Cranston - Solid Waste

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
75 Davis Street
Providence, R.I. 02908

8 December 1986

Representative Irving H. Levin
89 Lyndon Road
Cranston, RI 02905

Dear Representative Levin:

I am enclosing a copy of the results of the most recent sampling at Ciba-Geigy, along with an explanation of those results. I am also enclosing a map with suggested locations for the next round of sampling. Myself and members of this Department will be happy to discuss these items at the next meeting of the Commission to Monitor the Dismantling of Ciba-Geigy. We would like to conduct this next round of sampling as soon as possible, so I would like to suggest that the next meeting be held during the week of 15 December.

If you have any questions, you can contact me at 277-2808.

Very truly yours,

Stephen Majkut, Supervising Engineer
Division of Air and Hazardous
Materials

SM:tg
Enc.
cc: Eric Palazzo, City of Cranston
Mrs. Marion McGrath, 156 Shaw Ave. 02905
Robert L. Bendick, DEM

LEVIN/TG3

SEMS DocID 658561

MEMO TO: FILE

FROM: STEPHEN MAJKUT SM

DATE: 5 DECEMBER 1986

SUBJECT: CIBA-GEIGY SAMPLING

Attached are the sampling results with respect to the sampling in the area of Ciba-Geigy (CG). The original Sample 2 was re-sampled (2A). Samples were taken of areas outside of Cranston, one in a rural area of North Kingstown location (A), three others in urban residential areas outside Cranston (B,C,D) and also included are results from analyses of two tomatoes grown near Site 4 from the first sampling.

Sample 2A shows no volatiles or tinuvins present. These compounds were found in the first sampling. This raises the possibility that the first sampling did not show a true indication of the level of contamination in the area. For the present, Site 2 will not be considered when interpreting the results.

The rural sample (A) showed low concentrations of PAHs compared to the samples from urban areas (B,C,D) and the samples from Cranston. This indicates that presence of PAH is probably associated with urban areas, that is, a high concentration of fuel combustion sources. The sampling shows that the area around CG is no different from other urban areas in this respect.

No volatiles were found in any recent sampling. Also, no tinuvins or other compounds known to be associated with the operations at CG were found. This could indicate that the area around CG where volatiles and tinuvins were found in the first sampling is more contaminated with these substances than other urban areas. Information obtained from the first sampling, especially if Sample 2 is discounted, indicates the CG plant as the possible source.

A phthalate compound was found in one tomato and in the other urban samples. This phthalate compound is widely used as a plasticizer and used in lesser quantity in other ways, including in pesticides. We have no evidence that this material was used at CG. Therefore, CG was probably not the source of this material.

The next round of sampling will be used to seek further evidence on whether contamination in the area of CG is from the plant and if contamination lessens farther away from the plant. The next sampling should also examine different directions from the plant.

CIBASAMP/TG3

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

DIVISION OF AIR AND HAZARDOUS MATERIALS

RESULTS OF SOIL SAMPLING

	MDL	2A	A	B	C	D	RT	OT
Volatile Organics (ppm)								
Chloroform	0.5	ND	NA	ND	ND	ND	NA	NA
Bromodichloromethane	0.5	ND	NA	ND	ND	ND	NA	NA
Dibromochloromethane	0.5	ND	NA	ND	ND	ND	NA	NA
Bromoform	0.5	ND	NA	ND	ND	ND	NA	NA
1,1,1-trichloroethane	0.5	ND	NA	ND	ND	ND	NA	NA
Carbon Tetrachloride	0.5	ND	NA	ND	ND	ND	NA	NA
Trichloroethylene	0.5	ND	NA	ND	ND	ND	NA	NA
1,1,2-trichloroethane	0.5	ND	NA	ND	ND	ND	NA	NA
Tetrachloroethylene	0.5	ND	NA	ND	ND	ND	NA	NA
1,1,2,2-tetrachloroethane	0.5	ND	NA	ND	ND	ND	NA	NA
Dichloromethane	0.5	ND	NA	ND	ND	ND	NA	NA
1,1-dichloroethene	0.5	ND	NA	ND	ND	ND	NA	NA
1,2-dichloroethene	0.5	ND	NA	ND	ND	ND	NA	NA
1,1-dichloroethane	0.5	ND	NA	ND	ND	ND	NA	NA
1,2-dichloroethane	0.5	ND	NA	ND	ND	ND	NA	NA
1,2-dichloropropane	0.5	ND	NA	ND	ND	ND	NA	NA
1,3-dichloropropene (cis & trans)	0.5	ND	NA	ND	ND	ND	NA	NA
Chlorobenzene	0.5	ND	NA	ND	ND	ND	NA	NA
Benzene	0.5	ND	NA	ND	ND	ND	NA	NA
Toluene	0.5	ND	NA	ND	ND	ND	NA	NA
Ethylbenzene	0.5	ND	NA	ND	ND	ND	NA	NA
Xylene	1.0	ND	NA	ND	ND	ND	NA	NA
2-chloroethylvinylether	0.5	ND	NA	ND	ND	ND	NA	NA
Polycyclic Aromatic Hydrocarbon Extractables (ppb)								
Naphthalene	75	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	ND	ND	180	ND	ND	ND	ND
Acenaphthene	150	ND	ND	ND	ND	ND	ND	ND
Fluorene	150	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	3400	ND	2300	520	ND	ND	ND
Anthracene	75	400	ND	300	ND	ND	ND	ND
Fluoranthene	100	5800	13	4100	820	ND	ND	ND
Pyrene	150	5800	10	3500	820	ND	ND	ND

Polycyclic Aromatic Hydrocarbon Extractables (ppb) (continued)

	MDL	2A	A	B	C	D	RT	OT
Benzo(a)anthracene	250	6800	ND	2400	720	ND	ND	ND
Chrysene	200	4700	ND	2000	480	ND	ND	ND
Benzo(b)fluoranthene	250	ND	ND	3200	ND	ND	ND	ND
Benzo(k)fluoranthene	200	1500	ND	1300	ND	ND	ND	ND
Benzo(a)pyrene	300	14000	ND	5300	1300	ND	ND	ND
Ideno(1,2,3)pyrene	500	6600	ND	2400	ND	ND	ND	ND
Dibenzo(a,h)anthracene	300	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	500	5700	ND	2500	ND	ND	ND	ND
Dacthal*	200	ND	6800	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate*	900	1000	ND	7300	880	39000	1900	ND
Hexanedioic Acid Dioctyl Ester*	--	ND	ND	**	ND	**	ND	ND
Others (ppb)								
p-cresol	200	ND	ND	ND	ND	ND	ND	ND
phenyl ether	150	ND	ND	ND	ND	ND	ND	ND
biphenyl	100	ND	39	ND	ND	ND	ND	ND
Tinuvin 327	500	ND	ND	ND	ND	ND	ND	ND
Tinuvin 328	400	ND	ND	ND	ND	ND	ND	ND
Prometon	400	ND	ND	ND	ND	ND	ND	ND
Metal (ppm)								
Zinc	-	34.1	NA	151.0	232.0	88.7	NA	NA

* Not a polycyclic aromatic hydrocarbon.
** This compound appears to be present but its presence cannot be confirmed or quantified.
ND Not detected at concentrations above the Minimum Detection Limit (MDL).
MDL Minimum Detection Limit; the level below which the chemical cannot be detected with presently available instrumentation.
PPM Parts per million.
PPB Parts ber billion.
NA Not analyzed.
Samples collected 2A, B, C, D 12 November 1986. Sample Acollected September 1986.

Analyses performed by the Rhode Island Department of Health, Division of Laboratories.

