

To: Joe Ledvina, Houston

**Interoffice
Communication**

From: H. G. Coleman, R&D, Austin

Date: February 2, 1990

Subject: **Analysis of Resins for BUS-80**

VISTA

Several samples of resins were submitted to R&D Analytical for gas phase chromatography (GPC) in an effort to determine the level of BUS-80 present from the EVC clean wall plant trial currently in progress at Aberdeen. Resin made with BUS-80 in reactor D-745 was isolated from that made in reactor D-700 without BUS-80. They are identified on the attached GPC charts as "treated" and "untreated" respectively.

There are four "trios" of charts that show the level of BUS-80 present. let me discuss each one separately.

- I. These are methanol extracts of treated, untreated, and BUS-80 spiked untreated (Analytical spiked untreated samples with 50 ppb of BUS-80) resins. GPC fluorescence was measured. Significant activity occurred at the 16 minute mark in the spiked sample. The treated sample exhibited only minor activity compared to the untreated sample, and far less than the spiked.
- II. Same samples as in I; GPC UV (ultraviolet) was measured. Activity was noted at the same 16 minute mark, very significant with the spiked sample. Very little activity was seen with the treated sample.
- III. Resin samples came from different production lots than I and II above. Again, treated, untreated, and spiked samples were analyzed, but this time the methanol was dried off and the residue was concentrated in a small amount of THF. Areas on the GPC fluorescence curves where significant activity is noted are at 14.5 minutes and at 17.5 minutes. Once again, the treated sample with BUS-80 shows less activity than the spiked (50ppb) sample and only slightly more than the untreated sample.
- IV. The same resins as in III were measured on GPC UV. Peak activity at 17.5 minutes was noted on the spiked sample, with absolutely nothing from the untreated sample and only minor activity from the treated sample.

VEV-145150

4

These analyses show that two different resin samples made in D-745 with BUS-80, and analyzed using two different solvents (methanol and THF), showed levels of BUS-80 significantly less than known, 50 ppb spiked "standards". This indicates that the level on the resin is far less than 50 ppb and that most of the BUS-80 remains on the reactor walls or in the water discharged from the centrifuge.

I hope this evidence is useful to you and our legal advisors in determining the FDA status of resin made in a reactor treated with EVC's clean wall agent, BUS-80.

If you have any questions, please call me at (512) 331-2428.

Harold G. Coleman

Harold G. Coleman
Senior Group Leader - Resin Technology

cc: Austin - RBQ
Houston - EJM, RRS
Aberdeen - RWS, RBN, KWB

VEU-145151

805

1-Feb-90

17:26:56

Printed on 2-Feb-90 at 9:43:25

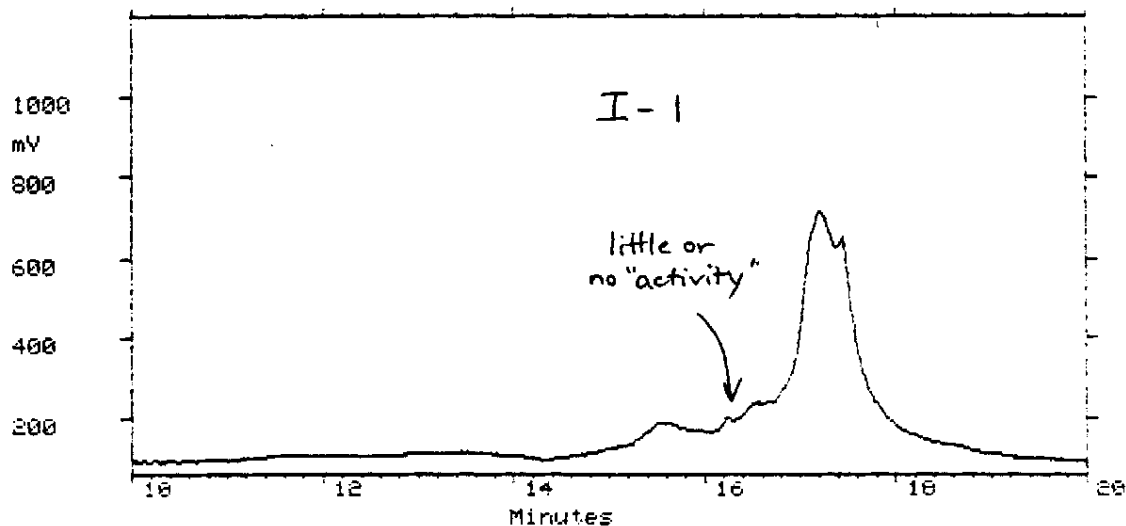
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Units		System number	2
Channel	3	Vial	3
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	1.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

