

M E M O R A N D U M
Washington State Department of Ecology

April 2, 2013

TO: Weyerhaeuser Everett East File

FROM: David L. South

SUBJECT: Supplement to *Periodic Review, Weyerhaeuser Everett East Site, Facility Site ID# 11*, July 9, 2012.

Ecology conducted the subject periodic review to assess environmental conditions at the Weyerhaeuser Everett East cleanup site. Construction is complete for this site and the site is in long-term monitoring. This memorandum is a supplement to the periodic review. Please refer to the periodic review for additional detail.

The review found that ground water data collected by Sierra Pacific in 2005 found pentachlorophenol concentrations of 14,000 µg/L in the Upper Sand Aquifer and 15 µg/L in the Lower Sand Aquifer at location GP-10. These concentrations exceed the Consent Decree ground water cleanup level of 7.29 µg/L. GP-10 is located landward of the conditional point of compliance set at the Snohomish River.

Compliance monitoring data was not collected in the Lower Sand Aquifer during post-construction ground water monitoring. The Periodic Review recommended assessing pentachlorophenol concentrations in the vicinity of GP-10.

Ecology installed a number of wells to assess ground water conditions with respect to the Everett Smelter cleanup site. The Everett Smelter site includes Weyerhaeuser Everett East. Wells LLMW-17S (screened in the Upper Sand Aquifer) and LLMW-17D (screened) in the Lower Sand Aquifer) were installed near the river bank downgradient from GP-10. The well locations are shown on Figure 1. Well information is as follows:

| Location | Ecy_Well_Tag | Northing_Y | Easting_X | Surface_Elevation_feet | ToC_ferret | momument | Screened_Interval_ft_bgs |
|----------|--------------|-------------|-------------|------------------------|------------|----------|--------------------------|
| LLMW-17S | BHU-039 | 371320.3207 | 1310602.283 | 15.32 | 18.27 | Stickup | 4-11 |
| LLMW-17D | BHU-038 | 371317.6575 | 1310603.072 | 15.27 | 18.29 | Stickup | 15-25 |

Ecology's contractor, GeoEngineers, collected samples from these wells in January 2013 and sent them to Analytical Resources, Incorporated for analysis. GeoEngineers provided Weyerhaeuser with split samples for analysis by Weyerhaeuser Analytical & Testing Services. Ecology's results indicated pentachlorophenol was not detected in either well at a Method Reporting Limit of 0.25 µg/L. Weyerhaeuser's results indicated pentachlorophenol was not detected in either well at a Method Reporting Limit of 0.50 µg/L. Ecology's laboratory data sheets are included in Attachment A. Weyerhaeuser provided a table of their results, Attachment B.

Weyerhaeuser Everett East File

April 2, 2013

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As a result of this sampling Ecology considers the Weyerhaeuser Everett East site to currently be in compliance with the requirements of the Consent Decree. The next Periodic Review is to be performed by 2017. When performing this review, Ecology may require Weyerhaeuser to collect ground water quality data to evaluate whether protectiveness continues to be achieved at the ground water conditional point of compliance.

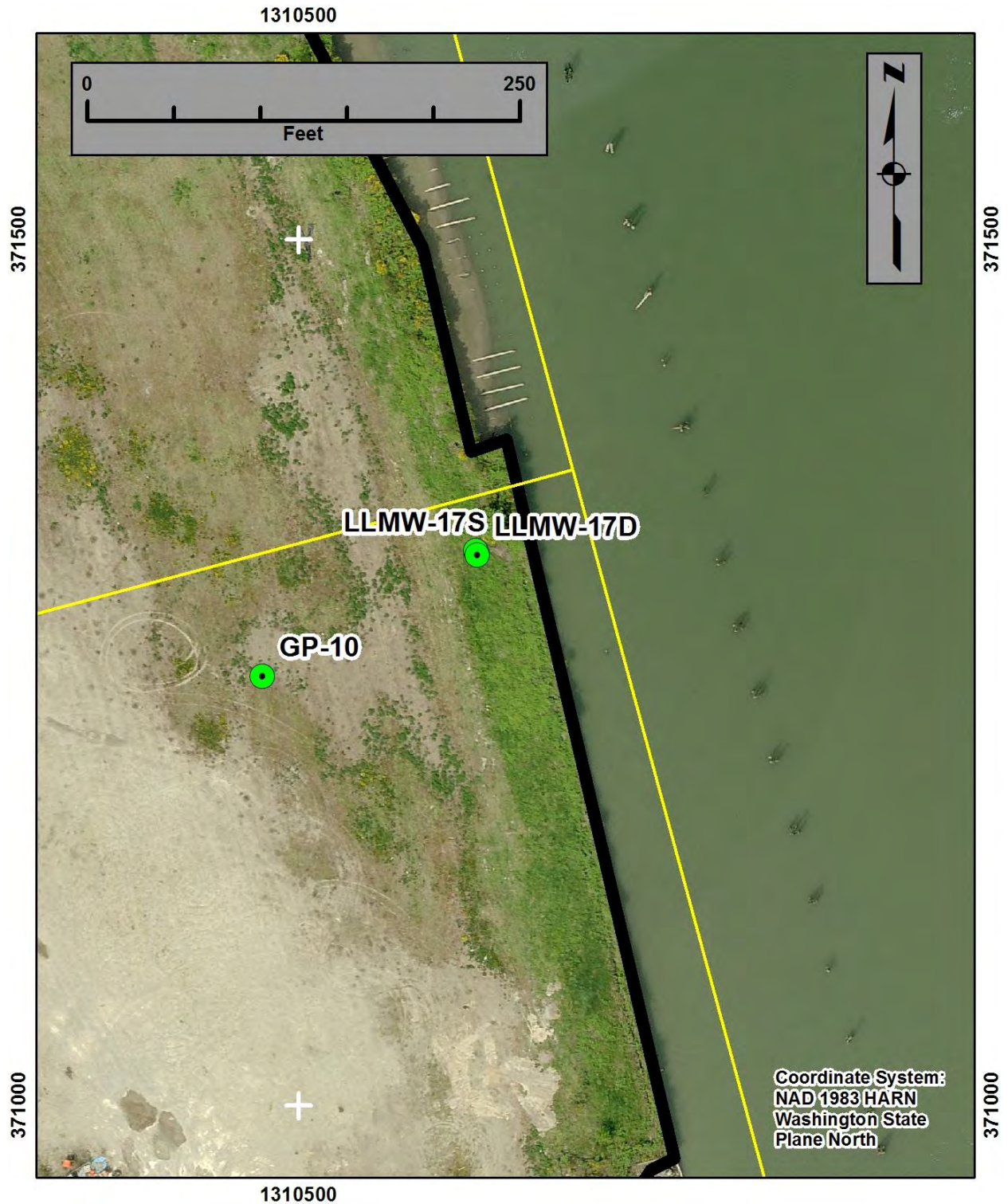


Figure 1: Location of GP-10, LLMW-17S, and LLMW-17D. Pentachlorophenol concentrations measured in LLMW-17S and LLMW-17D were $< 0.25 \mu\text{g/L}$. The cleanup level is $7.29 \mu\text{g/L}$. See the Periodic Review for additional figures that show the entire site.

Attachment 1: Laboratory Data Sheets for Ecology Samples



Analytical Resources, Incorporated
Analytical Chemists and Consultants

January 23, 2013

Garrett Leque
GeoEngineers, Inc.
1101 Fawcett, Suite 200
Tacoma, WA 98402

RE: Everett
ARI Job No.: VZ72

Dear Garrett:

Please find enclosed the Chain-of-Custody record (COC), sample receipt documentation, and the data package for samples from the project referenced above.

Sample receipt and details of these analyses are discussed in the Case Narrative.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Cheronne Oreiro".

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile VZ72

Enclosures

Chain of Custody Documentation

ARI Job ID: VZ72

Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

| | | |
|--|--------------------------------------|-----------------------------------|
| ARI Assigned Number: <u>✓ 112</u> | Turn-around Requested: <u>NORMAL</u> | Page: <u>1</u> of <u>1</u> |
| ARI Client Company: <u>GEO ENGINEERS</u> | Phone: <u>253 383 4940</u> | Date: <u>1/11/13</u> Ice Present? |
| Client Contact: <u>GARRETT LEQUE</u> | No. of Coolers: | Cooler Temps: |

| | | |
|-------------------------------------|--------------------|----------------|
| Client Project Name: <u>EVERETT</u> | Analysis Requested | Notes/Comments |
| Client Project #: <u>NA</u> | | |
| Samplers: <u>PAUL ROBIETTE</u> | | |

| Sample ID | Date | Time | Matrix | No. Containers | Penta EPA 8011A* | | | | | | | | | |
|-----------------|------|------|--------|----------------|------------------|--|--|--|--|--|--|--|--|--|
| LLMW175-13011-W | 1/13 | 1020 | W | 2 | X | | | | | | | | | |
| LLMW17D-13011-W | 1/13 | 1050 | W | 2 | X | | | | | | | | | |
| | | | | | | | | | | | | | | |
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| | | | | |
|---|---|--|------------------------------|--------------------------|
| Comments/Special Instructions <u>* LDR = 0.25 mg/L</u> | Relinquished by (Signature): <u>Paul Robiette</u> | Received by (Signature): <u>Jennifer Milberg</u> | Relinquished by (Signature): | Received by (Signature): |
| | Printed Name: <u>Paul Robiette</u> | Printed Name: <u>Jennifer Milberg</u> | Printed Name: | Printed Name: |
| | Company: <u>GEO ENGINEERS</u> | Company: <u>ARI</u> | Company: | Company: |
| | Date & Time: <u>1/14/13 1000</u> | Date & Time: <u>1/14/13 1000</u> | Date & Time: | Date & Time: |

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Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client GeoEngineers

Project Name Everett

COC No(s). _____ NA

Delivered by Fed-Ex UPS Courier Hand Delivered Other _____

Assigned ARI Job No 272

Tracking No _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? ... YES NO

Were custody papers properly filled out (ink, signed, etc) ... YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry). ... 28

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 13241 2024

Cooler Accepted by JM Date: 1/14/13 Time: 1000

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ... YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ... NA YES NO

Were all bottles sealed in individual plastic bags? ... YES NO

Did all bottles arrive in good condition (unbroken)? ... YES NO

Were all bottle labels complete and legible? ... YES NO

Did the number of containers listed on COC match with the number of containers received? ... YES NO

Did all bottle labels and tags agree with custody papers? ... YES NO

Were all bottles used correct for the requested analyses? ... YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs). ... NA YES NO

Were all VOC vials free of air bubbles? ... NA YES NO

Was sufficient amount of sample sent in each bottle? ... YES NO

Date VOC Trip Blank was made at ARI.. ... NA

Was Sample Split by ARI: YES Date/Time _____ Equipment _____ Split by: _____

Samples Logged by: JM Date: 1-14-13 Time: 1601

**** Notify Project Manager of discrepancies or concerns ****

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
| | | | |
| | | | |
| | | | |

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____

| | | | |
|------------------------------------|------------------------------|--|-------------------|
| <p>Small Air Bubbles ~ 2mm</p> | <p>Peabubbles 2-4 mm</p> | <p>LARGE Air Bubbles > 4 mm</p> | Small → "sm" |
| | | | Peabubbles → "pb" |
| | | | Large → "lg" |
| | | | Headspace → "hs" |

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: VZ72



Case Narrative

Client: GeoEngineers
Project: Everett
ARI Job No.: VZ72

Sample Receipt

Two water samples were received on January 14, 2013 under ARI job VZ72. The cooler temperature measured by IR thermometer following ARI SOP was 0.8°C. For details regarding sample receipt, refer to the Cooler Receipt Forms.

Pentachlorophenol by SW8041

The samples were extracted and analyzed within the method recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limit. The LCS and LCSD percent recoveries were within the control limits.

Sample ID Cross Reference Report



ARI Job No: VZ72
Client: GeoEngineers
Project Event: N/A
Project Name: Everett

| Sample ID | ARI Lab ID | ARI LIMS ID | Matrix | Sample Date/Time | VTSR |
|---------------------|------------|-------------|--------|------------------|----------------|
| 1. LLMW175-130111-W | VZ72A | 13-907 | Water | 01/13/13 10:20 | 01/14/13 10:00 |
| 2. LLMW17D-130111-W | VZ72B | 13-908 | Water | 01/13/13 10:50 | 01/14/13 10:00 |



Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but \geq the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is ≤ 5 times the Reporting Limit and the replicate control limit defaults to ± 1 RL instead of the normal 20% RPD

Organic Data

-
- U Indicates that the target analyte was not detected at the reported concentration
 - * Flagged value is not within established control limits
 - B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
 - J Estimated concentration when the value is less than ARI's established reporting limits
 - D The spiked compound was not detected due to sample extract dilution
 - E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte
 - Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by $\geq 40\%$ RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions **(Dioxin/Furan analysis only)**



Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when **only** sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting



Chlorinated Phenols DL, LOD, LOQ and Control Limit Summary ¹ EPA Method 8041A

| Analyte | Aqueous Samples ^{2,3} | | | | Solid Samples ^{2,4} | | | | RPD ⁵ |
|--|--------------------------------|-----------------------------|--------------|------------------------------|------------------------------|-----------------------------|--------------|------------------------------|------------------|
| | DL µg/L | LOD µg/L | LOQ µg/L | LCS Recovery ⁶ | DL µg/kg | LOD µg/kg | LOQ µg/kg | LCS Recovery ⁶ | |
| Pentachlorophenol (PCP) | 0.085 | 0.13 | 0.25 | 48 – 116% | 0.83 | 3.13 | 6.25 | 56 – 111% | ≤ 40 |
| 2,4,6-Trichlorophenol | 0.106 | 0.13 | 0.25 | 30 – 160% | 1.21 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,3,6-Trichlorophenol | 0.066 | 0.13 | 0.25 | 30 – 160% | 2.96 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,4,5-Trichlorophenol | 0.077 | 0.13 | 0.25 | 30 – 160% | 2.24 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,3,4-Trichlorophenol | 0.126 | 0.13 | 0.25 | 30 – 160% | 1.67 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,3,5,6-Tetrachlorophenol | 0.091 | 0.13 | 0.25 | 30 – 160% | 1.61 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,3,4,5-Tetrachlorophenol | 0.077 | 0.13 | 0.25 | 30 – 160% | 1.26 | 3.13 | 6.25 | 30 – 160% | ≤ 40 |
| 2,4-Dichlorophenol | 1.510 | 3.0 | 6.0 | 30 – 160% | 16.6 | 31.3 | 62.5 | 30 – 160% | ≤ 40 |
| Pentachlorophenol (PCP)(low level prep) | 0.014 ⁷ | 0.013 | 0.025 | 36 – 159% | | | | | ≤ 40 |
| Surrogate % Recovery | MB / LCS | Sample | | | MB / LCS | Sample | | | |
| 2,4,6-Tribromophenol | 41 – 98 | 26 – 113 | | | 39 – 99 | 10 – 129⁸ | | | ≤ 40 |
| 2,4,6-Tribromophenol (low level preparation) | 33 – 151 | 10 – 181⁸ | | | | | | | ≤ 40 |

(1) Detection Limit (DL), Limit of Detection (LOD) and Limit of Quantitation as defined in ARI SOP 1018S

(2) Control limits calculated using all data from 1/1/10 through 8/1/11.

(3) Separatory funnel extraction (EPA Method 3510C) 500 mL sample to 50 mL final volume (5 mL for low level Prep)

(4) Microwave assisted extraction (EPA Method 3546) 10 g sample to 25 mL final volume

(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_o - C_D|}{\frac{C_o + C_D}{2}} \times 100$$

(6) 30 – 160 are default values used when there is insufficient data to calculate historic control limits.

(7) MDL study QS97 (4/30/10)

(8) Highlighted control limits (**bold font**) are adjusted from the calculated values to reflect that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.

**PCP/Chlorophenols Analysis
Report and Summary QC Forms**

ARI Job ID: VZ72

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
 Page 1 of 1

Sample ID: LLMW175-130111-W
SAMPLE

Lab Sample ID: VZ72A
 LIMS ID: 13-907
 Matrix: Water
 Data Release Authorized: *MW*
 Reported: 01/23/13

QC Report No: VZ72-GeoEngineers
 Project: Everett

Date Sampled: 01/13/13
 Date Received: 01/14/13

Date Extracted: 01/17/13
 Date Analyzed: 01/22/13 15:45
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
 Final Extract Volume: 50 mL
 Dilution Factor: 1.00

| CAS Number | Analyte | RL | Result |
|------------|-------------------|------|----------|
| 87-86-5 | Pentachlorophenol | 0.25 | < 0.25 U |

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

| | |
|----------------------|-------|
| 2,4,6-Tribromophenol | 82.0% |
|----------------------|-------|

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
 Page 1 of 1

Sample ID: LLMW17D-130111-W
SAMPLE

Lab Sample ID: VZ72B
 LIMS ID: 13-908
 Matrix: Water
 Data Release Authorized: *MW*
 Reported: 01/23/13

QC Report No: VZ72-GeoEngineers
 Project: Everett

Date Sampled: 01/13/13
 Date Received: 01/14/13

Date Extracted: 01/17/13
 Date Analyzed: 01/22/13 16:21
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
 Final Extract Volume: 50 mL
 Dilution Factor: 1.00

| CAS Number | Analyte | RL | Result |
|--|----------------------|-------|----------|
| 87-86-5 | Pentachlorophenol | 0.25 | < 0.25 U |
| Reported in µg/L (ppb) | | | |
| Chlorophenol Surrogate Recovery | | | |
| | 2,4,6-Tribromophenol | 80.8% | |

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VZ72-GeoEngineers
Project: Everett

| <u>Client ID</u> | <u>TBP</u> | <u>TOT OUT</u> |
|------------------|------------|----------------|
| LLMW175-130111-W | 82.0% | 0 |
| MB-011713 | 76.4% | 0 |
| LCS-011713 | 91.4% | 0 |
| LCSD-011713 | 90.0% | 0 |
| LLMW17D-130111-W | 80.8% | 0 |

LCS/MB LIMITS QC LIMITS

(TBP) = 2,4,6-Tribromophenol

(41-98)

(26-113)

Prep Method: SW3510C
Log Number Range: 13-907 to 13-908

4
 CHLOROPHENOL METHOD BLANK SUMMARY

SAMPLE NO.

| |
|----------|
| VZ72MBW1 |
|----------|

| | |
|---------------------------------------|---------------------------------------|
| Lab Name: ANALYTICAL RESOURCES INC | Client: GEOENGINEERS |
| ARI Job No.: VZ72 | Project: EVERETT |
| Lab Sample ID: VZ72MBW1 | Lab File ID: 0122A004 |
| Matrix (soil/water) LIQUID | Extraction: (SepF/Cont/Sonc) SW3510C |
| Sulfur Cleanup (Y/N) Y | Date Extracted: 01/17/13 |
| Date Analyzed (1): 01/22/13 | Date Analyzed (2): 01/22/13 |
| Time Analyzed (1): 1319 | Time Analyzed (2): 1319 |
| Instrument ID (1): ECD1 | Instrument ID (2): ECD1 |
| GC Column (1): STX CLP1 ID: 0.53 (mm) | GC Column (2): STX CLP2 ID: 0.53 (mm) |

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED 1 | DATE ANALYZED 2 |
|----|----------------------|------------------|--------------------|--------------------|
| | ===== | ===== | ===== | ===== |
| 01 | VZ72LCSW1 | VZ72LCSW1 | 01/22/13 | 01/22/13 |
| 02 | VZ72LCSDW1 | VZ72LCSDW1 | 01/22/13 | 01/22/13 |
| 03 | LLMW175-1301 | VZ72A | 01/22/13 | 01/22/13 |
| 04 | LLMW17D-1301 | VZ72B | 01/22/13 | 01/22/13 |

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
 Page 1 of 1

Sample ID: MB-011713
METHOD BLANK

Lab Sample ID: MB-011713
 LIMS ID: 13-908
 Matrix: Water
 Data Release Authorized: *mmw*
 Reported: 01/23/13

QC Report No: VZ72-GeoEngineers
 Project: Everett

Date Sampled: NA
 Date Received: NA

Date Extracted: 01/17/13
 Date Analyzed: 01/22/13 13:19
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
 Final Extract Volume: 50 mL
 Dilution Factor: 1.00

| CAS Number | Analyte | RL | Result |
|------------|-------------------|------|----------|
| 87-86-5 | Pentachlorophenol | 0.25 | < 0.25 U |

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

| | |
|----------------------|-------|
| 2,4,6-Tribromophenol | 76.4% |
|----------------------|-------|

6D
 CHLOROPHENOL INITIAL CALIBRATION
 RETENTION TIME WINDOWS

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP1 ID: 0.53 (mm)

Instrument ID: ECD1

Calibration Date: 09/21/12

| COMPOUND | RT OF STANDARDS | | | | | | MEAN RT | RT WINDOW | |
|----------------------|-----------------|-------|-------|-------|-------|-------|------------|-----------|-------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | | FROM | TO |
| Pentachlorophenol | 21.18 | 21.17 | 21.16 | 21.24 | 21.15 | 21.15 | 21.18 | 21.17 | 21.31 |
| 2,4,6-Trichloropheno | 13.26 | 13.26 | 13.26 | 13.33 | 13.25 | 13.25 | 13.27 | 13.26 | 13.40 |
| 2,3,6-Trichloropheno | 14.26 | 14.26 | 14.26 | 14.33 | 14.25 | 14.25 | 14.27 | 14.26 | 14.40 |
| 2,4,5-Trichloropheno | 16.04 | 16.02 | 16.02 | 16.09 | 16.00 | 16.00 | 16.03 | 16.02 | 16.16 |
| 2,3,4-Trichloropheno | 17.57 | 17.54 | 17.53 | 17.60 | 17.51 | 17.51 | 17.55 | 17.53 | 17.67 |
| 2,3,5,6-Tetrachlorop | 17.33 | 17.32 | 17.32 | 17.39 | 17.31 | 17.31 | 17.33 | 17.32 | 17.46 |
| 2,3,4,5-Tetrachlorop | 20.37 | 20.35 | 20.33 | 20.41 | 20.31 | 20.31 | 20.35 | 20.34 | 20.48 |
| 2,4-Dichlorophenol | 12.78 | 12.78 | 12.78 | 12.78 | 12.78 | 12.78 | 12.78 | 12.71 | 12.85 |
| 2,4,6-Tribromophenol | 18.79 | 18.78 | 18.77 | 18.84 | 18.76 | 18.75 | 18.79 | 18.77 | 18.91 |

6D
 CHLOROPHENOL INITIAL CALIBRATION
 RETENTION TIME WINDOWS

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP2 ID: 0.53 (mm)

Instrument ID: ECD1

Calibration Date: 09/21/12

| COMPOUND | RT OF STANDARDS | | | | | | MEAN RT | RT WINDOW | |
|----------------------|-----------------|-------|-------|-------|-------|-------|------------|-----------|-------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | | FROM | TO |
| Pentachlorophenol | 22.91 | 22.90 | 22.89 | 22.96 | 22.88 | 22.88 | 22.91 | 22.89 | 23.03 |
| 2,4,6-Trichloropheno | 14.27 | 14.27 | 14.27 | 14.34 | 14.26 | 14.26 | 14.28 | 14.27 | 14.41 |
| 2,3,6-Trichloropheno | 15.51 | 15.51 | 15.51 | 15.58 | 15.50 | 15.50 | 15.52 | 15.51 | 15.65 |
| 2,4,5-Trichloropheno | 17.45 | 17.43 | 17.43 | 17.50 | 17.42 | 17.41 | 17.45 | 17.43 | 17.57 |
| 2,3,4-Trichloropheno | 19.00 | 18.98 | 18.97 | 19.05 | 18.96 | 18.96 | 18.99 | 18.98 | 19.12 |
| 2,3,5,6-Tetrachlorop | 18.77 | 18.76 | 18.75 | 18.83 | 18.75 | 18.75 | 18.77 | 18.76 | 18.90 |
| 2,3,4,5-Tetrachlorop | 22.04 | 22.03 | 22.02 | 22.09 | 22.01 | 22.00 | 22.04 | 22.02 | 22.16 |
| 2,4-Dichlorophenol | 13.79 | 13.78 | 13.78 | 13.85 | 13.77 | 13.77 | 13.79 | 13.78 | 13.92 |
| 2,4,6-Tribromophenol | 20.89 | 20.88 | 20.87 | 20.94 | 20.86 | 20.86 | 20.89 | 20.87 | 21.01 |

6E
 CHLOROPHENOL INITIAL CALIBRATION
 CALIBRATION FACTORS

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP1 ID: 0.53 (mm)

Instrument ID: ECD1

Calibration Date: 09/21/12

| COMPOUND | CALIBRATION FACTORS | | | | | | R ² / %RSD | CT |
|-----------------------|---------------------|-------|-------|-------|-------|-------|--------------------------|----|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | | |
| Pentachlorophenol | 77052 | 71102 | 62381 | 56971 | 51600 | 44551 | 0.9999 | Q |
| 2,4,6-Trichlorophenol | 37800 | 36793 | 34435 | 30695 | 27572 | 23819 | 17.2 | A |
| 2,3,6-Trichlorophenol | 39363 | 41432 | 38253 | 34053 | 27204 | 22897 | 0.9992 | Q |
| 2,4,5-Trichlorophenol | 23290 | 24192 | 22777 | 19742 | 16572 | 13274 | 1.0000 | Q |
| 2,3,4-Trichlorophenol | 35575 | 30905 | 28044 | 24569 | 21009 | 17260 | 1.0000 | Q |
| 2,3,5,6-Tetrachloroph | 53827 | 53395 | 50427 | 46244 | 41856 | 36207 | 14.8 | A |
| 2,3,4,5-Tetrachloroph | 50607 | 45516 | 41632 | 36089 | 31716 | 27069 | 0.9998 | Q |
| 2,4-Dichlorophenol | 2363 | 1981 | 1759 | 1559 | 1390 | 1206 | 0.9998 | Q |
| 2,4,6-Tribromophenol | 63570 | 57559 | 52456 | 46332 | 41843 | 35975 | 0.9999 | Q |

| | |
|---------|------|
| AVE RSD | 21.0 |
|---------|------|

CT stands for Curve Types:

- A Indicates an Average Response Factor Curve
- L Indicates a Linear Curve
- Q Indicates a Quadratic Curve

CALIBRATION FILES

LVL 1: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A018.d
 LVL 2: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A019.d
 LVL 3: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A020.d
 LVL 4: /chem2/ecd1.i/PCP20120921.b/1205-1.b/1205A012.d
 LVL 5: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A021.d
 LVL 6: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A022.d

6E
 CHLOROPHENOL INITIAL CALIBRATION
 CALIBRATION FACTORS

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP2 ID: 0.53 (mm)

Instrument ID: ECD1

Calibration Date: 09/21/12

| COMPOUND | CALIBRATION FACTORS | | | | | | R ² / %RSD | CT |
|-----------------------|---------------------|-------|-------|-------|-------|-------|--------------------------|----|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | | |
| Pentachlorophenol | 42596 | 39717 | 37527 | 34681 | 31627 | 27985 | 15.0 | A |
| 2,4,6-Trichlorophenol | 32528 | 33312 | 25170 | 22050 | 20938 | 17684 | 0.9992 | Q |
| 2,3,6-Trichlorophenol | 25874 | 25680 | 24007 | 20973 | 17820 | 15188 | 0.9997 | Q |
| 2,4,5-Trichlorophenol | 12584 | 13469 | 15051 | 12710 | 10198 | 7860 | 0.9996 | Q |
| 2,3,4-Trichlorophenol | 23072 | 18508 | 18408 | 15761 | 13094 | 9728 | 0.9988 | Q |
| 2,3,5,6-Tetrachloroph | 33035 | 31396 | 31059 | 28607 | 26066 | 23149 | 12.9 | A |
| 2,3,4,5-Tetrachloroph | 25112 | 23550 | 21899 | 20040 | 18059 | 15675 | 17.0 | A |
| 2,4-Dichlorophenol | 1292 | 1502 | 1138 | 970 | 877 | 712 | 0.9993 | Q |
| 2,4,6-Tribromophenol | 33881 | 32521 | 32652 | 29584 | 27527 | 24749 | 11.7 | A |
| AVE RSD | | | | | | | 19.8 | |

CT stands for Curve Types:

- A Indicates an Average Response Factor Curve
- L Indicates a Linear Curve
- Q Indicates a Quadratic Curve

CALIBRATION FILES

-
- LVL 1: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A018.d
 - LVL 2: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A019.d
 - LVL 3: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A020.d
 - LVL 4: /chem2/ecd1.i/PCP20120921.b/1205-2.b/1205A012.d
 - LVL 5: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A021.d
 - LVL 6: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A022.d

CHLOROPHENOL CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP1 ID: 0.53 (mm)

Init. Calib. Date(s): 09/21/12 12/05/12

Client Sample No. (PCP):

Date Analyzed : 01/22/13

Lab Sample ID (PCP): PCPCCAL

Time Analyzed : 1243

| PCP MIX COMPOUND | RT | RT WINDOW | | CALC AMOUNT | NOM AMOUNT | %D |
|----------------------------|-------|-----------|-------|----------------|---------------|------|
| | | FROM | TO | | | |
| Pentachlorophenol | 21.27 | 21.17 | 21.31 | 26.3 | 25.0 | 5.2 |
| 2,4,6-Trichlorophenol | 13.36 | 13.26 | 13.40 | 28.2 | 25.0 | 12.8 |
| 2,3,6-Trichlorophenol | 14.36 | 14.26 | 14.40 | 25.3 | 25.0 | 1.2 |
| 2,4,5-Trichlorophenol | 16.12 | 16.02 | 16.16 | 23.0 | 25.0 | -8.0 |
| 2,3,4-Trichlorophenol | 17.63 | 17.53 | 17.67 | 27.5 | 25.0 | 10.0 |
| 2,3,5,6-Tetrachlorophenol | 17.42 | 17.32 | 17.46 | 26.3 | 25.0 | 5.2 |
| 2,3,4,5-Tetrachlorophenol | 20.44 | 20.34 | 20.48 | 27.0 | 25.0 | 8.0 |
| 2,4-Dichlorophenol | 12.81 | 12.71 | 12.85 | 271 | 250 | 8.4 |
| 2,4,6-Tribromophenol (surr | 18.87 | 18.77 | 18.91 | 26.3 | 25.0 | 5.2 |
| | | | | | | |
| | | | | | | |

AVERAGE %D = 7.1

CHLOROPHENOL CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP2 ID: 0.53 (mm)

Init. Calib. Date(s): 09/21/12 12/05/12

Client Sample No. (PCP):

Date Analyzed :01/22/13

Lab Sample ID (PCP): PCPCCAL

Time Analyzed :1243

| PCP MIX COMPOUND | RT | RT WINDOW | | CALC AMOUNT | NOM AMOUNT | %D |
|----------------------------|-------|-----------|-------|----------------|---------------|-------|
| | | FROM | TO | | | |
| Pentachlorophenol | 22.99 | 22.89 | 23.03 | 26.7 | 25.0 | 6.8 |
| 2,4,6-Trichlorophenol | 14.36 | 14.27 | 14.41 | 23.0 | 25.0 | -8.0 |
| 2,3,6-Trichlorophenol | 15.61 | 15.51 | 15.65 | 23.3 | 25.0 | -6.8 |
| 2,4,5-Trichlorophenol | 17.52 | 17.43 | 17.57 | 23.2 | 25.0 | -7.2 |
| 2,3,4-Trichlorophenol | 19.07 | 18.98 | 19.12 | 24.0 | 25.0 | -4.0 |
| 2,3,5,6-Tetrachlorophenol | 18.85 | 18.76 | 18.90 | 25.2 | 25.0 | 0.8 |
| 2,3,4,5-Tetrachlorophenol | 22.12 | 22.02 | 22.16 | 26.2 | 25.0 | 4.8 |
| 2,4-Dichlorophenol | 13.88 | 13.78 | 13.92 | 214 | 250 | -14.4 |
| 2,4,6-Tribromophenol (surr | 20.97 | 20.87 | 21.01 | 25.5 | 25.0 | 2.0 |
| | | | | | | |
| | | | | | | |

AVERAGE %D = 6.1

CHLOROPHENOL CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP1 ID: 0.53 (mm)

Init. Calib. Date(s): 09/21/12 12/05/12

Client Sample No. (PCP):