Sample No.	Location
2A	Broad Street and Woodbury Road, Cranston
A	Rural Location - North Kingstown
B	East Side - Providence
C	Mount Pleasant - Providence
D	Buttonwoods - Warwick
RT	Red Tomato
OT	Orange Tomato

Norwood Ave
Sch
Hospital
St Marys
Sch
Edward Rood
Sch
Fay Mem
Field
RESERVATION
Silver
Hook
PAWTUXET
Sub
Sta
Cem
Pawtuxet
Elm Lake
Pond
Park
Sanford
Sch
Elmwood
Ave
Cranston
Edgewood
Ave
Norwood
Ave
Broad
Street
Bay Tower
Sch
PROVIDENCE
CO
KENT
ROAD
Cem
Edgewood
23
50
20
33
47
48

RADIAN
CORPORATION

8501 Mo-Pac Blvd.
P.O. Box 201088
Austin, TX 78720-1088
(512)454-4797

26 October 1990

REC'D 10-29-90
F.B.

Mr. Frank Battaglia
EPA
90 Canal Street
Boston, MA 02203

Re: Ciba-Geigy Cranston, RI Project
QA/QC Study for Fingerprint Compounds

Dear Frank,

Enclosed is the final report and control charts for the above referenced project. Copies of the report and control charts were sent to Mark Houlday of Woodward-Clyde, Joanna Hall of Alliance and Diana Baldi of Ciba-Geigy. Diana Baldi also has copies of the raw data.

Please call if you have any questions.

Sincerely,

Kelly A. Young

Kelly A. Young
Client Services Coordinator
Analytical Services

Enclosures

RADIAN CORPORATION

Radian Work Order 90-10-148

Analytical Report
10/25/90

Ciba-Geigy

Corporate Environmental Tech.
P.O. Box 18300
Greensboro, NC, 27419-8300

Diana Baldi

Customer Work Identification Cranston, RI
Purchase Order Number C-31993

Contents:

1 Analytical Data Summary
2 Sample History
3 Comments Summary
4 Notes and Definitions

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: KAYOUNG

Certified by: _____

Ciba-Geigy
Radian Work Order: 90-10-148

Method:SW8270-Semi-Volatiles (1)
List:8270 Special list RW

Sample ID:	RW-1 RS MSO	RW-1 RS MS 1	RW-1 RS MS 2	RW-1 RS MS 3
Factor:	0	0	0	0
Results in:	% recvry	% recvry	% recvry	% recvry
	01A	02A	03A	04A
Matrix:	solid	solid	solid	solid

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Butazolidin	58		54		53		44	
Irgasan DP-300	115		111		112		114	
Propazine	86		92		83		92	
Tinuvin 327	90		87		90		100	
Tofranil	31		33		31		34	
Surrogate Recovery(%)								
2-Fluorobiphenyl	89		85		84		86	
Control Limits: 30 to 115								
2-Fluorophenol	75		79		72		69	
Control Limits: 25 to 121								
Nitrobenzene-d5	81		84		77		77	
Control Limits: 23 to 120								
Phenol-d5	80		85		78		78	
Control Limits: 24 to 113								
Terphenyl-d14	92		87		94		95	
Control Limits: 18 to 137								
2,4,6-Tribromophenol	94		106		81		91	
Control Limits: 19 to 122								

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Ciba-Geigy
Radian Work Order: 90-10-148

Method:SW8270-Semi-Volatiles (1)
List:8270 Special list RW

Sample ID:	RW-1 RS MS 4	RW-1 RS	Reagent Blank 1
Factor:	0	0.10	0.10
Results in:	% recvry	ug/g	ug/g
	05A	10A	11A
Matrix:	solid	solid	solid

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Butazolidin	27		ND	5.0	ND	5.0		
Irgasan DP-300	115		ND	5.0	ND	5.0		
Propazine	89		ND	5.0	ND	5.0		
Tinuvin 327	92		ND	5.0	ND	5.0		
Tofranil	24		ND	5.0	ND	5.0		
Surrogate Recovery(%)								
2-Fluorobiphenyl	86		85		87			
Control Limits: 30 to 115								
2-Fluorophenol	74		82		72			
Control Limits: 25 to 121								
Nitrobenzene-d5	80		79		78			
Control Limits: 23 to 120								
Phenol-d5	80		92		79			
Control Limits: 24 to 113								
Terphenyl-d14	101		98		83			
Control Limits: 18 to 137								
2,4,6-Tribromophenol	86		66		78			
Control Limits: 19 to 122								

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Ciba-Geigy
Radian Work Order: 90-10-148

Method:SW8270-Semi-Volatiles (1)
List:8270 Special List RW

Sample ID:	Recovery Chec-k 1	Recovery Chec-k 2	Recovery Chec-k 3	Recovery Chec-k 4
Factor:	0	0	0	0
Results in:	% recvry	% recvry	% recvry	% recvry
	06A	07A	08A	09A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Butazolidin	67		48		46		52	
Irgasan DP-300	108		92		89		85	
Propazine	85		83		56		84	
Tinuvin 327	102		85		82		72	
Tofranil	31		23		9		34	
Surrogate Recovery(%)								
2-Fluorobiphenyl	65		59		61		64	
Control Limits: 43 to 116								
2-Fluorophenol	79		76		79		81	
Control Limits: 21 to 100								
Nitrobenzene-d5	83		72		76		81	
Control Limits: 35 to 114								
Phenol-d5	93		86		78		83	
Control Limits: 10 to 94								
Terphenyl-d14	101		88		82		86	
Control Limits: 33 to 141								
2,4,6-Tribromophenol	88		82		84		86	
Control Limits: 10 to 123								

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Ciba-Geigy
Radian Work Order: 90-10-148

Method:SW8270-Semi-Volatiles (1)
List:8270 Special List RW
Sample ID: Reagent Blank
2
Factor: 1
Results in: ug/L
12A
Matrix: water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Butazolidin	ND	50						
Irgasan DP-300	ND	50						
Propazine	ND	50						
Tinuvin 327	ND	50						
Tofranil	ND	50						
Surrogate Recovery(%)								
2-Fluorobiphenyl	61							
Control Limits: 43 to 116								
2-Fluorophenol	84							
Control Limits: 21 to 100								
Nitrobenzene-d5	76							
Control Limits: 35 to 114								
Phenol-d5	80							
Control Limits: 10 to 94								
Terphenyl-d14	85							
Control Limits: 33 to 141								
2,4,6-Tribromophenol	81							
Control Limits: 10 to 123								

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN CORPORATION

Sample History

Ciba-Geigy
Radian Work Order: 90-10-148

Sample Identifications and Dates

Sample ID	RW-1 RS MSO	RW-1 RS MS 1	RW-1 RS MS 2	RW-1 RS MS 3	RW-1 RS MS 4	Recovery Check 1
Date Sampled						
Date Received	10/11/90	10/11/90	10/11/90	10/11/90	10/11/90	10/11/90
Matrix	solid	solid	solid	solid	solid	water
	01	02	03	04	05	06
SW8270-Semi-Volatiles						
Prepared	10/12/90	10/12/90	10/12/90	10/12/90	10/12/90	
Analyzed	10/16/90	10/16/90	10/16/90	10/16/90	10/16/90	
Analyst	MCK	MCK	MCK	MCK	MCK	
File ID	94226	94227	94228	94229	94230	
Blank ID	94231	94231	94231	94231	94231	
Instrument	MSD2	MSD2	MSD2	MSD2	MSD2	
Report as	received	received	received	received	received	
SW8270-Semi-Volatiles						
Prepared						10/12/90
Analyzed						10/16/90
Analyst						MCK
File ID						94232
Blank ID						94236
Instrument						MSD2
Report as						received

Ciba-Geigy
Radian Work Order: 90-10-148

Sample Identifications and Dates

Sample ID	Recovery Check 2	Recovery Check 3	Recovery Check 4	RW-1 RS	Reagent Blank 1	Reagent Blank 2
Date Sampled						
Date Received	10/11/90	10/11/90	10/11/90	10/11/90	10/11/90	10/11/90
Matrix	water	water	water	solid	solid	water
	07	08	09	10	11	12
SW8270-Semi-Volatiles						
Prepared				10/17/90	10/12/90	
Analyzed				10/19/90	10/16/90	
Analyst				MCK	MCK	
File ID				85679	94231	
Blank ID				85621	94231	
Instrument				MSD1	MSD2	
Report as				received	received	
SW8270-Semi-Volatiles						
Prepared	10/12/90	10/12/90	10/12/90			10/12/90
Analyzed	10/16/90	10/16/90	10/16/90			10/16/90
Analyst	MCK	MCK	MCK			MCK
File ID	94233	94234	94235			94236
Blank ID	94236	94236	94236			94236
Instrument	MSD2	MSD2	MSD2			MSD2
Report as	received	received	received			received

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CORPORATION

Appendix A

Comments, Notes and Definitions

Ciba-Geigy
Radian Work Order: 90-10-148

General Comments

Fraction 01a(RW-1 RS) was spiked with matrix spike so there will be 5 matrix spikes and 10a will serve as the corresponding sample.