FLUOR

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

80-5 IN MEOH (UNTREATED)

Chromatogram of 805



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEU-145152

802

1-Feb-90

17:02:04

Printed on 2-Feb-90 at 9:39:56

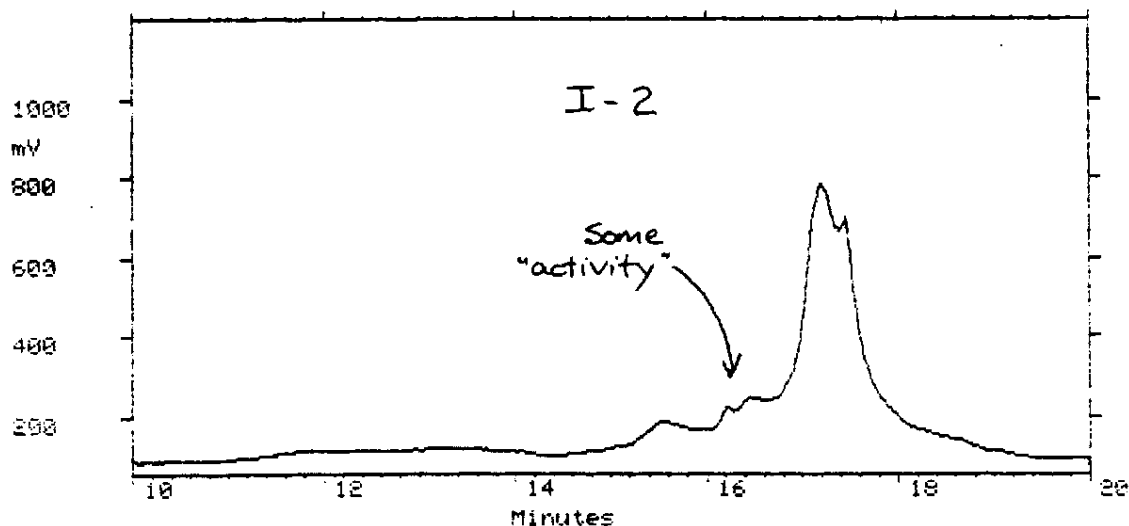
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Units		System number	2
Channel	3	Vial	2
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	1.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