Date Analyzed :01/22/13

Lab Sample ID (PCP): PCPCAL

Time Analyzed :1733

| PCP MIX COMPOUND | RT | RT WINDOW | | CALC AMOUNT | NOM AMOUNT | %D |
|----------------------------|-------|-----------|-------|----------------|---------------|------|
| | | FROM | TO | | | |
| Pentachlorophenol | 21.27 | 21.17 | 21.31 | 26.7 | 25.0 | 6.8 |
| 2,4,6-Trichlorophenol | 13.36 | 13.26 | 13.40 | 25.8 | 25.0 | 3.2 |
| 2,3,6-Trichlorophenol | 14.36 | 14.26 | 14.40 | 22.6 | 25.0 | -9.6 |
| 2,4,5-Trichlorophenol | 16.12 | 16.02 | 16.16 | 23.5 | 25.0 | -6.0 |
| 2,3,4-Trichlorophenol | 17.63 | 17.53 | 17.67 | 28.0 | 25.0 | 12.0 |
| 2,3,5,6-Tetrachlorophenol | 17.42 | 17.32 | 17.46 | 26.9 | 25.0 | 7.6 |
| 2,3,4,5-Tetrachlorophenol | 20.44 | 20.34 | 20.48 | 27.9 | 25.0 | 11.6 |
| 2,4-Dichlorophenol | 12.82 | 12.71 | 12.85 | 27.3 | 25.0 | 9.2 |
| 2,4,6-Tribromophenol (surr | 18.87 | 18.77 | 18.91 | 27.4 | 25.0 | 9.6 |
| | | | | | | |
| | | | | | | |

AVERAGE %D = 8.4

CHLOROPHENOL CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP2 ID: 0.53 (mm)

Init. Calib. Date(s): 09/21/12 12/05/12

Client Sample No. (PCP):

Date Analyzed :01/22/13

Lab Sample ID (PCP): PCPCCAL

Time Analyzed :1733

| PCP MIX COMPOUND | RT | RT WINDOW | | CALC AMOUNT | NOM AMOUNT | %D |
|----------------------------|-------|-----------|-------|----------------|---------------|-------|
| | | FROM | TO | | | |
| Pentachlorophenol | 22.99 | 22.89 | 23.03 | 27.8 | 25.0 | 11.2 |
| 2,4,6-Trichlorophenol | 14.37 | 14.27 | 14.41 | 23.9 | 25.0 | -4.4 |
| 2,3,6-Trichlorophenol | 15.61 | 15.51 | 15.65 | 27.8 | 25.0 | 11.2 |
| 2,4,5-Trichlorophenol | 17.53 | 17.43 | 17.57 | 22.0 | 25.0 | -12.0 |
| 2,3,4-Trichlorophenol | 19.07 | 18.98 | 19.12 | 22.9 | 25.0 | -8.4 |
| 2,3,5,6-Tetrachlorophenol | 18.86 | 18.76 | 18.90 | 25.7 | 25.0 | 2.8 |
| 2,3,4,5-Tetrachlorophenol | 22.12 | 22.02 | 22.16 | 26.8 | 25.0 | 7.2 |
| 2,4-Dichlorophenol | 13.88 | 13.78 | 13.92 | 233 | 250 | -6.8 |
| 2,4,6-Tribromophenol (surr | 20.97 | 20.87 | 21.01 | 26.0 | 25.0 | 4.0 |
| | | | | | | |
| | | | | | | |

AVERAGE %D = 7.6

CHLOROPHENOL ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP1 ID: 0.53 (mm)

Instrument ID: ECD1

Init. Calib. Date(s): 09/21/12 12/05/12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
SAMPLES, AND STANDARDS IS GIVEN BELOW:

| MEAN SURROGATE RT FROM INITIAL CALIBRATION S1 : 18.84 | | | | |
|--|------------------|------------------|------------------|------------|
| CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED | TIME ANALYZED | S1 RT # |
| ===== | ===== | ===== | ===== | ===== |
| 01 | PCP D | 09/21/12 | 1928 | 18.76 |
| 02 | PCP A | 09/21/12 | 2004 | 18.79 |
| 03 | PCP B | 09/21/12 | 2041 | 18.78 |
| 04 | PCP C | 09/21/12 | 2117 | 18.77 |
| 05 | PCP E | 09/21/12 | 2153 | 18.76 |
| 06 | PCP F | 09/21/12 | 2230 | 18.75 |
| 07 | PCPCCAL | 01/22/13 | 1243 | 18.87 |
| 08 VZ72MBW1 | VZ72MBW1 | 01/22/13 | 1319 | 18.89 |
| 09 VZ72LCSW1 | VZ72LCSW1 | 01/22/13 | 1356 | 18.89 |
| 10 VZ72LCSDW1 | VZ72LCSDW1 | 01/22/13 | 1432 | 18.89 |
| 11 ZZZZZ | ZZZZZ | 01/22/13 | 1508 | 18.89 |
| 12 LLMW175-1301 | VZ72A | 01/22/13 | 1545 | 18.88 |
| 13 LLMW17D-1301 | VZ72B | 01/22/13 | 1621 | 18.88 |
| 14 | PCPCCAL | 01/22/13 | 1733 | 18.87 |

QC LIMITS

S1 = 2,4,6-Tribromophenol (+/- 0.07 MINUTES)

* Values outside of QC limits.

CHLOROPHENOL ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC

Client: GEOENGINEERS

ARI Job No.: VZ72

Project: EVERETT

GC Column: STX CLP2 ID: 0.53 (mm)

Instrument ID: ECD1

Init. Calib. Date(s): 09/21/12 12/05/12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
SAMPLES, AND STANDARDS IS GIVEN BELOW:

| MEAN SURROGATE RT FROM INITIAL CALIBRATION | | | | | |
|--|------------|----------|----------|-------|-------|
| S1 : 20.94 | | | | | |
| CLIENT | LAB | DATE | TIME | S1 | |
| SAMPLE NO. | SAMPLE ID | ANALYZED | ANALYZED | RT | # |
| ===== | ===== | ===== | ===== | ===== | ===== |
| 01 | PCP D | 09/21/12 | 1928 | 20.87 | |
| 02 | PCP A | 09/21/12 | 2004 | 20.89 | |
| 03 | PCP B | 09/21/12 | 2041 | 20.88 | |
| 04 | PCP C | 09/21/12 | 2117 | 20.87 | |
| 05 | PCP E | 09/21/12 | 2153 | 20.86 | |
| 06 | PCP F | 09/21/12 | 2230 | 20.86 | |
| 07 | PCPCAL | 01/22/13 | 1243 | 20.97 | |
| 08 VZ72MBW1 | VZ72MBW1 | 01/22/13 | 1319 | 20.98 | |
| 09 VZ72LCSW1 | VZ72LCSW1 | 01/22/13 | 1356 | 20.98 | |
| 10 VZ72LCSDW1 | VZ72LCSDW1 | 01/22/13 | 1432 | 20.98 | |
| 11 ZZZZZ | ZZZZZ | 01/22/13 | 1508 | 20.98 | |
| 12 LLMW175-1301 | VZ72A | 01/22/13 | 1545 | 20.98 | |
| 13 LLMW17D-1301 | VZ72B | 01/22/13 | 1621 | 20.97 | |
| 14 | PCPCAL | 01/22/13 | 1733 | 20.97 | |

QC LIMITS

S1 = 2,4,6-Tribromophenol (+/- 0.07 MINUTES)

* Values outside of QC limits.

**PCP/Chlorophenols Raw Data
Extraction Bench Sheets and Notes**

ARI Job ID: VZ72

**PCP/Chlorophenols Raw Data
Initial Calibration**

ARI Job ID: VZ72



GC Initial Calibration Notes

ARI SOP: 403S(PCB) 405S(Herb) 407S(TPH-D) 409S(HCID) 412S(PCP) 423S(Pest)
427S(Dir Inj) 428S(EPH) Other

Instrument: FID-3A FID-3B FID-4A FID-4B FID-5 FID-7 FID-8
FID-9 ECD-1 ECD-5 ECD-6 ECD-7 ECD-8

Curve Date(s): 9/21/2012 Internal Standard ID NA Expiration NA

Endrin/DDT Breakdown <15%? YES / NO / NA ICV Exceeding ±20%? YES / NO

ICal Meets %RSD & r² Criteria YES / NO ICV Exceeding ±30%? YES / NO

Manual Integrations for ICal? YES / NO Linear Fits Used? YES / NO

Minimum Response S/N Met YES / NO Quadratic Fits Used? YES / NO

Calibration Points Dropped? YES / NO

| Primary Source | Standard # | Expiration | Secondary Source | Standard # | Expiration |
|---------------------|---------------------------------|-------------------|------------------|---------------|-----------------|
| <u>AccuStandard</u> | 1919-3 <u>1919-3</u> | <u>10/15/2012</u> | | <u>1957-2</u> | <u>6/8/2013</u> |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Detail problems, corrective actions and/or other pertinent information below:

Analyst: [Signature] Date: 9/25/2012
Reviewer: [Signature] Date: 9/26/12

GC LOG SUMMARY FOR DATABATCH - /chem2/ecdl.i/PCP20120921.b/ical-2.b

| | Inject | Date/Time | Filename | DF | LabID | ClientID |
|---|-------------|-----------|------------|----|---------|----------|
| 1 | 21-SEP-2012 | 19:28 | 0921A017.d | 1 | PCP D | |
| 2 | 21-SEP-2012 | 20:04 | 0921A018.d | 1 | PCP A | |
| 3 | 21-SEP-2012 | 20:41 | 0921A019.d | 1 | PCP B | |
| 4 | 21-SEP-2012 | 21:17 | 0921A020.d | 1 | PCP C | |
| 5 | 21-SEP-2012 | 21:53 | 0921A021.d | 1 | PCP E | |
| 6 | 21-SEP-2012 | 22:30 | 0921A022.d | 1 | PCP F | |
| 7 | 21-SEP-2012 | 23:06 | 0921A023.d | 1 | PCP ICV | |

MANUAL INTEGRATION SUMMARY FOR DATABATCH - /chem2/ecd1.i/PCP20120921.b/ical-1.b

ARI Job No.: PCP Method: PCP.m Instrument: ecd1.i Date: 21-SEP-2012

| Time | Filename | LabID | ClientId | DF | Manually Integrated Compounds |
|------|------------|-------|----------|----|-------------------------------|
| 1928 | 0921A017.d | PCP D | | 1 | NO MANUAL INTEGRATION |
| 2004 | 0921A018.d | PCP A | | 1 | NO MANUAL INTEGRATION |
| 2041 | 0921A019.d | PCP B | | 1 | NO MANUAL INTEGRATION |
| 2117 | 0921A020.d | PCP C | | 1 | NO MANUAL INTEGRATION |
| 2153 | 0921A021.d | PCP E | | 1 | NO MANUAL INTEGRATION |
| 2230 | 0921A022.d | PCP F | | 1 | NO MANUAL INTEGRATION |

MANUAL INTEGRATION SUMMARY FOR DATABATCH - /chem2/ecd1.i/PCP20120921.b/ical-2.b

ARI Job No.: PCP Method: PCPB.m Instrument: ecd1.i Date: 21-SEP-2012

| Time | Filename | LabID | ClientId | DP | Manually Integrated Compounds |
|------|------------|---------|----------|----|-------------------------------|
| 1928 | 0921A017.d | PCP D | | 1 | NO MANUAL INTEGRATION |
| 2004 | 0921A018.d | PCP A | | 1 | NO MANUAL INTEGRATION |
| 2041 | 0921A019.d | PCP B | | 1 | NO MANUAL INTEGRATION |
| 2117 | 0921A020.d | PCP C | | 1 | NO MANUAL INTEGRATION |
| 2153 | 0921A021.d | PCP E | | 1 | NO MANUAL INTEGRATION |
| 2230 | 0921A022.d | PCP F | | 1 | NO MANUAL INTEGRATION |
| 2306 | 0921A023.d | PCP ICV | | 1 | NO MANUAL INTEGRATION |

Analytical Resources, Inc.
RETENTION TIME SUMMARY REPORT

Method File: /chem2/ecd1.i/PCP20120921.b/PCPB.m
Batch File: /chem2/ecd1.i/PCP20120921.b/ical-2.b
Inst ID: ecd1.i

| ID: | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 | RT07 |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| FILENAME: | 0921A017 | 0921A018 | 0921A019 | 0921A020 | 0921A021 | 0921A022 | 0921A023 |
| INJ. DATE: | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 |
| INJ. TIME: | 19:28 | 20:04 | 20:41 | 21:17 | 21:53 | 22:30 | 23:06 |

| Compound | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 | RT07 | EXPEC RT | RT WINDOW | AVG RT | STD DEV |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|----------|---------------|--------|---------|
| 1 2,4-Dichlorophenol | 13.778 | 13.787 | 13.782 | 13.780 | 13.775 | 13.773 | 13.779 | 13.778 | 13.708-13.848 | 13.779 | 0.005 |
| 2 2,4,6-Trichlorophenol | 14.264 | 14.268 | 14.266 | 14.265 | 14.261 | 14.259 | 14.264 | 14.264 | 14.194-14.334 | 14.264 | 0.003 |
| 3 2,3,6-Trichlorophenol | 15.507 | 15.514 | 15.510 | 15.508 | 15.504 | 15.502 | 15.510 | 15.507 | 15.437-15.577 | 15.508 | 0.004 |
| 4 2,4,5-Trichlorophenol | 17.423 | 17.448 | 17.434 | 17.427 | 17.418 | 17.414 | 17.433 | 17.423 | 17.353-17.493 | 17.428 | 0.012 |
| 5 2,3,5,6-Tetrachlorophe | 18.752 | 18.767 | 18.759 | 18.754 | 18.748 | 18.746 | 18.759 | 18.752 | 18.682-18.822 | 18.755 | 0.007 |
| 6 2,3,4-Trichlorophenol | 18.968 | 19.001 | 18.984 | 18.974 | 18.961 | 18.957 | 18.982 | 18.968 | 18.898-19.038 | 18.975 | 0.015 |
| 7 2,4,6-Tribromophenol | 20.867 | 20.887 | 20.877 | 20.870 | 20.863 | 20.861 | 20.878 | 20.867 | 20.797-20.937 | 20.872 | 0.009 |
| 8 2,3,4,5-Tetrachlorophe | 22.012 | 22.044 | 22.029 | 22.019 | 22.006 | 22.003 | 22.024 | 22.012 | 21.942-22.082 | 22.020 | 0.014 |
| 9 Pentachlorophenol | 22.888 | 22.906 | 22.897 | 22.892 | 22.884 | 22.882 | 22.896 | 22.888 | 22.818-22.958 | 22.892 | 0.008 |

Reviewer 1 _____
Reviewer 2 _____

AR
~~AR~~ Date: 9/26/2012
Date: 9/26/12


Analytical Resources, Inc.
RETENTION TIME SUMMARY REPORT

Method File: /chem2/ecd1.i/PCP20120921.b/PCP.m
Batch File: /chem2/ecd1.i/PCP20120921.b/ical-1.b
Inst ID: ecd1.i

| ID: | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| FILENAME: | 0921A017 | 0921A018 | 0921A019 | 0921A020 | 0921A021 | 0921A022 |
| INJ.DATE: | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 | 21-SEP-2012 |
| INJ.TIME: | 19:28 | 20:04 | 20:41 | 21:17 | 21:53 | 22:30 |

| Compound | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 | EXPEC RT | RT WINDOW | AVG RT | STD DEV |
|--------------------------|--------|--------|--------|--------|--------|--------|----------|---------------|--------|---------|
| 1 2,4-Dichlorophenol | 12.711 | 12.719 | 12.716 | 12.713 | 12.707 | 12.706 | 12.711 | 12.641-12.781 | 12.712 | 0.005 |
| 2 2,4,6-Trichlorophenol | 13.256 | 13.260 | 13.257 | 13.256 | 13.254 | 13.252 | 13.256 | 13.186-13.326 | 13.256 | 0.003 |
| 3 2,3,6-Trichlorophenol | 14.254 | 14.262 | 14.258 | 14.256 | 14.251 | 14.249 | 14.254 | 14.184-14.324 | 14.255 | 0.005 |
| 4 2,4,5-Trichlorophenol | 16.010 | 16.044 | 16.025 | 16.015 | 16.003 | 15.999 | 16.010 | 15.940-16.080 | 16.016 | 0.016 |
| 5 2,3,5,6-Tetrachlorophe | 17.315 | 17.334 | 17.323 | 17.318 | 17.311 | 17.307 | 17.315 | 17.245-17.385 | 17.318 | 0.009 |
| 6 2,3,4-Trichlorophenol | 17.519 | 17.566 | 17.541 | 17.527 | 17.511 | 17.506 | 17.519 | 17.449-17.589 | 17.528 | 0.022 |
| 7 2,4,6-Tribromophenol | 18.763 | 18.793 | 18.776 | 18.768 | 18.757 | 18.753 | 18.763 | 18.693-18.833 | 18.768 | 0.014 |
| 8 2,3,4,5-Tetrachlorophe | 20.323 | 20.368 | 20.346 | 20.331 | 20.314 | 20.308 | 20.323 | 20.253-20.393 | 20.332 | 0.022 |
| 9 Pentachlorophenol | 21.158 | 21.182 | 21.170 | 21.163 | 21.153 | 21.149 | 21.158 | 21.088-21.228 | 21.162 | 0.012 |

Reviewer 1 _____
Reviewer 2 _____

AR Date: 9/26/2012
 Date: 9/26/12

Analytical Resources, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 21-SEP-2012 19:28
 End Cal Date : 21-SEP-2012 22:30
 Quant Method : ESTD
 Origin : Disabled
 Target Version : 3.50
 Integrator : HP Genie
 Method file : /chem2/ecd1.i/PCP20120921.b/PCPB.m
 Cal Date : 25-Sep-2012 10:11 aron
 Curve Type : Average

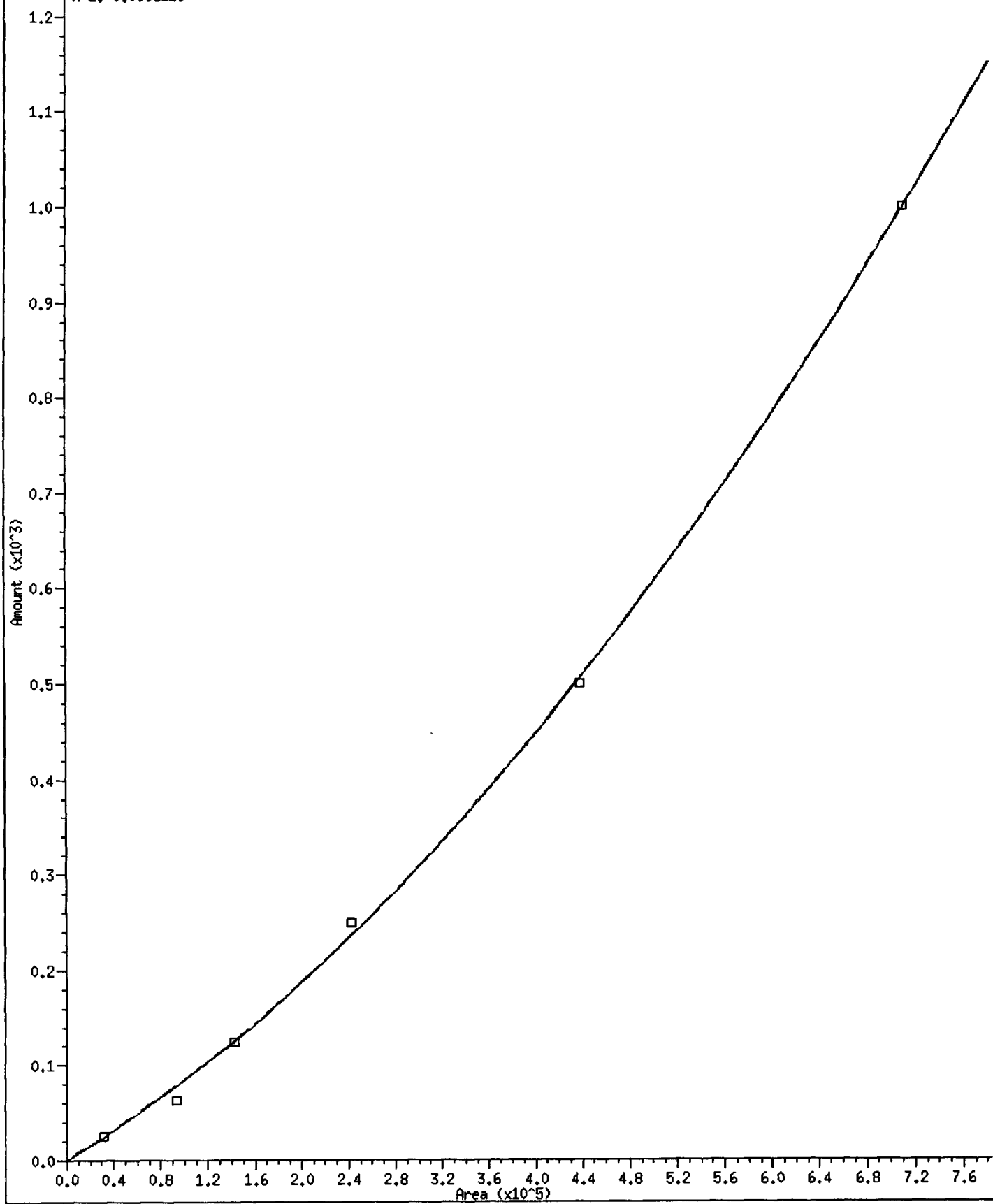
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 Level 3: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A020.d
 Level 4: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A017.d
 Level 5: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A021.d
 Level 6: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A022.d

| Compound | 2.500 Level 1 | 6.250 Level 2 | 12.500 Level 3 | 25.000 Level 4 | 50.000 Level 5 | 100.000 Level 6 | RRF | % RSD |
|----------------------------------|------------------|------------------|-------------------|-------------------|-------------------|--------------------|-------|-----------|
| 1 2,4-Dichlorophenol | 1292 | 1502 | 1138 | 970 | 877 | 712 | 1082 | 26.637 <- |
| 2 2,4,6-Trichlorophenol | 32528 | 33312 | 25171 | 22050 | 20938 | 17684 | 25280 | 25.269 <- |
| 3 2,3,6-Trichlorophenol | 25874 | 25680 | 24007 | 20973 | 17820 | 15189 | 21590 | 20.347 <- |
| 4 2,4,5-Trichlorophenol | 12584 | 13469 | 15051 | 12710 | 10198 | 7860 | 11979 | 21.347 <- |
| 5 2,3,5,6-Tetrachlorophenol | 33035 | 31396 | 31059 | 28607 | 26066 | 23149 | 28886 | 12.877 |
| 6 2,3,4-Trichlorophenol | 23072 | 18508 | 18408 | 15761 | 13094 | 9728 | 16428 | 28.400 <- |
| 8 2,3,4,5-Tetrachlorophenol | 25112 | 23550 | 21899 | 20040 | 18059 | 15675 | 20723 | 16.950 |
| 9 Pentachlorophenol | 42596 | 39717 | 37527 | 34681 | 31627 | 27985 | 35689 | 15.046 |
| \$ 7 2,4,6-Tribromophenol (surr) | 33881 | 32521 | 32652 | 29584 | 27527 | 24749 | 30152 | 11.695 |

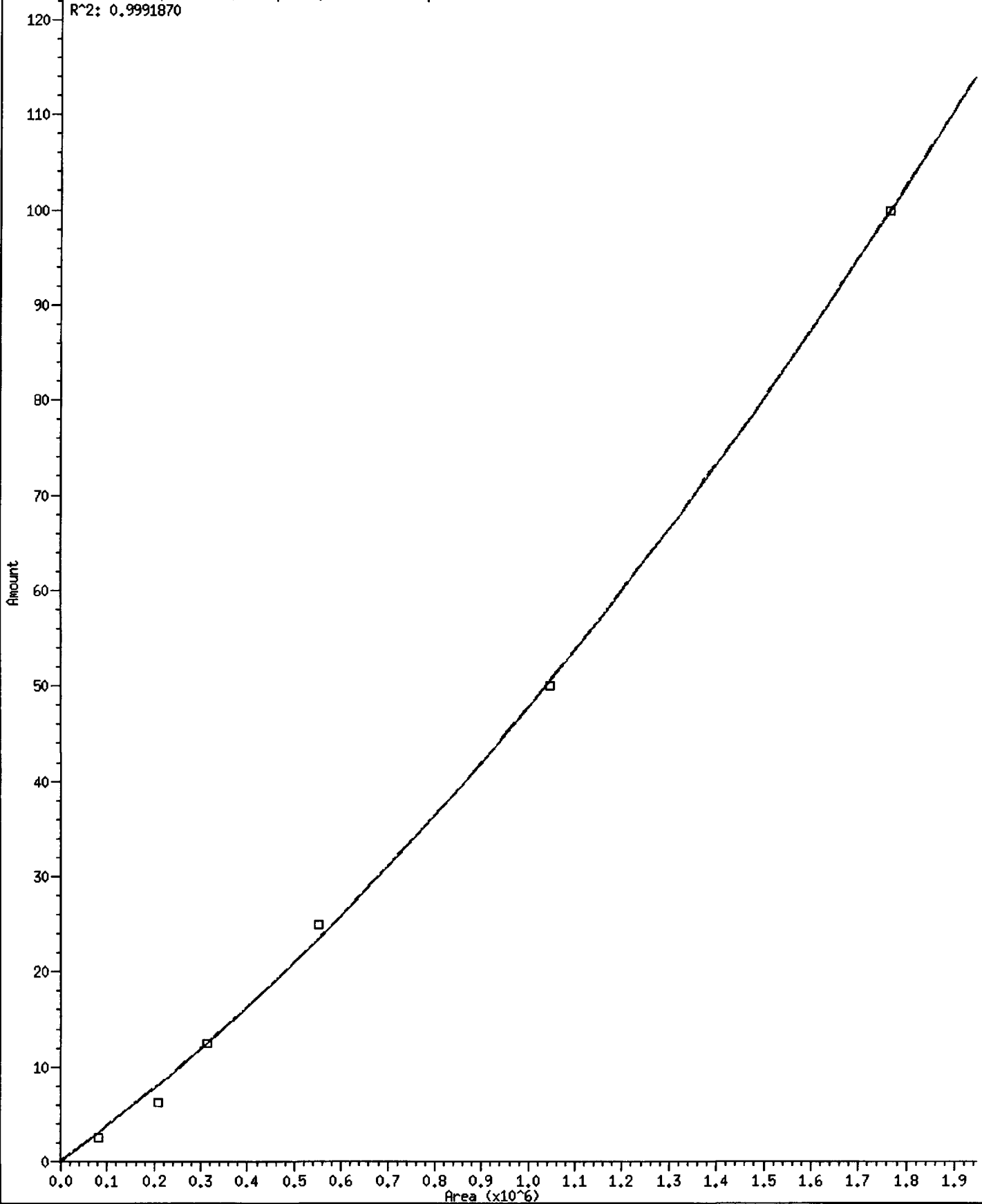
1 2,4-Dichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.0007495282*Rsp + 9.19662e-10*Rsp^2
R^2: 0.9993119



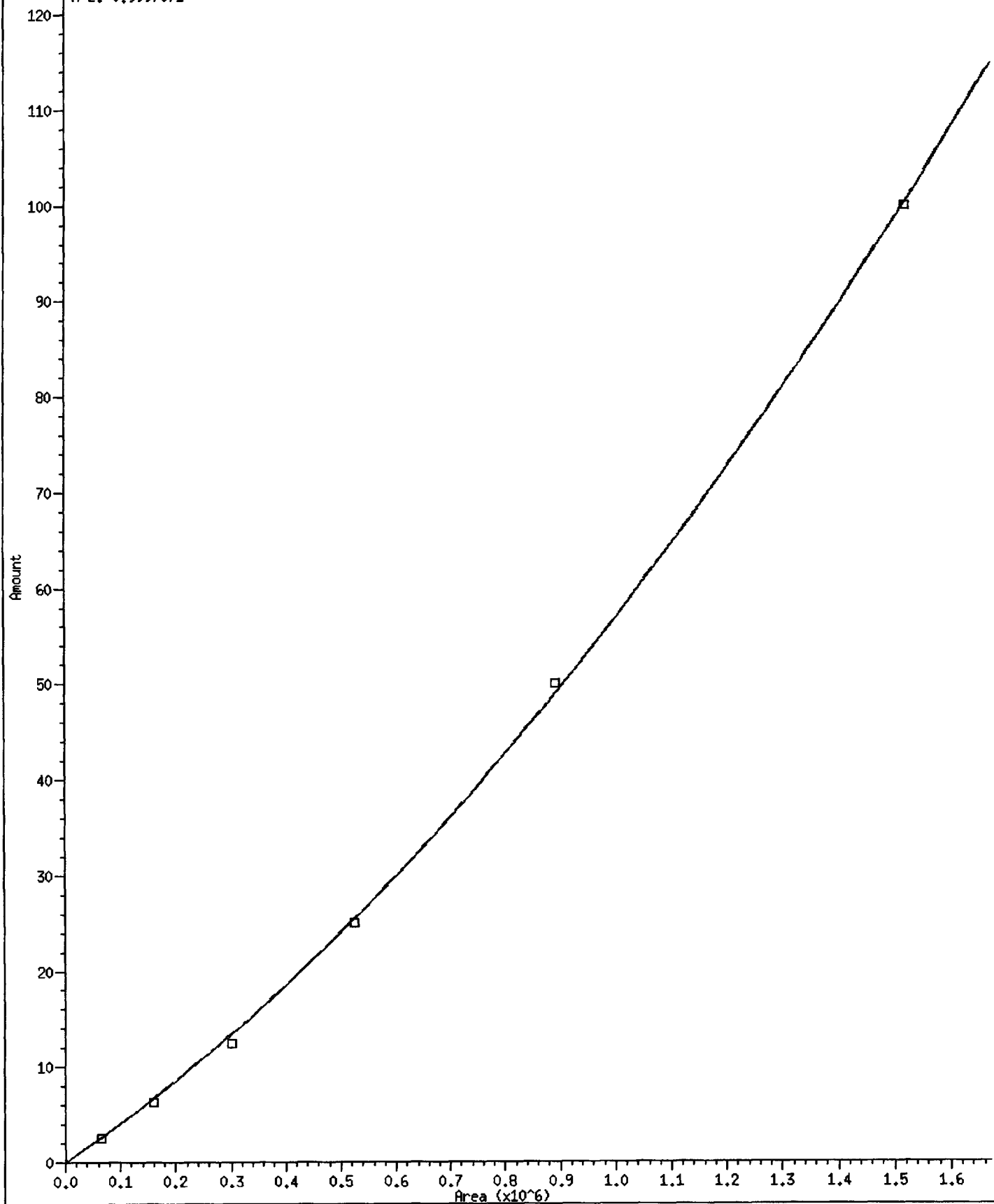
2 2,4,6-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00003621041MRsp + 1.148504e-11MRsp^2
R^2: 0.9991870