Ciba-Geigy
Radian Work Order: 90-10-148

ND ALL METHODS EXCEPT CLP

This flag is used to denote analytes which are not detected at or above the specified detection limit.

EXPLANATION

The value to the right of the < symbol is the method specified detection limit for the analyte.

Ciba-Geigy
Radian Work Order: 90-10-148

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

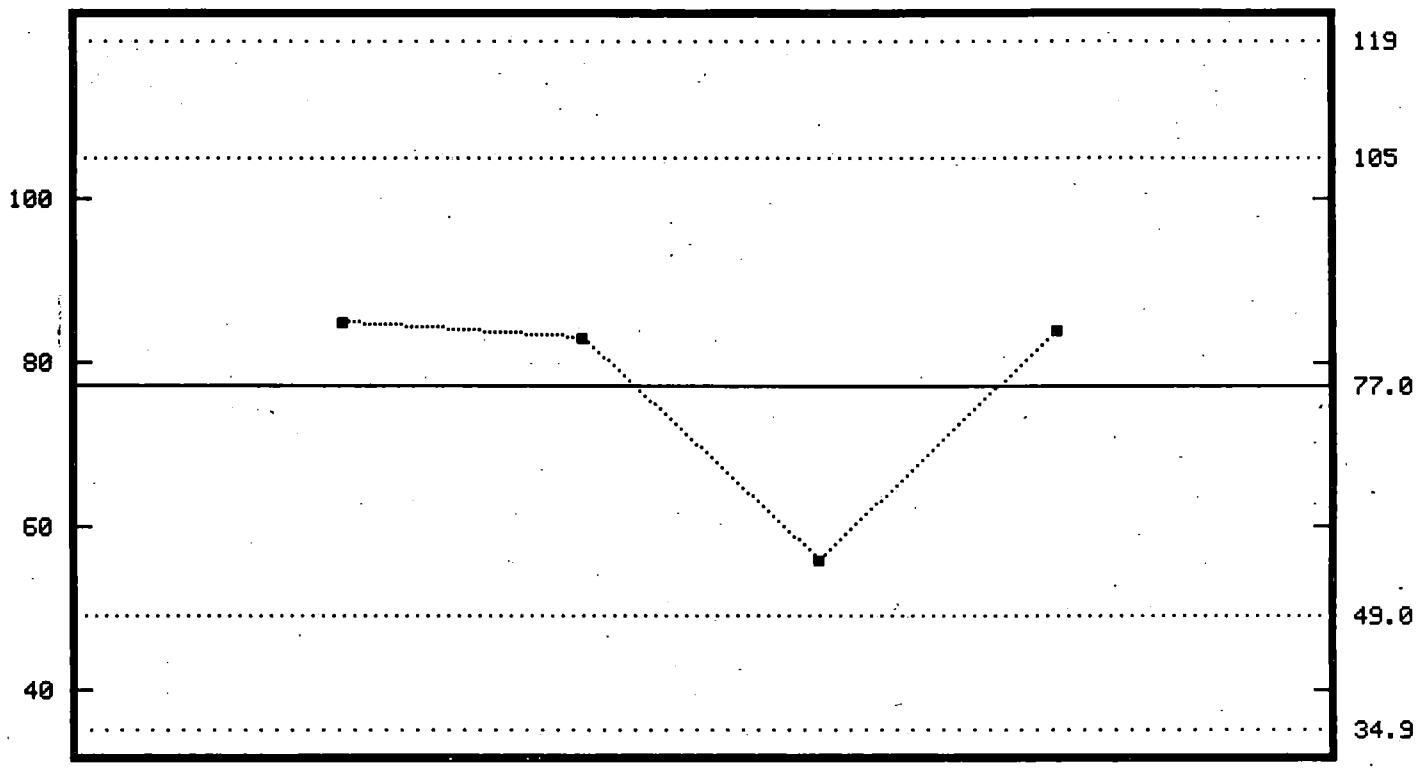
Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

8270 Special List Recovery Checks
10/25/90 10:50:45

Analyte
Propazine



From	Points	To
10/16/90	4	10/16/90

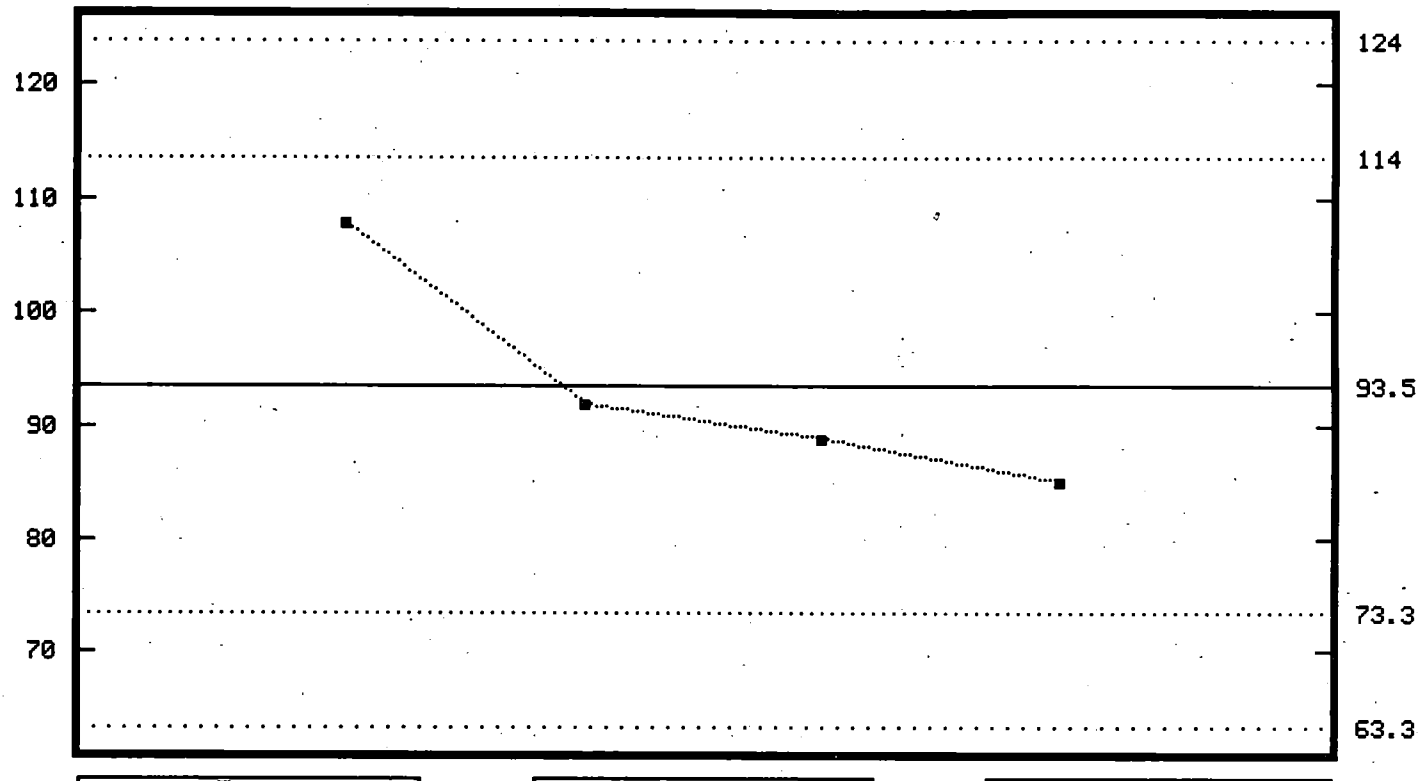
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	14.0	18.2

