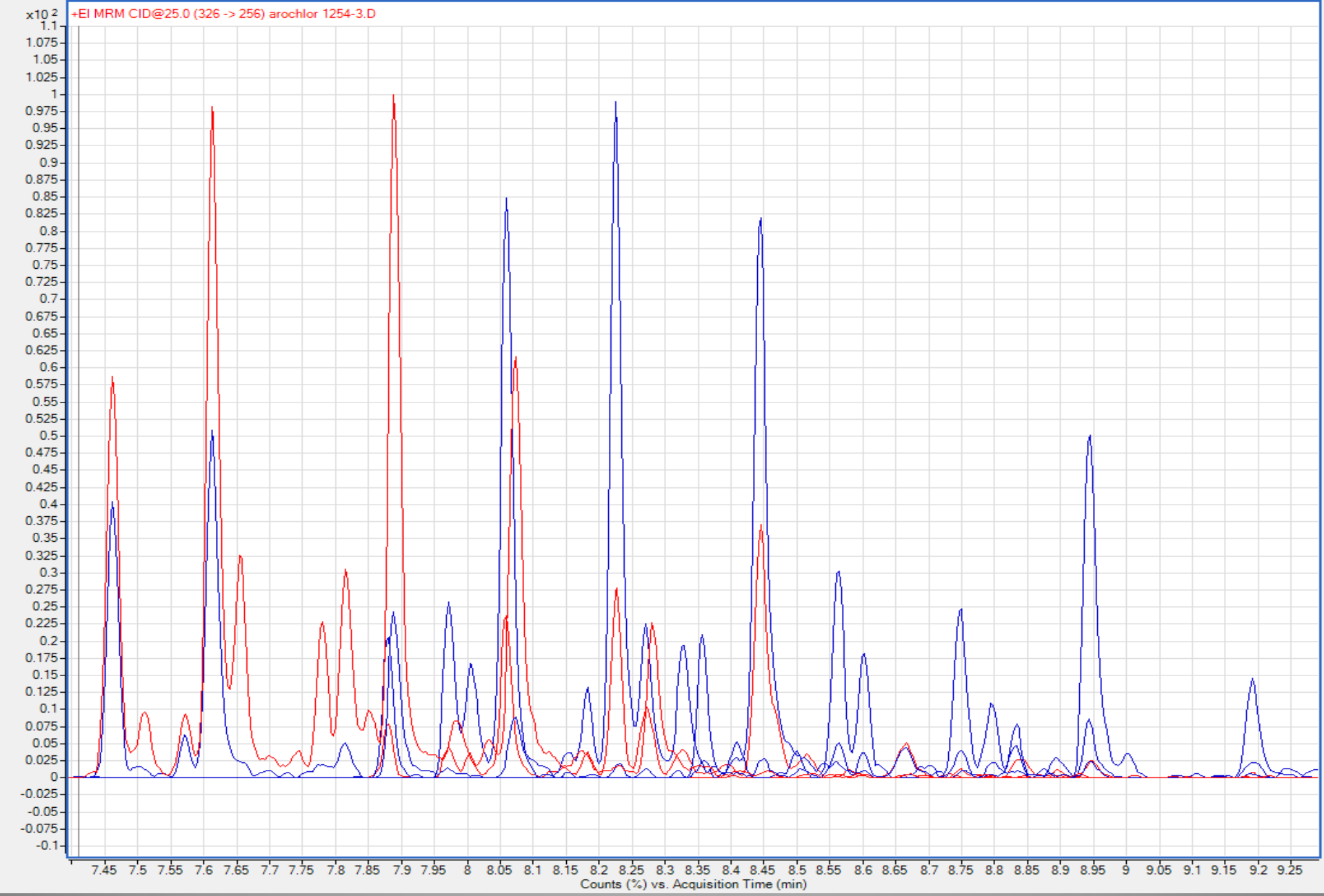
tch Table

Sample Type: <All> | Compound: 1260 | ISTD:

Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

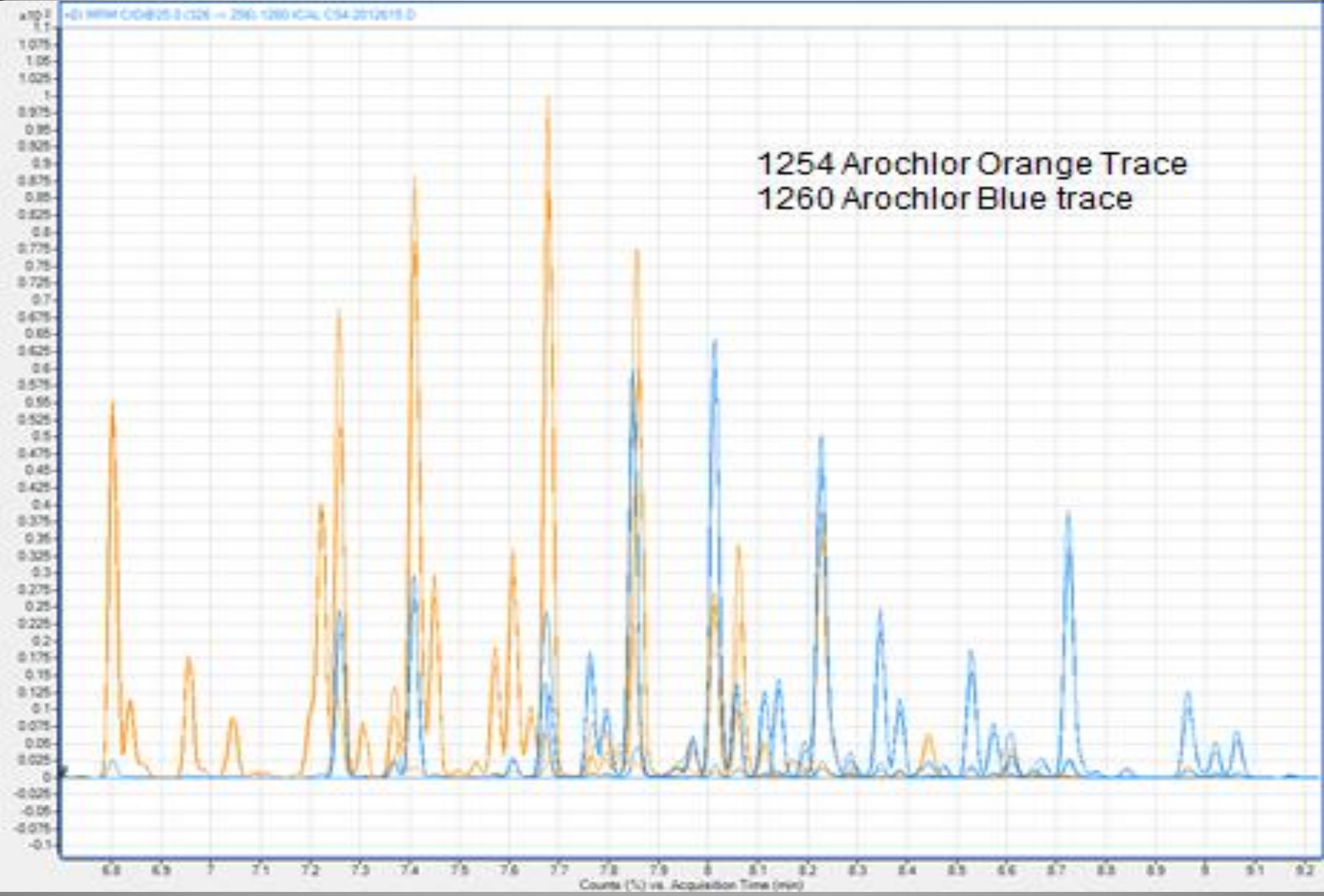
| Sample | | | | | | | 1260 Met... | 1260 Results | | | | | | Qualifier... | | Qualifier (... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Final Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 05022012-01 | arochlor 1248-1.D | Cal | 1248-1 | 5/2/2012 9:57 AM | | 8.207 | 1484 | | 1.2100 | 1.2100 | | 44.6 | | 785.5 | |
| | | 05022012-02 | arochlor 1248-2.D | Cal | 1248-2 | 5/2/2012 10:11 AM | | 8.207 | 2859 | | 2.3304 | 2.3304 | | | | 2118.3 | |
| | | 05022012-03 | arochlor 1248-3.D | Cal | 1248-3 | 5/2/2012 10:26 AM | | 8.207 | 6504 | | 5.3013 | 5.3013 | | 8.1 | | 2042.0 | |
| | | 05022012-04 | arochlor 1248-4.D | Cal | 1248-4 | 5/2/2012 10:41 AM | | 8.207 | 12399 | | 10.1062 | 10.1062 | | 7.5 | | 2131.0 | |
| | | 05022012-05 | arochlor 1248-5.D | Cal | 1248-5 | 5/2/2012 10:56 AM | | 8.207 | 27186 | | 22.1590 | 22.1590 | | 2.8 | | 2070.9 | |
| | | 05022012-06 | arochlor 1254-1.D | Cal | 1254-1 | 5/2/2012 11:11 AM | | 8.207 | 8249 | | 6.7234 | 6.7234 | | 6.2 | | 409.7 | |
| | | 05022012-07 | arochlor 1254-2.D | Cal | 1254-2 | 5/2/2012 11:26 AM | | 8.207 | 10397 | | 8.4746 | 8.4746 | | 2.8 | | 353.6 | |
| | | 05022012-08 | arochlor 1254-3.D | Cal | 1254-3 | 5/2/2012 11:40 AM | | 8.207 | 27561 | | 22.4648 | 22.4648 | | 4.8 | | 388.1 | |
| | | 05022012-09 | arochlor 1254-4.D | Cal | 1254-4 | 5/2/2012 11:55 AM | | 8.207 | 43908 | | 35.7891 | 35.7891 | | 5.9 | | 348.7 | |
| | | 05022012-10 | arochlor 1254-5.D | Cal | 1254-5 | 5/2/2012 12:10 PM | | 8.207 | 88133 | | 71.8372 | 71.8372 | | 6.0 | | 353.3 | |
| | | 05022012-18 | arochlor 1260-1.D | Cal | 1260-1 | 5/2/2012 12:25 PM | 5.0000 | 8.228 | 6708 | ✓ | 5.4675 | 5.4675 | 109.3 | 44.0 | | 50.9 | |
| | | 05022012-20 | arochlor 1260-3.D | Cal | 1260-3 | 5/2/2012 12:55 PM | 25.0000 | 8.207 | 33137 | | 27.0096 | 27.0096 | 108.0 | 45.6 | | 42.2 | |
| | | 05022012-21 | arochlor 1260-4.D | Cal | 1260-4 | 5/2/2012 1:10 PM | 50.0000 | 8.207 | 65459 | | 53.3557 | 53.3557 | 106.7 | 46.5 | ✓ | 46.9 | |
| | | 05022012-22 | arochlor 1260-5.D | Cal | 1260-5 | 5/2/2012 1:25 PM | 100.0000 | 8.207 | 120041 | | 97.8447 | 97.8447 | 97.8 | 44.8 | ✓ | 44.4 | |
| | | 05022012-23.D | arochlor1260-02a.D | Cal | 1260-2 | 5/2/2012 1:40 PM | 10.0000 | 8.207 | 11676 | | 9.5167 | 9.5167 | 95.2 | 41.4 | | 45.1 | |
| | | | | | 1 | 5/14/2012 5:00 PM | | 8.207 | 307 | | 0.2503 | 0.2503 | | 83.5 | | | |
| | | | | | 1254-1 | 5/14/2012 5:15 PM | | 8.207 | 6098 | | 4.9702 | 4.9702 | | 51.9 | | 87.3 | |
| | | | | | 1254-4 | 5/14/2012 5:30 PM | | 8.207 | 61105 | | 49.8068 | 49.8068 | | 49.6 | | 91.7 | |