FLUOR

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

80-2 IN MEOH TREATED
WITH
BUS80

Chromatogram of 802



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEV-145153

SPA

1-Feb-90

16:37:08

Printed on 2-Feb-90 at 9:36:58

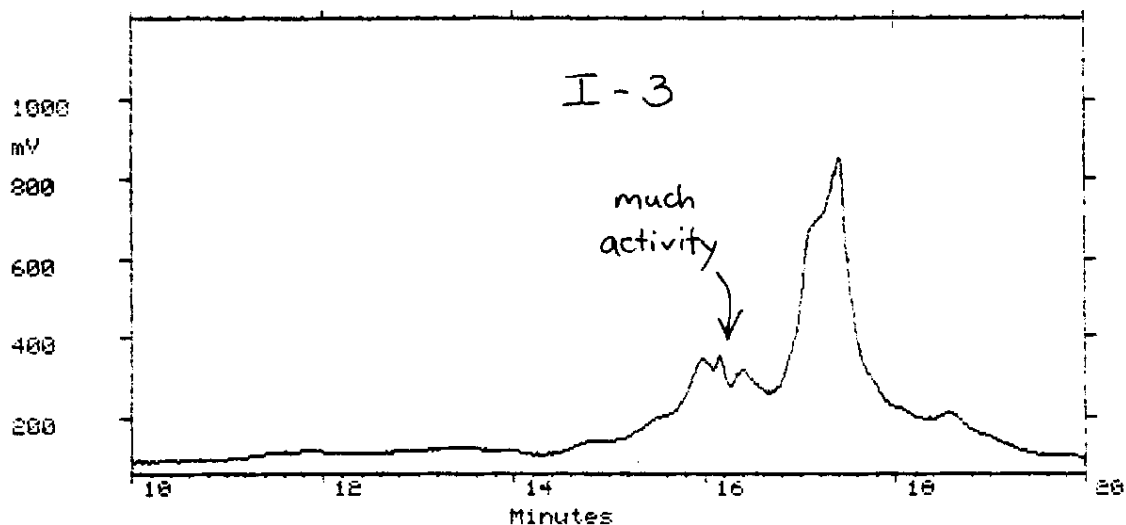
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Units		System number	2
Channel	3	Vial	1
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	1.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

FLUOR

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

SPIKE A IN MECH
WITH
BUS 80
50 PPB

Chromatogram of SPA



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEV-145154

805

1-Feb-90

17:26:56

Printed on 2-Feb-90 at 9:41:46

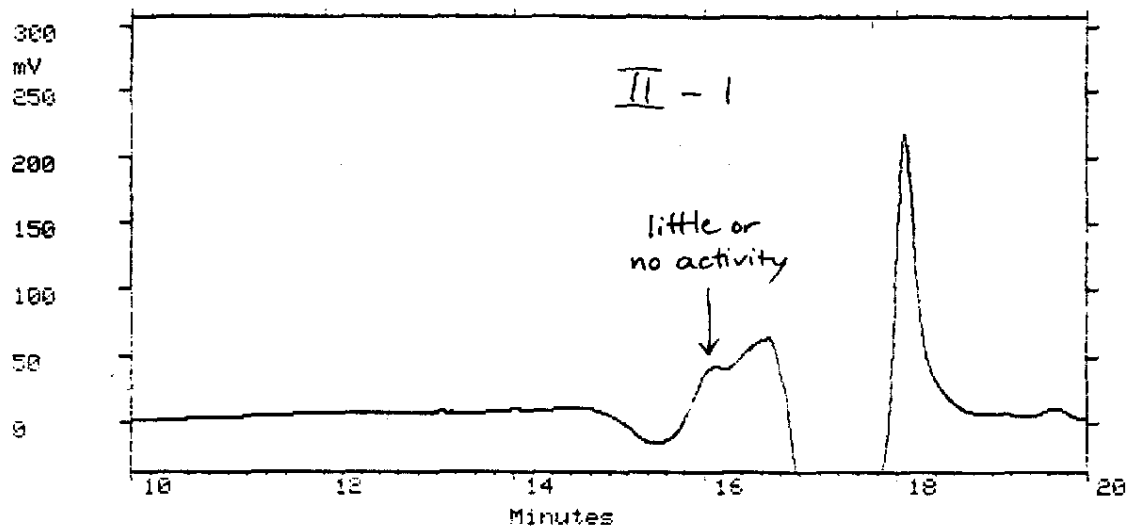
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Units		System number	2
Channel	2	Vial	3
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