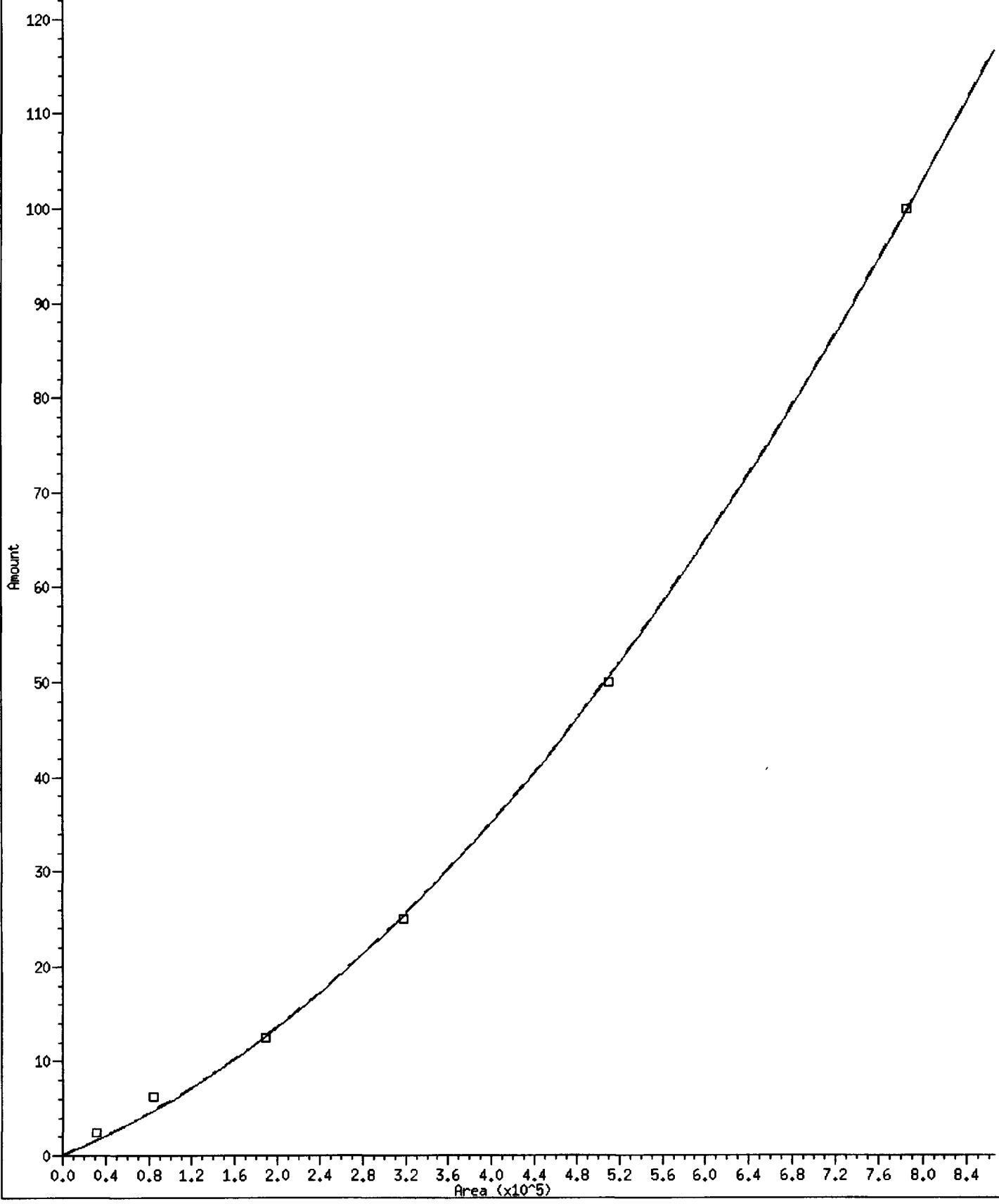
3 2,3,6-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00003908481 * Rsp + 1.774195e-11 * Rsp^2
R^2: 0.9997071



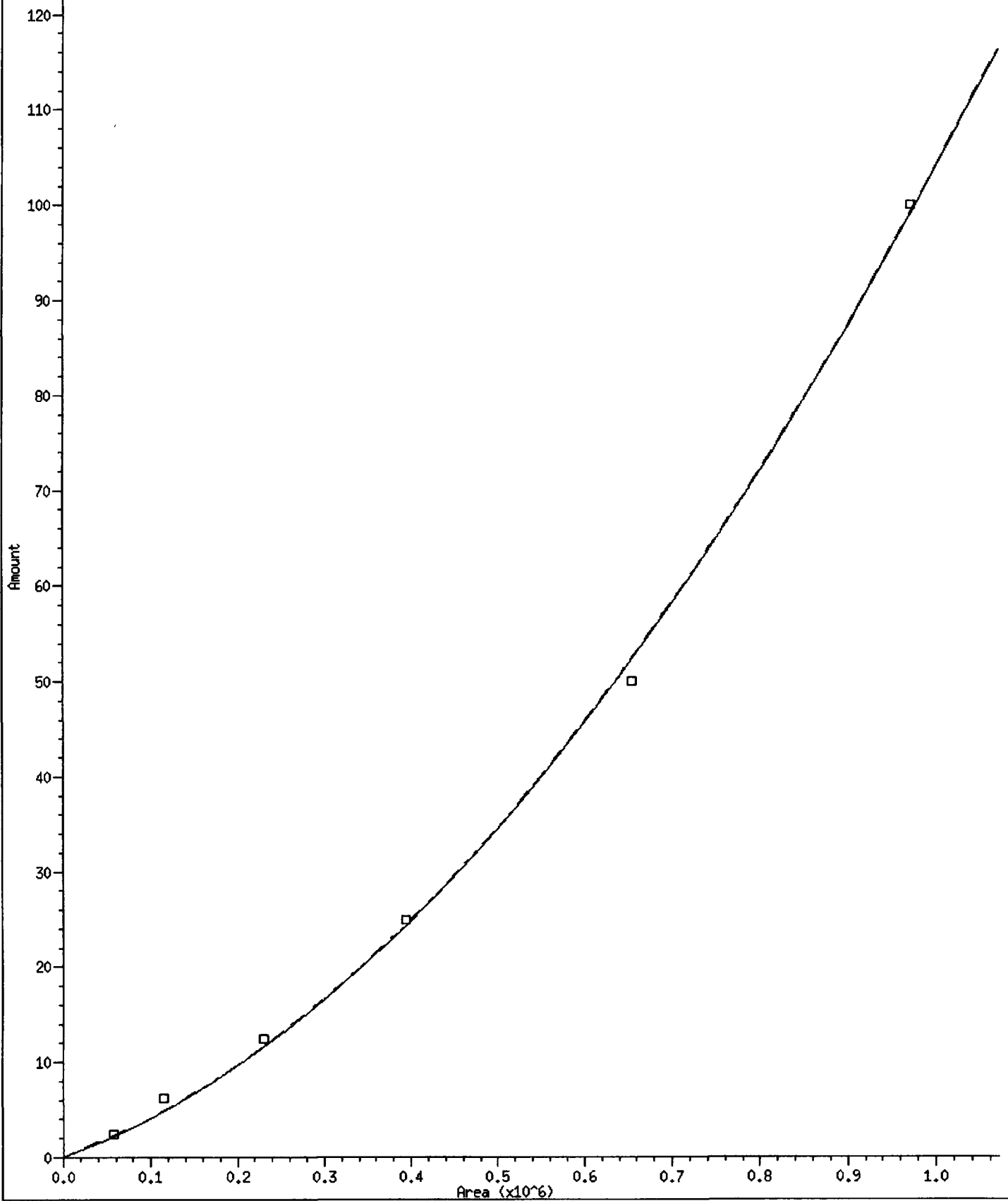
4 2,4,5-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00004747477*Rsp + 1.010754e-10*Rsp^2
R^2: 0.9996490



6 2,3,4-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00003425395*Rsp + 6.958576e-11*Rsp^2
R^2: 0.9988476



Analytical Resources, Inc.
INITIAL CALIBRATION DATA

Start Cal Date : 21-SEP-2012 19:28
 End Cal Date : 21-SEP-2012 22:30
 Quant Method : ESTD
 Origin : Force
 Target Version : 3.50
 Integrator : HP Genie
 Method file : /chem2/ecd1.i/PCP20120921.b/PCPB.m
 Cal Date : 25-Sep-2012 10:11 aron

Calibration File Names:
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 Level 2: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A019.d
 Level 3: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A020.d
 Level 4: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A017.d
 Level 5: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A021.d
 Level 6: /chem2/ecd1.i/PCP20120921.b/ical-2.b/0921A022.d

| Compound | Level | | | | | | Curve | Coefficients | | | WRSD or R^2 |
|----------------------------------|-------|--------|--------|--------|---------|---------|-------|--------------|---------|-----------|----------------|
| | 2 | 6 | 12 | 25 | 50 | 100 | | b | m1 | m2 | |
| 1 2,4-Dichlorophenol | 3292 | 93863 | 142277 | 242396 | 438595 | 711683 | QUAD | 0.000e+00 | 0.00075 | 9.197e-10 | 0.99931 |
| 2 2,4,6-Trichlorophenol | 81319 | 208197 | 314632 | 551249 | 1046878 | 1768391 | QUAD | 0.000e+00 | 0.00004 | 1.149e-11 | 0.99919 |
| 3 2,3,6-Trichlorophenol | 64685 | 160501 | 300088 | 524327 | 891000 | 1518853 | QUAD | 0.000e+00 | 0.00004 | 1.774e-11 | 0.99971 |
| 4 2,4,5-Trichlorophenol | 31460 | 84183 | 188136 | 317756 | 509875 | 786042 | QUAD | 0.000e+00 | 0.00005 | 1.011e-10 | 0.99965 |
| 5 2,3,5,6-Tetrachlorophenol | 33035 | 31396 | 31059 | 28607 | 26066 | 23149 | AVRG | 28886 | | | 12.87707 |
| 6 2,3,4-Trichlorophenol | 57679 | 115678 | 230095 | 394022 | 654702 | 972757 | QUAD | 0.000e+00 | 0.00003 | 6.959e-11 | 0.99885 |
| 8 2,3,4,5-Tetrachlorophenol | 25112 | 23550 | 21899 | 20040 | 18059 | 15675 | AVRG | 20723 | | | 16.95022 |
| 9 Pentachlorophenol | 42596 | 39717 | 37527 | 34681 | 31627 | 27985 | AVRG | 35689 | | | 15.04595 |
| \$ 7 2,4,6-Tribromophenol (surr) | 33881 | 32521 | 32652 | 29584 | 27527 | 24749 | AVRG | 30152 | | | 11.69494 |

Analytical Resources, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 21-SEP-2012 19:28
 End Cal Date : 21-SEP-2012 22:30
 Quant Method : ESTD
 Origin : Disabled
 Target Version : 3.50
 Integrator : HP Genie
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 Cal Date : 25-Sep-2012 12:45 aron
 Curve Type : Average

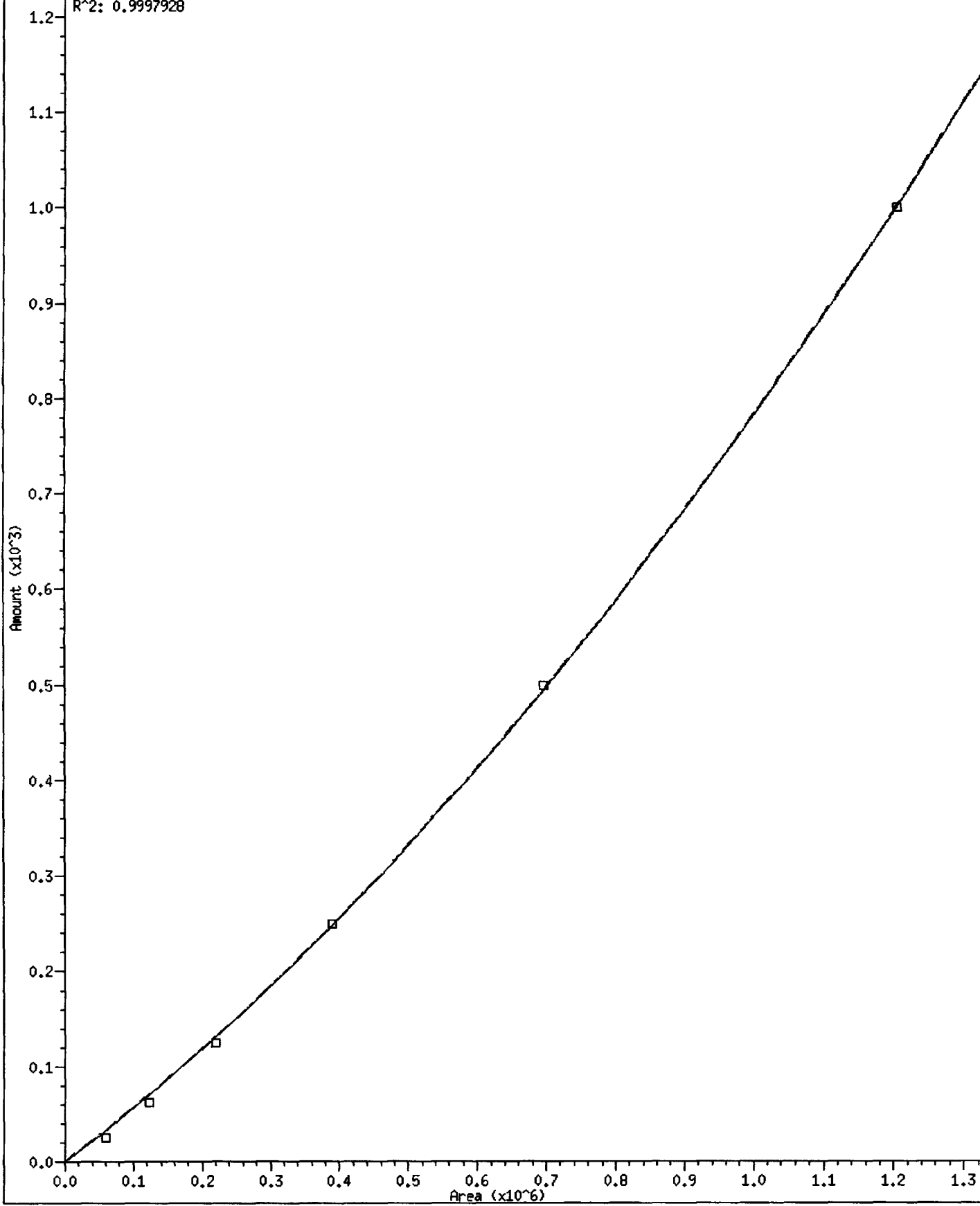
Calibration File Names:

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 Level 3: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A020.d
 Level 4: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A017.d
 Level 5: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A021.d
 Level 6: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A022.d

| Compound | 2.500 Level 1 | 6.250 Level 2 | 12.500 Level 3 | 25.000 Level 4 | 50.000 Level 5 | 100.000 Level 6 | RRF | % RSD |
|----------------------------------|------------------|------------------|-------------------|-------------------|-------------------|--------------------|-------|-----------|
| 1 2,4-Dichlorophenol / | 2363 | 1981 | 1759 | 1559 | 1390 | 1206 | 1710 | 24.560 <- |
| 2 2,4,6-Trichlorophenol / | 37800 | 36793 | 34435 | 30695 | 27572 | 23819 | 31852 | 17.232 |
| 3 2,3,6-Trichlorophenol | 39363 | 41432 | 38253 | 34053 | 27204 | 22897 | 33867 | 21.756 <- |
| 4 2,4,5-Trichlorophenol | 23290 | 24192 | 22777 | 19742 | 16572 | 13274 | 19974 | 21.611 <- |
| 5 2,3,5,6-Tetrachlorophenol | 53827 | 53395 | 50427 | 46244 | 41856 | 36207 | 46993 | 14.828 |
| 6 2,3,4-Trichlorophenol | 35575 | 30905 | 28044 | 24569 | 21009 | 17260 | 26227 | 25.461 <- |
| 8 2,3,4,5-Tetrachlorophenol | 50607 | 45516 | 41632 | 36089 | 31716 | 27069 | 38772 | 22.711 <- |
| 9 Pentachlorophenol | 77052 | 71102 | 62381 | 56971 | 51600 | 44551 | 60610 | 20.016 <- |
| \$ 7 2,4,6-Tribromophenol (surr) | 63570 | 57559 | 52456 | 46332 | 41843 | 35975 | 49623 | 20.614 <- |

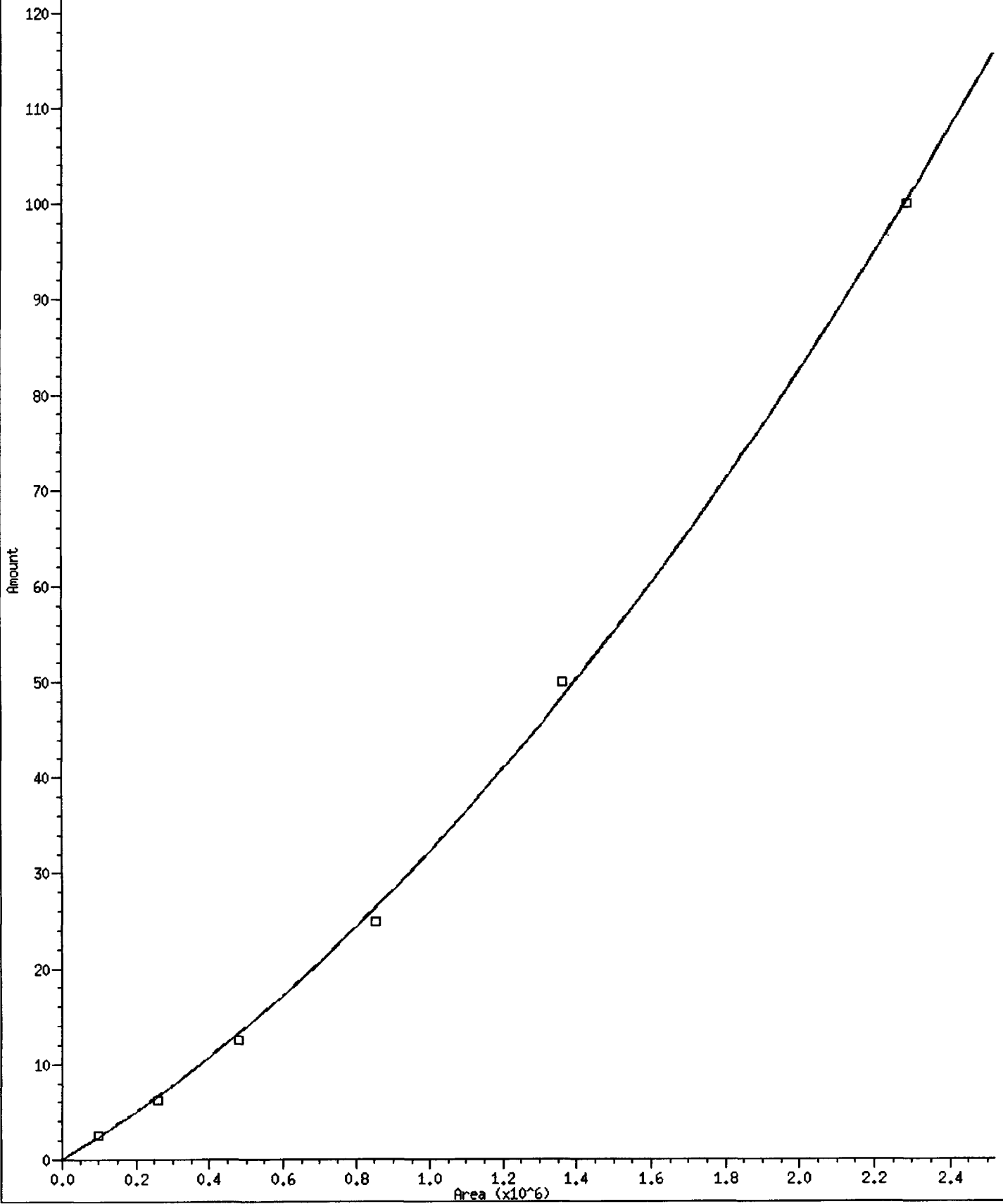
1 2,4-Dichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.0005439634*Rsp + 2.380142e-10*Rsp^2
R^2: 0.9997928



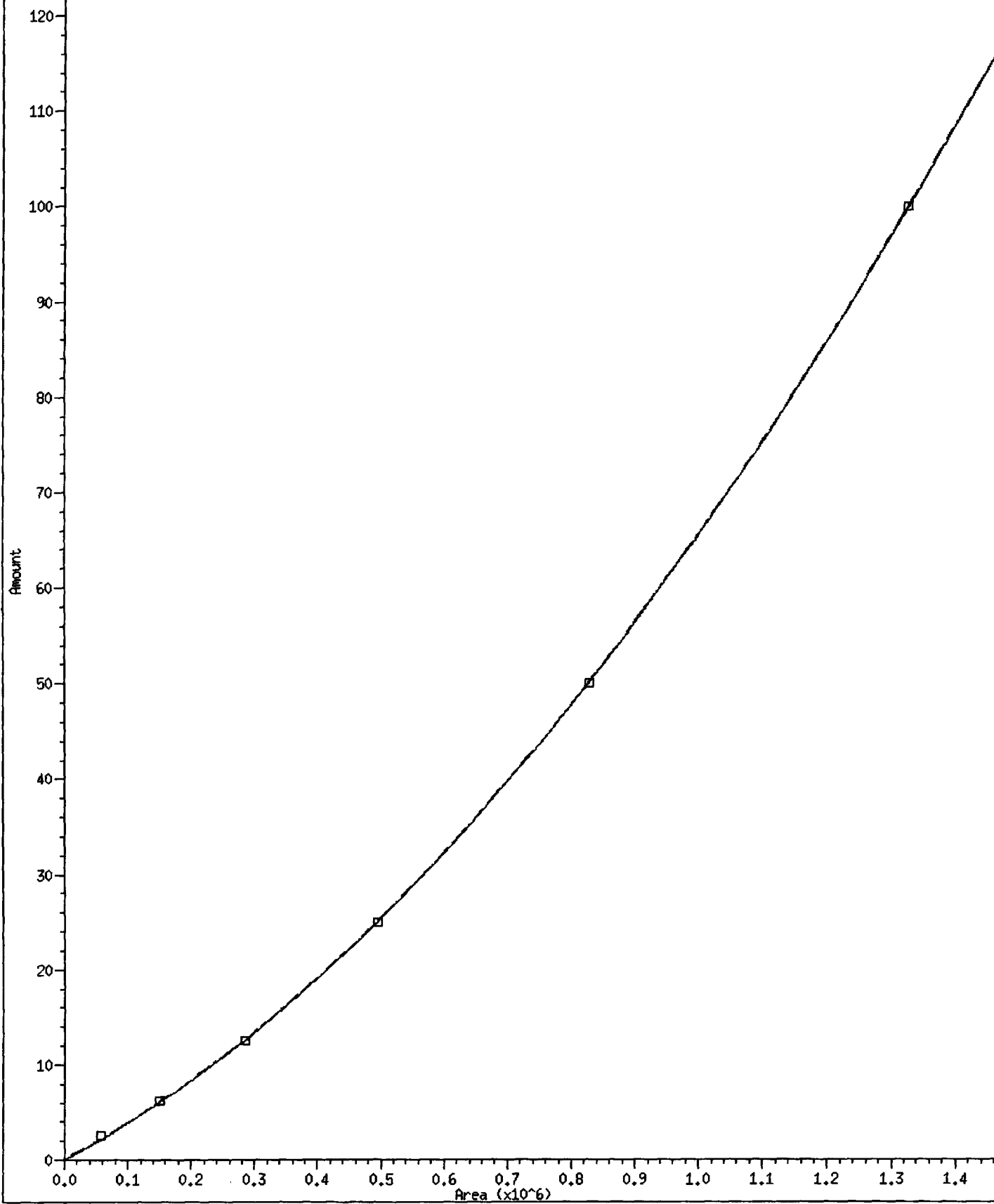
3 2,3,6-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00002314655*Rsp + 9.045971e-12*Rsp^2
R^2: 0.9992332



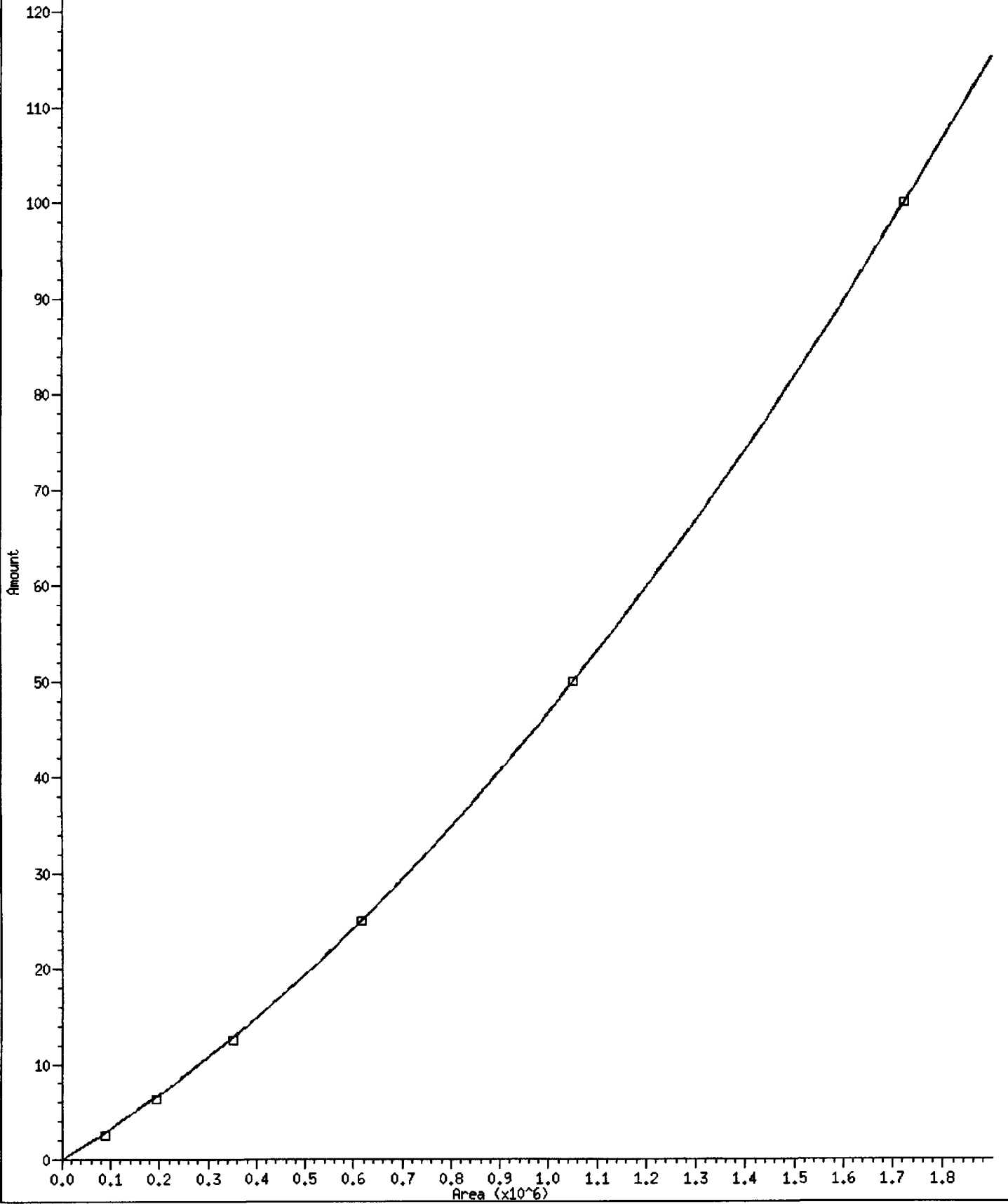
4 2,4,5-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00003583434 * Rsp + 2.973949e-11 * Rsp^2
R^2: 0.9999836



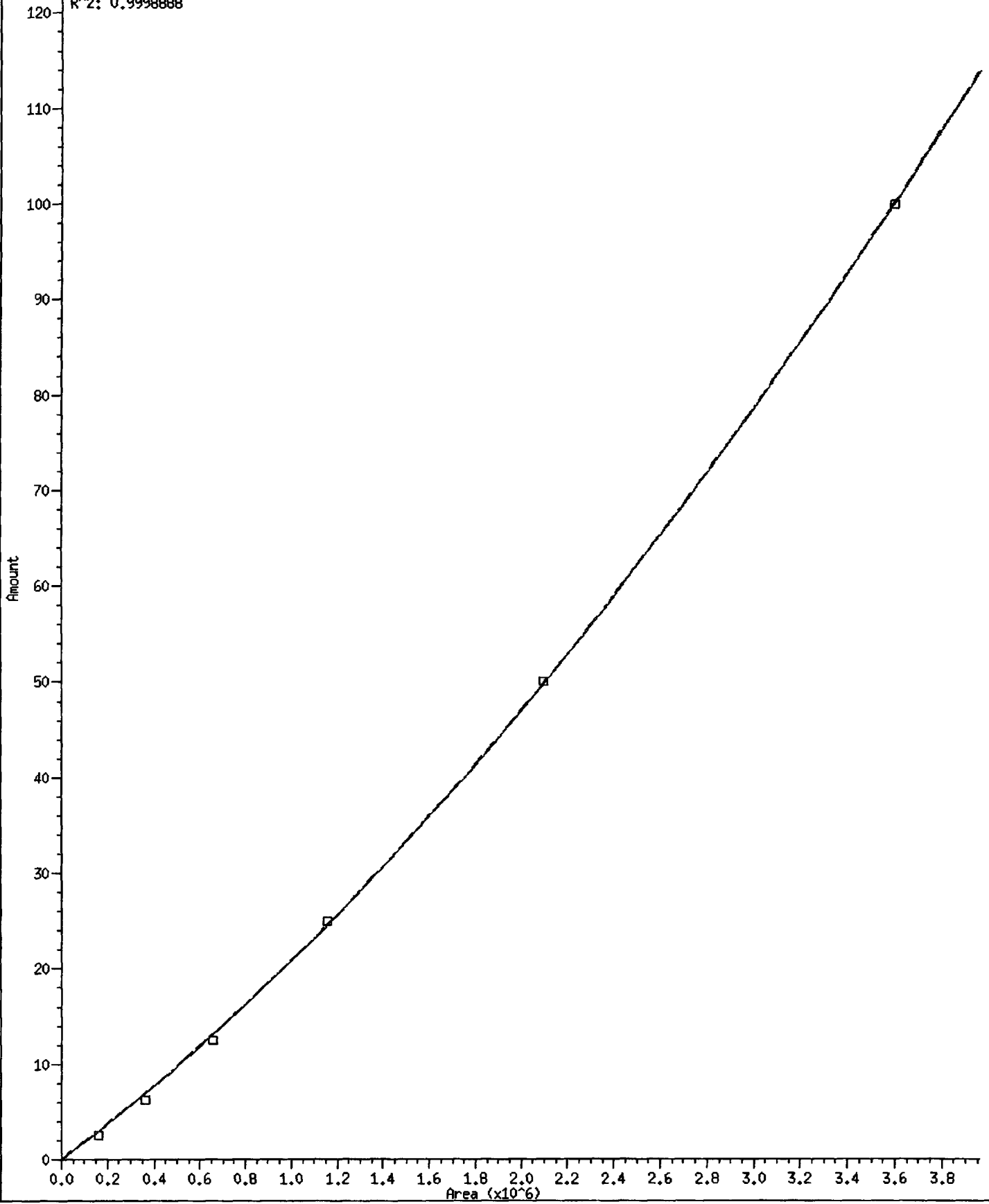
6 2,3,4-Trichlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00003084114*Rsp + 1.573015e-11*Rsp^2
R^2: 0.9999656



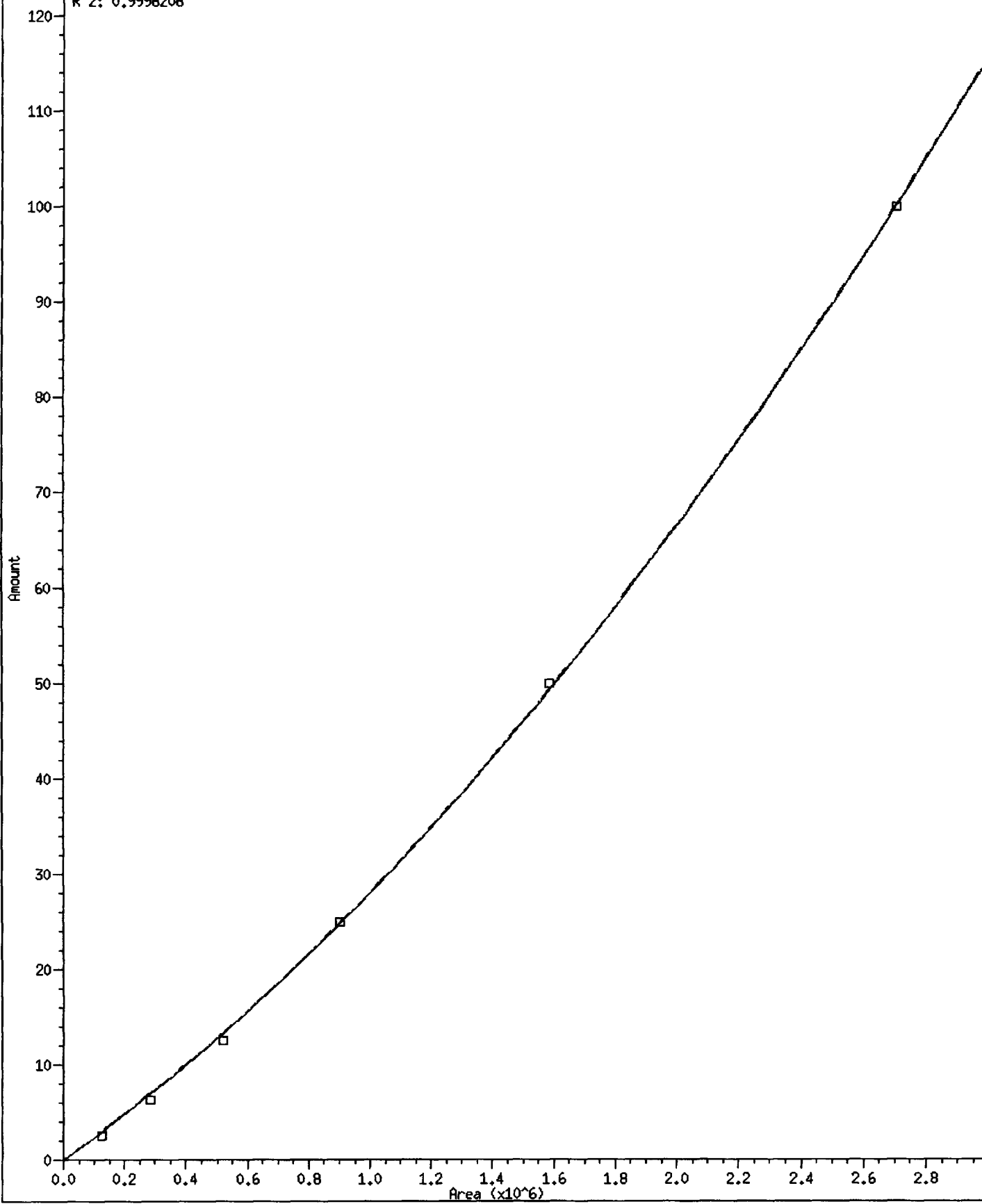
* 7 2,4,6-Tribromophenol (surr)