Matrix:	Water
% Recovery Range:	34-119
Relative Standard Deviation,%:	18

10/16/90	9010148-06AM	85 % recvry	Propazine
10/16/90	9010148-07AM	83 % recvry	Propazine
10/16/90	9010148-08AM	56 % recvry	Propazine
10/16/90	9010148-09AM	84 % recvry	Propazine

8270 Special List Recovery Checks
10/25/90 10:49:24

Analyte
Irgasan DP-300



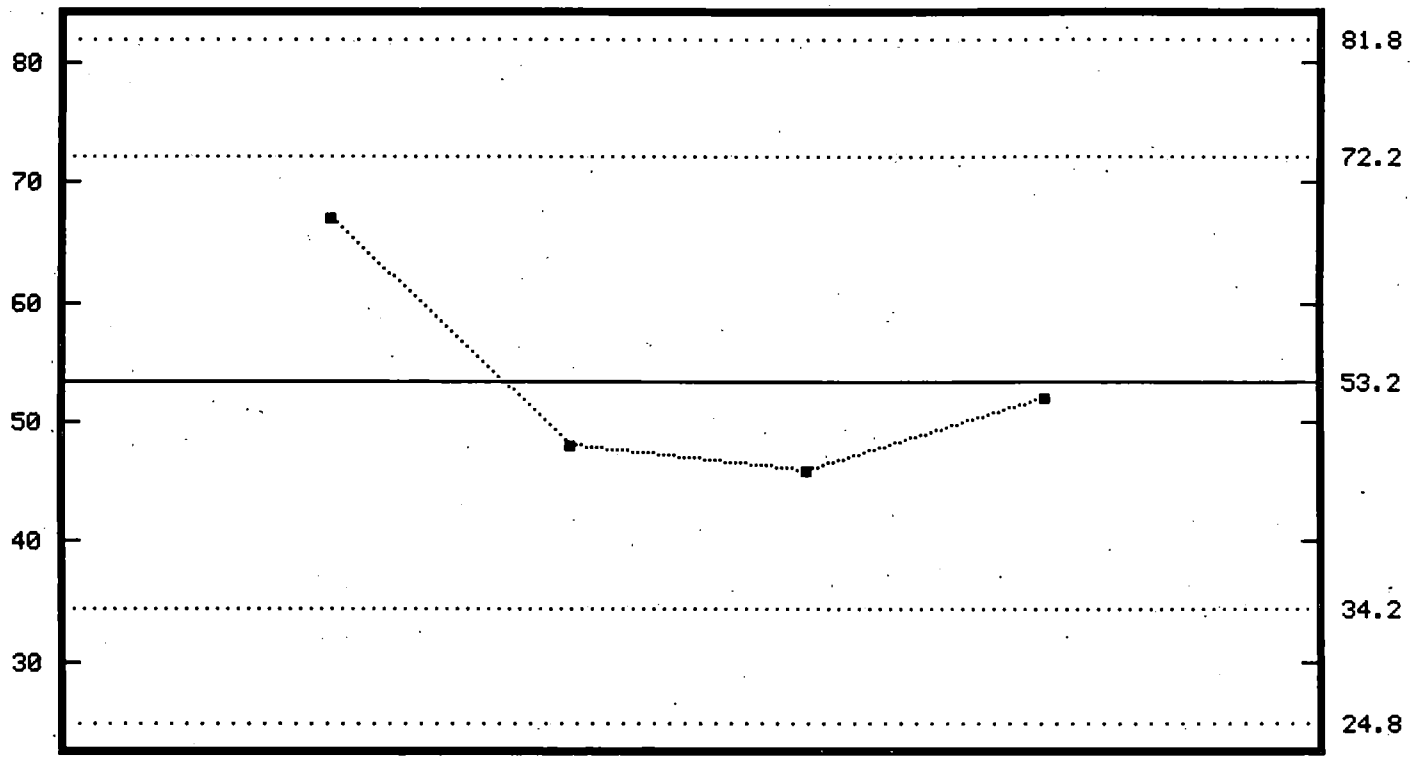
From	Points	To
10/16/90	4	10/16/90
Units	**Std. Dev.**	**Rel. Std. Dev., %**
% recvry	10.1	10.8

Matrix:	Water
% Recovery Range:	63-124
Relative Standard Deviation,%:	11

10/16/90	9010148-06AM	108	% recvry	Irgasan DP-300
10/16/90	9010148-07AM	92	% recvry	Irgasan DP-300
10/16/90	9010148-08AM	89	% recvry	Irgasan DP-300
10/16/90	9010148-09AM	85	% recvry	Irgasan DP-300

8270 Special List Recovery Checks
10/25/90 10:52:21

Analyte
Butazolidin



From	Points	To
10/16/90	4	10/16/90

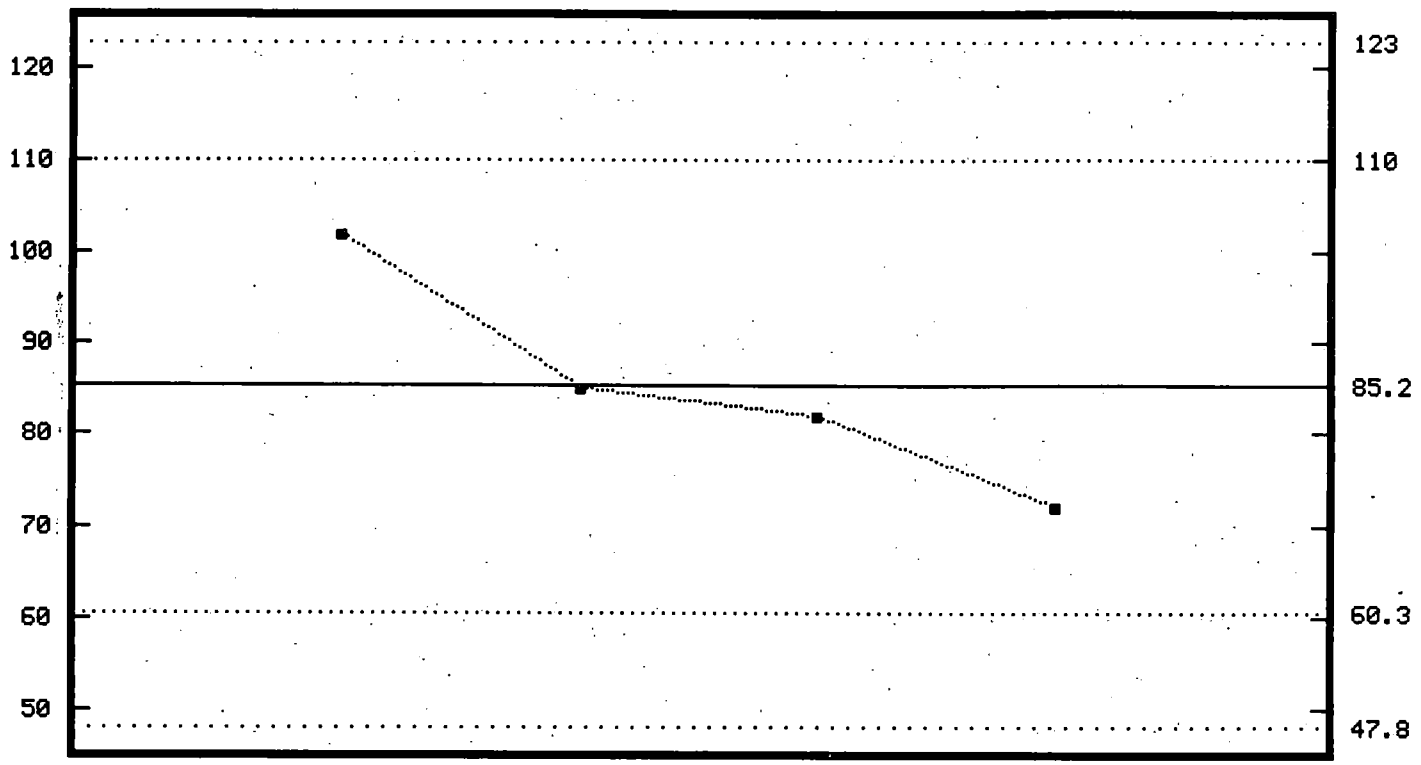
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	9.50	17.8