GPC BUS60 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-270nm

80-5 IN MECH UNTREATED

Chromatogram of 805



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEV-145155

802

1-Feb-90

17:02:04

Printed on 2-Feb-90 at 9:38:36

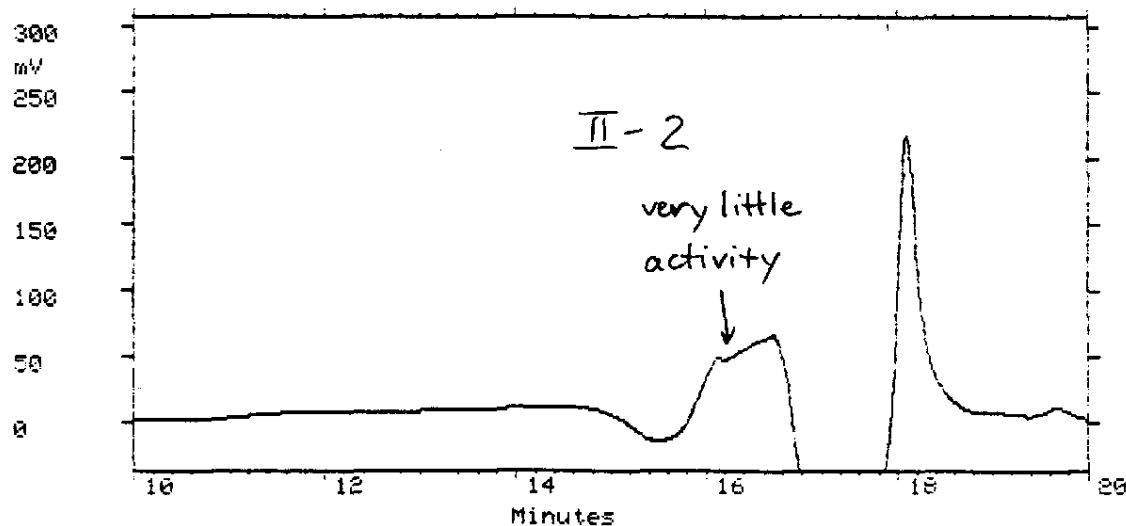
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Units		System number	2
Channel	2	Vial	2
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

BPC BUE80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

80-2 IN MEOM TREATED

Chromatogram of 802



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

UEV-145156

SPA

1-Feb-90

16:37:08

Printed on 2-Feb-90 at 9:35:55

Acquisition method	LAB	Quantitation method	LAB
Units		System number	2
Channel	2	Vial	1
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

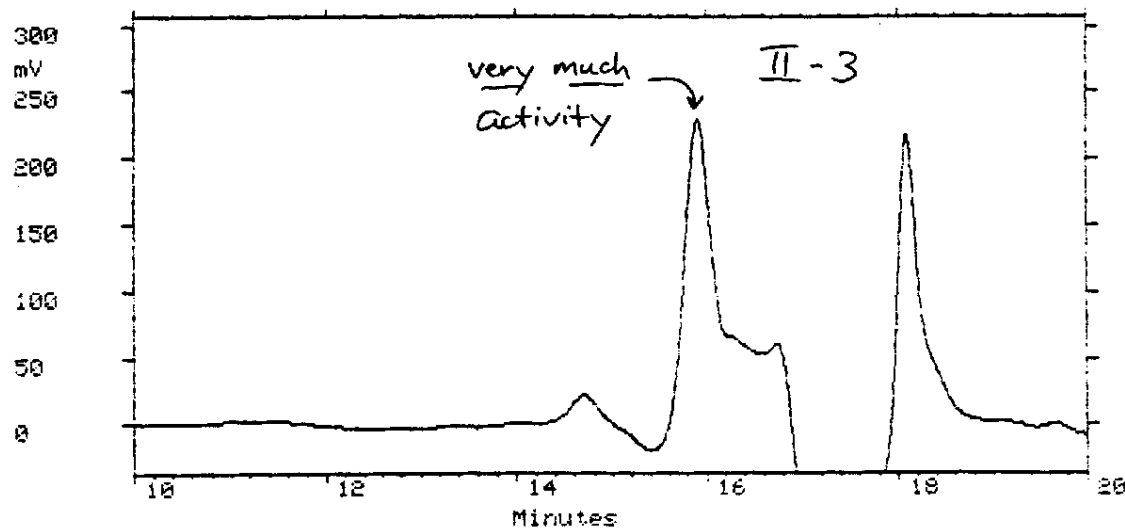
GPC BUSSO THF 1 ML/MIN; 2 50A COLUMNS, 35C

UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

SPIKE A IN MEOH

WITH
50 PPB
BUS 80

Chromatogram of SPA



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.

Total Area or Height is zero.

No Peaks, Try Again.