Curve Type: Quadratic By-Response
Amt = 0 + 0.0000181154*Rsp + 2.699923e-12*Rsp^2
R^2: 0.9998888



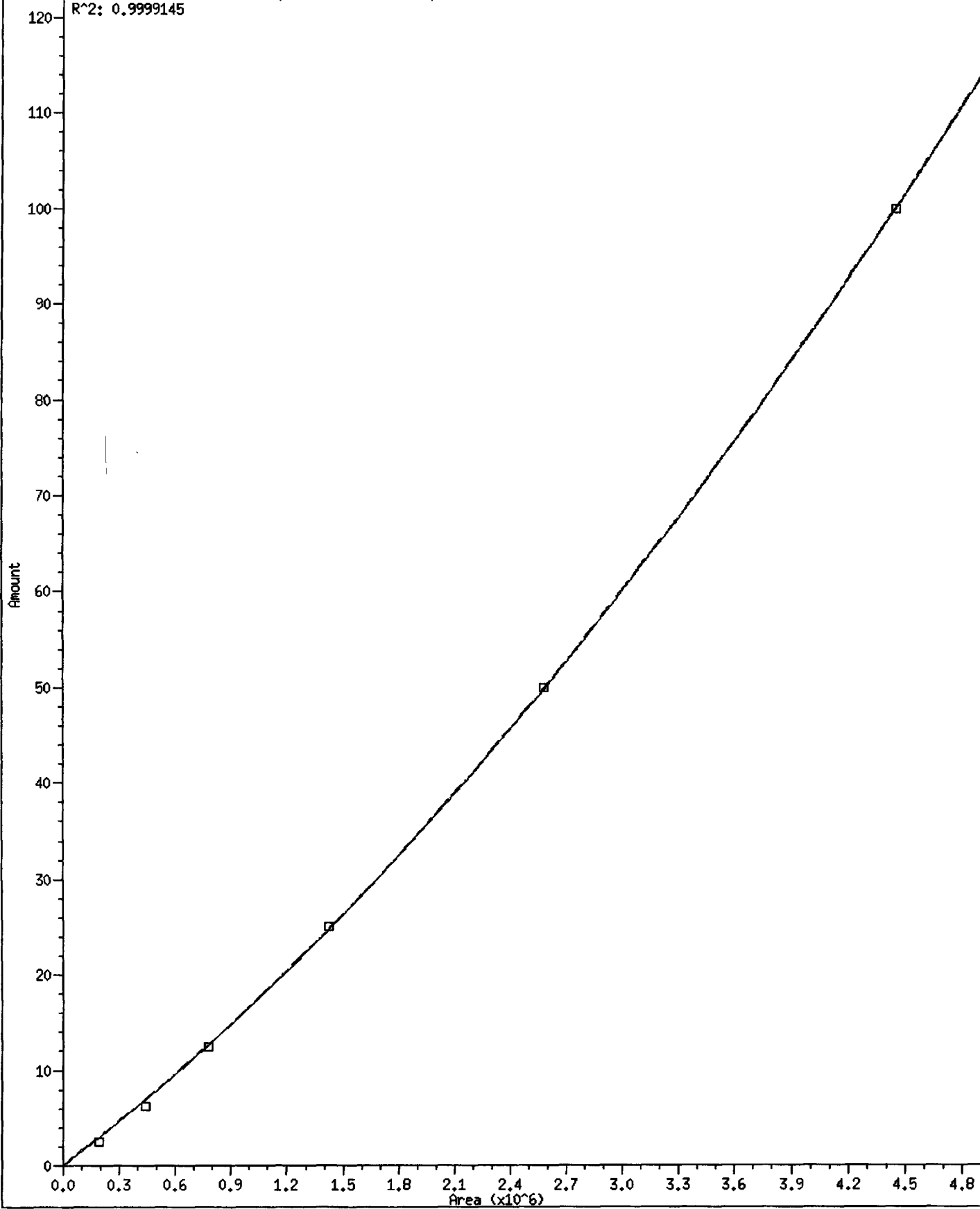
8 2,3,4,5-Tetrachlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00002275485*Rsp + 5.269859e-12*Rsp^2
R^2: 0.9998208



9 Pentachlorophenol

Curve Type: Quadratic By-Response
Amt = 0 + 0.00001495181 * Rsp + 1.686386e-12 * Rsp^2
R^2: 0.9999145



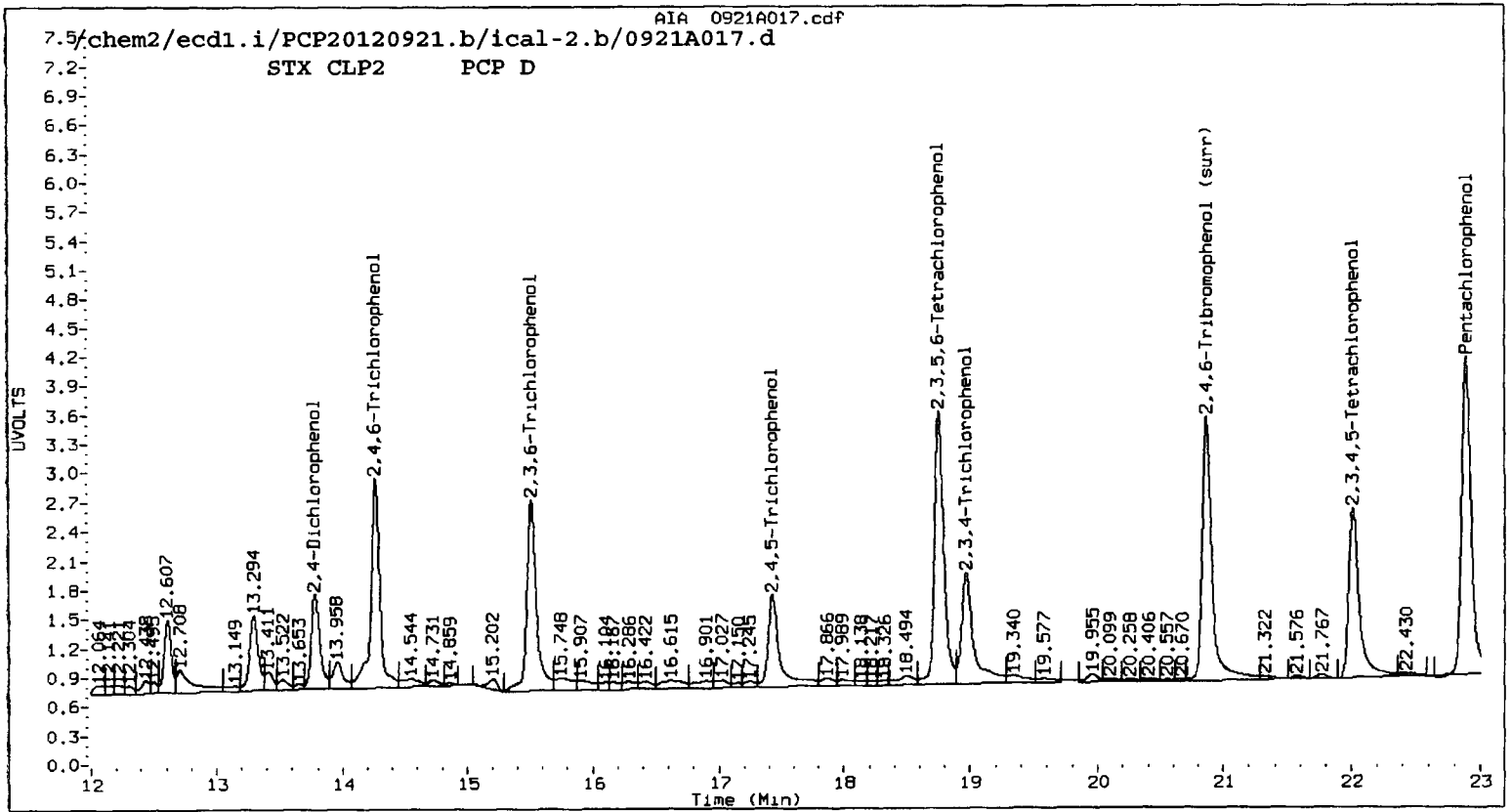
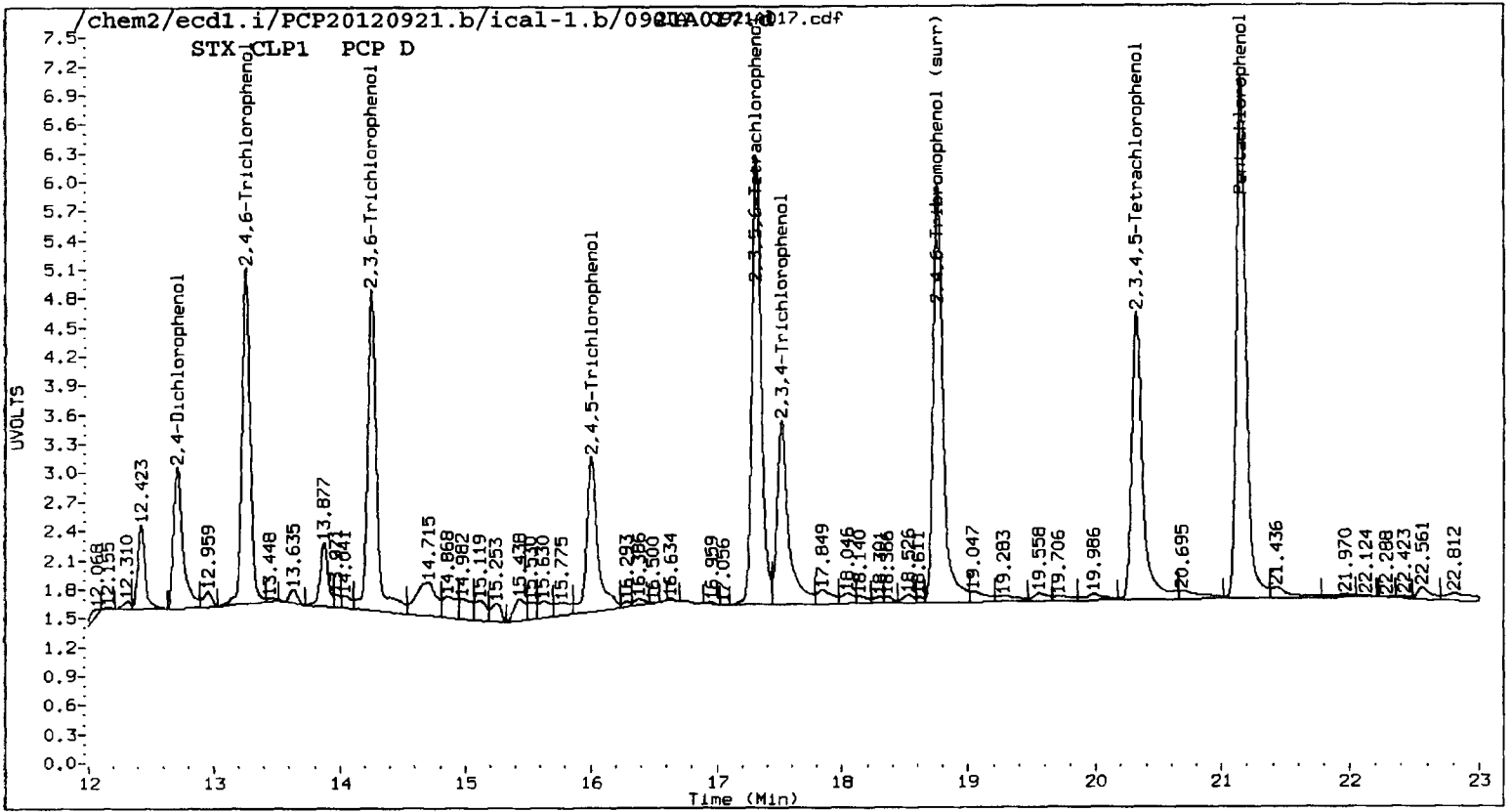
Analytical Resources, Inc.

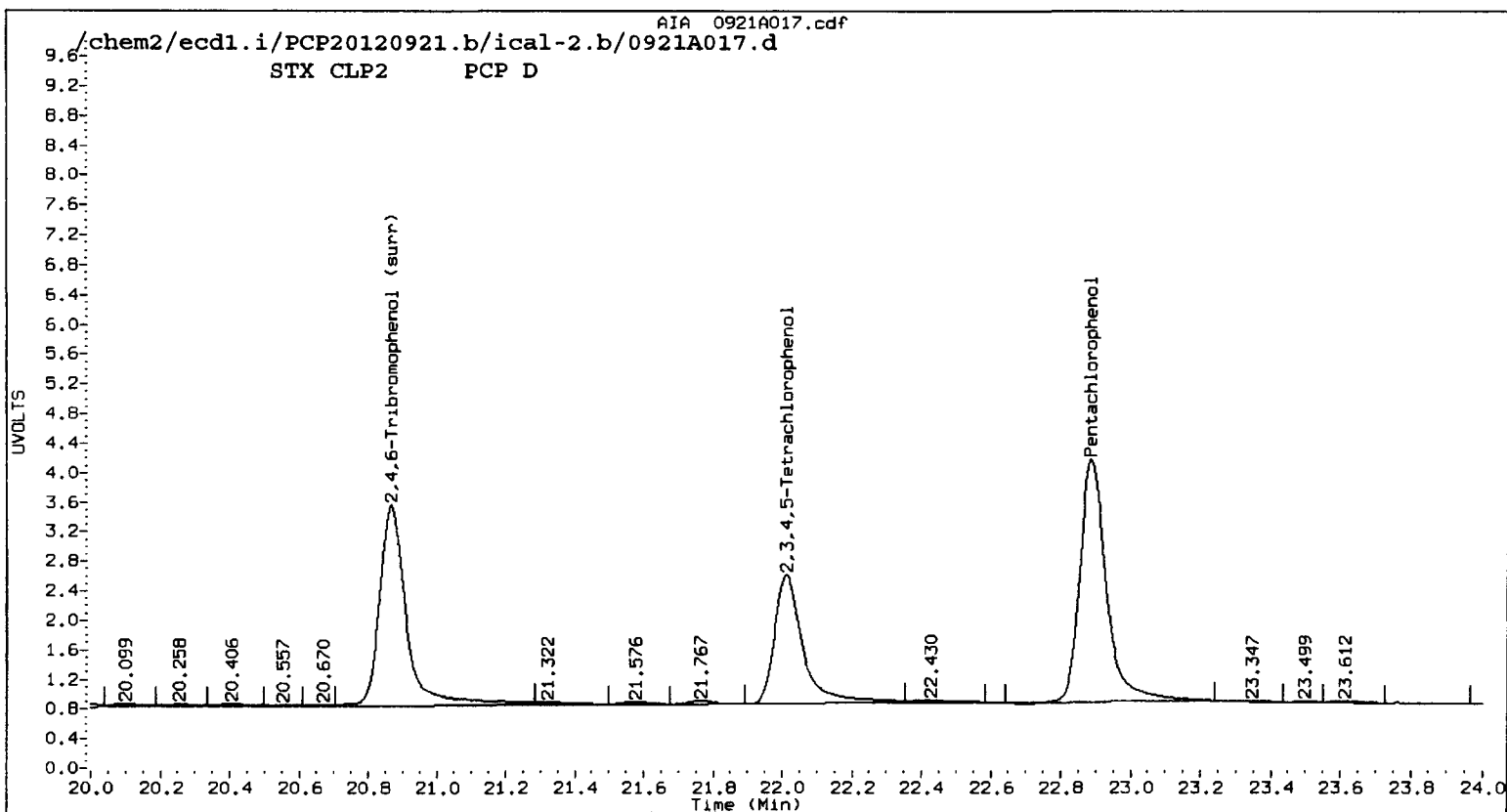
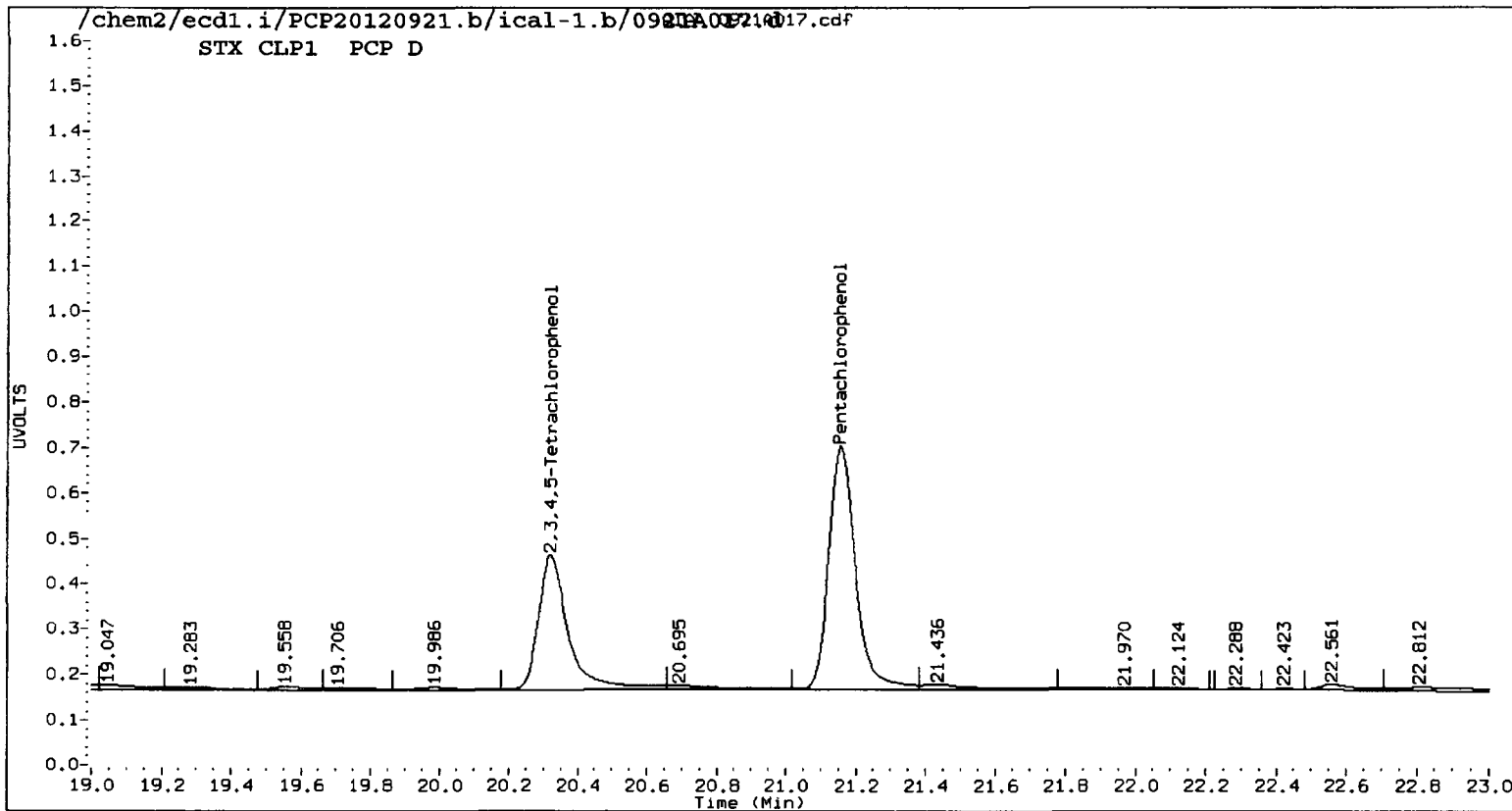
INITIAL CALIBRATION DATA

Start Cal Date : 21-SEP-2012 19:28
 End Cal Date : 21-SEP-2012 22:30
 Quant Method : ESTD
 Origin : Force
 Target Version : 3.50
 Integrator : HP Genie
 Method file : /chem2/ecd1.i/PCP20120921.b/PCP.m
 Cal Date : 25-Sep-2012 12:45 aron

Calibration File Names:
 Level 1: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A018.d
 Level 2: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A019.d
 Level 3: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A020.d
 Level 4: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A017.d
 Level 5: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A021.d
 Level 6: /chem2/ecd1.i/PCP20120921.b/ical-1.b/0921A022.d

| Compound | 2 | 6 | 12 | 25 | 50 | 100 | Curve | Coefficients | | | %RSD or R ² |
|----------------------------------|---------|---------|---------|---------|---------|---------|-------|--------------|---------|-----------|---------------------------|
| | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | b | m1 | m2 | |
| 1 2,4-Dichlorophenol | 59080 | 123823 | 219893 | 389692 | 695219 | 1205949 | QUAD | 0.000e+00 | 0.00054 | 2.380e-10 | 0.99979 |
| 2 2,4,6-Trichlorophenol | 37800 | 36793 | 34435 | 30695 | 27572 | 23819 | AVRG | | 31852 | | 17.23219 |
| 3 2,3,6-Trichlorophenol | 98407 | 258950 | 478158 | 851316 | 1360198 | 2289663 | QUAD | 0.000e+00 | 0.00002 | 9.046e-12 | 0.99923 |
| 4 2,4,5-Trichlorophenol | 58226 | 151202 | 284711 | 493541 | 828590 | 1327374 | QUAD | 0.000e+00 | 0.00004 | 2.974e-11 | 0.99998 |
| 5 2,3,5,6-Tetrachlorophenol | 53827 | 53395 | 50427 | 46244 | 41856 | 36207 | AVRG | | 46993 | | 14.82781 |
| 6 2,3,4-Trichlorophenol | 88937 | 193157 | 350554 | 614215 | 1050439 | 1725987 | QUAD | 0.000e+00 | 0.00003 | 1.573e-11 | 0.99997 |
| 8 2,3,4,5-Tetrachlorophenol | 126517 | 284477 | 520404 | 902216 | 1585782 | 2706943 | QUAD | 0.000e+00 | 0.00002 | 5.270e-12 | 0.99982 |
| 9 Pentachlorophenol | 192630 | 444389 | 779765 | 1424284 | 2579984 | 4455069 | QUAD | 0.000e+00 | 0.00001 | 1.686e-12 | 0.99991 |
| \$ 7 2,4,6-Tribromophenol (surr) | 158926 | 359745 | 655694 | 1158311 | 2092155 | 3597466 | QUAD | 0.000e+00 | 0.00002 | 2.700e-12 | 0.99989 |





Date : 21-SEP-2012 19:28

Client ID:

Sample Info: PCP D

Purge Volume: 500.0

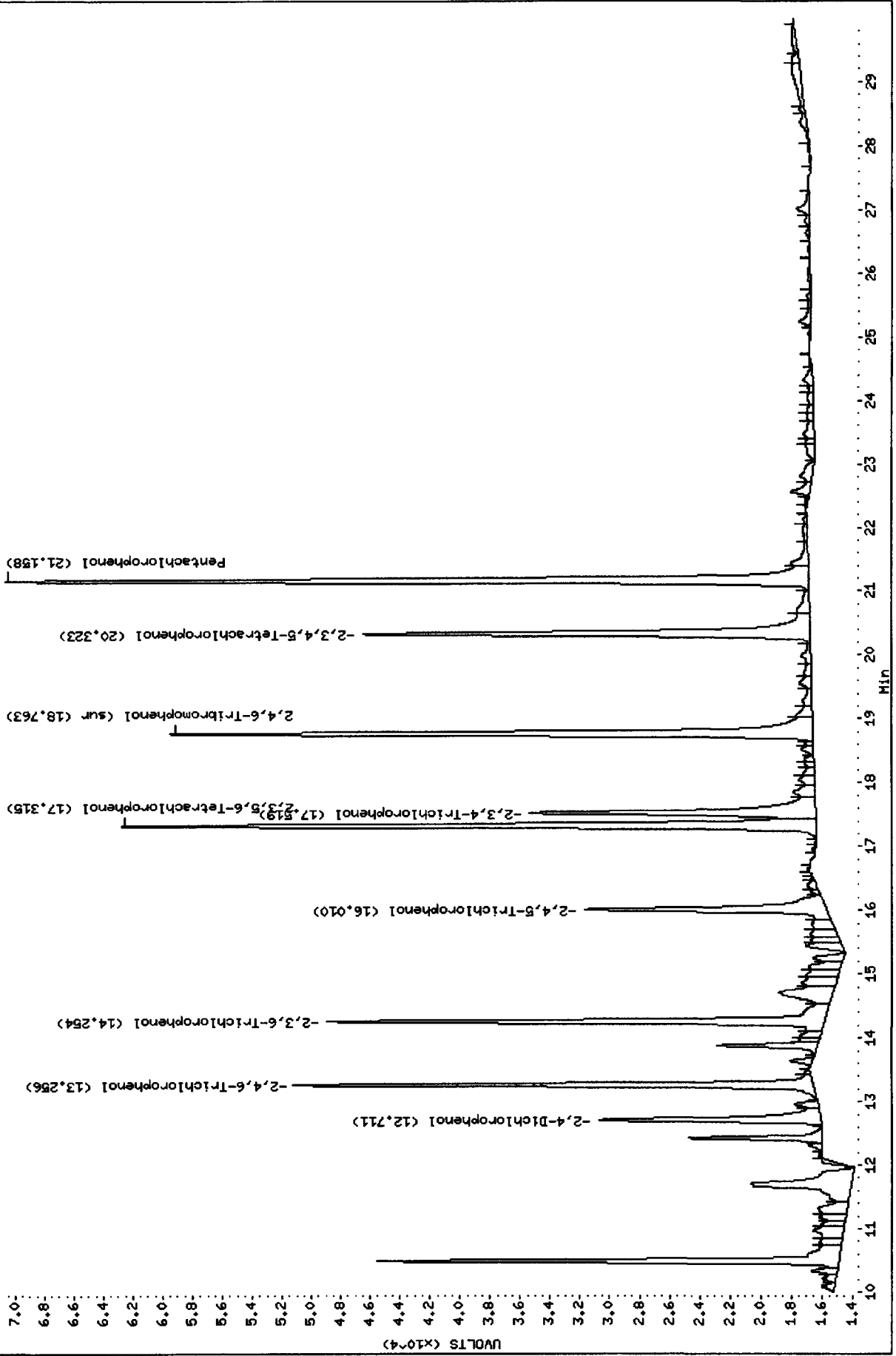
Column phase: STX CLP1

Instrument: eod1.i

Operator: ar

Column diameter: 0.53

/chem2/eod1.i/PCP20120921.b/ical-1.b/0921A017.d/0921A017.odf



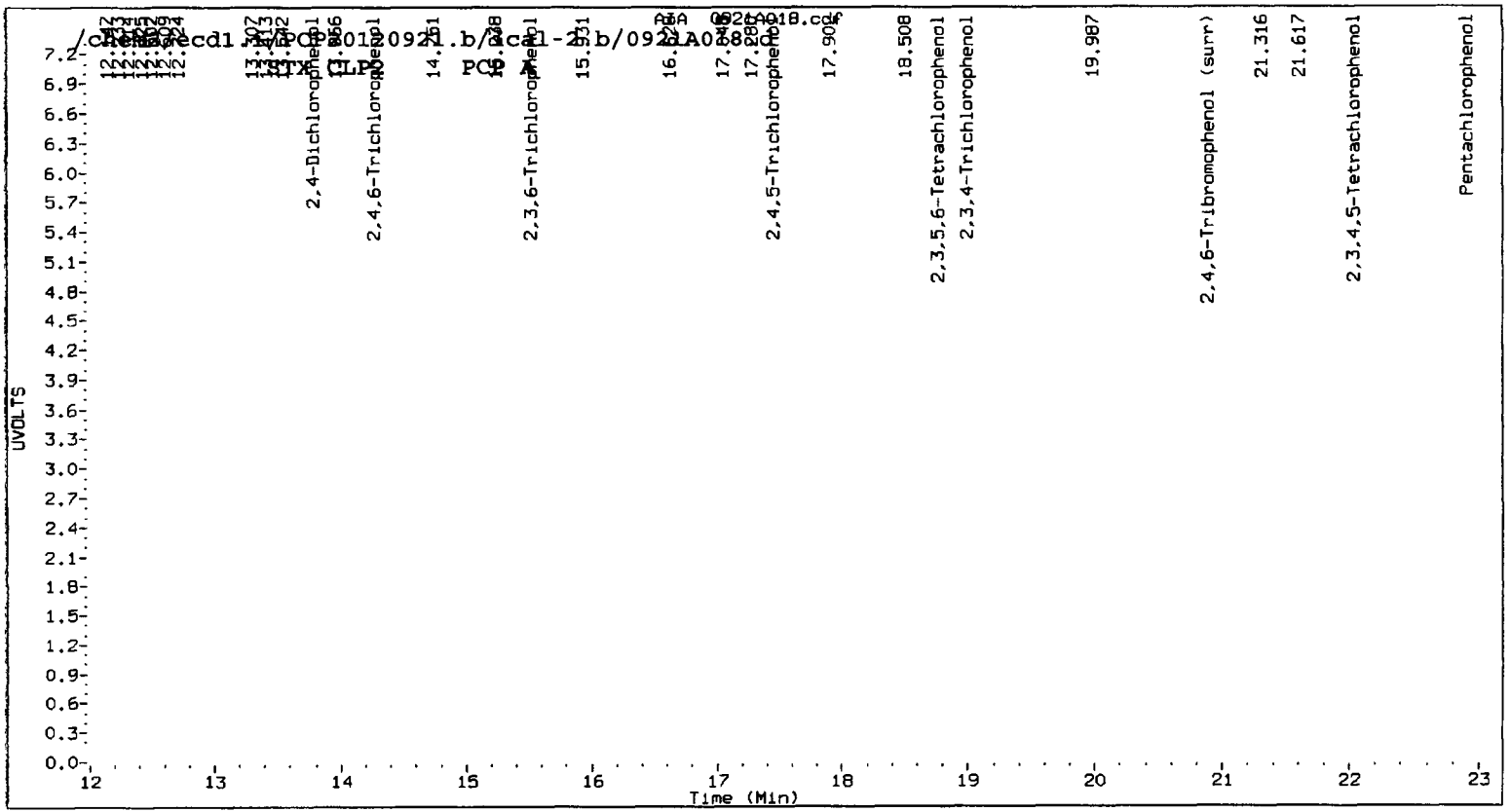
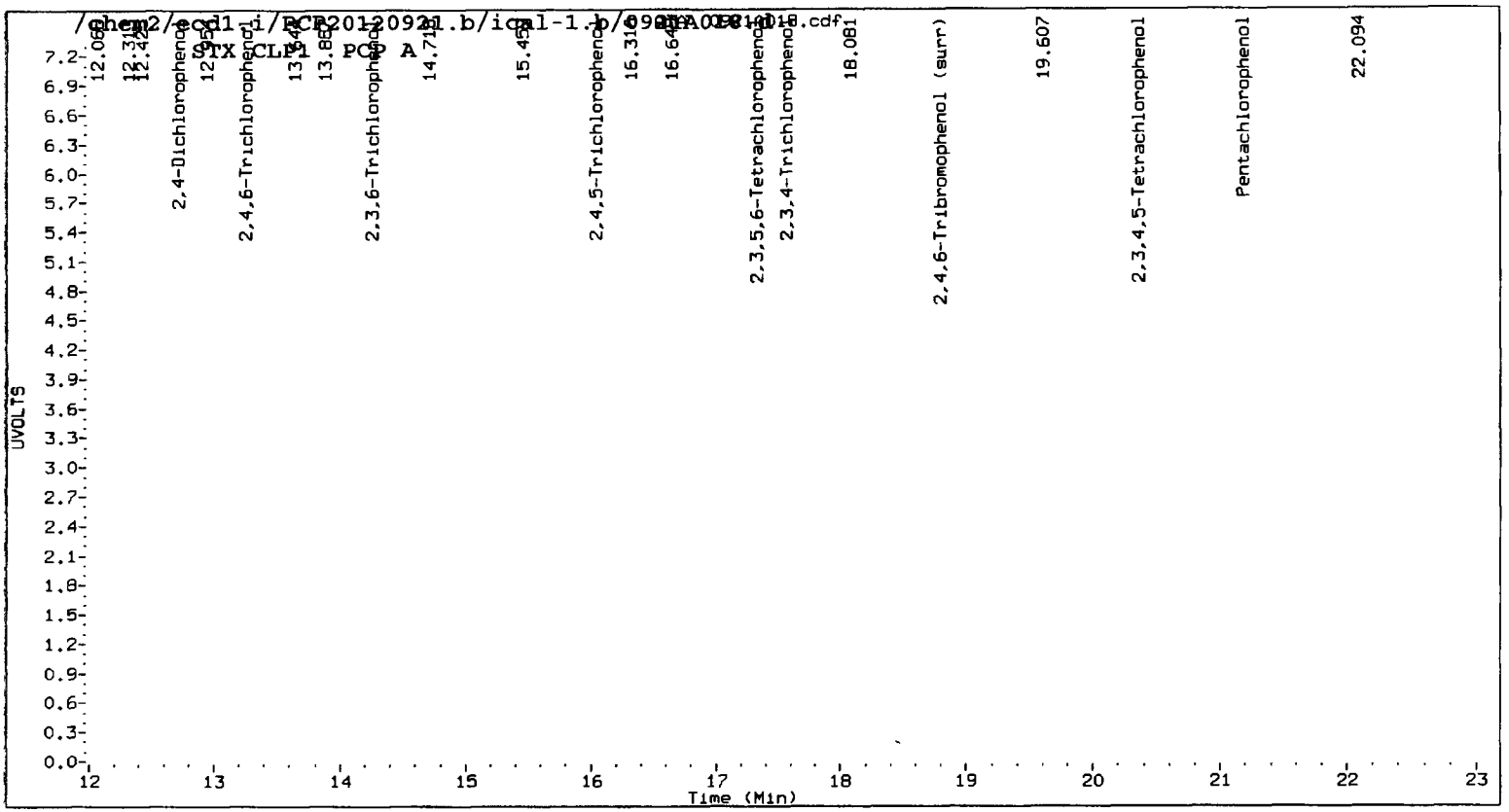
Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