Matrix:	Water
% Recovery Range:	24-82
Relative Standard Deviation,%:	18

10/16/90	9010148-06AM	67 % recvry	Butazolidin
10/16/90	9010148-07AM	48 % recvry	Butazolidin
10/16/90	9010148-08AM	46 % recvry	Butazolidin
10/16/90	9010148-09AM	52 % recvry	Butazolidin

8270 Special List Recovery Checks
10/25/90 10:48:01

Analyte
Tinuvin 327



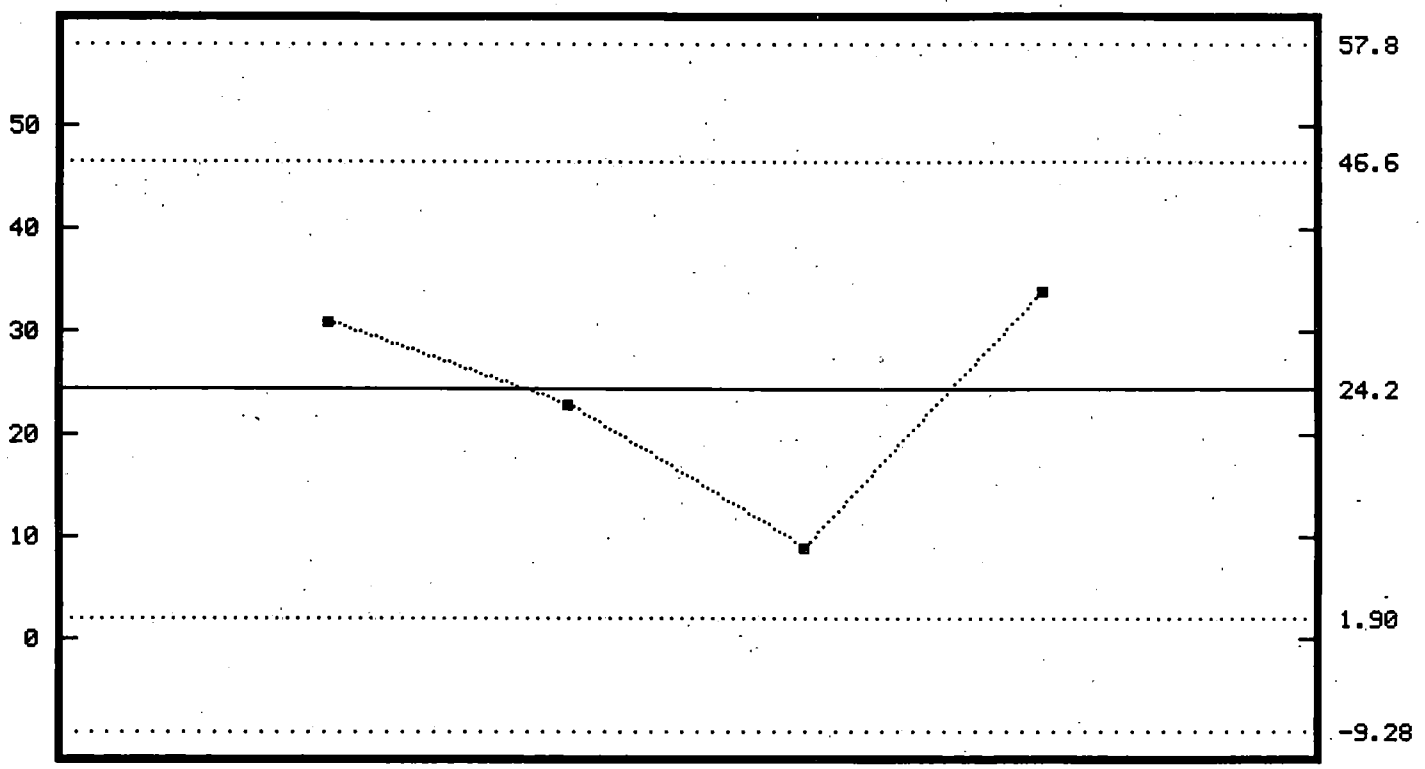
From	Points	To
10/16/90	4	10/16/90
Units	**Std. Dev.**	**Rel. Std. Dev., %**
% recvry	12.5	14.6

Matrix:	Water
% Recovery Range:	47-123
Relative Standard Deviation,%:	15

10/16/90	9010148-06AM	102	% recvry	Tinuvin 327
10/16/90	9010148-07AM	85	% recvry	Tinuvin 327
10/16/90	9010148-08AM	82	% recvry	Tinuvin 327
10/16/90	9010148-09AM	72	% recvry	Tinuvin 327

8270 Special List Recovery Checks
10/25/90 10:53:48

Analyte
Tofranil



From	Points	To
10/16/90	4	10/16/90

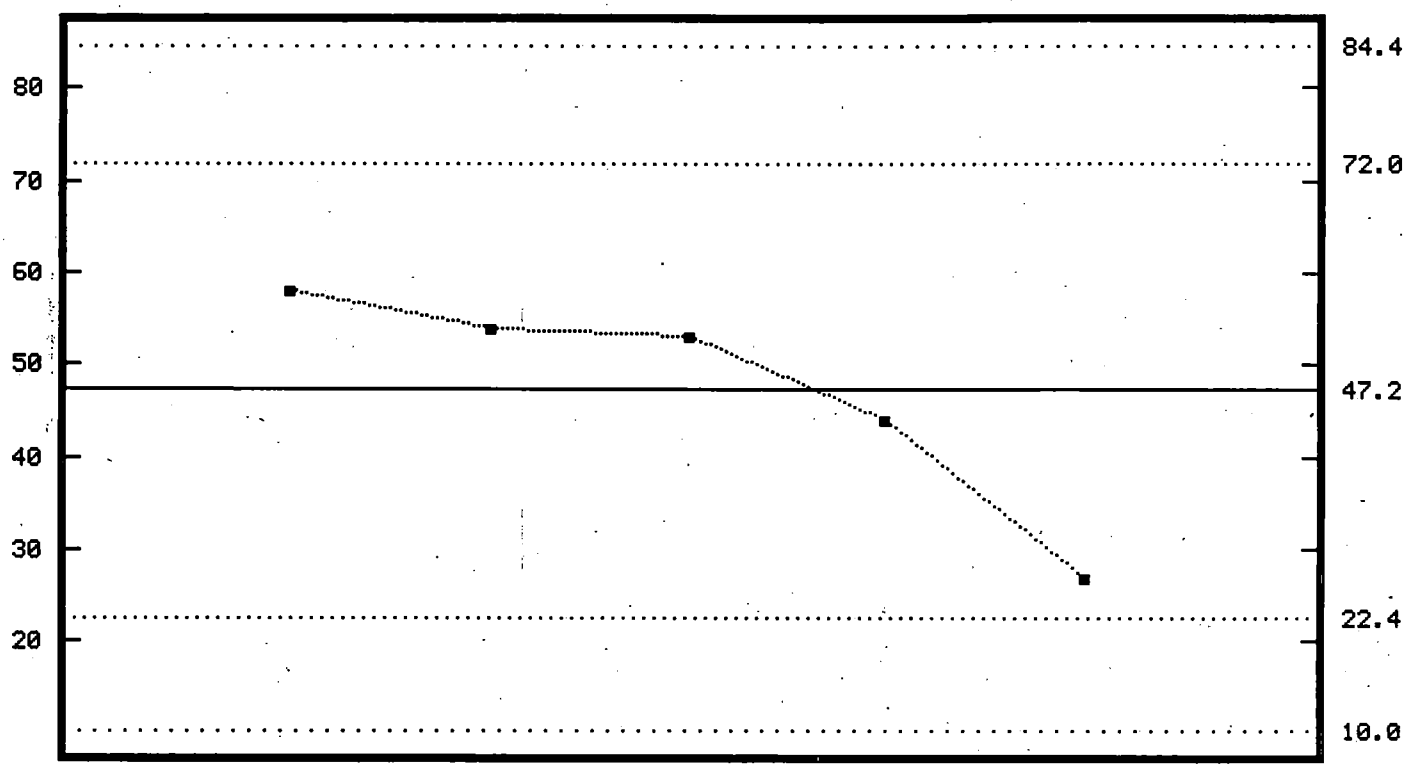
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	11.2	46.1