VEU-145157

804CON

1-Feb-90

18:16:44

inted on 2-Feb-90 at 9:50:35

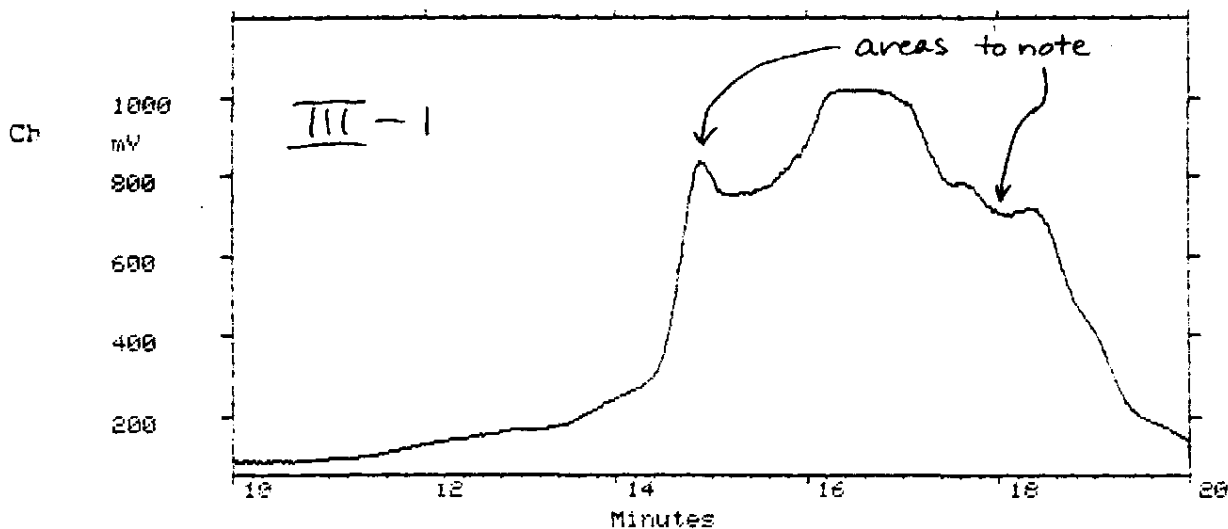
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Units		System number	2
Channel	3	Vial	5
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	1.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

FLUOR

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

20-4 10X CONCEN IN THF UNTREATED

Chromatogram of 804CON



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

No
m-

VEV-145158

SPBCON

1-Feb-90

19:31:22

Printed on 2-Feb-90 at 10:01:30

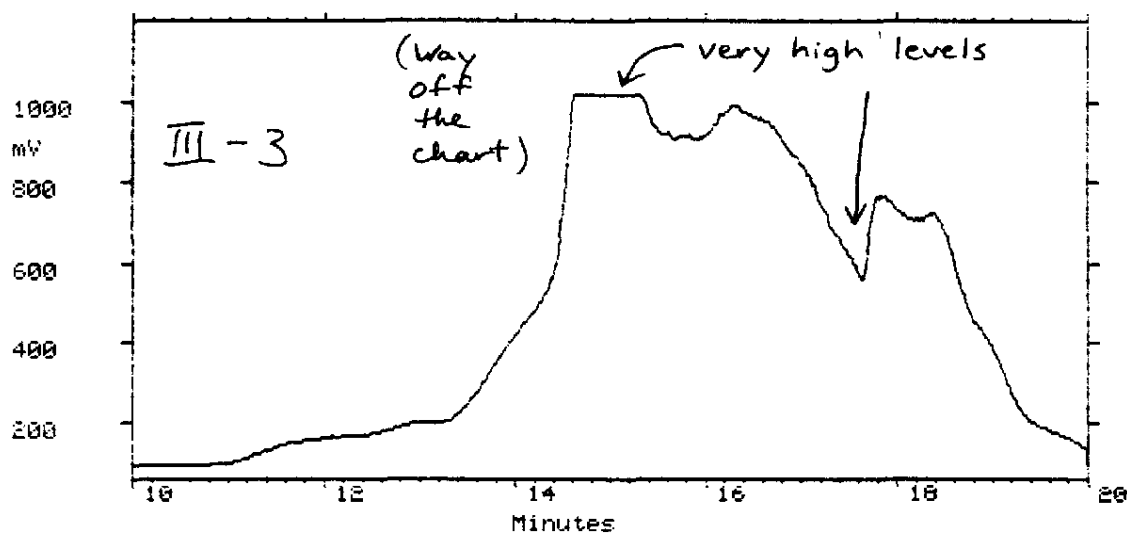
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Units		System number	2
Channel	3	Vial	8
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	1.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