Dale Walker
Agilent GCMS
Applications Engineer



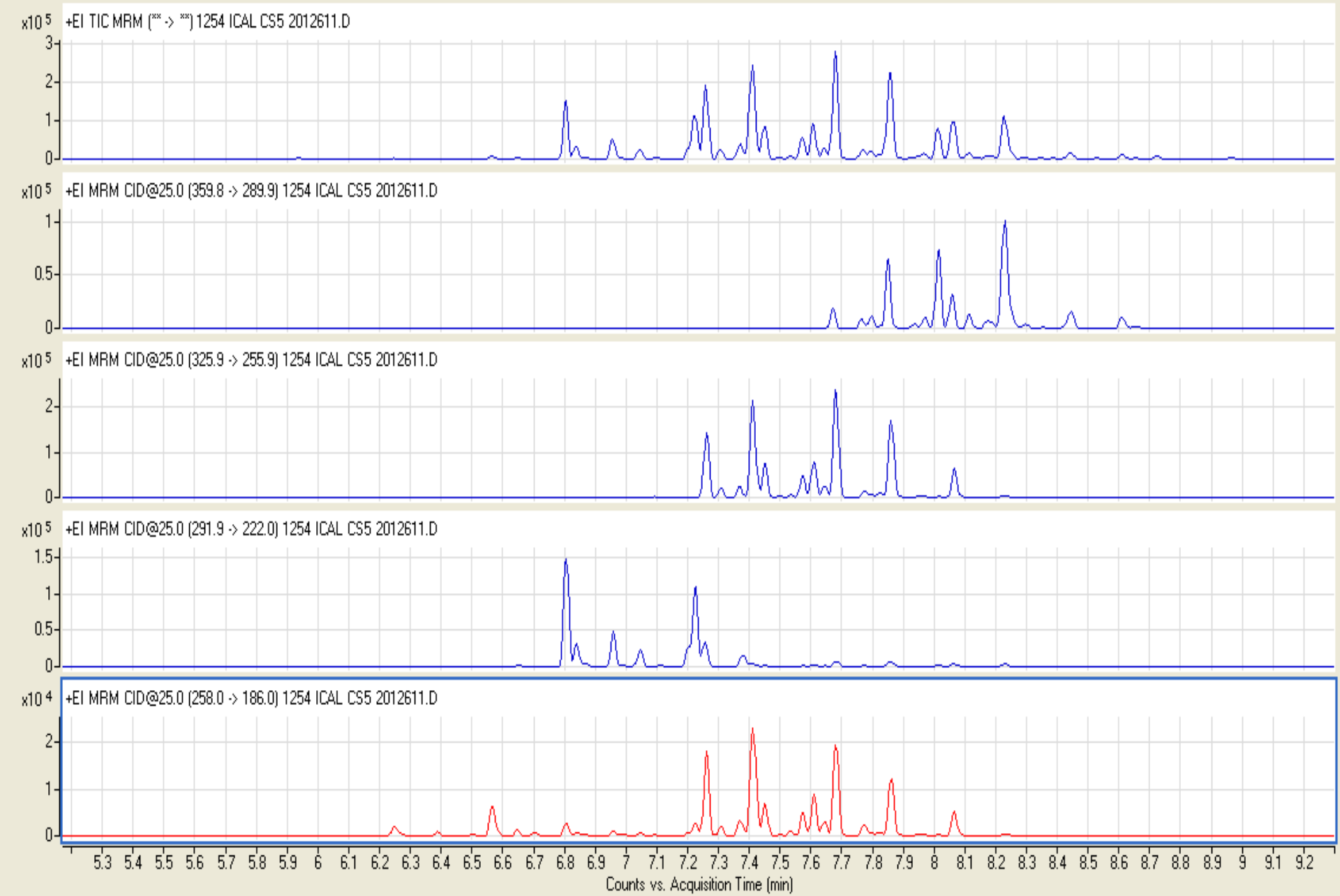

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



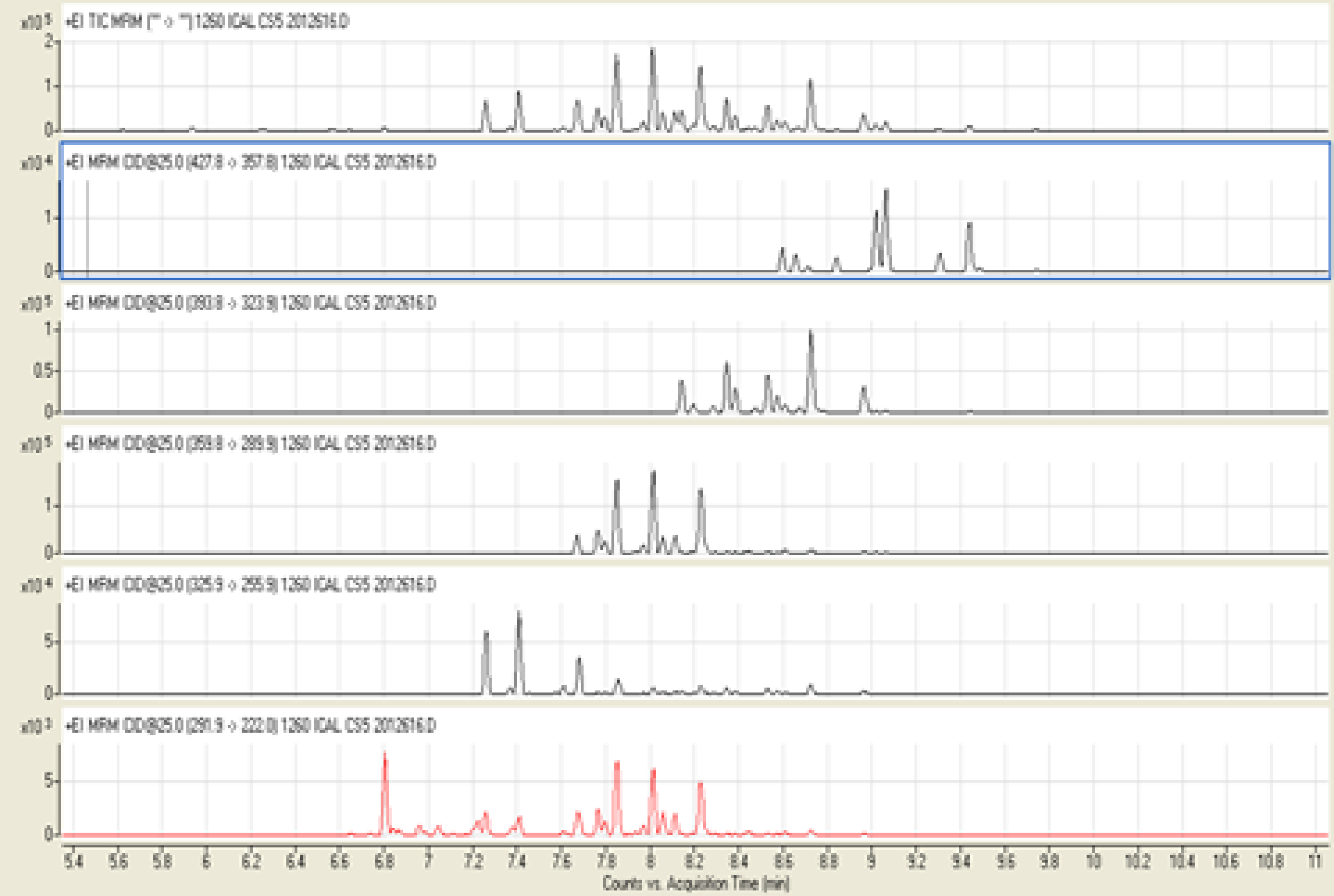