Matrix:	Water
% Recovery Range:	2-47
Relative Standard Deviation,%:	46

10/16/90	9010148-06AM	31 %	recvry	Tofranil
10/16/90	9010148-07AM	23 %	recvry	Tofranil
10/16/90	9010148-08AM	9 %	recvry	Tofranil
10/16/90	9010148-09AM	34 %	recvry	Tofranil

8270 Special List Spike Recoveries
10/25/90 10:43:21

Analyte
Butazolidin



From	Points	To
10/16/90	5	10/16/90

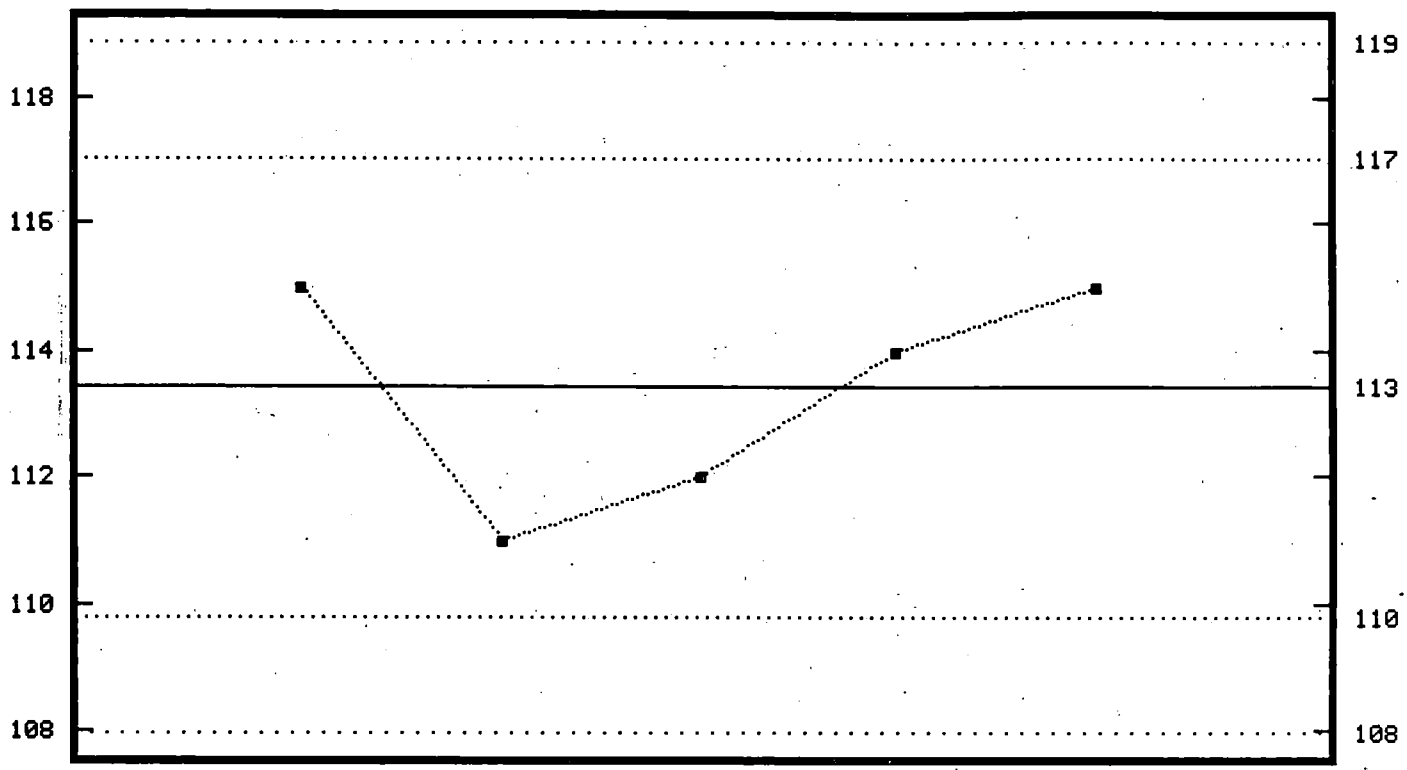
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	12.4	26.3

Matrix:	Sediment
% Recovery Range:	10-85
Relative Standard Deviation,%:	26

10/16/90	9010148-01AS	58 % recvry	Butazolidin
10/16/90	9010148-02AS	54 % recvry	Butazolidin
10/16/90	9010148-03AS	53 % recvry	Butazolidin
10/16/90	9010148-04AS	44 % recvry	Butazolidin
10/16/90	9010148-05AS	27 % recvry	Butazolidin

8270 Special List Spike Recoveries
10/25/90 10:40:49

Analyte
Irgasan DP-300



From	Points	To
10/16/90	5	10/16/90
Units	**Std. Dev.**	**Rel. Std. Dev., %**
% recvry	1.82	1.60

Matrix:	Sediment
% Recovery Range:	108-119
Relative Standard Deviation,%:	2

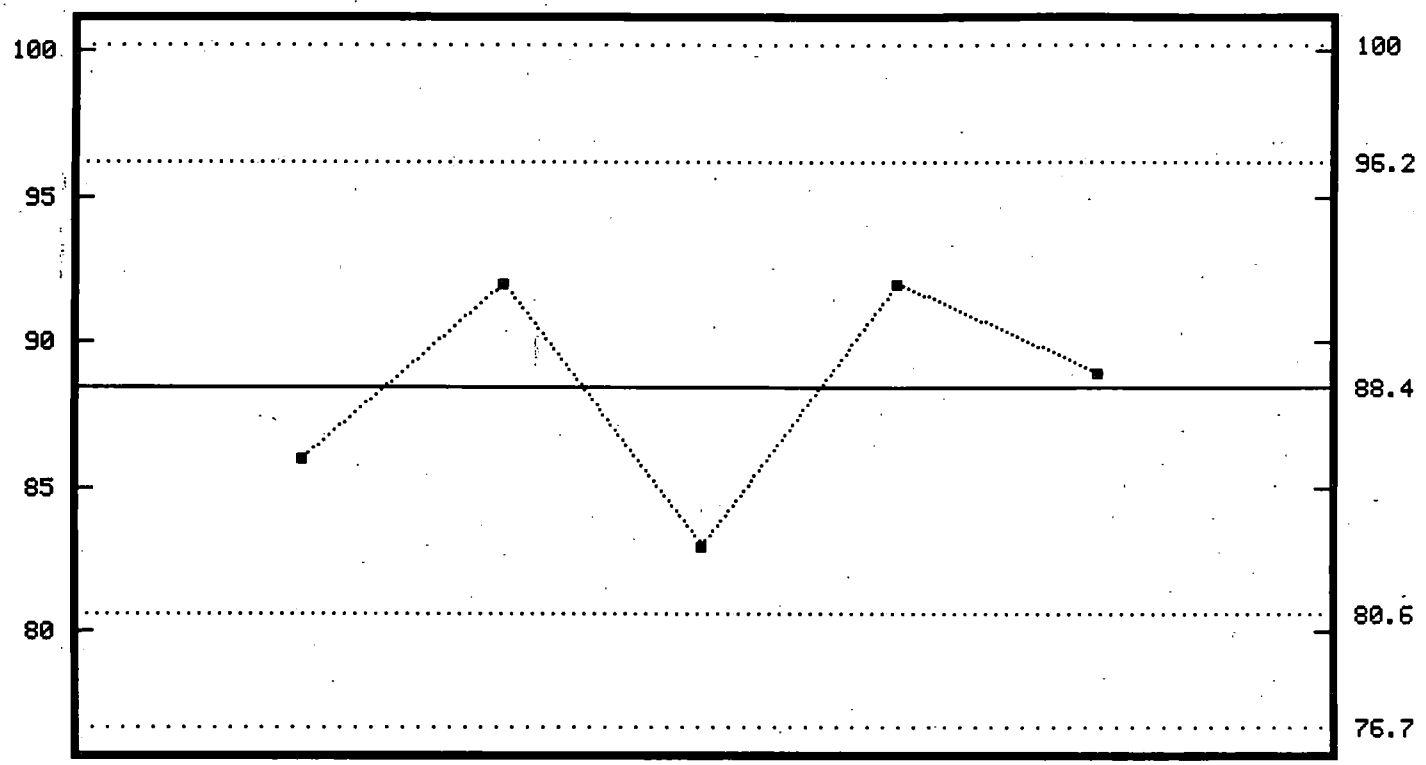
10/16/90	9010148-01AS	115 % recvry	Irgasan DP-300
10/16/90	9010148-02AS	111 % recvry	Irgasan DP-300
10/16/90	9010148-03AS	112 % recvry	Irgasan DP-300
10/16/90	9010148-04AS	114 % recvry	Irgasan DP-300
10/16/90	9010148-05AS	115 % recvry	Irgasan DP-300