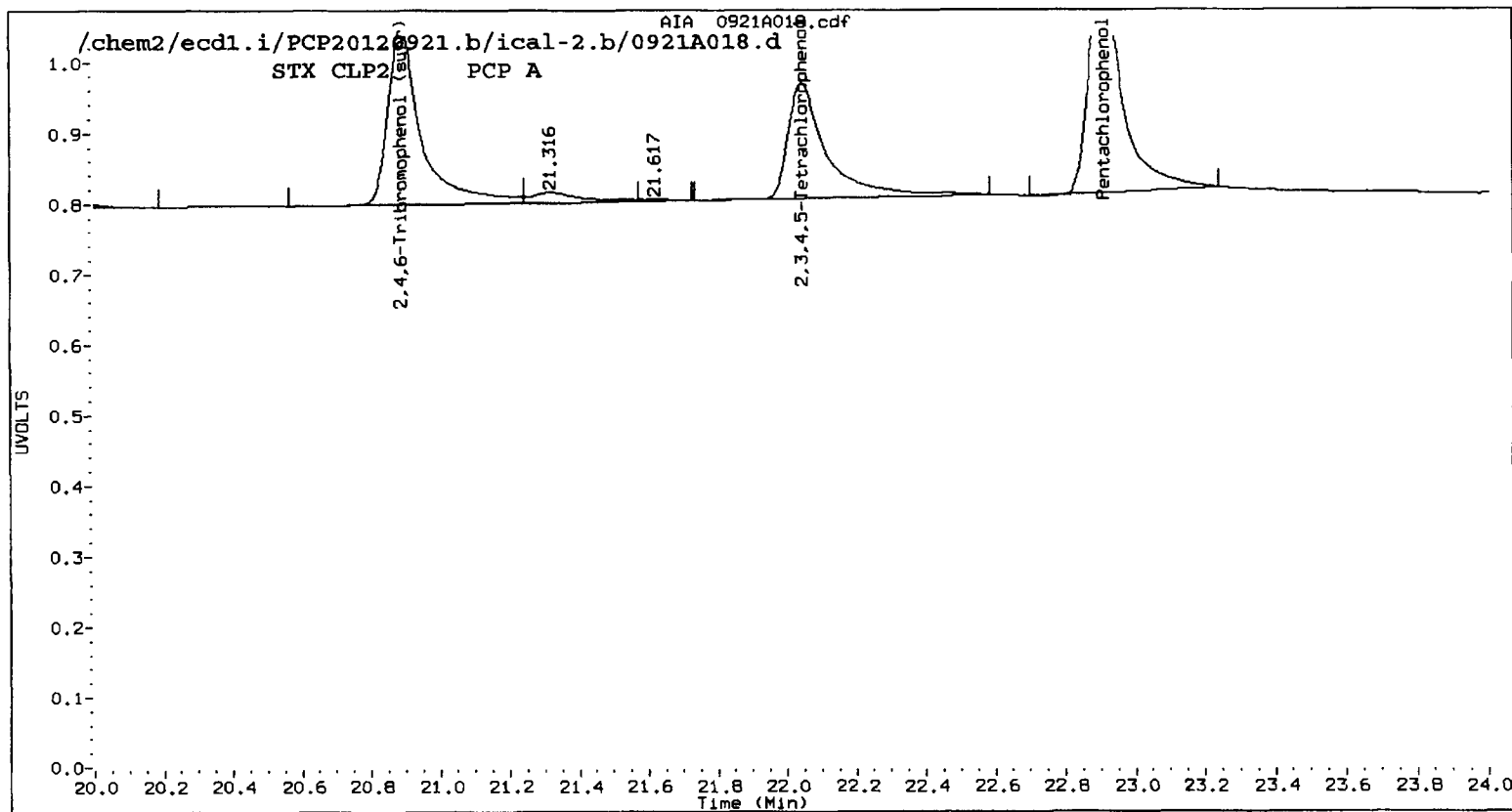
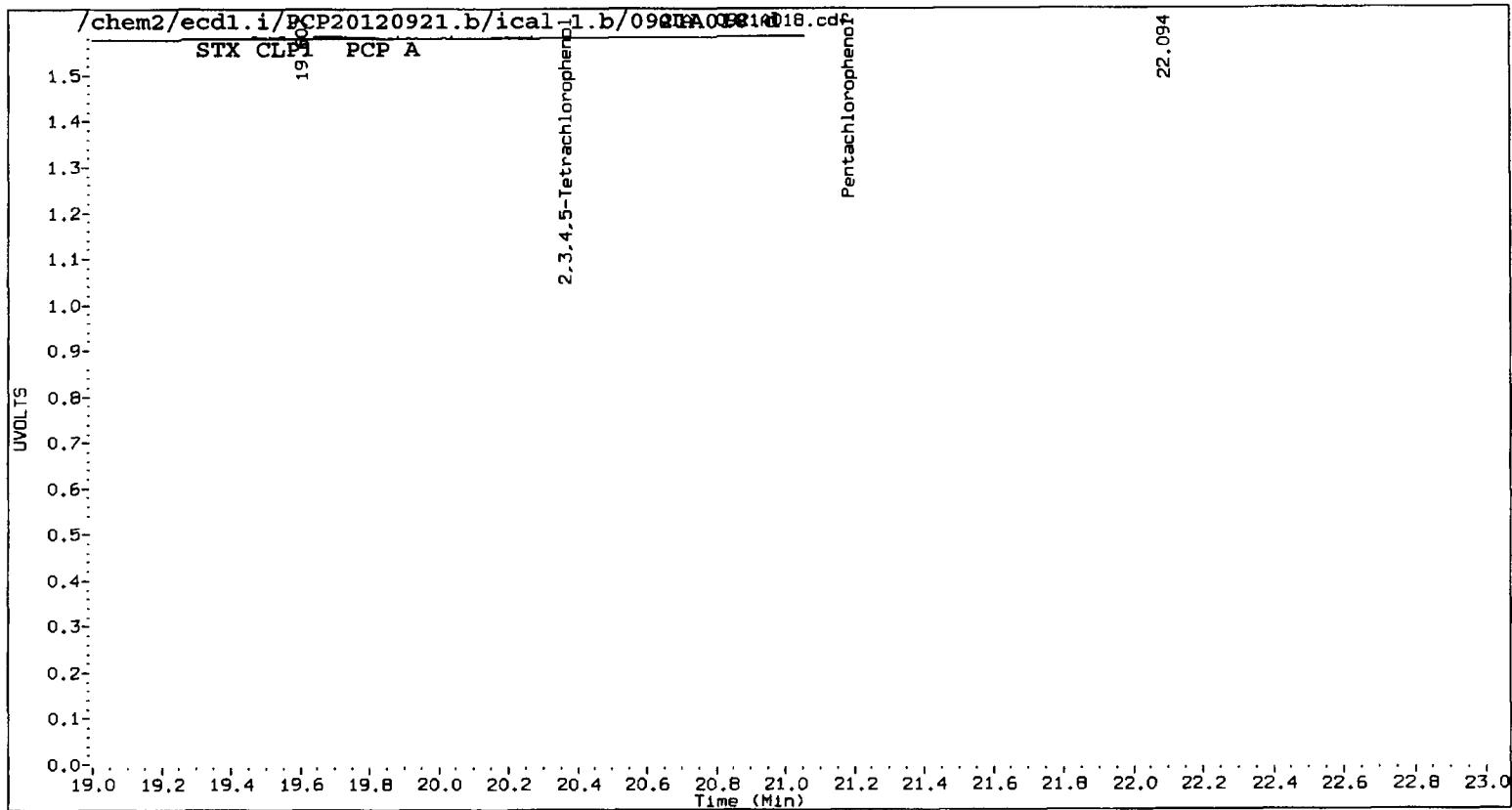
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 Data file 2: /chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A018.d Client ID:
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 21-SEP-2012 20:04
 Compound Sublist: all Report Date: 09/25/2012 13:17
 Instrument: ecdl.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

| RT | STX CLP1 Col Shift Response | RT | STX CLP2 Col Shift Response | on col | STX CLP1 on col | STX CLP2 RPD | Compound |
|--------|--------------------------------|--------|--------------------------------|---------|--------------------|-----------------|-------------------------|
| 21.182 | 0.024 192630 | 22.906 | 0.018 106490 | 2.9427 | 2.9838 | 1.4 | Pentachlorophenol |
| 13.260 | 0.004 94500 | 14.268 | 0.004 81319 | 2.9668 | 3.0205 | 1.8 | 2,4,6-Trichlorophenol |
| 14.262 | 0.008 98407 | 15.514 | 0.007 64685 | 2.3654 | 2.6024 | 9.5 | 2,3,6-Trichlorophenol |
| 16.044 | 0.034 58226 | 17.448 | 0.025 31460 | 2.1873 | 1.5936 | 31.4 | 2,4,5-Trichlorophenol |
| 17.566 | 0.047 88937 | 19.001 | 0.033 57679 | 2.8673 | 2.2072 | 26.0 | 2,3,4-Trichlorophenol |
| 17.334 | 0.019 134568 | 18.767 | 0.015 82588 | 2.8636 | 2.8591 | 0.2 | 2,3,5,6-Tetrachlorophe |
| 20.368 | 0.045 126517 | 22.044 | 0.032 62781 | 2.9632 | 3.0296 | 2.2 | 2,3,4,5-Tetrachlorophe |
| 12.719 | 0.008 59080 | 13.787 | 0.009 32292 | 32.9681 | 25.1628 | 26.9 | 2,4-Dichlorophenol |
| 18.793 | 0.030 158926 | 20.887 | 0.020 84702 | 2.9 | 2.8 | 4.8 | 2,4,6-Tribromophenol (s |

PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|------------------|------|------|
| 2,4,6-TBP (surr) | 11.8 | 11.2 |





Date : 21-SEP-2012 20:04

Client ID:

Instrument: ecd1.i

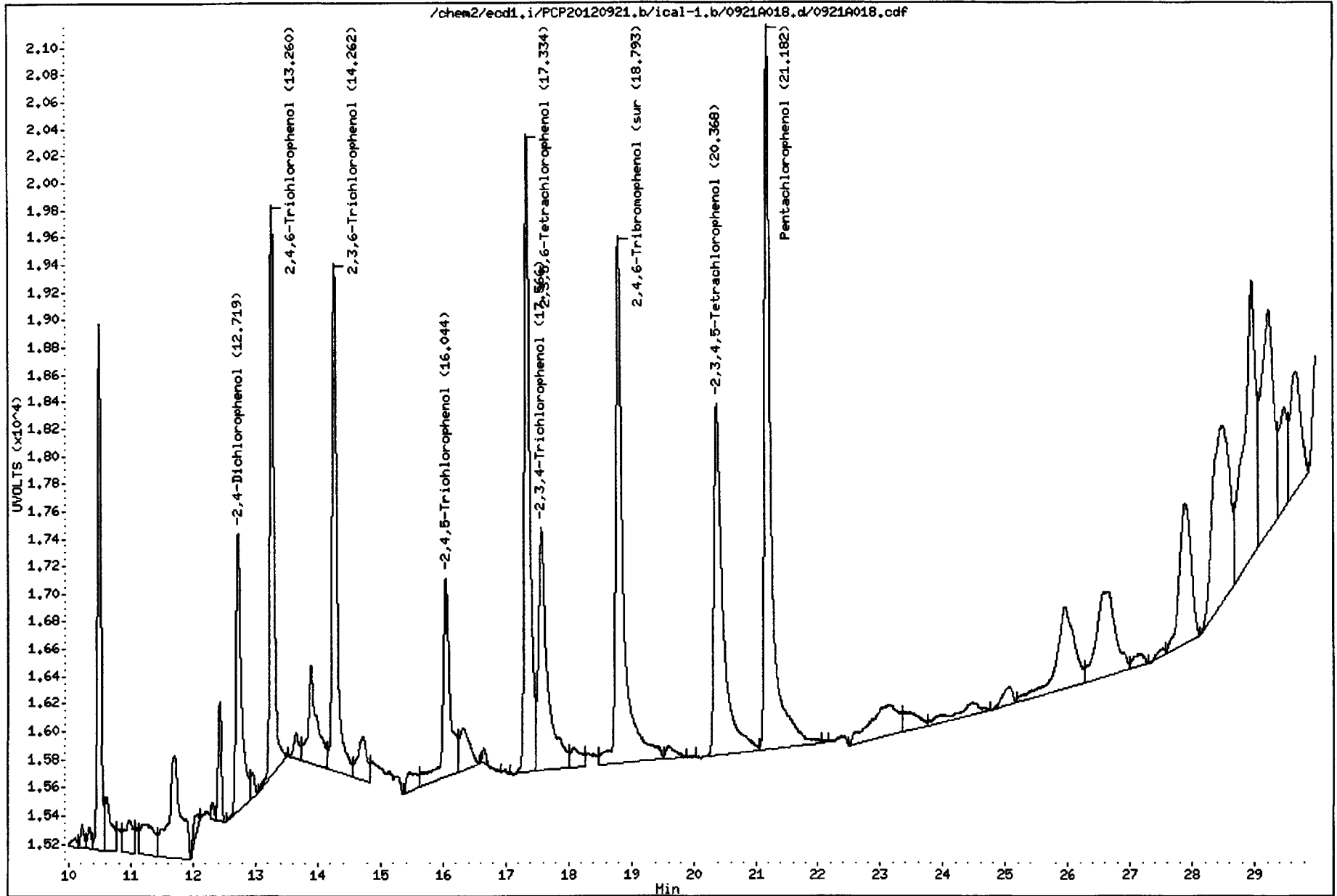
Sample Info: PCP A

Operator: ar

Purge Volume: 500.0

Column diameter: 0.53

Column phase: STX CLP1



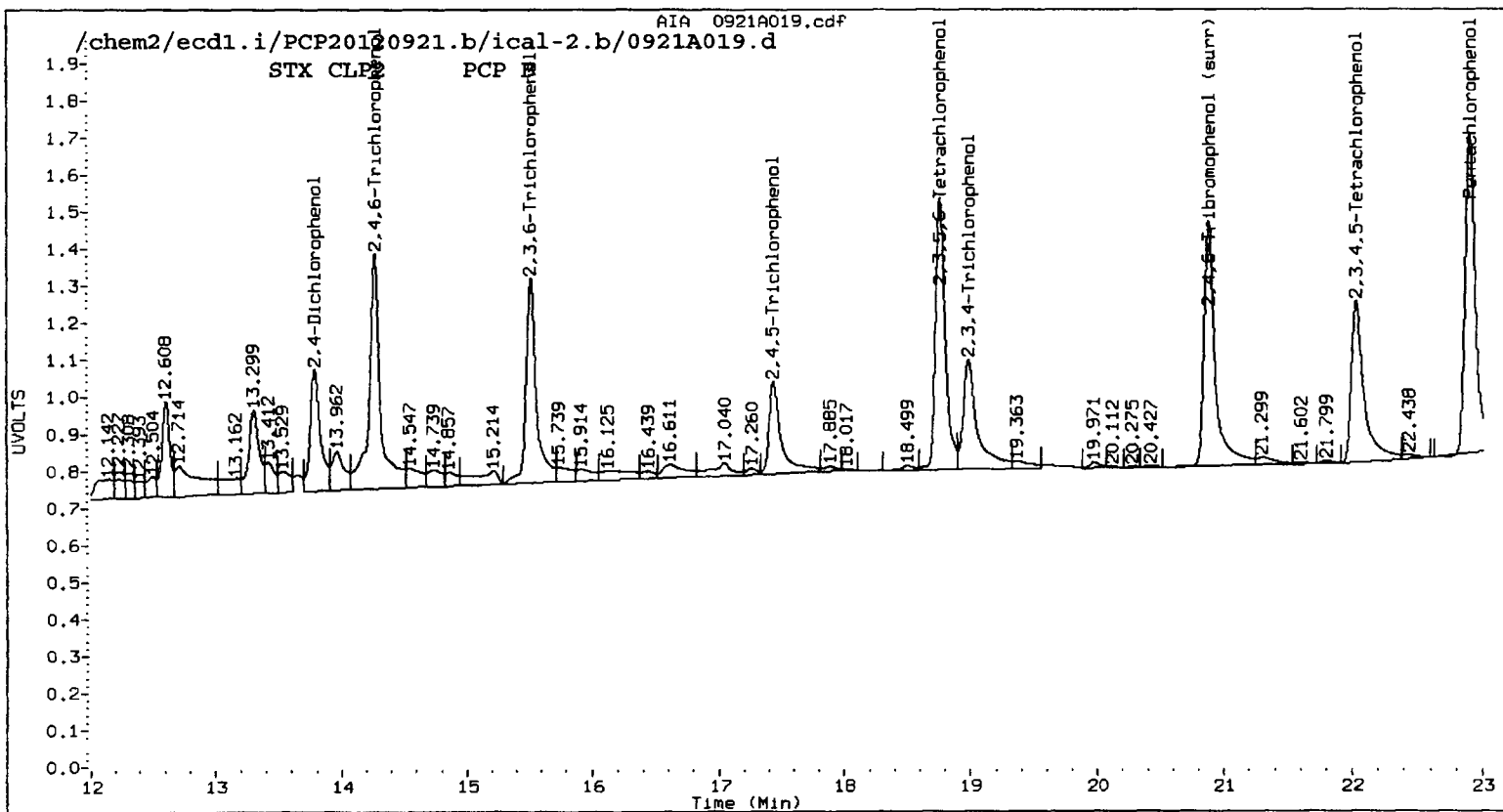
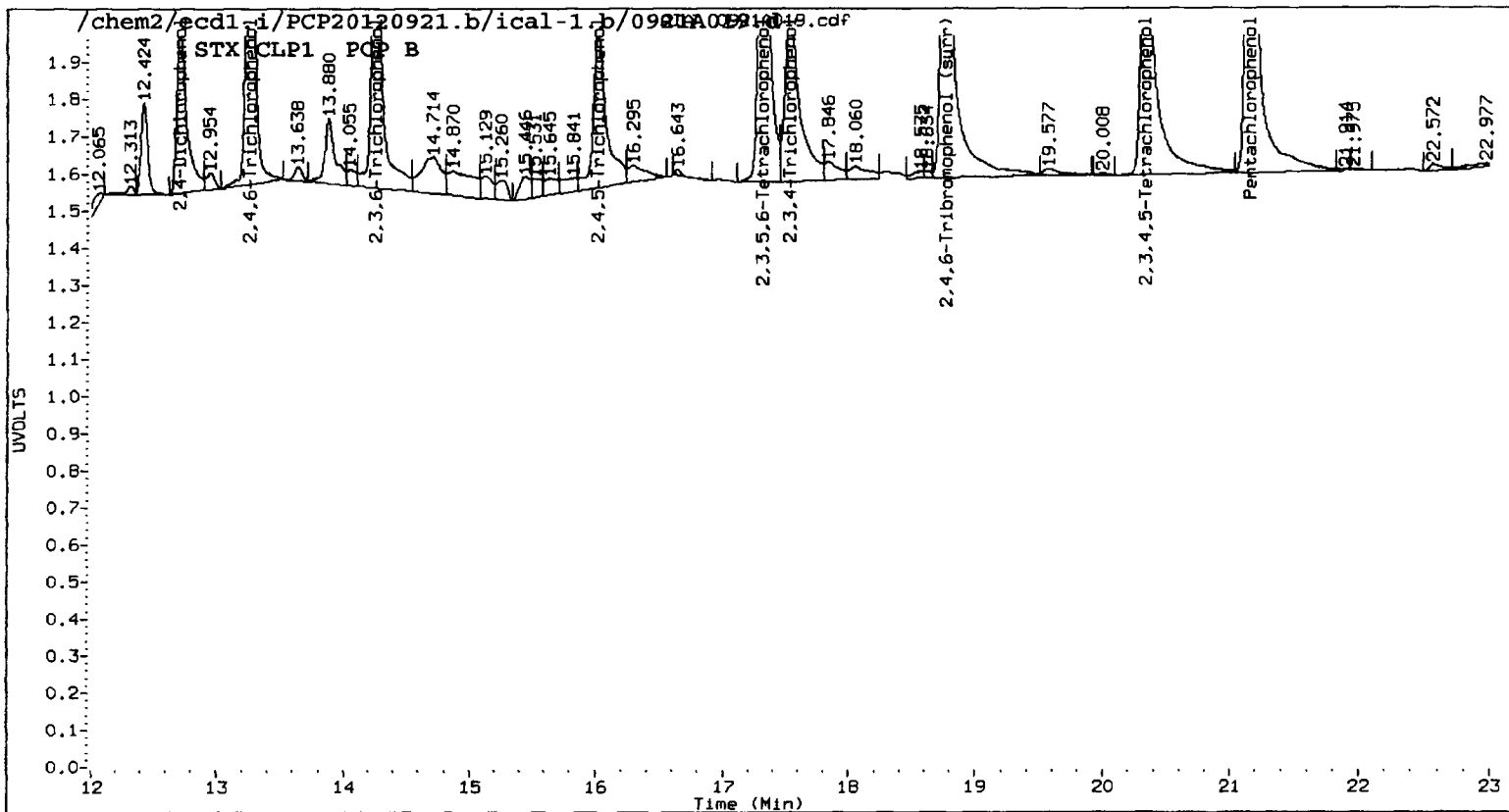
Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

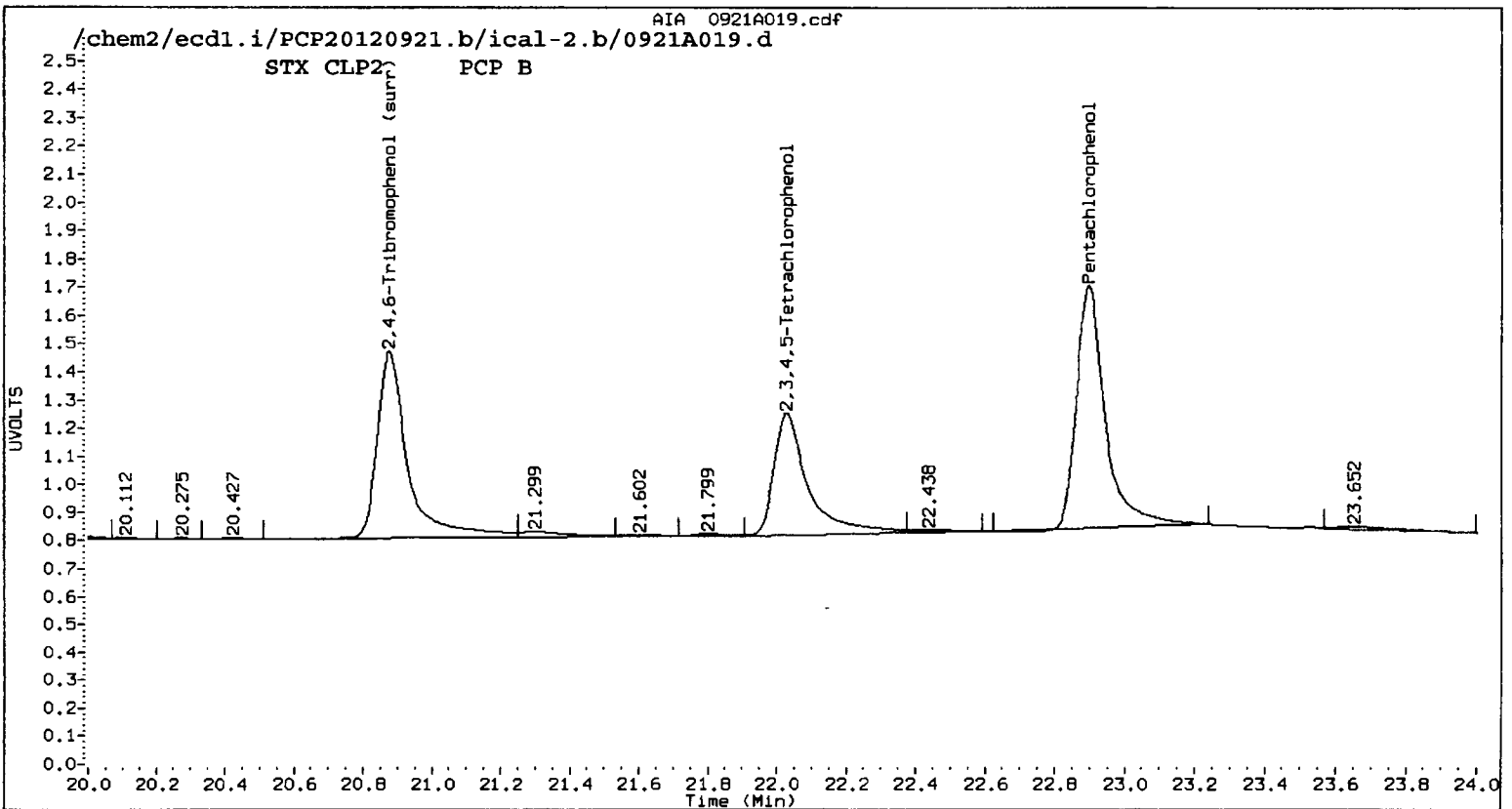
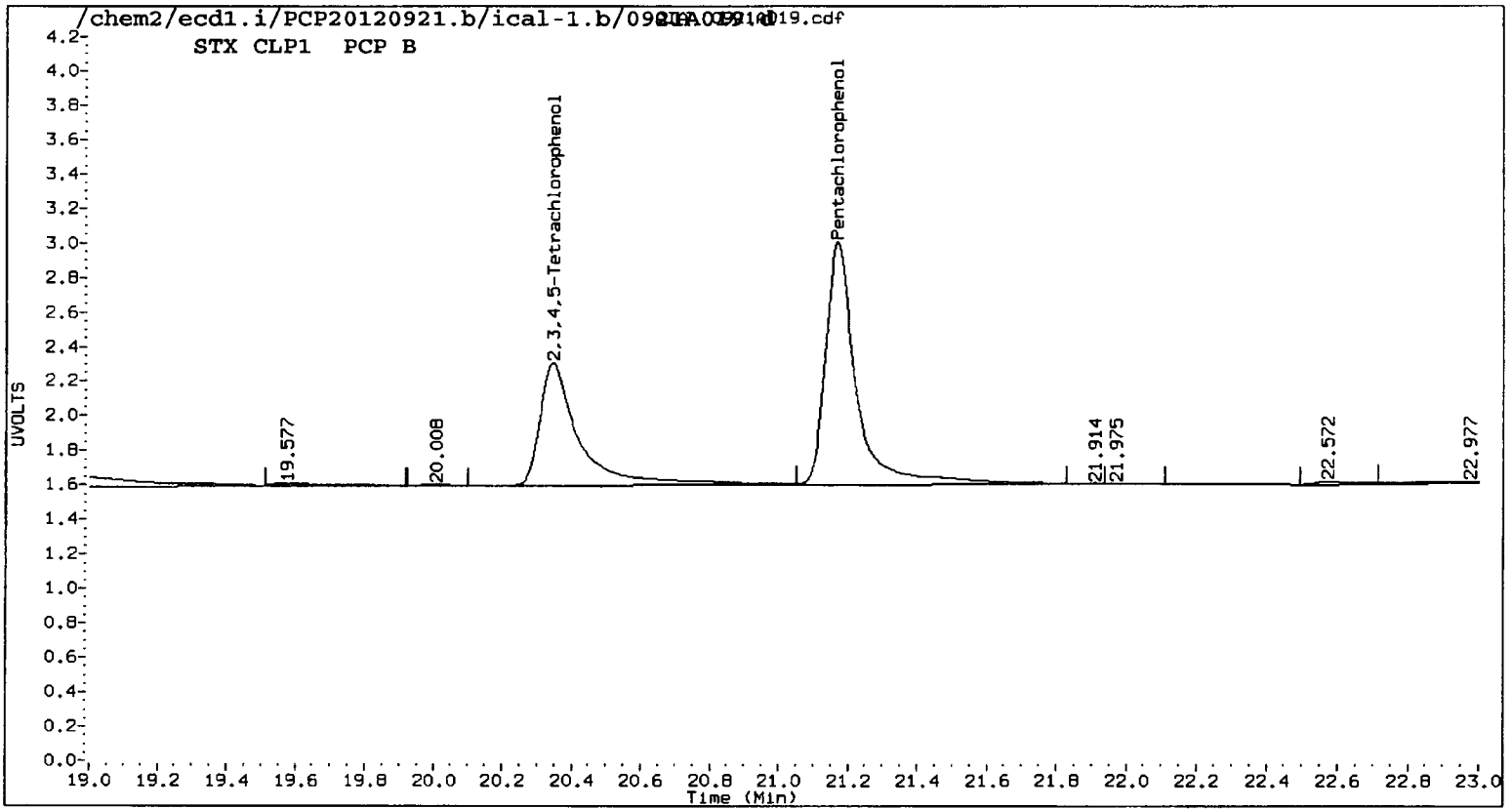
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 Data file 2: /chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A019.d Client ID:
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 Compound Sublist: all Report Date: 09/25/2012 13:17
 Instrument: ecd1.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

| STX CLP1 Col | | | STX CLP2 Col | | | STX CLP1 | STX CLP2 | | |
|--------------|-------|----------|--------------|-------|----------|----------|----------|------|-------------------------|
| RT | Shift | Response | RT | Shift | Response | on col | on col | RPD | Compound |
| 21.170 | 0.012 | 444389 | 22.897 | 0.009 | 248232 | 6.9775 | 6.9555 | 0.3 | Pentachlorophenol |
| 13.257 | 0.001 | 229955 | 14.266 | 0.002 | 208197 | 7.2194 | 8.0367 | 10.7 | 2,4,6-Trichlorophenol |
| 14.258 | 0.004 | 258950 | 15.510 | 0.003 | 160501 | 6.6004 | 6.7302 | 1.9 | 2,3,6-Trichlorophenol |
| 16.025 | 0.015 | 151202 | 17.434 | 0.011 | 84183 | 6.0981 | 4.7129 | 25.6 | 2,4,5-Trichlorophenol |
| 17.541 | 0.022 | 193157 | 18.984 | 0.016 | 115678 | 6.5441 | 4.8936 | 28.9 | 2,3,4-Trichlorophenol |
| 17.323 | 0.008 | 333721 | 18.759 | 0.007 | 196228 | 7.1015 | 6.7933 | 4.4 | 2,3,5,6-Tetrachlorophe |
| 20.346 | 0.023 | 284477 | 22.029 | 0.017 | 147190 | 6.8997 | 7.1029 | 2.9 | 2,3,4,5-Tetrachlorophe |
| 12.716 | 0.005 | 123823 | 13.782 | 0.004 | 93863 | 71.0044 | 78.4554 | 10.0 | 2,4-Dichlorophenol |
| 18.776 | 0.013 | 359745 | 20.877 | 0.010 | 203256 | 6.9 | 6.7 | 1.8 | 2,4,6-Tribromophenol (s |