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies



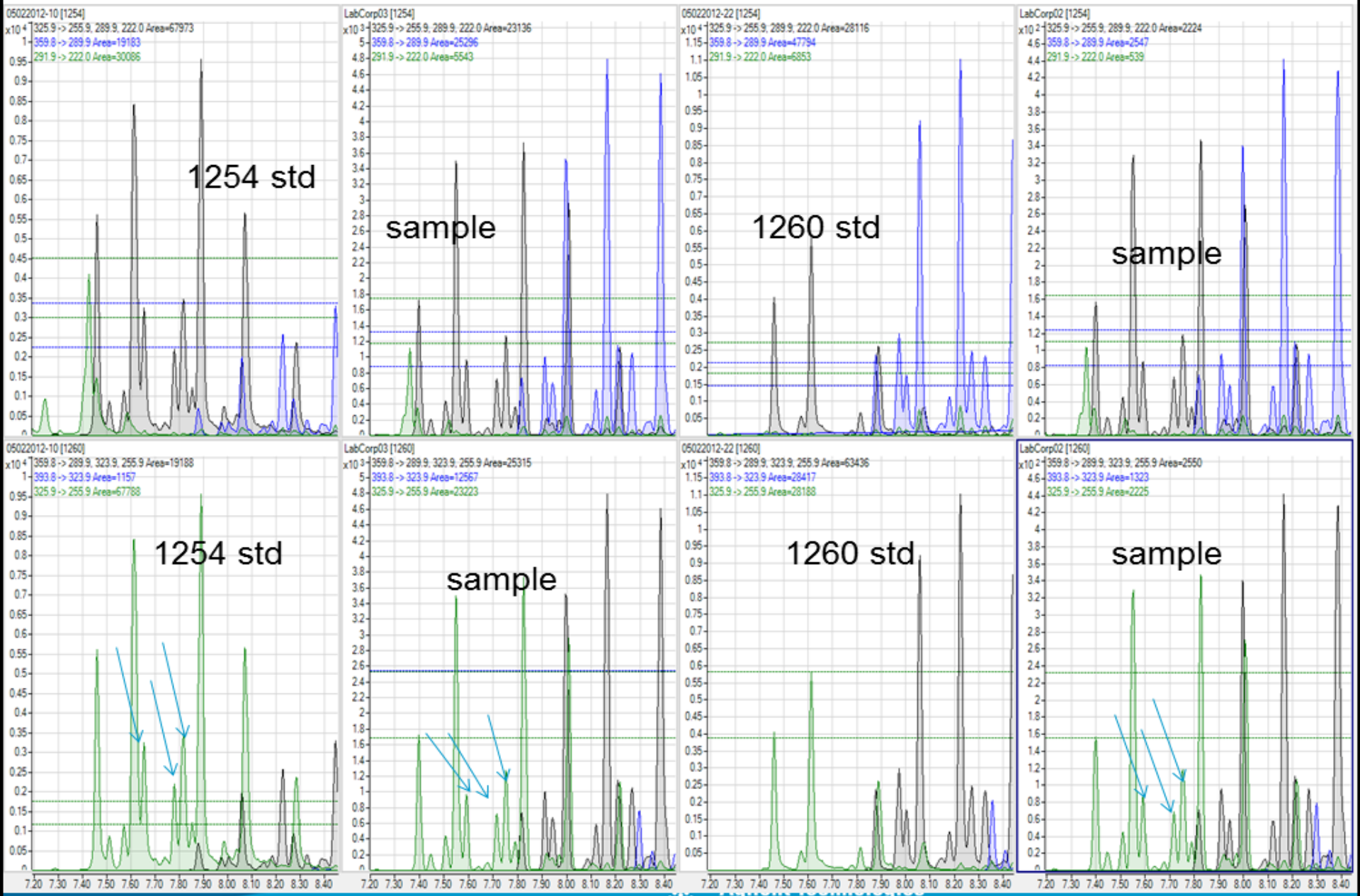

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

Batch Table

Sa [redacted] Sample Type: <All> Compound: 1254 ISTD:

Compound Group: <All> Sample Group: <All> ISTD: <All> Time Segment: <All> Sample/Compound Group: <All>

| Sample | | | | | | | 1254 Met... | 1254 Results | | | | | | Qualifier... | | Qualifier... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Compound Group | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Final Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 05022012-01 | arochlor 1248-1.D | Cal | 1248-1 | 5/2/2012 9:57 AM | | 8.048 | 5830 | | 4.8941 | 4.8941 | | 13.7 | | 359.2 | |
| | ! | 05022012-02 | arochlor 1248-2.D | Cal | 1248-2 | 5/2/2012 10:11 AM | | 7.615 | 11930 | ✓ | 10.0147 | 10.0147 | | 4.8 | ✓ | 331.8 | |
| | | 05022012-03 | arochlor 1248-3.D | Cal | 1248-3 | 5/2/2012 10:26 AM | | 8.048 | 28725 | | 24.1128 | 24.1128 | | 4.9 | | 362.9 | |
| | | 05022012-04 | arochlor 1248-4.D | Cal | 1248-4 | 5/2/2012 10:41 AM | | 8.048 | 58259 | | 48.9050 | 48.9050 | | 4.5 | | 362.9 | |
| | | 05022012-05 | arochlor 1248-5.D | Cal | 1248-5 | 5/2/2012 10:56 AM | | 8.048 | 128444 | | 107.8213 | 107.8213 | | 4.8 | | 391.1 | |
| | | 05022012-06 | arochlor 1254-1.D | Cal | 1254-1 | 5/2/2012 11:11 AM | 5.0000 | 8.048 | 10841 | | 9.1002 | 9.1002 | 182.0 | 24.4 | | 41.1 | |
| | | 05022012-07 | arochlor 1254-2.D | Cal | 1254-2 | 5/2/2012 11:26 AM | 10.0000 | 8.048 | 14319 | | 12.0197 | 12.0197 | 120.2 | 27.5 | | 45.7 | |
| | | 05022012-08 | arochlor 1254-3.D | Cal | 1254-3 | 5/2/2012 11:40 AM | 25.0000 | 8.048 | 37575 | | 31.5416 | 31.5416 | 126.2 | 28.6 | | 43.7 | |
| | | 05022012-09 | arochlor 1254-4.D | Cal | 1254-4 | 5/2/2012 11:55 AM | 50.0000 | 8.048 | 58467 | | 49.0796 | 49.0796 | 98.2 | 28.7 | | 45.0 | |
| | | 05022012-10 | arochlor 1254-5.D | Cal | 1254-5 | 5/2/2012 12:10 PM | 100.0000 | 8.048 | 117242 | | 98.4178 | 98.4178 | 98.4 | 28.2 | | 44.3 | |
| | | 05022012-18 | arochlor 1260-1.D | Cal | 1260-1 | 5/2/2012 12:25 PM | | 8.048 | 5235 | | 4.3945 | 4.3945 | | 192.1 | | 19.9 | |
| | | 05022012-20 | arochlor 1260-3.D | Cal | 1260-3 | 5/2/2012 12:55 PM | | 8.048 | 25406 | | 21.3267 | 21.3267 | | 201.9 | | 24.1 | |
| | | 05022012-21 | arochlor 1260-4.D | Cal | 1260-4 | 5/2/2012 1:10 PM | | 8.048 | 43591 | | 36.5920 | 36.5920 | | 165.0 | | 25.3 | |
| | | 05022012-22 | arochlor 1260-5.D | Cal | 1260-5 | 5/2/2012 1:25 PM | | 8.048 | 106875 | | 89.7154 | 89.7154 | | 255.8 | ✓ | 24.4 | |
| | | 05022012-23.D | arochlor1260-02a.D | Cal | 1260-2 | 5/2/2012 1:40 PM | | 8.048 | 8726 | | 7.3246 | 7.3246 | | 188.6 | | 21.0 | |
| | | [redacted] | | | 1 | 5/14/2012 5:00 PM | | 8.048 | 232 | | 0.1952 | 0.1952 | | 333.6 | | 30.9 | |
| | | | | | 1254-1 | 5/14/2012 5:15 PM | 5.0000 | 7.825 | 5276 | ✓ | 4.4286 | 4.4286 | 88.6 | 114.1 | ✓ | 24.4 | ✓ |
| ▶ | | | | | 1254-4 | 5/14/2012 5:30 PM | 50.0000 | 8.048 | 53976 | | 45.3098 | 45.3098 | 90.6 | 109.3 | | 24.0 | |

File Edit View Analyze Method Update Report Tools Help

Analyze Batch | Layout: | Restore Default Layout

tch Table

Sample Type: <All> | Compound: 1260 | ISTD:

Compound Group: <All> | Sample Group: <All> | ISTD: <All> | Time Segment: <All> | Sample/Compound Group: <All>