FLUOR

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

EPIKE 3 10X CONCEN
WITH
50PPB
BUS80

Chromatogram of SPBCON



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEV-145160

804CON

1-Feb-90

18:16:44

Printed on 2-Feb-90 at 9:49:28

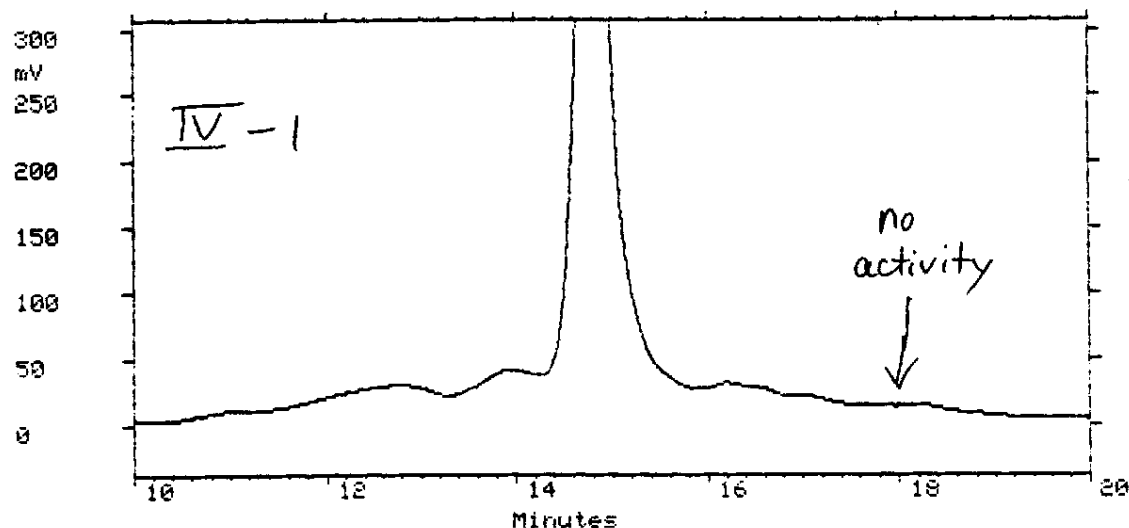
Acquisition method	LAB	Quantitation method	LAB
Units		System number	2
Channel	2	Vial	5
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