PERCENT RECOVERY

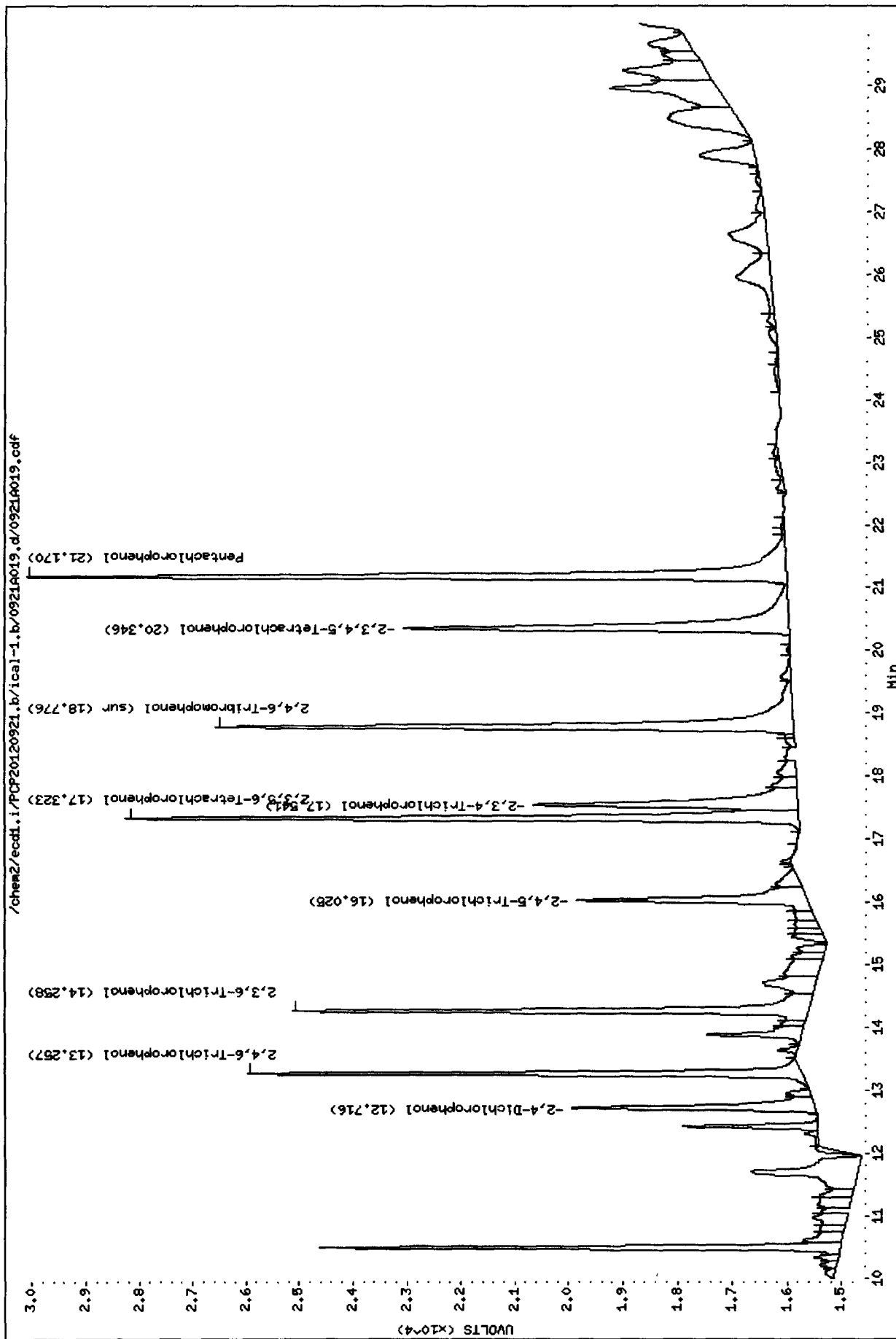
| COMPOUND | Col1 | Col2 |
|------------------|------|------|
| 2,4,6-TBP (surr) | 27.5 | 27.0 |



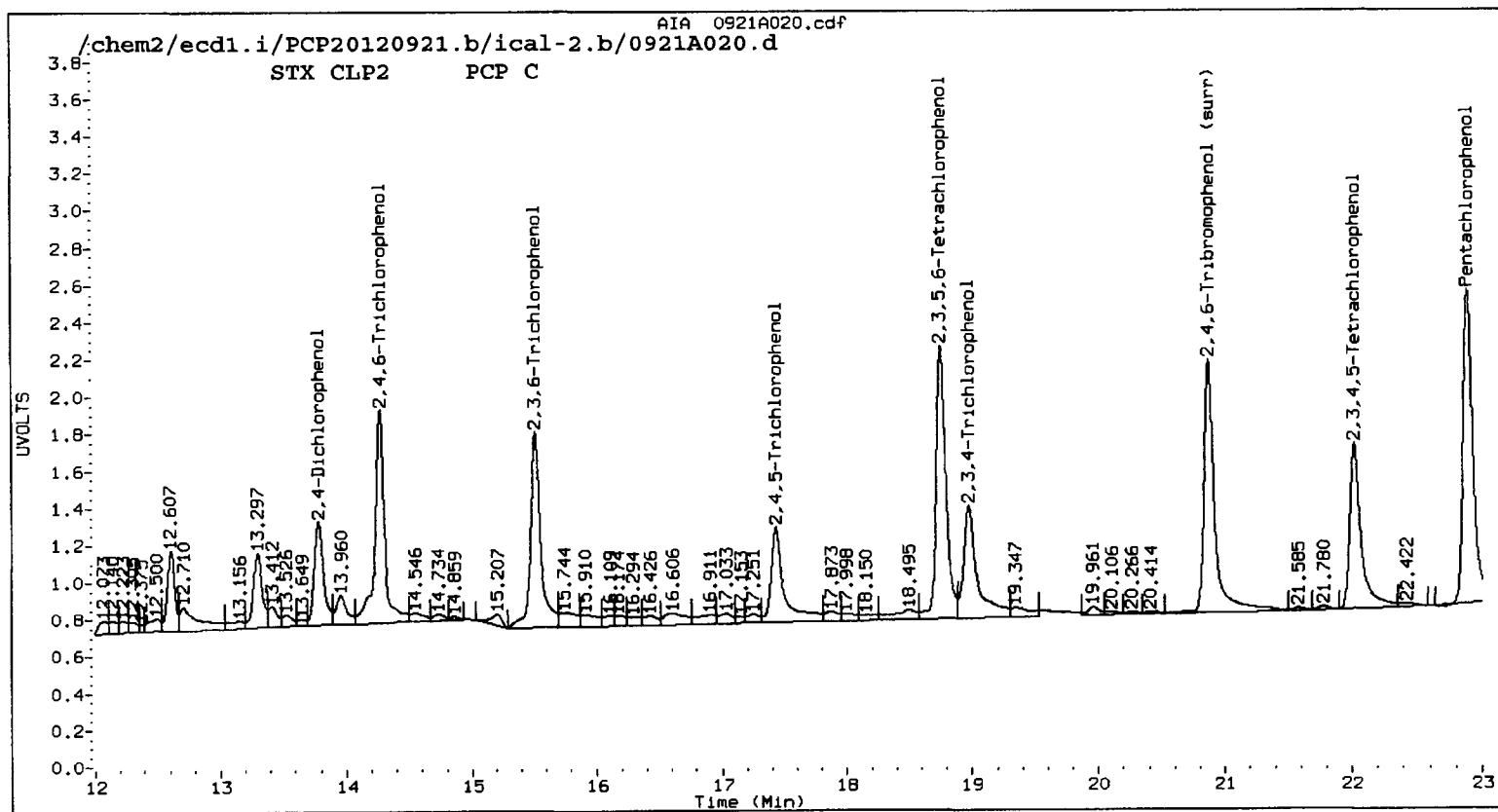
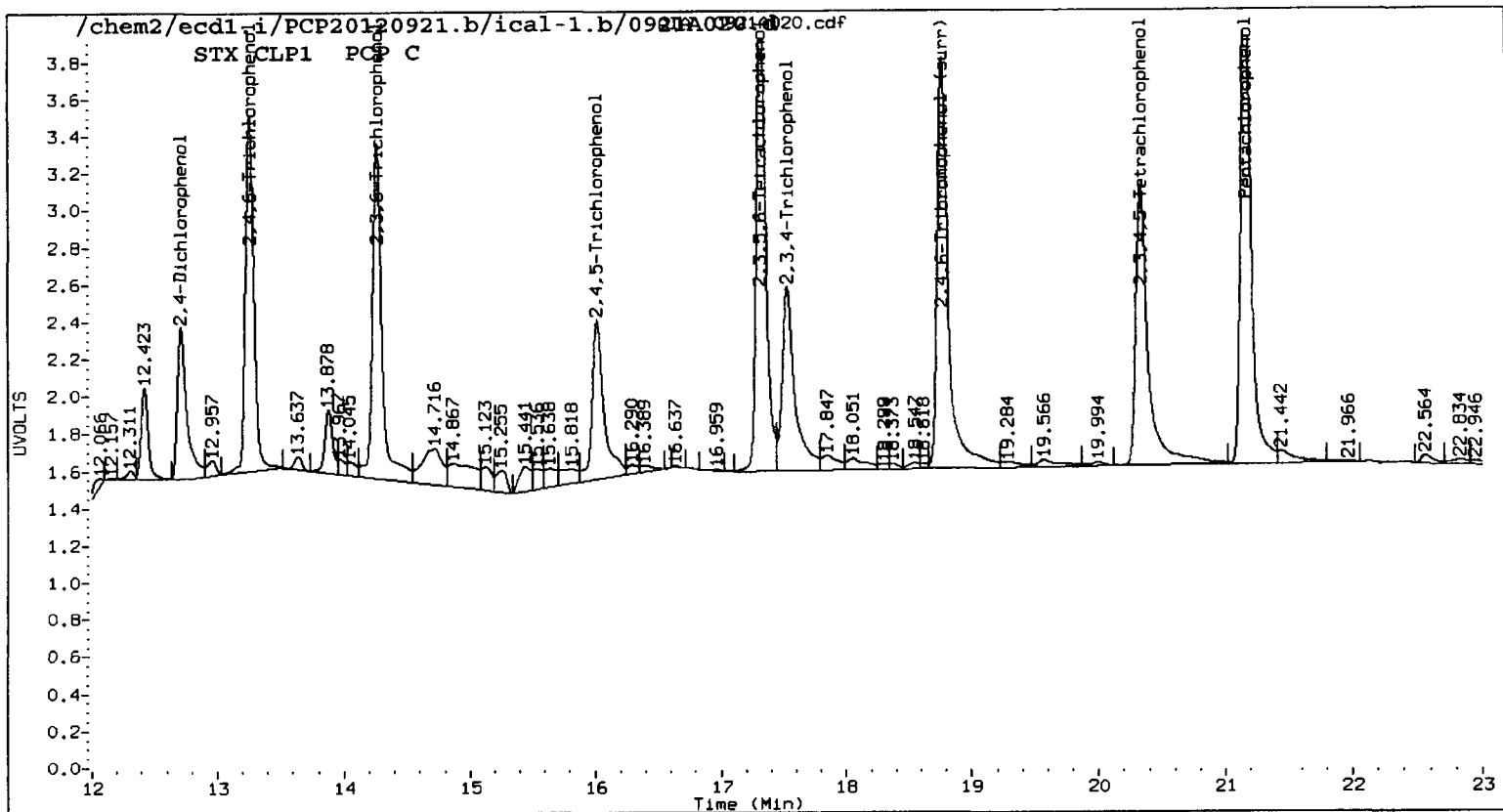


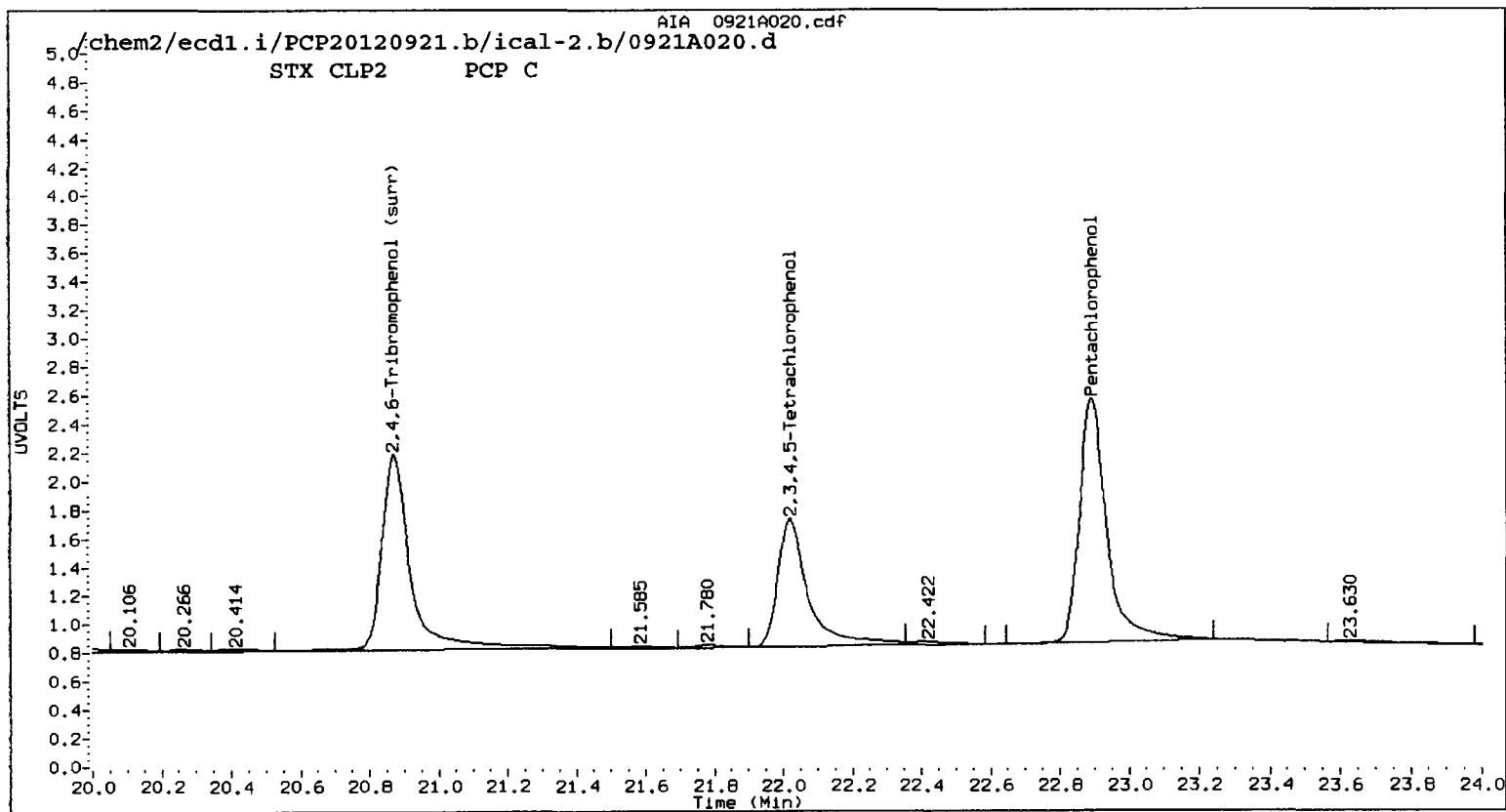
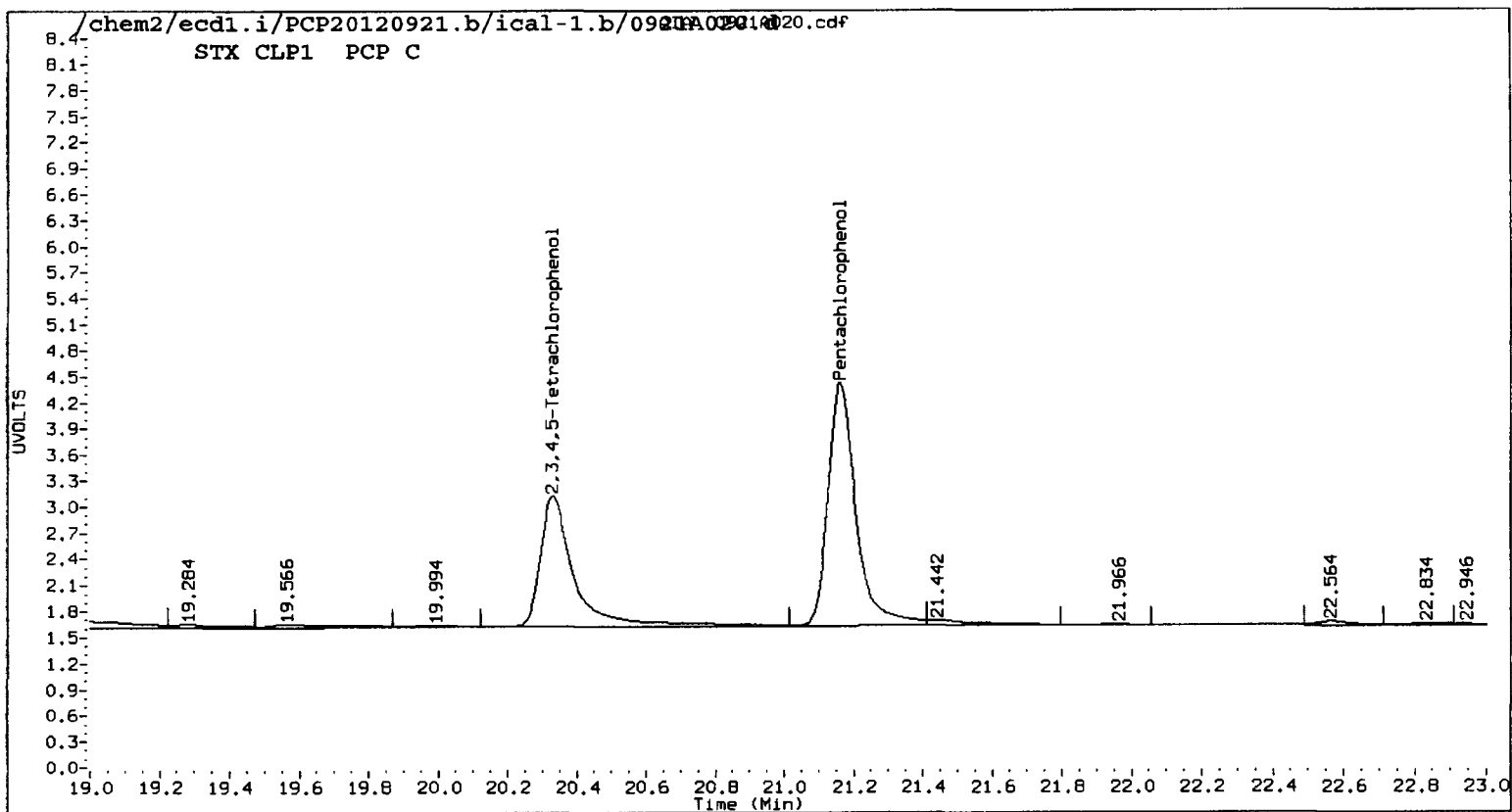
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Date : 21-SEP-2012 20:41
Client ID:
Sample Info: PCP B
Purge Volume: 500.0
Column phase: STX CLP1

Instrument: ecdl.i
Operator: ar
Column diameter: 0.53



2122 000005





Date : 21-SEP-2012 21:17

Client ID:

Instrument: ecd1.i

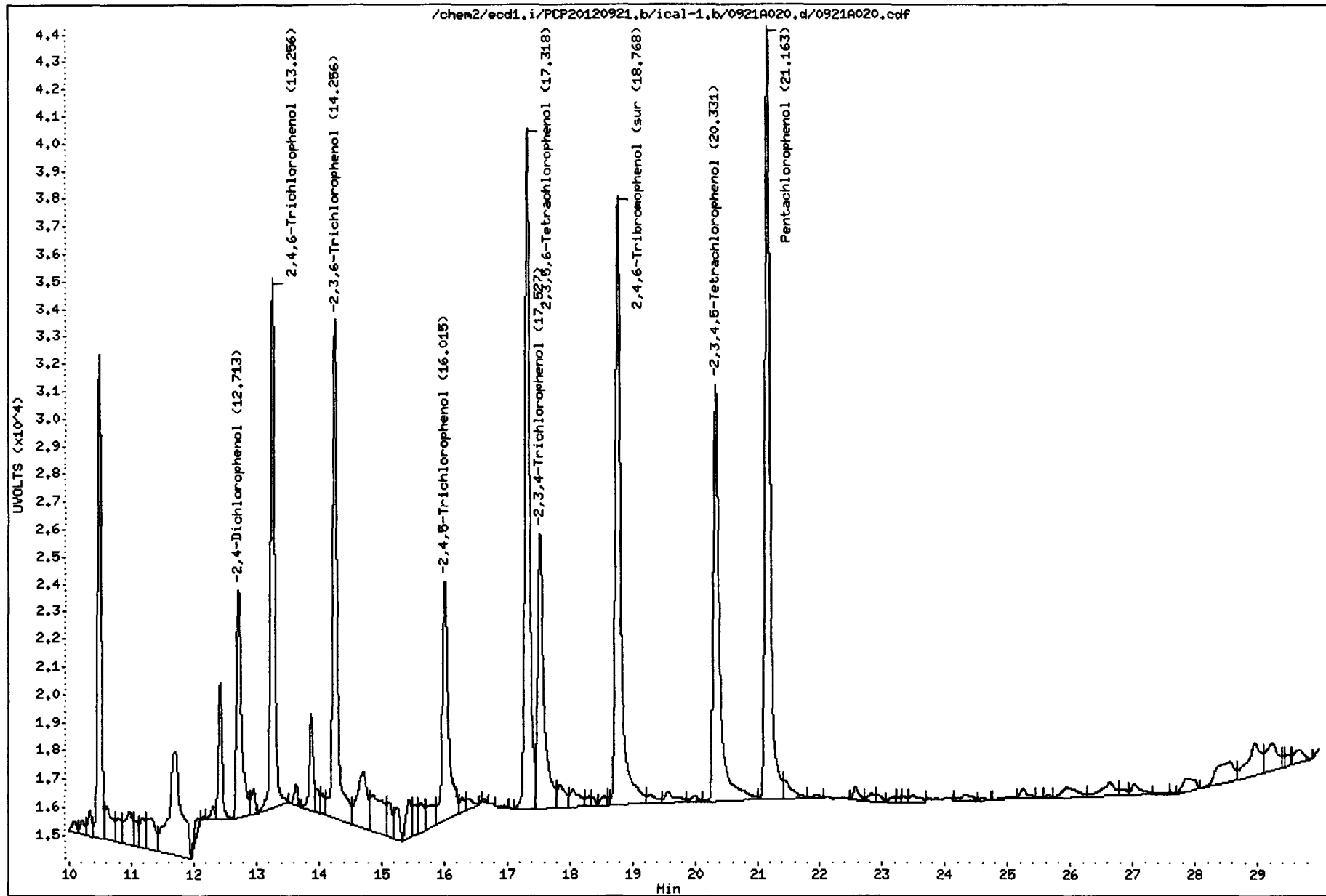
Sample Info: PCP C

Operator: ar

Purge Volume: 500.0

Column diameter: 0.53

Column phase: STX CLP1



0921A020

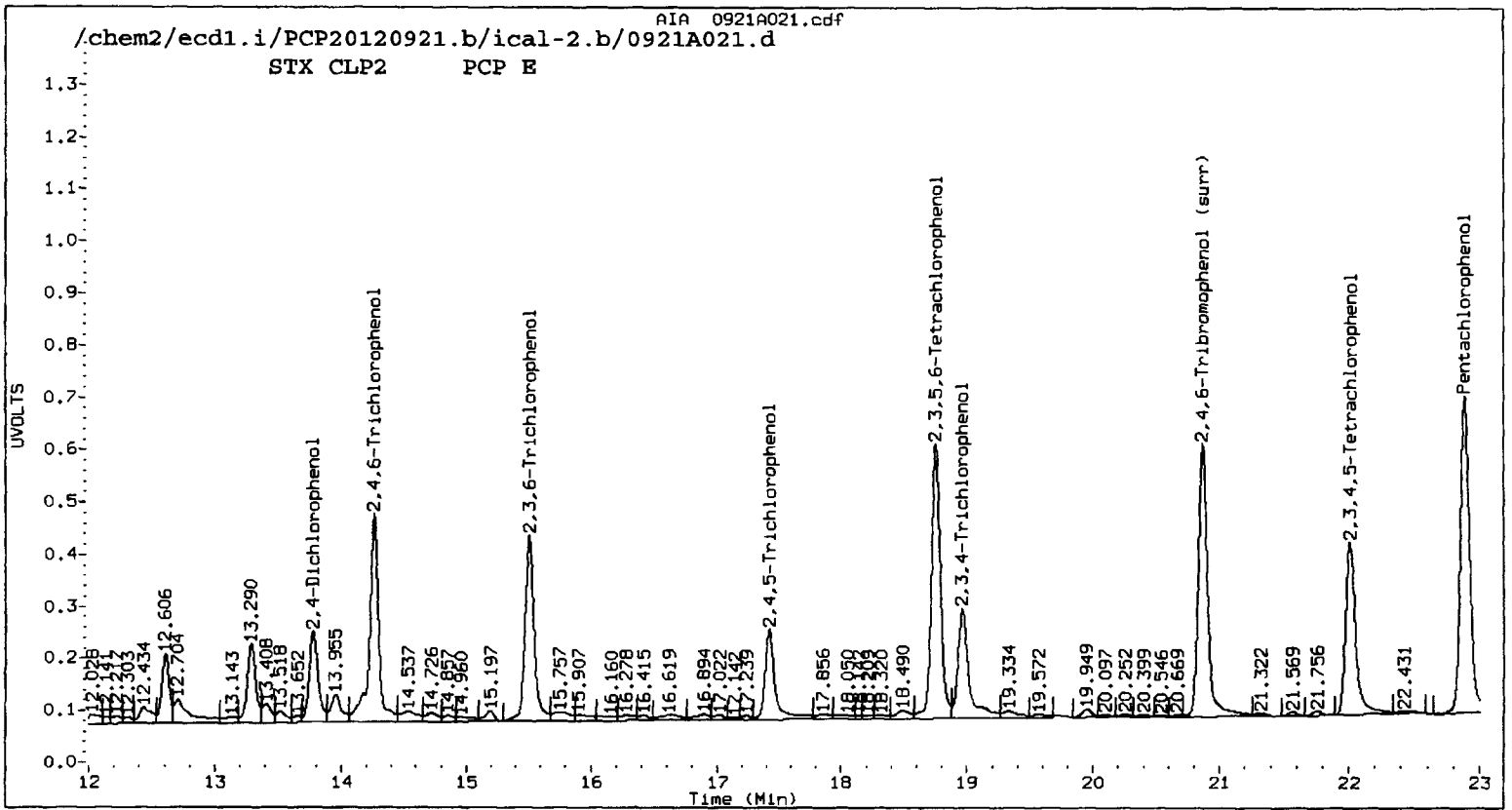
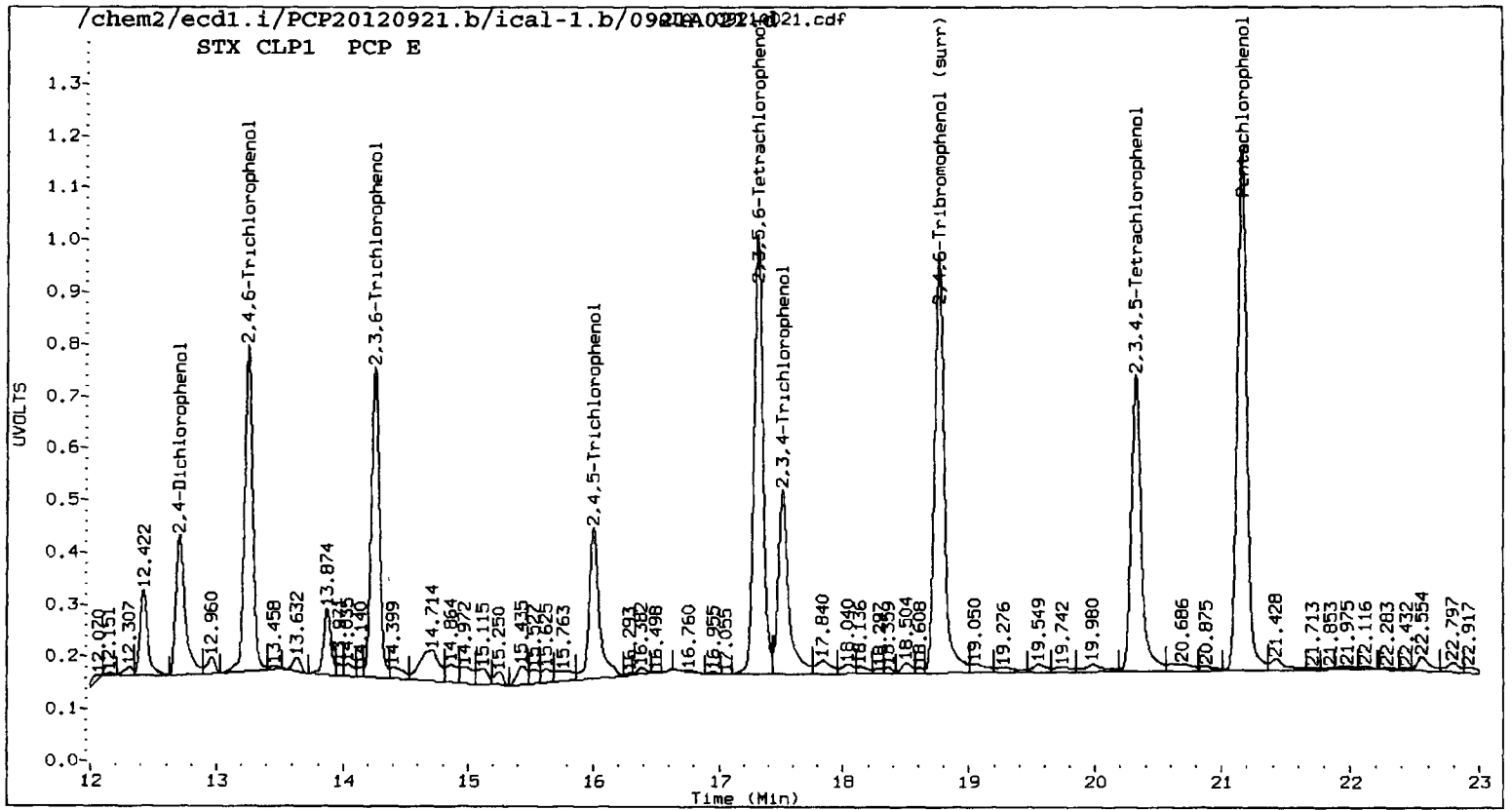
Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