| Sample | | | | | | | 1260 Met... | 1260 Results | | | | | | Qualifier... | | Qualifier (... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Name | Data File | Type | Level | Acq. Date-Time | Exp. Conc. | RT | Resp. | MI | Calc. Conc. | Final Conc. | Accuracy | Ratio | MI | Ratio | MI |
| | | 05022012-01 | arochlor 1248-1.D | Cal | 1248-1 | 5/2/2012 9:57 AM | | 8.207 | 1484 | | 1.2100 | 1.2100 | | 44.6 | | 785.5 | |
| | | 05022012-02 | arochlor 1248-2.D | Cal | 1248-2 | 5/2/2012 10:11 AM | | 8.207 | 2859 | | 2.3304 | 2.3304 | | | | 2118.3 | |
| | | 05022012-03 | arochlor 1248-3.D | Cal | 1248-3 | 5/2/2012 10:26 AM | | 8.207 | 6504 | | 5.3013 | 5.3013 | | 8.1 | | 2042.0 | |
| | | 05022012-04 | arochlor 1248-4.D | Cal | 1248-4 | 5/2/2012 10:41 AM | | 8.207 | 12399 | | 10.1062 | 10.1062 | | 7.5 | | 2131.0 | |
| | | 05022012-05 | arochlor 1248-5.D | Cal | 1248-5 | 5/2/2012 10:56 AM | | 8.207 | 27186 | | 22.1590 | 22.1590 | | 2.8 | | 2070.9 | |
| | | 05022012-06 | arochlor 1254-1.D | Cal | 1254-1 | 5/2/2012 11:11 AM | | 8.207 | 8249 | | 6.7234 | 6.7234 | | 6.2 | | 409.7 | |
| | | 05022012-07 | arochlor 1254-2.D | Cal | 1254-2 | 5/2/2012 11:26 AM | | 8.207 | 10397 | | 8.4746 | 8.4746 | | 2.8 | | 353.6 | |
| | | 05022012-08 | arochlor 1254-3.D | Cal | 1254-3 | 5/2/2012 11:40 AM | | 8.207 | 27561 | | 22.4648 | 22.4648 | | 4.8 | | 388.1 | |
| | | 05022012-09 | arochlor 1254-4.D | Cal | 1254-4 | 5/2/2012 11:55 AM | | 8.207 | 43908 | | 35.7891 | 35.7891 | | 5.9 | | 348.7 | |
| | | 05022012-10 | arochlor 1254-5.D | Cal | 1254-5 | 5/2/2012 12:10 PM | | 8.207 | 88133 | | 71.8372 | 71.8372 | | 6.0 | | 353.3 | |
| | | 05022012-18 | arochlor 1260-1.D | Cal | 1260-1 | 5/2/2012 12:25 PM | 5.0000 | 8.228 | 6708 | ✓ | 5.4675 | 5.4675 | 109.3 | 44.0 | | 50.9 | |
| | | 05022012-20 | arochlor 1260-3.D | Cal | 1260-3 | 5/2/2012 12:55 PM | 25.0000 | 8.207 | 33137 | | 27.0096 | 27.0096 | 108.0 | 45.6 | | 42.2 | |
| | | 05022012-21 | arochlor 1260-4.D | Cal | 1260-4 | 5/2/2012 1:10 PM | 50.0000 | 8.207 | 65459 | | 53.3557 | 53.3557 | 106.7 | 46.5 | ✓ | 46.9 | |
| | | 05022012-22 | arochlor 1260-5.D | Cal | 1260-5 | 5/2/2012 1:25 PM | 100.0000 | 8.207 | 120041 | | 97.8447 | 97.8447 | 97.8 | 44.8 | ✓ | 44.4 | |
| | | 05022012-23.D | arochlor1260-02a.D | Cal | 1260-2 | 5/2/2012 1:40 PM | 10.0000 | 8.207 | 11676 | | 9.5167 | 9.5167 | 95.2 | 41.4 | | 45.1 | |
| | | | | | 1 | 5/14/2012 5:00 PM | | 8.207 | 307 | | 0.2503 | 0.2503 | | 83.5 | | | |
| | | | | | 1254-1 | 5/14/2012 5:15 PM | | 8.207 | 6098 | | 4.9702 | 4.9702 | | 51.9 | | 87.3 | |
| | | | | | 1254-4 | 5/14/2012 5:30 PM | | 8.207 | 61105 | | 49.8068 | 49.8068 | | 49.6 | | 91.7 | |

Dale Walker
Agilent GCMS
Applications Engineer

# Conclusion Experiment 2:

While there was heavy matrix and interferences within the sample a positive identification was made for both Arochlor 1254 and 1260 in a single sample during the same run.

The spiked amount for 1254 was 5ppb the amount reported was 4.42ppb The high spike was 50 ppb and the amount found was 45.30ppb

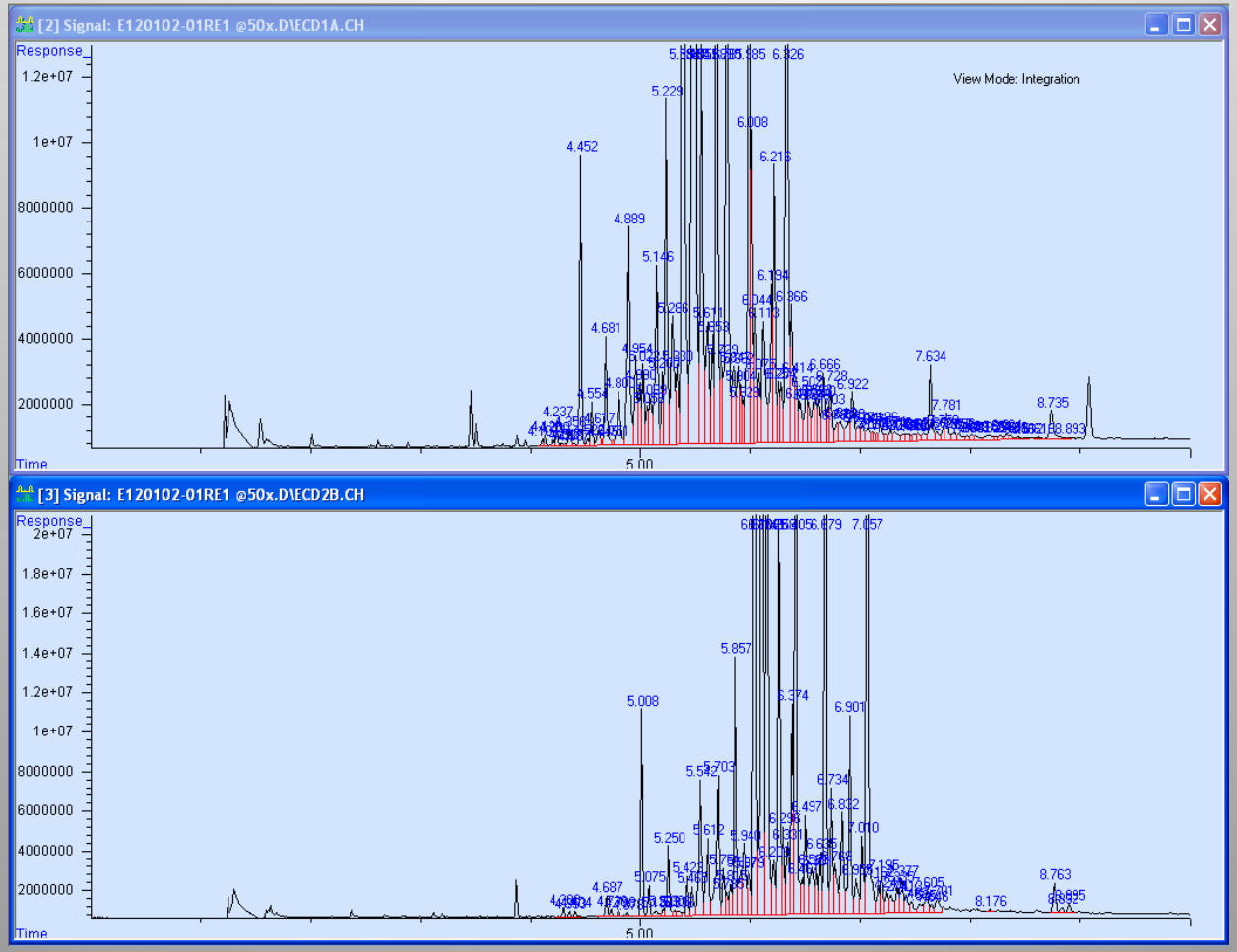
The spiked amount for 1260 was 5ppb the amount reported was 4.97ppb The high spike was 50 ppb and the amount found was 49.80ppb