8270 Special List Spike Recoveries

10/25/90 10:42:02

Analyte

Propazine



From	Points	To
10/16/90	5	10/16/90

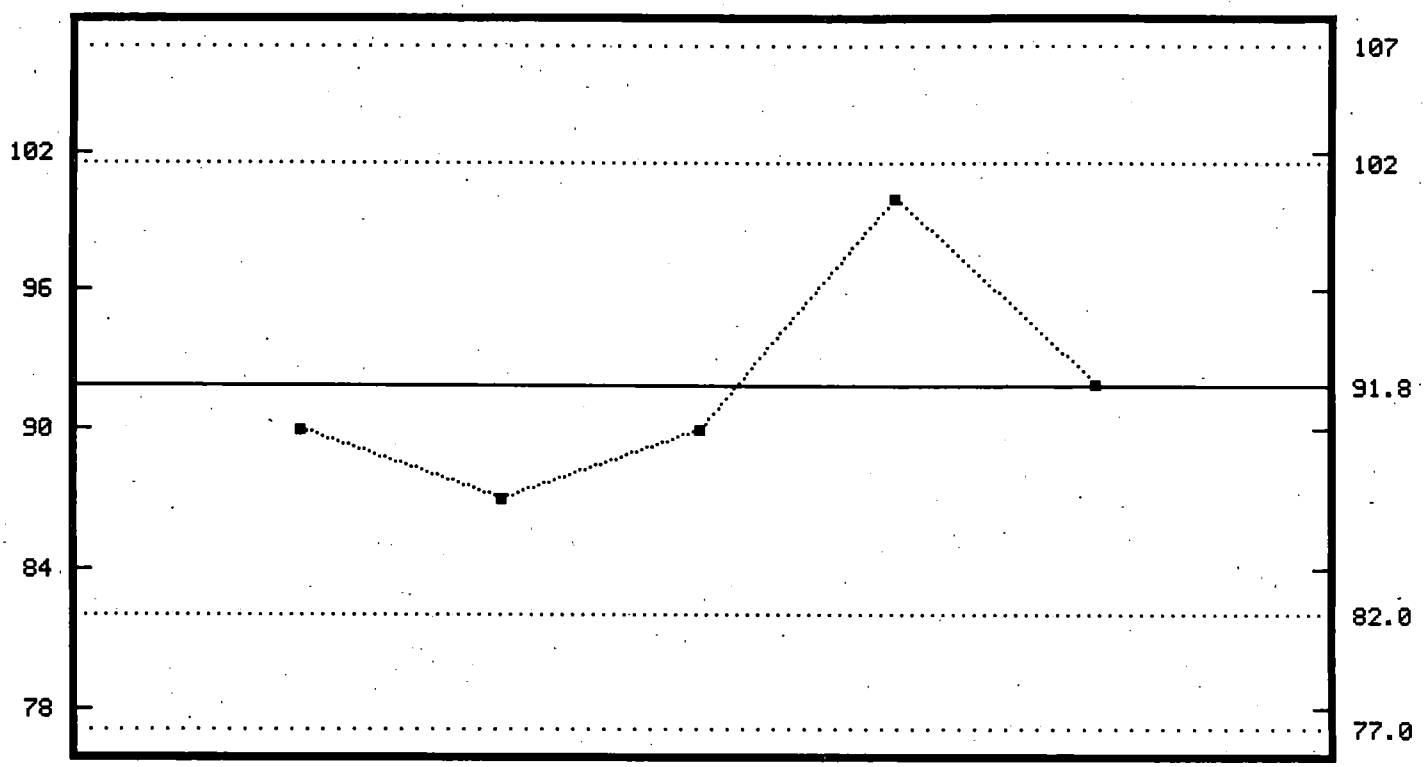
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	3.91	4.42

Matrix:	Sediment
% Recovery Range:	77-100
Relative Standard Deviation,%:	5

10/16/90	9010148-01AS	86 % recvry	Propazine
10/16/90	9010148-02AS	92 % recvry	Propazine
10/16/90	9010148-03AS	83 % recvry	Propazine
10/16/90	9010148-04AS	92 % recvry	Propazine
10/16/90	9010148-05AS	89 % recvry	Propazine

8270 Special List Spike Recoveries
10/25/90 10:39:56

Analyte
Tinuvin 327



From	Points	To
10/16/90	5	10/16/90

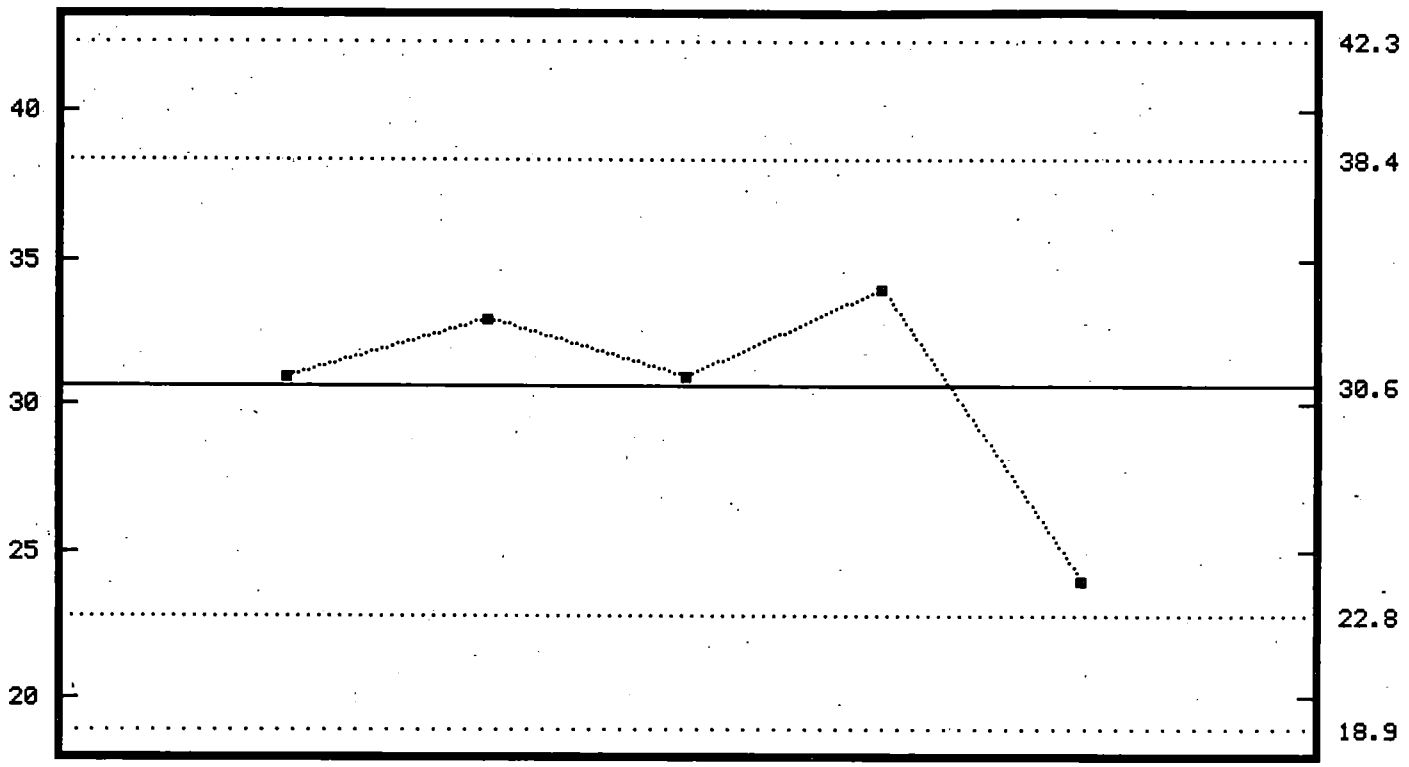
Units	Std. Dev.	Rel. Std. Dev., %
% recvry	4.92	5.36