80-4 10X CONCEN IN THF UNTREATED

Chromatogram of 804CON



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

UEV-145161

801CON

1-Feb-90

18:41:38

Printed on 2-Feb-90 at 9:52:51

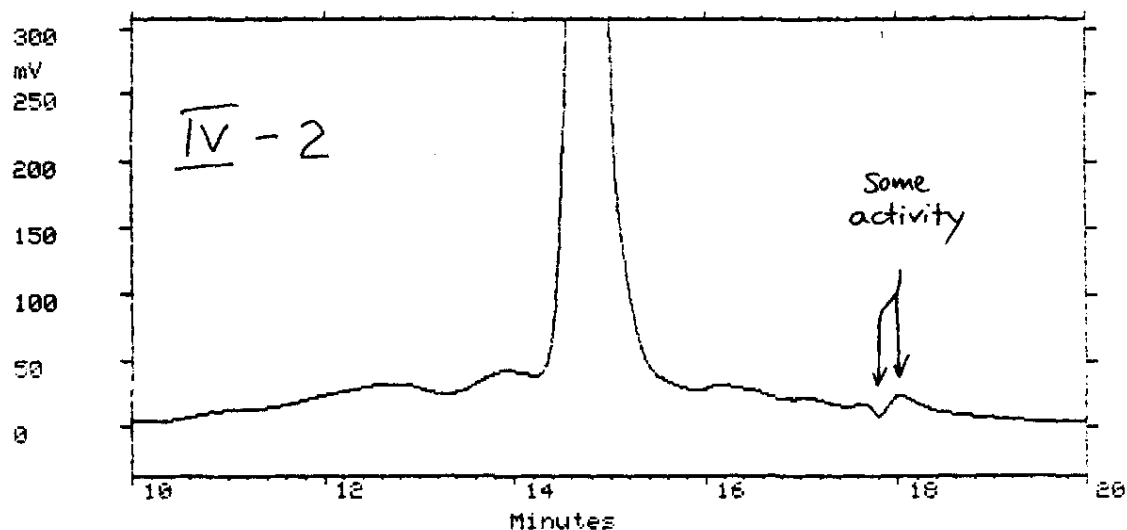
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Units		System number	2
Channel	2	Vial	6
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C
UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

60-1 10X CONCEN IN THF TREATED

Chromatogram of 801CON



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEU-145162

SPBCON

1-Feb-90

19:31:22

Printed on 2-Feb-90 at 10:00:02

Acquisition method	LAB	Quantitation method	LAB
Units		System number	2
Channel	2	Vial	8
Injection	1	Total injections	1
Run time	22.00 min	Sample rate	2.00 per sec
Injection volume	100 uL	Mode	Analysis
Acquisition version	6.21	Quantitation version	6.21

UV235

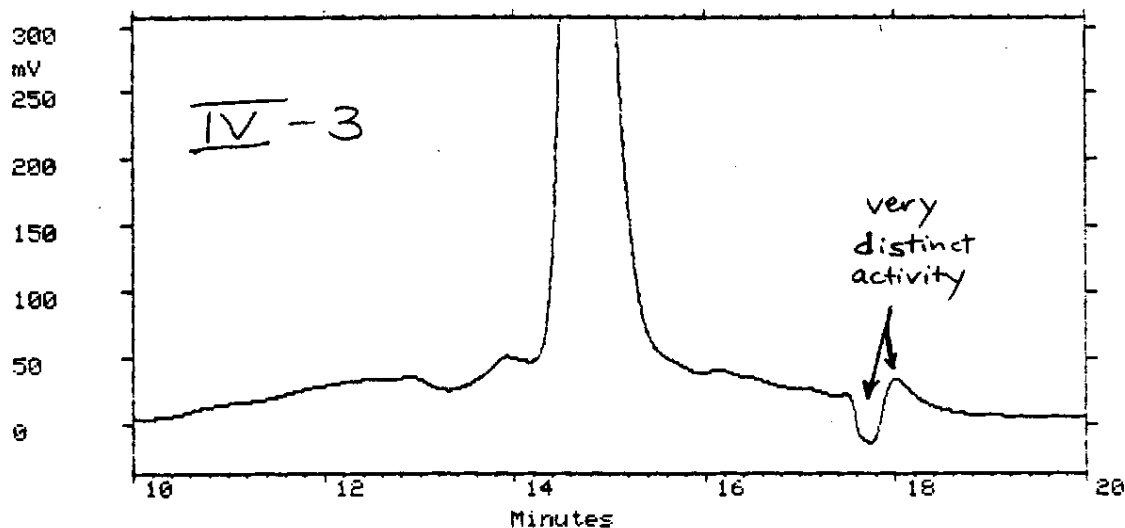
GPC BUS80 THF 1 ML/MIN; 2 50A COLUMNS, 35C

UV ABSORPTION 235, FLUORESCENCE EXCIT-233, EMIT-370nm

SPIKE B 10X CONCEN

WITH
50PPB
BUS 80

Chromatogram of SPBCON



Peak Name	Ret time	Area	Height	Type	Amount	Intercept	Slope	Response
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No Peaks, Try Again.
Total Area or Height is zero.

No Peaks, Try Again.

VEV-145163