Here is a preview of one of a future presentation for pesticides using EPA method 8081

Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

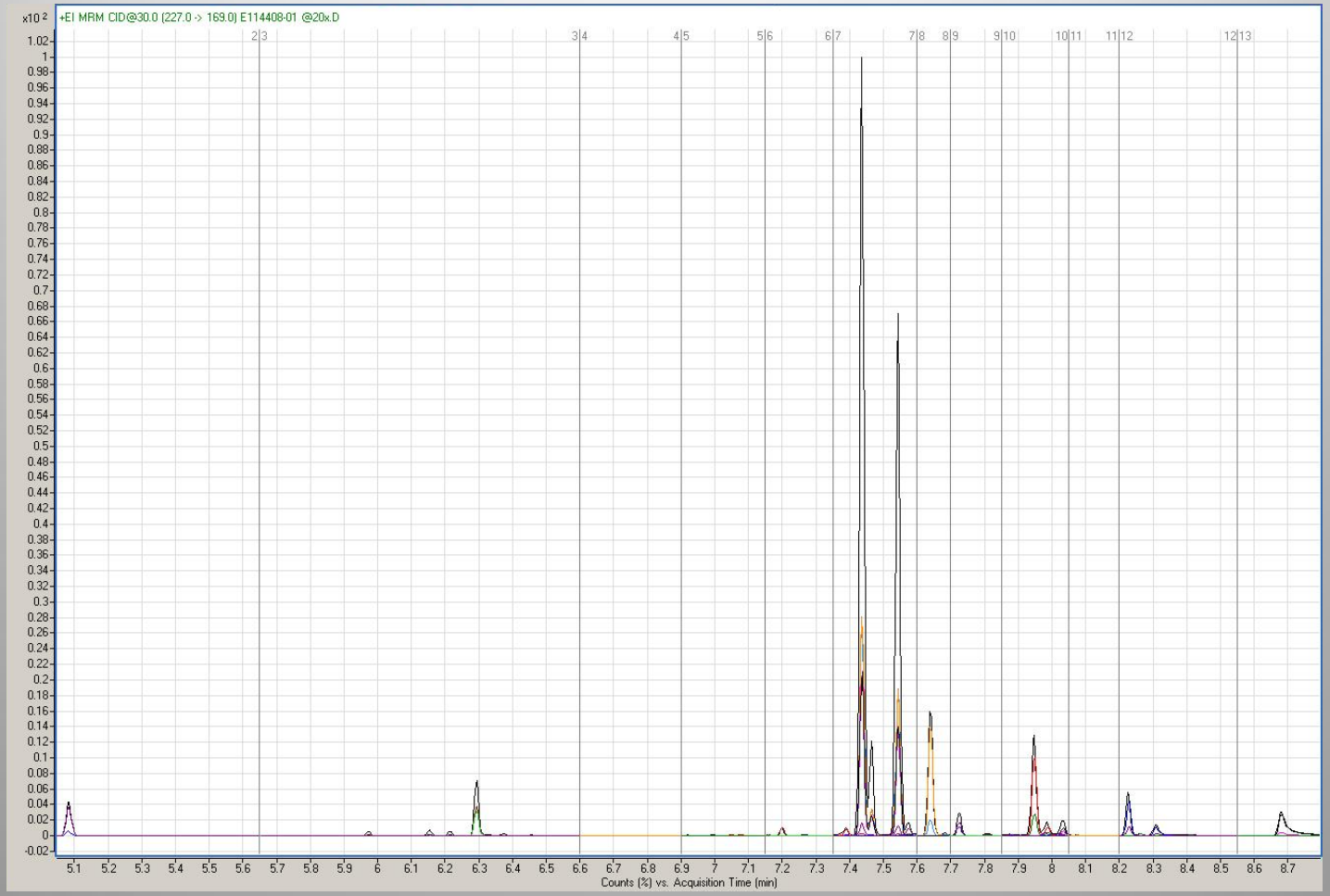
# Pesticide on ECD




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Pesticide on 7000B QQQ




Dale Walker
Agilent GCMS
Applications Engineer

Agilent Technologies

# Pesticide Calibration on QQQ

Calibration ReportInitial Calibration Report

Level ID : Calibration File
1 : D:\031212ical\8081 1ppb.D
2 : D:\031212ical\8081 2ppb.D
3 : D:\031212ical\8081 5ppb.D
4 : D:\031212ical\8081 10ppb.D
5 : D:\031212ical\8081 25ppb.D
6 : D:\031212ical\8081 50ppb.D
7 : D:\031212ical\8081 100ppb-2.D