Matrix:	Sediment
% Recovery Range:	77-107
Relative Standard Deviation,%:	6

10/16/90	9010148-01AS	90 %	recvry	Tinuvin 327
10/16/90	9010148-02AS	87 %	recvry	Tinuvin 327
10/16/90	9010148-03AS	90 %	recvry	Tinuvin 327
10/16/90	9010148-04AS	100 %	recvry	Tinuvin 327
10/16/90	9010148-05AS	92 %	recvry	Tinuvin 327

8270 Special List Spike Recoveries
10/25/90 10:44:33

Analyte
Tofranil



From	Points	To
10/16/90	5	10/16/90

Units	Std. Dev.	Rel. Std. Dev., %
% recvry	3.91	12.8

Matrix:	Sediment
% Recovery Range:	18-43
Relative Standard Deviation,%:	13

10/16/90	9010148-01AS	31 %	recvry	Tofranil
10/16/90	9010148-02AS	33 %	recvry	Tofranil
10/16/90	9010148-03AS	31 %	recvry	Tofranil
10/16/90	9010148-04AS	34 %	recvry	Tofranil
10/16/90	9010148-05AS	24 %	recvry	Tofranil

ALLIANCE
Technologies Corporation

Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852

Facsimile Transmission

Date: 8/23/90 No. of Pages 5 (Including Cover Sheet)

Alliance Charge Number: 1-635-058-0-1000-0

To:

Name: Frank Battaglia

Company: EPA Region I

Address:

Machine Telephone # (617) 573-9662

From:

Name: Joanna Hall

Third Floor FAX Machine Number (508) 452-6033

Subject: APD info for field dupes.

— FAX —
615 690 3626
Tom MARSHALL
Jim CROWLEY
914 478-1201 x 2332

AF-067

Example (Not used for this case)

REGION I
Data Review Worksheets

Organics

VIII. FIELD DUPLICATE PRECISION

TR Nos. AJ889 , AJ892

Matrix: aqueou

List the concentrations of the compounds which do not meet the followi RPD criteria:

1. An RPD of <30% for water duplicates.
2. An RPD of <50% for soil duplicates.

FRACTION	COMPOUND	SAMPLE CONC	DUP SAMPLE CONC	RP
SV	Naphthalene	70	82	16
SV	Pyrene	60	47	24

ACTIONS:

1. If the results for any componds do not meet the RPD criteria, flag the positive results for that compound as estimated.
2. If one value is non-detected, and one is above the CRQL:
   a. Flag the positive result as estimated (J).
   b. Flag the non-detected result as estimated (UJ).

NOTE: Professional judgement may be utilized to apply duplicate actions to all samples of a similar matrix.

A separate worksheet should be filled out for each field duplicate pair.

D. Action

If field duplicate analysis results for a particular analyte fall outside the appropriate control windows, qualify results >IDL for that analyte in all samples of the same matrix as estimated (J).

IX. LABORATORY CONTROL SAMPLE ANALYSIS (LCS)

A. Objective

The laboratory control sample analysis is designed to serve as a monitor of the efficiency of the digestion procedure.

B. Criteria

1. All aqueous LCS results must fall within the control limits of 80-120%R. According to SOW 7/87 Antimony and Silver are excluded from this criteria. For validation purposes the ±20% limit will be applied to both Antimony and Silver.

2. All solid LCS results must fall within the control limits established by the EPA. The 80-120% criteria is not applied to the soil LCS.

3. An LCS must be prepared and analyzed for each matrix, for each batch of samples digested, or for every twenty samples, whichever is more frequent.

C. Evaluation Procedure

1. Review Form VII and verify that results fall within the control limits.

2. Check the raw data to verify reported results on Form VII. Recalculate one or more of the recoveries using the following equation.

$$\text{LCS \%R} = \frac{\text{LCS Found}}{\text{LCS True}} \times 100$$

Where,

LCS Found = concentration (in ug/L for aqueous, mg/kg for solid) of each analyte measured in the analysis of the LCS solution.

3. Verify that the field blank was not used for duplicate analysis.

4. Verify that duplicates were prepared at the required frequency.

D. Action

1. If duplicate analysis results for a particular analyte fall outside the appropriate control windows, qualify results > IDL for that analyte in all samples of the same matrix as estimated (J).

2. If the field blank was used for duplicate analysis, the other QC data must be carefully checked and professional judgement exercised when evaluating the data.

VIII. FIELD DUPLICATES

A. Objective

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than lab duplicates which measure only lab performance. It is also expected that soil duplicate results will have greater variance than water matrices due to difficulties associated with collecting identical field samples.

B. Criteria

(NORG. Inorganics)

A control limit of ±30% (50% for soil) for the RPD shall be used for sample values >5xCRDL.

A control limit of ±2xCRDL (4xCRDL for soil) shall be used for sample values < 5xCRDL.

C. Evaluation Procedures

Samples which are field duplicates should be identified using EPA Sample Traffic Reports or sample field sheets. The reviewer should compare the results reported for each sample and calculate the Relative Percent Difference (RPD), if appropriate.

NOTE: The appropriate person should be contacted to determine whether field duplicates were taken during sampling.

INORGANICS

~~Professional judgement exercised when evaluating the~~ data.

~~NOTE: Any action taken applies to ALL samples of the same matrix.~~

VII. DUPLICATE SAMPLE ANALYSIS (Lab duplicates)

A. Objective

~~Duplicate analyses are indicators of the~~ precision of the sample results.

B. Criteria

1. Samples identified as field blanks cannot be used for duplicate sample analysis.

2. A control limit of ± 20% (35% for soil) for the Relative Percent Difference (RPD) shall be used for sample values > 5 times the CRDL.

3. A control limit of ± CRDL (± 2xCRDL for soil) shall be used for sample values less than 5 times the CRDL, including the case when only one sample value is <5x CRDL or when one sample is above the IDL and one is non-detected.

4. A duplicate sample must be prepared and analyzed for every 20 samples, for every batch digested, or for every matrix, whichever is more frequent.

C. Evaluation Procedure

1. ~~Review Form VI and verify~~ that results fall within the control limits.

2. Check the raw data and recalculate one or more RPD using the following equation to verify that results have been correctly reported on Form VI.

INORGA ORG CALC.

$$RPD = \frac{S-D}{(S+D)/2} \times 100$$

Where,

S = Original Sample Value
D = Duplicate Sample Value

Field dupe

Same Calculation for field dupes