| Compound | 1 | 2 | 3 | 4 | 5 | 6 | 7 | AvgRF | %RSD | r^2 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) 2 flurobiphenyl | 0.35247 | 0.32931 | 0.33079 | 0.39534 | 0.37141 | 0.36975 | 0.35631 | 0.35791 | 6.561 | 0.9994 |
| 2) Acenaphtene D10 | ----------ISTD---------- | | | | | | | | | |
| 3) Alpha BHC | 1.23177 | 1.13280 | 1.13338 | 1.30561 | 1.20603 | 1.13599 | 1.09618 | 1.17739 | 6.246 | 0.9924 |
| 4) Beta BHC | 1.01825 | 0.95467 | 0.92697 | 1.06688 | 0.97907 | 0.92022 | 0.91400 | 0.96858 | 5.883 | 0.9944 |
| 5) Delta BHC | 0.87389 | 0.81305 | 0.79933 | 0.92564 | 0.85576 | 0.82301 | 0.79021 | 0.84013 | 5.725 | 0.9946 |
| 6) Gama BHC | 1.01787 | 0.95364 | 0.92662 | 1.06622 | 0.97806 | 0.91960 | 0.91310 | 0.96787 | 5.892 | 0.9944 |
| 7) Phenantherene D10 | ----------ISTD---------- | | | | | | | | | |
| 8) Heptachlor | 0.18022 | 0.15757 | 0.15153 | 0.17494 | 0.16285 | 0.15541 | 0.16377 | 0.16376 | 6.377 | 0.9991 |
| 9) Aldrin | 0.23740 | 0.17132 | 0.15242 | 0.16707 | 0.15435 | 0.14831 | 0.13296 | 0.16626 | 20.324 | 0.9153 |
| 10) Heptachlor Epoxide | 0.07354 | 0.06708 | 0.06703 | 0.07612 | 0.07026 | 0.07075 | 0.06491 | 0.06996 | 5.652 | 0.9923 |
| 11) gamma-Chlordane | 0.21008 | 0.19400 | 0.18161 | 0.22565 | 0.20420 | 0.20646 | 0.18480 | 0.20097 | 7.649 | 0.9900 |
| 12) alpha-Chlordane | 0.18994 | 0.16675 | 0.16930 | 0.19607 | 0.18407 | 0.18464 | 0.16748 | 0.17975 | 6.589 | 0.9929 |
| 13) Endosulfan I | 0.06062 | 0.05606 | 0.05670 | 0.06640 | 0.06236 | 0.06080 | 0.05603 | 0.05985 | 6.454 | 0.9938 |
| 14) DDE | 1.00441 | 0.93833 | 0.92068 | 1.05195 | 0.94311 | 0.92305 | 0.82484 | 0.94377 | 7.557 | 0.9738 |
| 15) Terphenyl D14 | 1.55747 | 1.43313 | 1.36938 | 1.57228 | 1.40955 | 1.40173 | ----- | 1.45726 | 5.898 | 0.9970 |
| 16) Dieldrin | 0.06336 | 0.06869 | 0.06280 | 0.07694 | 0.07319 | 0.07345 | ----- | 0.06974 | 8.301 | 0.9951 |
| 17) Endrin | 0.01532 | 0.01321 | 0.01496 | 0.01777 | 0.01407 | 0.01504 | 0.01307 | 0.01478 | 10.784 | 0.9781 |
| 18) DDD | 1.28169 | 1.13462 | 1.10428 | 1.25219 | 1.12864 | 1.10318 | 0.99775 | 1.14319 | 8.422 | 0.9729 |
| 19) Endosulfan II | 0.02469 | 0.02115 | 0.02137 | 0.02383 | 0.02144 | 0.02239 | 0.02006 | 0.02213 | 7.325 | 0.9867 |
| 20) Endrin Aldehyde | 0.01427 | 0.01189 | 0.01204 | 0.01449 | 0.01412 | 0.01575 | 0.01400 | 0.01379 | 9.982 | 0.9937 |
| 21) DDT | 0.24089 | 0.24483 | 0.22360 | 0.25306 | 0.23964 | 0.24489 | 0.25065 | 0.24251 | 3.973 | 0.9986 |
| 22) Endosulfan Sulfate | 0.09011 | 0.08256 | 0.08594 | 0.10203 | 0.09834 | 0.10068 | 0.09822 | 0.09398 | 8.204 | 0.9960 |
| 23) Chrysene D12 | ----------ISTD---------- | | | | | | | | | |
| 24) Endrin Ketone | 0.00976 | 0.01122 | 0.00836 | 0.01086 | 0.01064 | 0.01147 | 0.01127 | 0.01051 | 10.514 | 0.9920 |
| 25) Methoxychlor | 0.11393 | 0.09597 | 0.09504 | 0.11150 | 0.10725 | 0.10840 | 0.12088 | 0.10757 | 8.699 | 0.9845 |

*(value) - Average RF below (value)

# QC Comparison QQQ vs ECD

## MRL Verification Results in pg/µL

| 1111005-PS1 | | | | | |
|---|---|---|---|---|---|
| ***Compound*** | ***QQQ*** | ***ECD*** | ***QQQ % Rec*** | ***ECD % Rec*** | ***RPD*** |
| alpha-BHC | 1.10 | 1.05 | 109.76 | 104.60 | 4.81% |
| beta-BHC | 2.02 | 1.60 | 100.78 | 80.20 | 22.74% |
| delta-BHC | 1.55 | 1.58 | 77.66 | 78.75 | 1.39% |
| gamma-Chlordane | 2.33 | 2.38 | 116.54 | 119.10 | 2.18% |
| alpha-Chlordane | 2.23 | 1.87 | 111.45 | 93.60 | 17.41% |
| DDE | 2.36 | 1.96 | 117.87 | 98.05 | 18.35% |
| Endrin | 3.97 | 3.32 | 99.25 | 83.03 | 17.80% |
| DDD | 4.13 | 3.67 | 103.26 | 91.68 | 11.89% |
| Endosulfan Sulfate | 3.39 | 3.84 | 67.81 | 76.70 | 12.30% |
| Endrin Ketone | 3.48 | 3.64 | 69.53 | 72.82 | 4.63% |

Dale Walker
Agilent GCMS
Applications Engineer

# Summary

We can analyze and report difficult samples that previously would have required additional sample treatment or raised detection limits on the ECD.

We are able to achieve detection limits at or below those currently attained on the ECD.

By using GC/MS/MS we are now able to confirm the presents of Aroclors not only by pattern matching TIC patterns but by insuring that the transitions are clearly defined. This offers the best legally defensible data.

Dale Walker
Agilent GCMS
Applications Engineer

# Acknowledgement

I would like to personally thank the following individuals. Without their help this presentation would not have been possible.

Fred Feyerherm  Agilent Technologies

Jeannie Williamson  and Jason Collum
Organic Chemistry Section SESD Region 4 EPA