Data file 1: /chem2/ecdl.i/PCP20120921.b/ical-1.b/0921A021.d ARI ID: PCP E
 Data file 2: /chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A021.d Client ID:
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 21-SEP-2012 21:53
 Compound Sublist: all Report Date: 09/25/2012 13:17
 Instrument: ecdl.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

| RT | STX CLP1 Col Shift Response | STX CLP2 Col Shift Response | STX CLP1 on col | STX CLP2 on col | STX CLP1 RPD | STX CLP2 Compound |
|--------|--------------------------------|--------------------------------|--------------------|--------------------|-----------------|-----------------------|
| 21.153 | -0.005 2579984 | 22.884 -0.004 1581355 | 49.8006 | 44.3095 | 11.7 | Pentachlorophenol |
| 13.254 | -0.002 1378613 | 14.261 -0.003 1046878 | 43.2813 | 50.4949 | 15.4 | 2,4,6-Trichloropheno |
| 14.251 | -0.003 1360198 | 15.504 -0.003 891000 | 48.2202 | 48.9096 | 1.4 | 2,3,6-Trichlorophenol |
| 16.003 | -0.007 828590 | 17.418 -0.005 509875 | 50.1100 | 50.4830 | 0.7 | 2,4,5-Trichlorophenol |
| 17.511 | -0.008 1050439 | 18.961 -0.007 654702 | 49.7537 | 52.2530 | 4.9 | 2,3,4-Trichlorophenol |
| 17.311 | -0.004 2092823 | 18.748 -0.004 1303311 | 44.5349 | 45.1198 | 1.3 | 2,3,5,6-Tetrachlorop |
| 20.314 | -0.009 1585782 | 22.006 -0.006 902939 | 49.3364 | 43.5727 | 12.4 | 2,3,4,5-Tetrachloroph |
| 12.707 | -0.004 695219 | 13.775 -0.003 438585 | 493.2130 | 505.6351 | 2.5 | 2,4-Dichlorophenol |
| 18.757 | -0.006 2092155 | 20.863 -0.004 1376359 | 49.7 | 45.6 | 8.5 | 2,4,6-Tribromophenol |

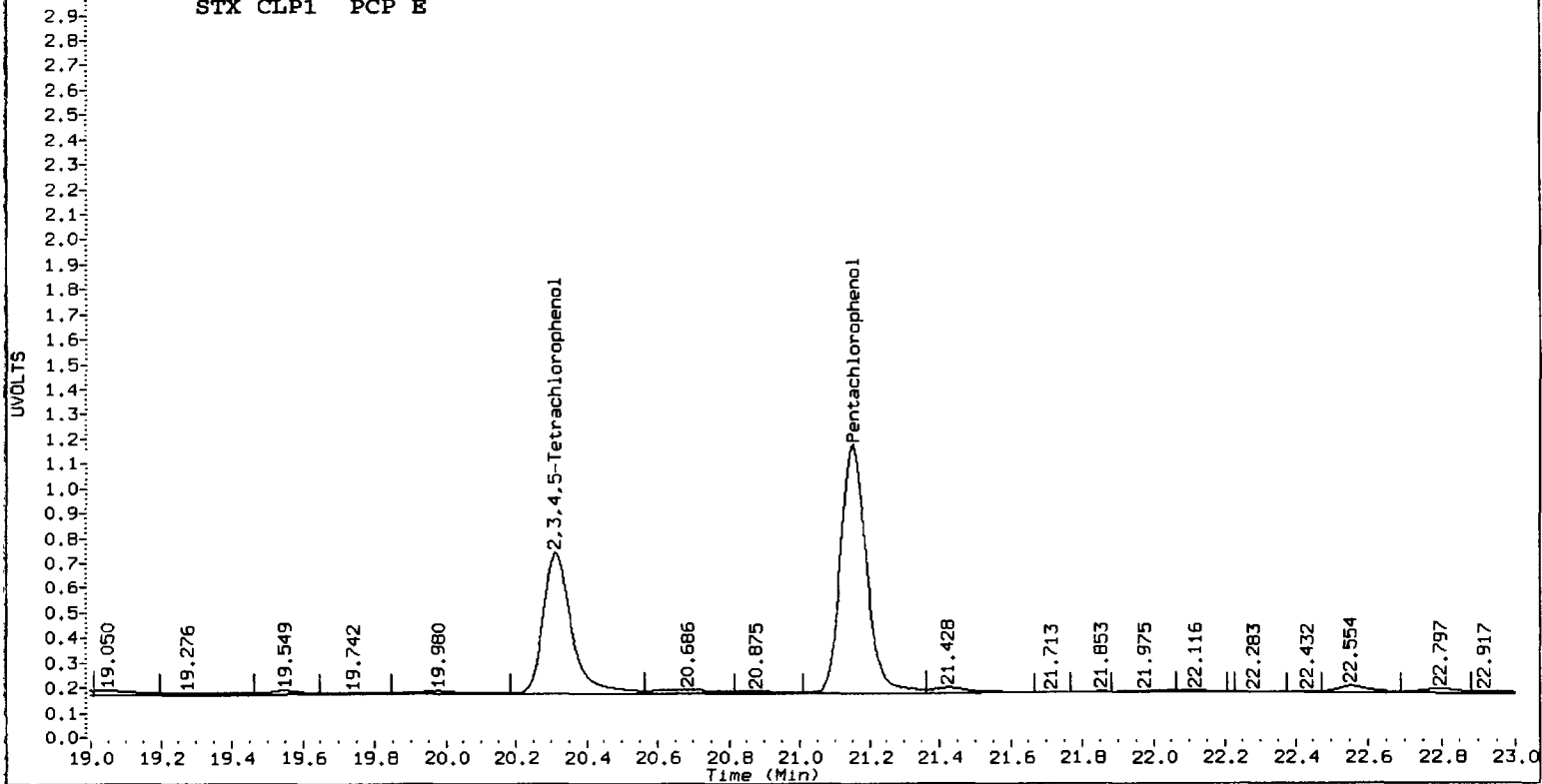
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|------------------|-------|-------|
| 2,4,6-TBP (surr) | 198.9 | 182.6 |



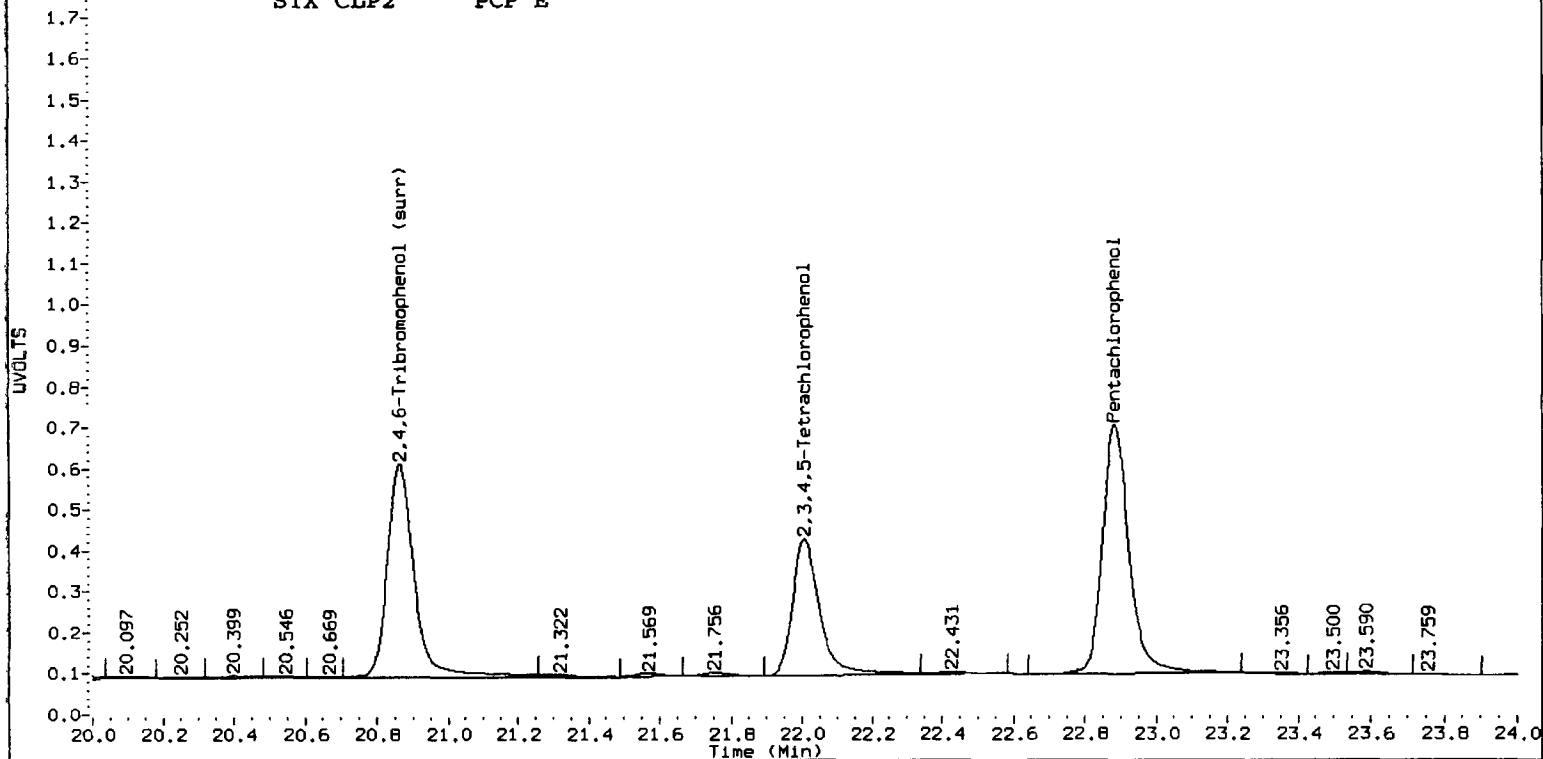
/chem2/ecdl.i/PCP20120921.b/ical-1.b/0921A021.d

STX CLP1 PCP E



/chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A021.d

STX CLP2 PCP E



Date : 21-SEP-2012 21:53

Client ID:

Instrument: ecd1.i

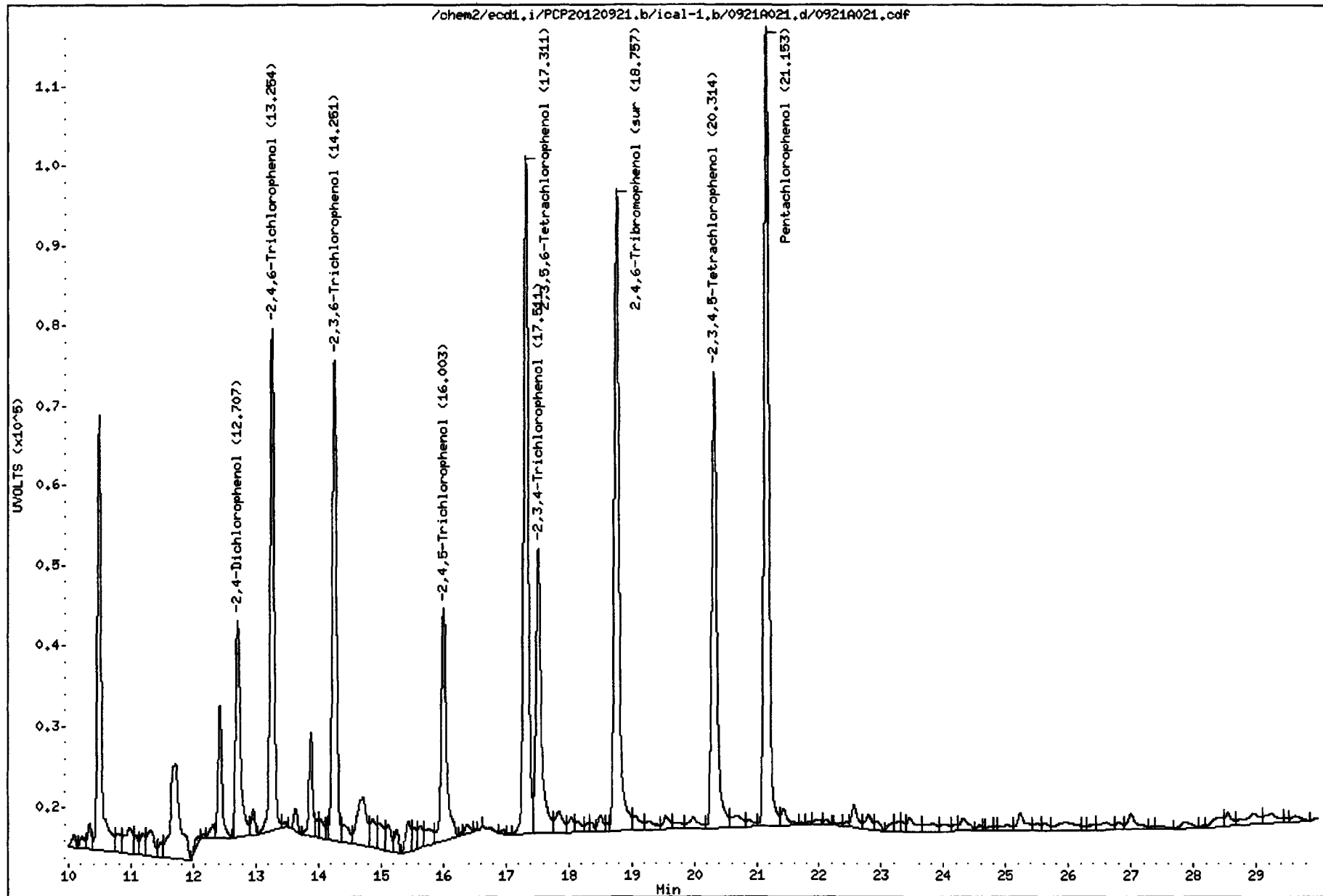
Sample Info: PCP E

Operator: ar

Purge Volume: 500.0

Column phase: STX CLP1

Column diameter: 0.53



12.707

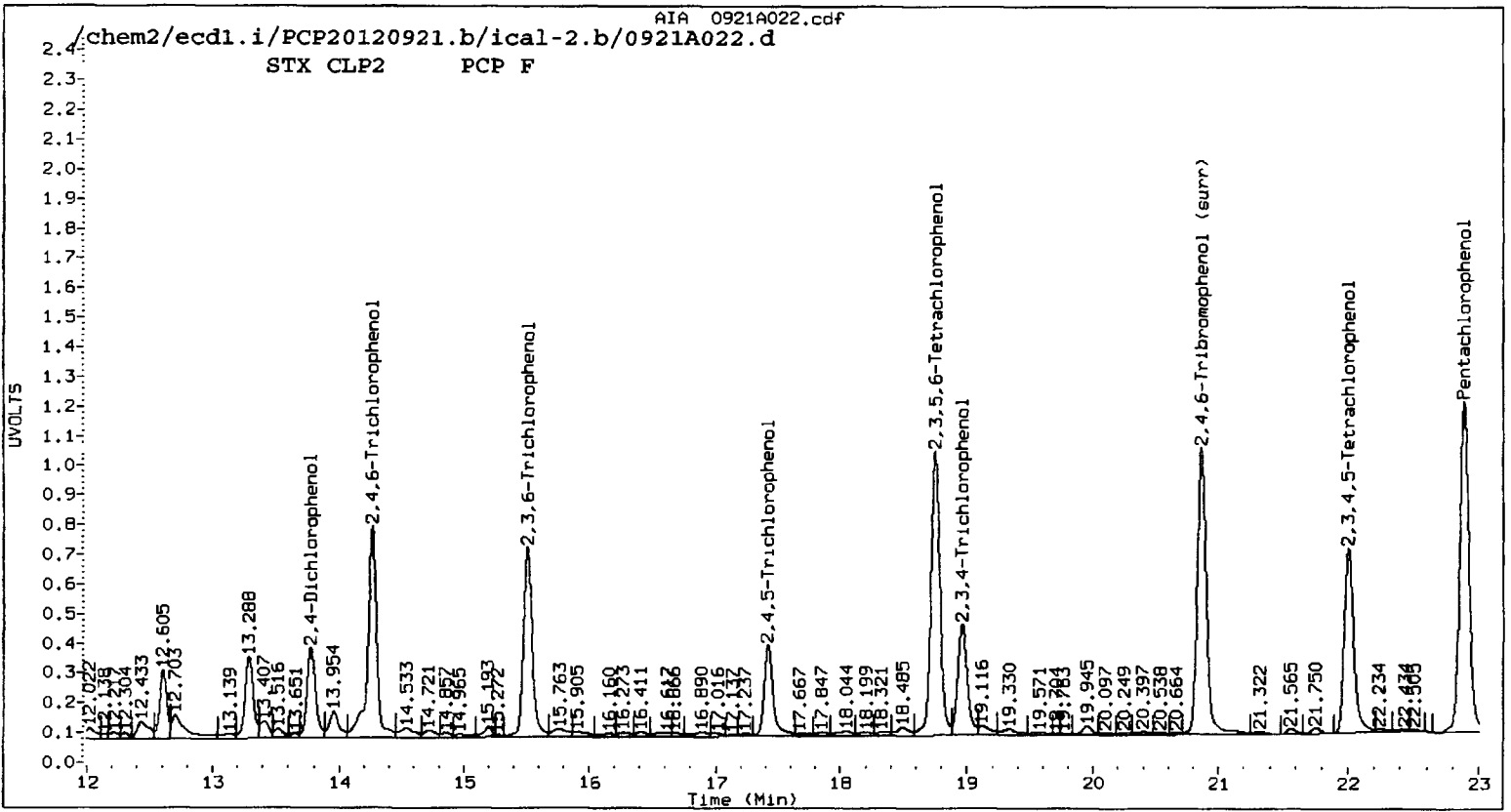
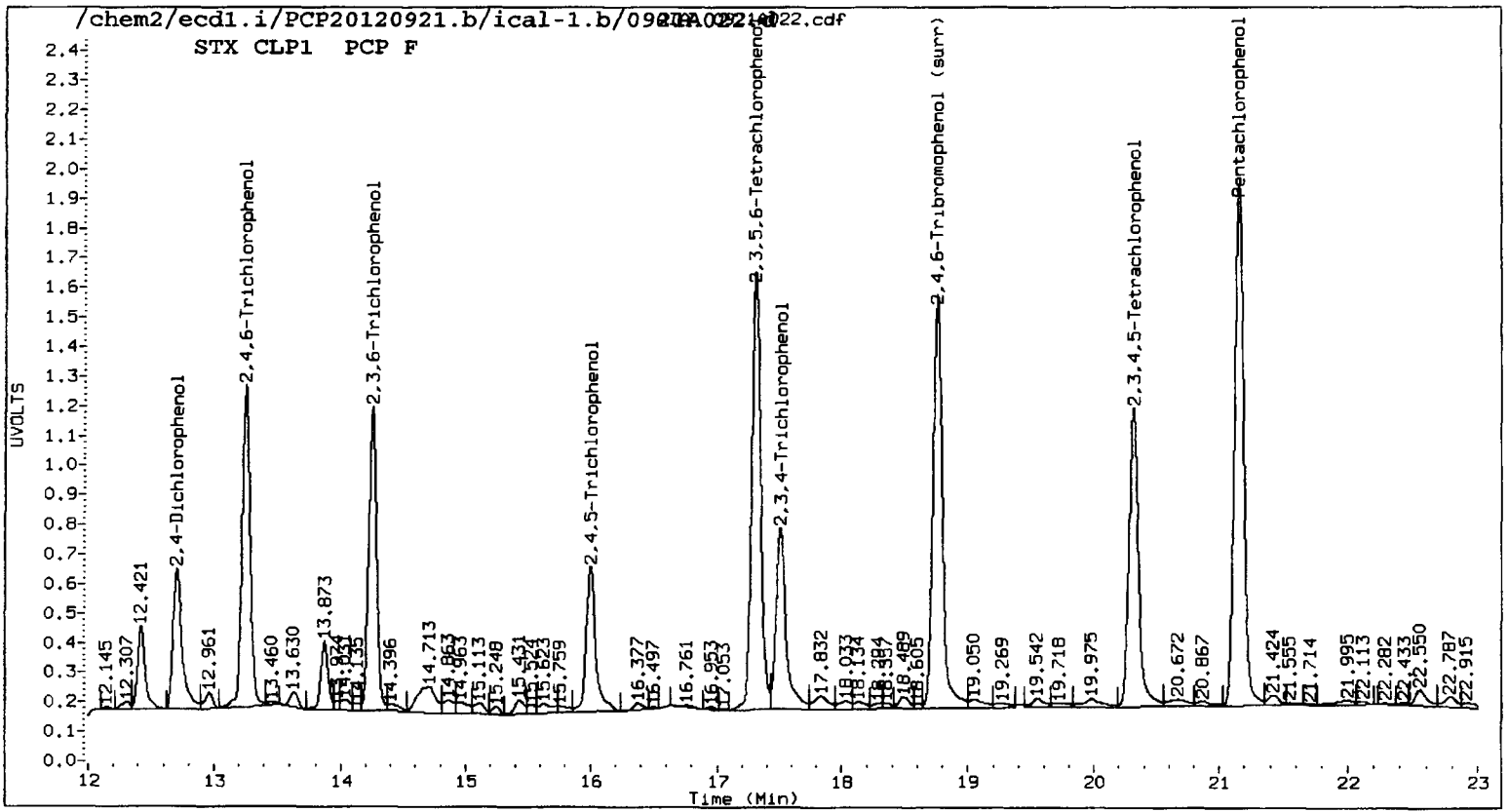
Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

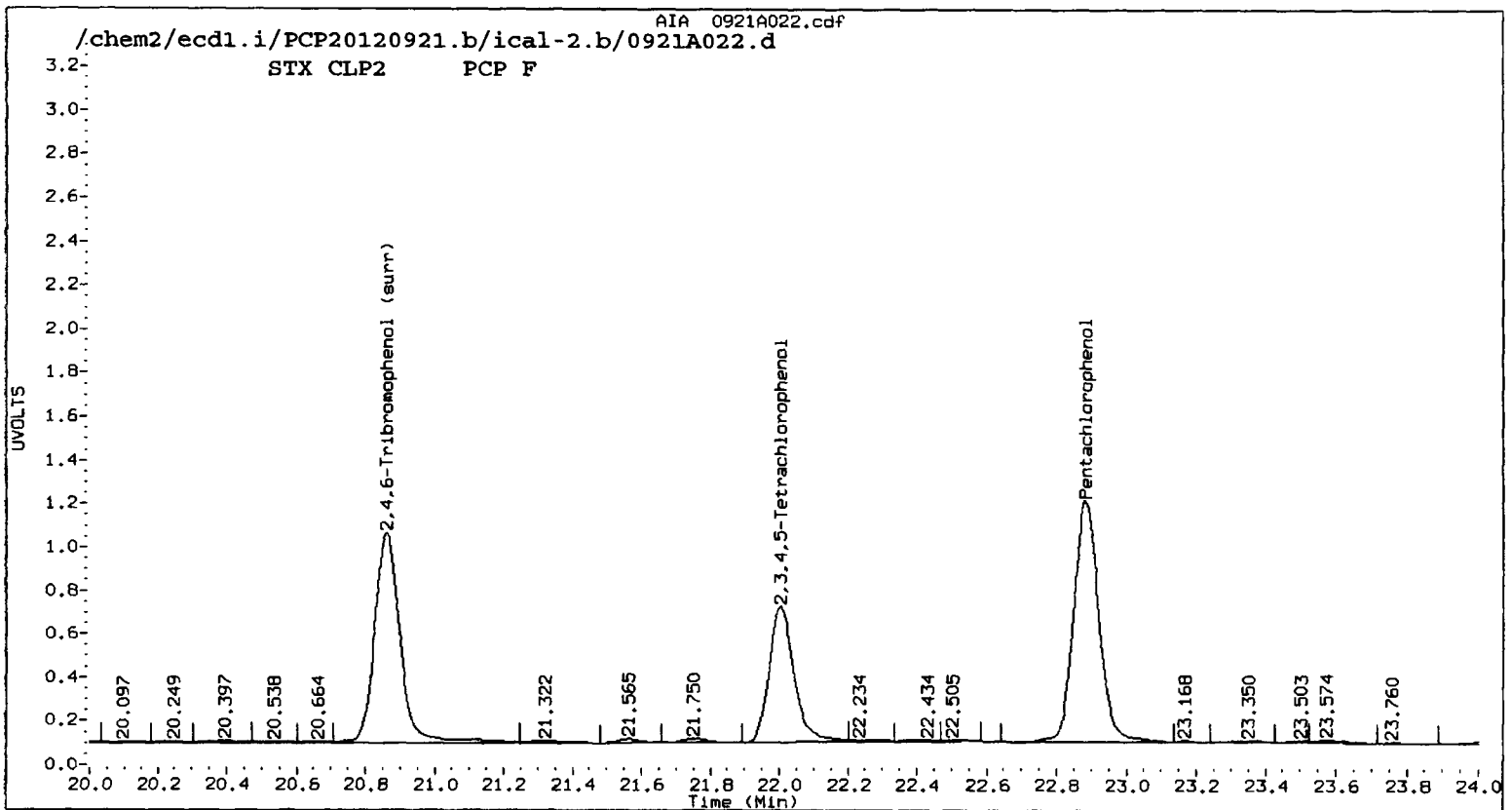
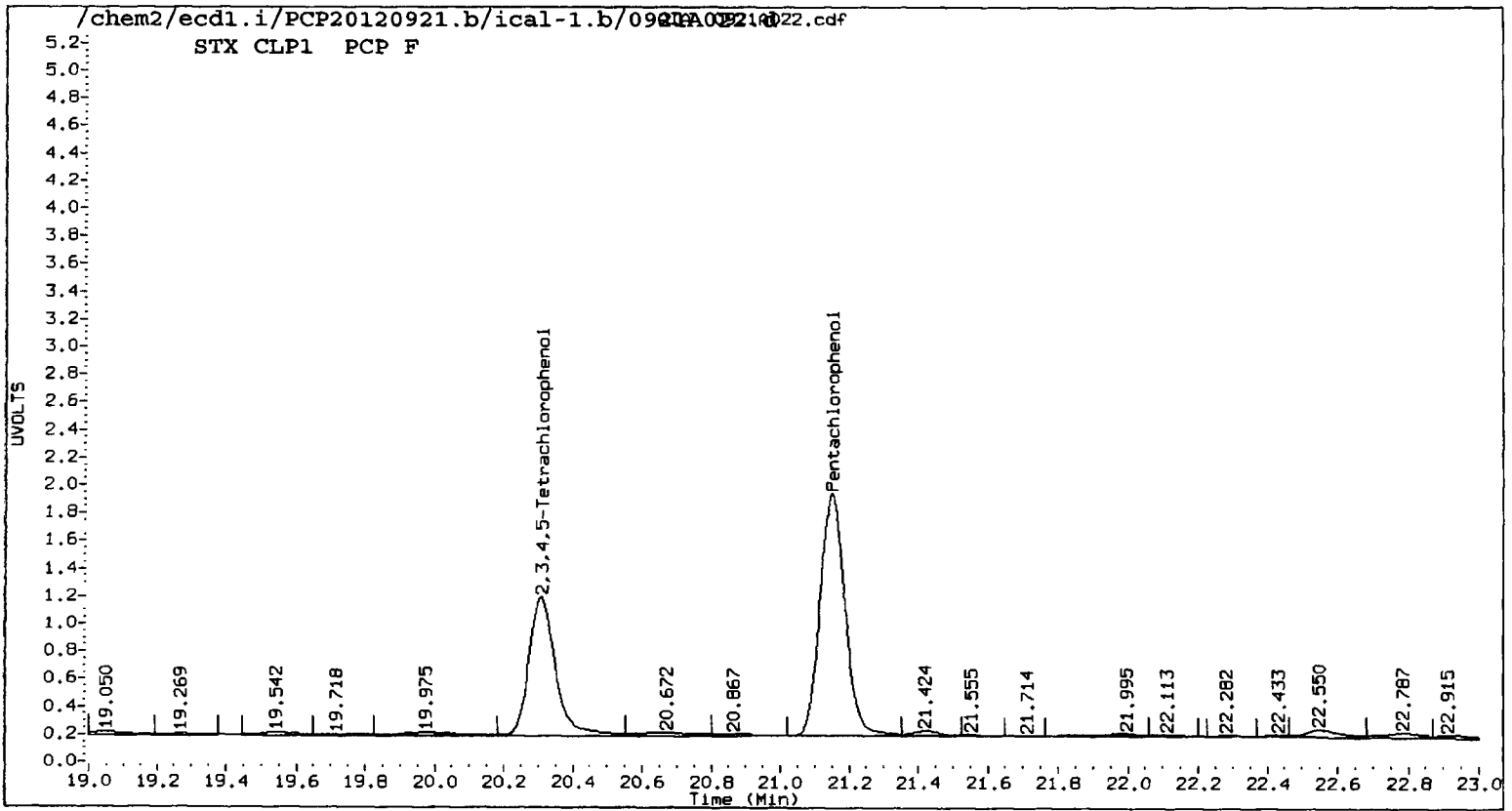
Data file 1: /chem2/ecdl.i/PCP20120921.b/ical-1.b/0921A022.d ARI ID: PCP F
 Data file 2: /chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A022.d Client ID:
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 21-SEP-2012 22:30
 Compound Sublist: all Report Date: 09/25/2012 13:17
 Instrument: ecd1.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

| RT | STX CLP1 Col Shift Response | RT | STX CLP2 Col Shift Response | on col | STX CLP1 on col | STX CLP2 RPD | Compound |
|--------|-----------------------------|--------|-----------------------------|-----------|-----------------|--------------|-----------------------|
| 21.149 | -0.009 4455069 | 22.882 | -0.006 2798545 | 100.0821 | 78.4151 | 24.3 | Pentachlorophenol |
| 13.252 | -0.004 2381933 | 14.259 | -0.005 1768391 | 74.7804 | 99.9503 | 28.8 | 2,4,6-Trichloropheno |
| 14.249 | -0.005 2289663 | 15.502 | -0.005 1518853 | 100.4218 | 100.2932 | 0.1 | 2,3,6-Trichlorophen |
| 15.999 | -0.011 1327374 | 17.414 | -0.009 786042 | 99.9642 | 99.7678 | 0.2 | 2,4,5-Trichlorophenol |
| 17.506 | -0.013 1725987 | 18.957 | -0.011 972757 | 100.0920 | 99.1667 | 0.9 | 2,3,4-Trichlorophenol |
| 17.307 | -0.008 3620738 | 18.746 | -0.006 2314935 | 77.0486 | 80.1416 | 3.9 | 2,3,5,6-Tetrachlorop |
| 20.308 | -0.015 2706943 | 22.003 | -0.009 1567510 | 100.2112 | 75.6425 | 27.9 | 2,3,4,5-Tetrachlorop |
| 12.706 | -0.005 1205949 | 13.773 | -0.005 711683 | 1002.1393 | 999.2285 | 0.3 | 2,4-Dichlorophenol |
| 18.753 | -0.010 3597466 | 20.861 | -0.006 2474892 | 100.1 | 82.1 | 19.8 | 2,4,6-Tribromophenol |

PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|------------------|-------|-------|
| 2,4,6-TBP (surr) | 400.4 | 328.3 |





Date : 21-SEP-2012 22:30

Client ID:

Instrument: ecd1.i

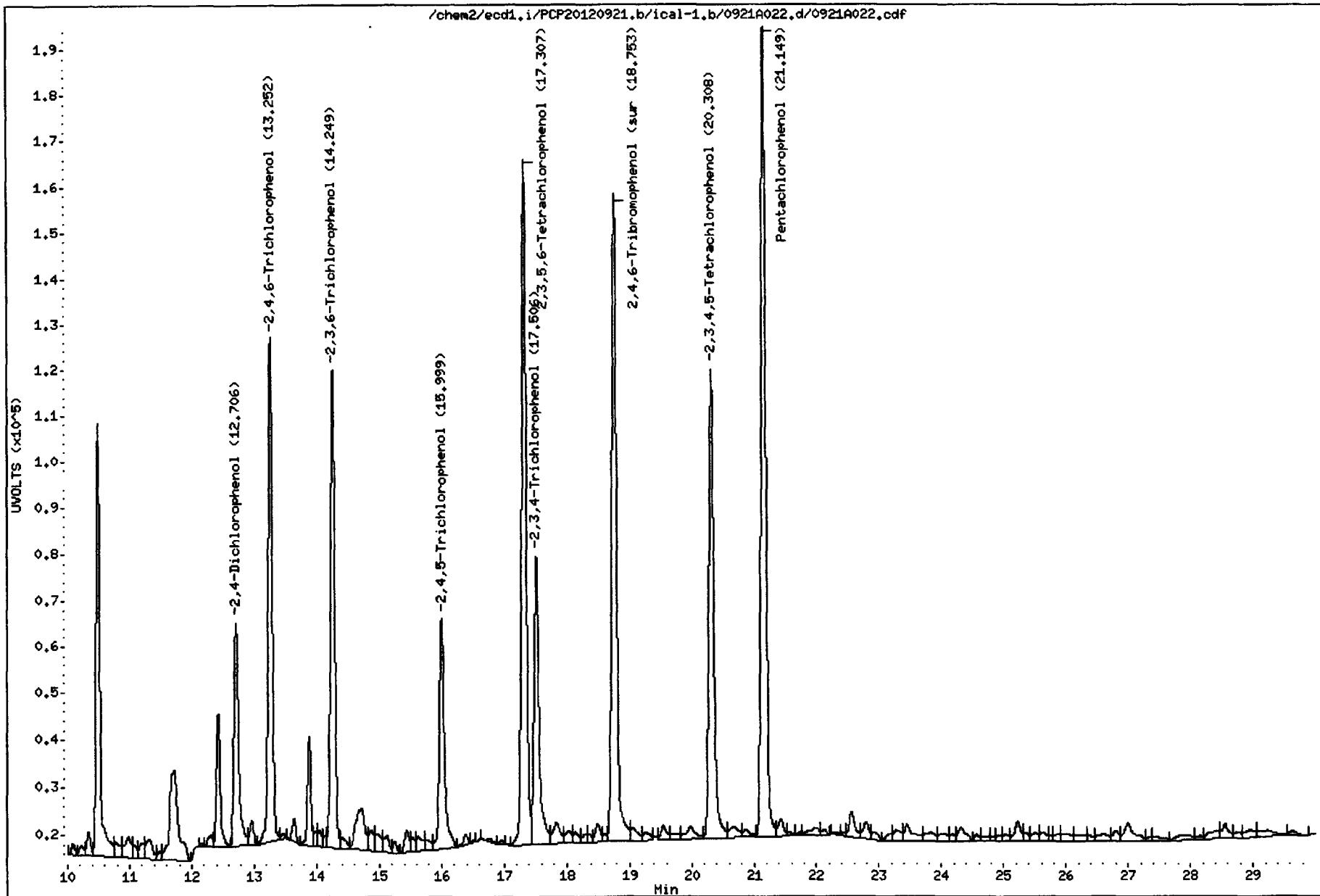
Sample Info: PCP F

Operator: ar

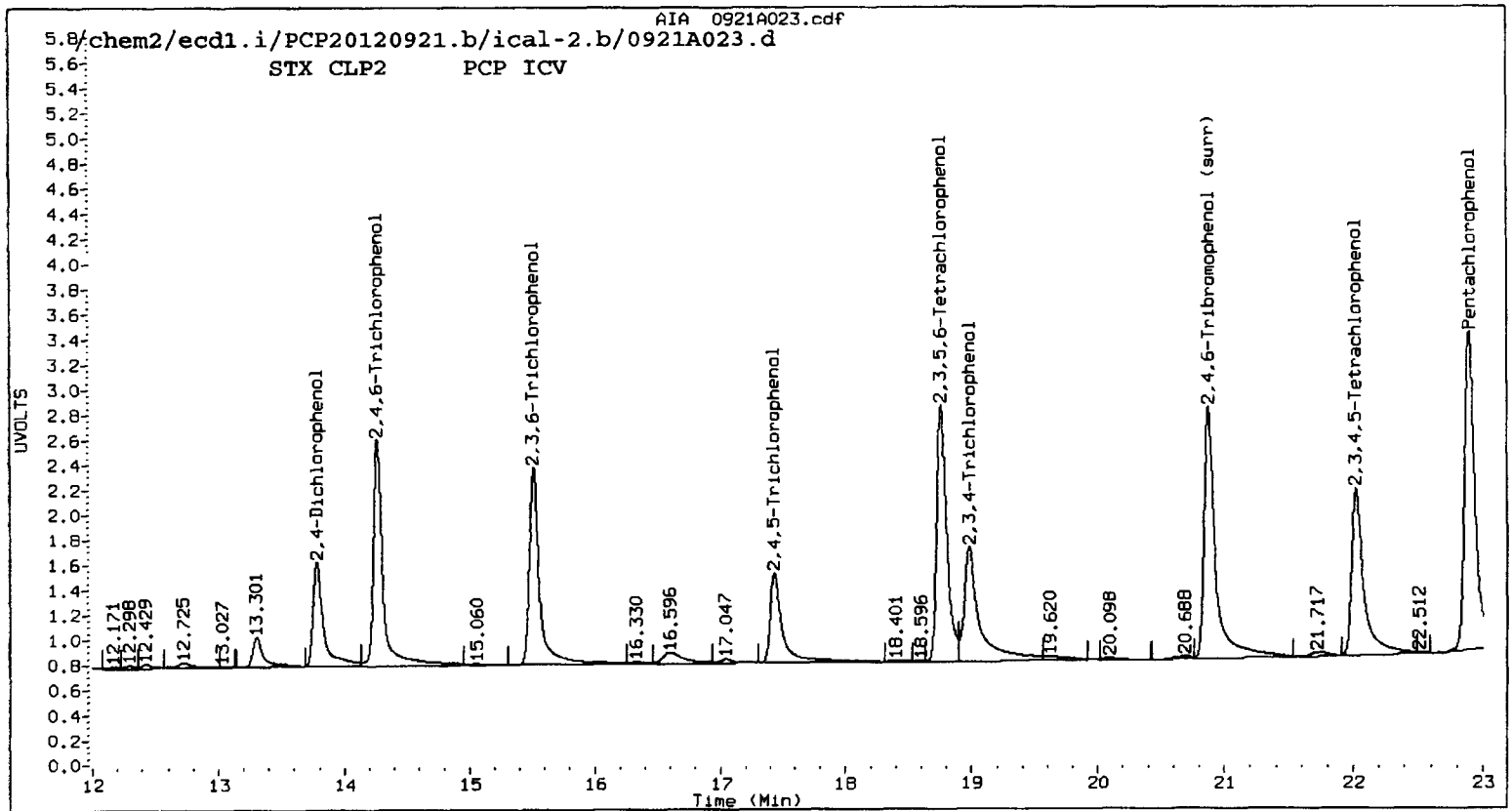
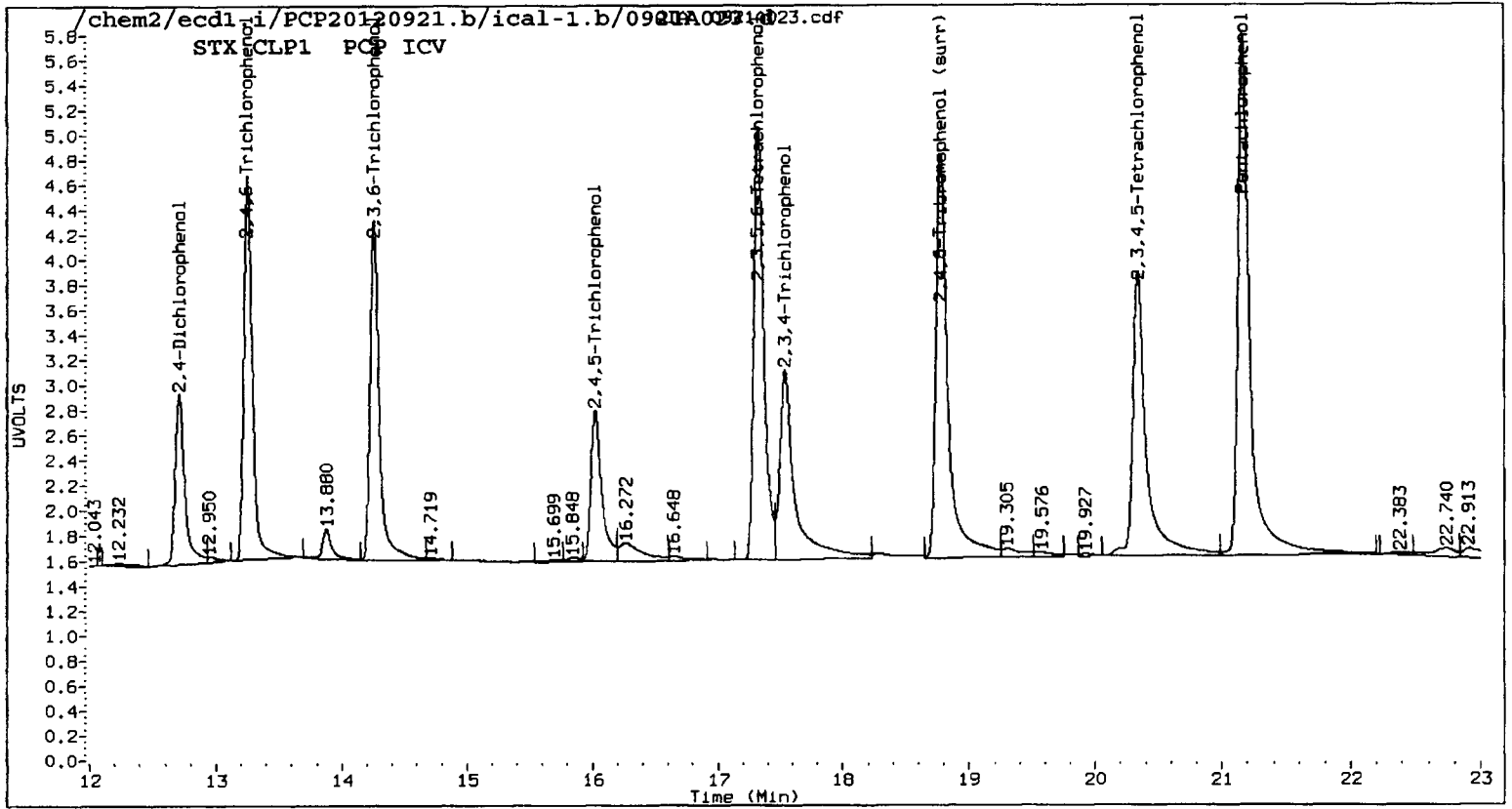
Purge Volume: 500.0

Column diameter: 0.53

Column phase: STX CLP1

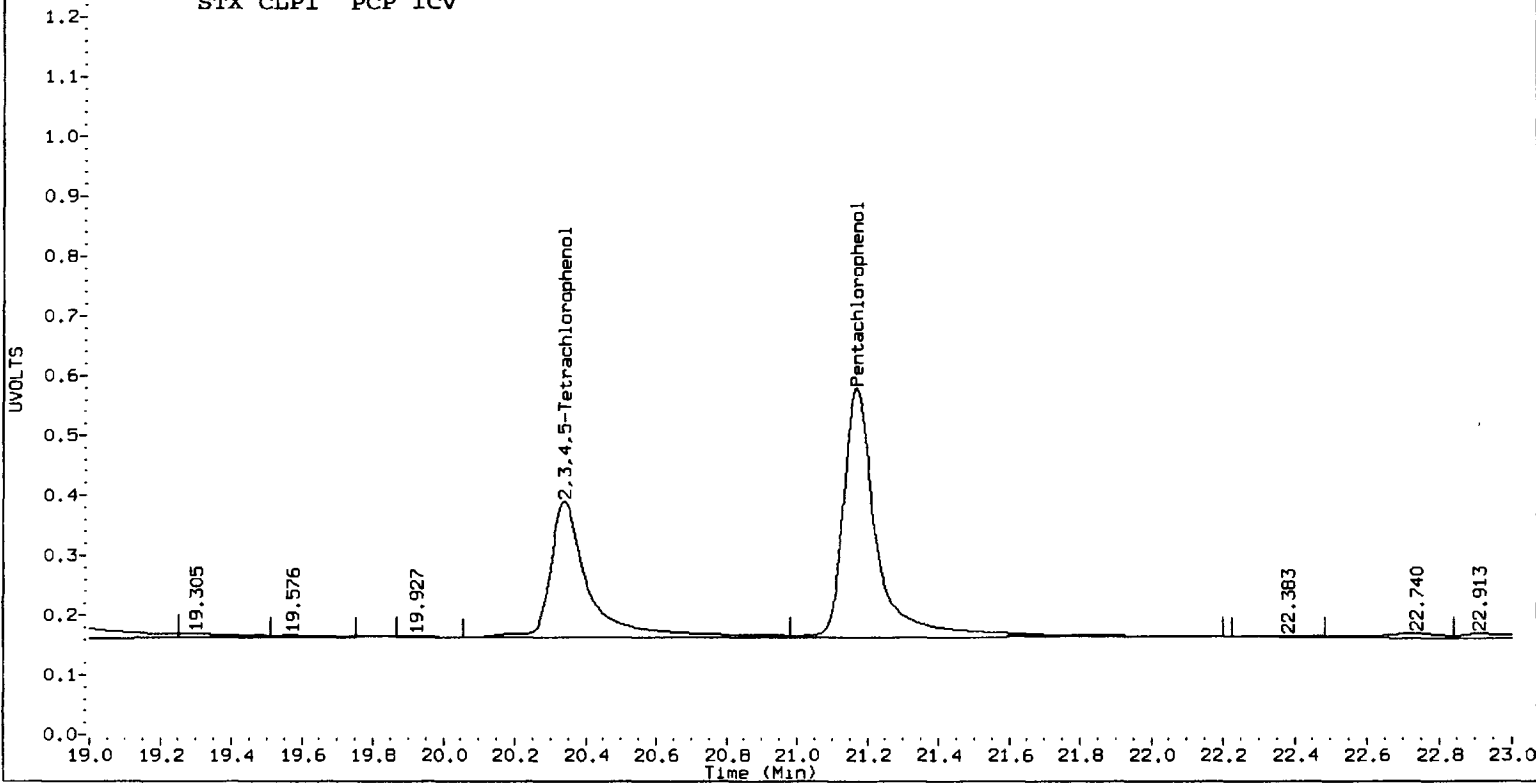


2100000000



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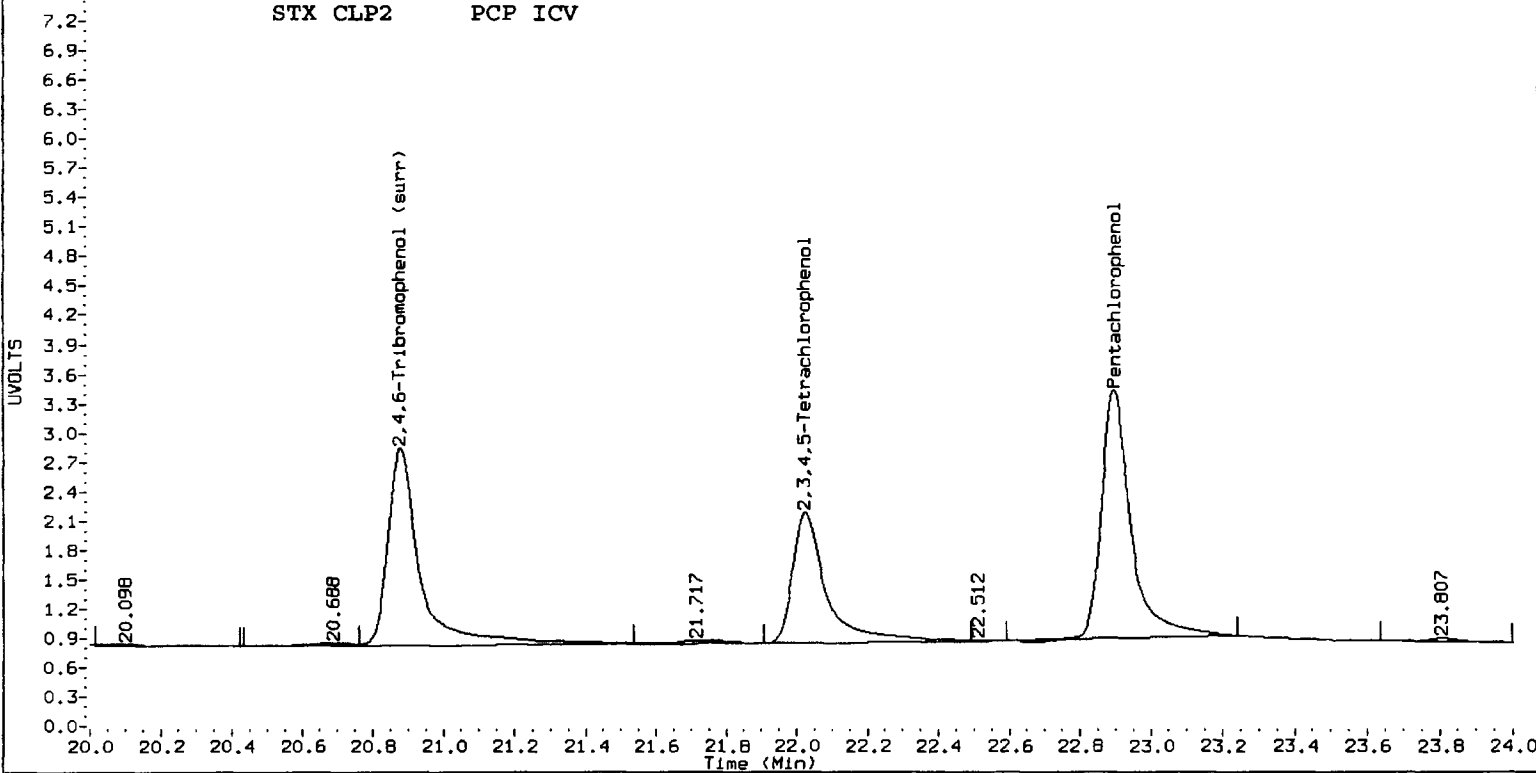
STX CLP1 PCP ICV



AIA 0921A023.cdf

7.5 /chem2/ecdl.i/PCP20120921.b/ical-2.b/0921A023.d

STX CLP2 PCP ICV



Date : 21-SEP-2012 23:06

Client ID:

Instrument: ecdf1.i

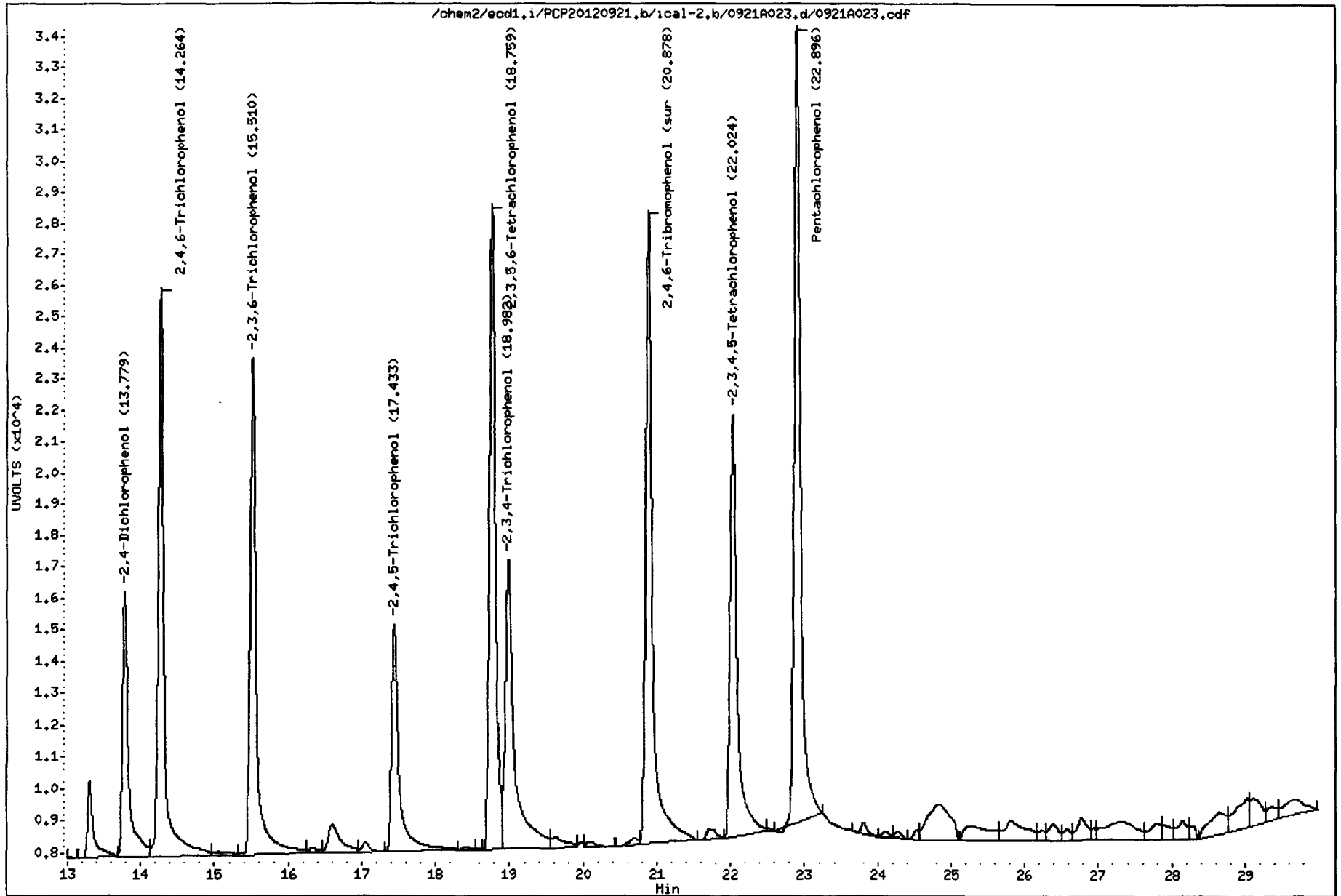
Sample Info: PCP ICV

Operator: ar

Purge Volume: 500.0

Column phase: STX CLP2

Column diameter: 0.53



Date : 21-SEP-2012 23:06

Client ID:

Instrument: ecd1.i

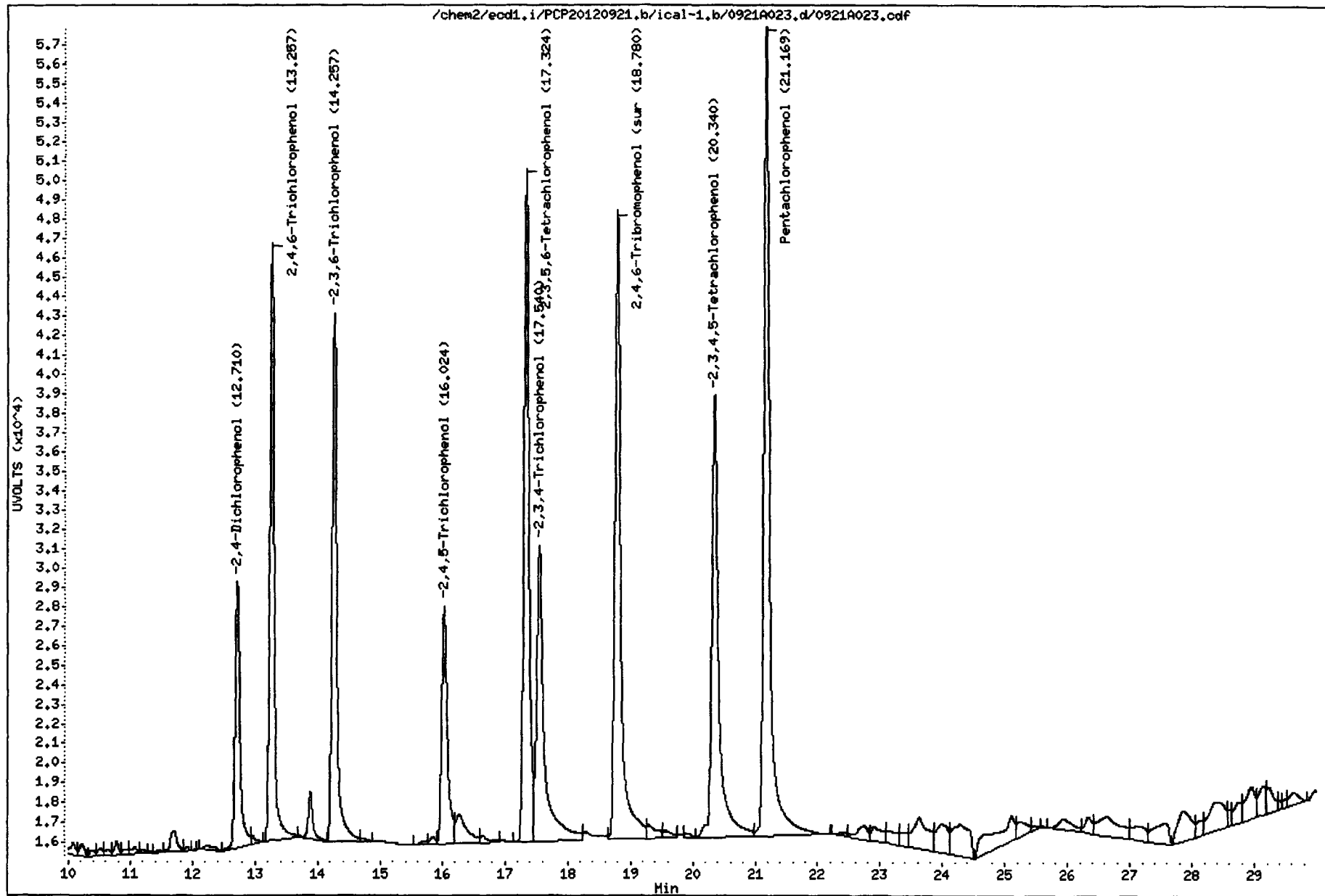
Sample Info: PCP ICV

Purge Volume: 500.0

Operator: ar

Column phase: STX CLP1

Column diameter: 0.53



0921A023

**PCP/Chlorophenols Raw Data
Run Logs, Continuing Calibrations, and Raw Data**

ARI Job ID: VZ72

GC Analyst Notes / Corrective Action Log

RI Project ID: 1272 Client ID: Geo Engineer 2

RI SOP: **403S(PCB)** **405S(Herb)** **407S(TPH-D)** **409S(HCID)** **412S(PCP)** **423S(Pest)**
427S(Dir Inj) **428S(EPH)** **432S(EDB)** **Other**

Parameter(s): PCP

Instrument: FID-3A FID-3B FID-4A FID-4B FID-5 FID-7 FID-8
FID-9 ECD-1 ECD-5 ECD-6 ECD-7

Dates: Curve: 09/23/12 Analysis Start: 09/23/12

Endrin/DDT Breakdown <15%? YES / NO / NA Method Blank In Control? YES / NO

Cal Meets RF & %RSD Criteria? YES / NO LCS/LCSD Recovery In Control? YES / NO

Cal Meets RF & %RSD Criteria? YES / NO Surrogate Recovery In Control? YES / NO

Manual Integrations for ICal? YES / NO Manual Integrations for Samples? YES / NO

Internal Standard Meets Criteria? YES / NO / NA Special Analysis Criteria Met? YES / NO / NA

Detail problems, corrective actions and/or other pertinent information below (use reverse side when necessary):

Additional Details on Reverse: Yes / No

Analyst: YZ Date: 09/23/12

Reviewer: Mur Date: 1/23

Analytical Resources Inc.: Organics Instrument Log

ECD1 Serial No.: 3410A39690

Date: 01/23/13 Analysis: PCP Analyst: YB
 GC Program: Herbm Column No: 922995/801642 Column Type: STX cap, 1 cap
 Calibration File: PCP2010921 Curve Date: 01/21/12 Injection Vol.: 2.0

| IS/SS | Ical/Ccal | LCS/ICV |
|-------|-----------------|---------|
| | <u>2034 - 3</u> | |
| | | |
| | | |
| | | |
| | | |
| | | |

Document All Maintenance Tasks In StarLIMS

GC LOG SUMMARY FOR DATABATCH - /chem2/ecd1.i/PCP20120921.b/0122-1.b

| Inject | Date/Time | Filename | DF | LabID | ClientID |
|--------|-------------------|------------|----|------------|----------|
| 1 | 22-JAN-2013 12:43 | 0122A003.d | 1 | PCPCCAL | |
| 2 | 22-JAN-2013 13:19 | 0122A004.d | 1 | VZ72MBW1 | |
| 3 | 22-JAN-2013 13:56 | 0122A005.d | 1 | VZ72LCSW1 | |
| 4 | 22-JAN-2013 14:32 | 0122A006.d | 1 | VZ72LCSDW1 | |
| 5 | 22-JAN-2013 15:08 | 0122A007.d | 1 | VZ72QLS1 | |
| 6 | 22-JAN-2013 15:45 | 0122A008.d | 1 | VZ72A | |
| 7 | 22-JAN-2013 16:21 | 0122A009.d | 1 | VZ72B | |
| 8 | 22-JAN-2013 16:57 | 0122A010.d | 1 | PCP | |
| 9 | 22-JAN-2013 17:33 | 0122A011.d | 1 | PCPCCAL | |

YB 01/23/13

Every line must contain information or be lined out. Make all entries legible.
 Start a new page for each QC period. Document All Maintenance Tasks In StarLIMS

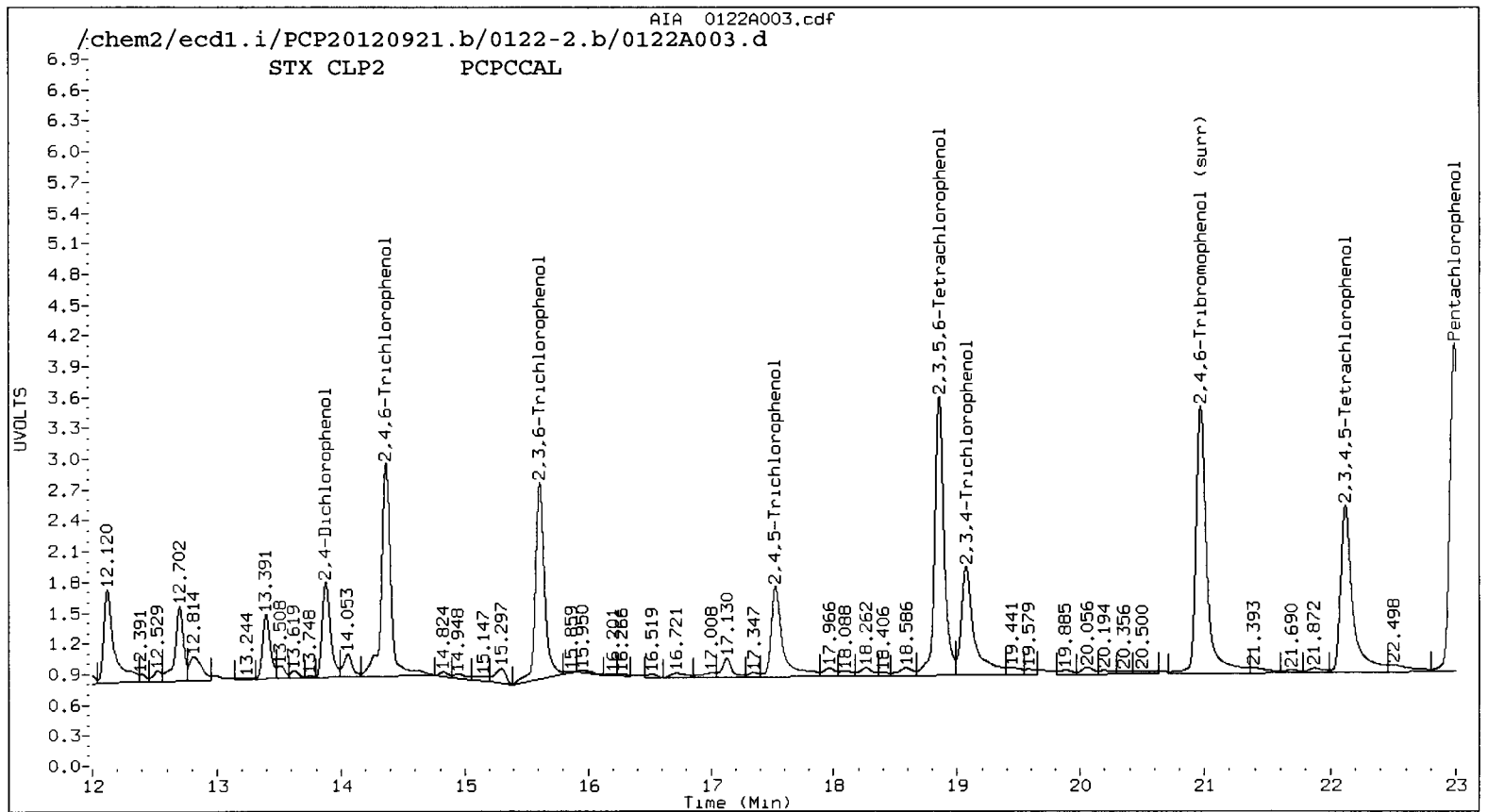
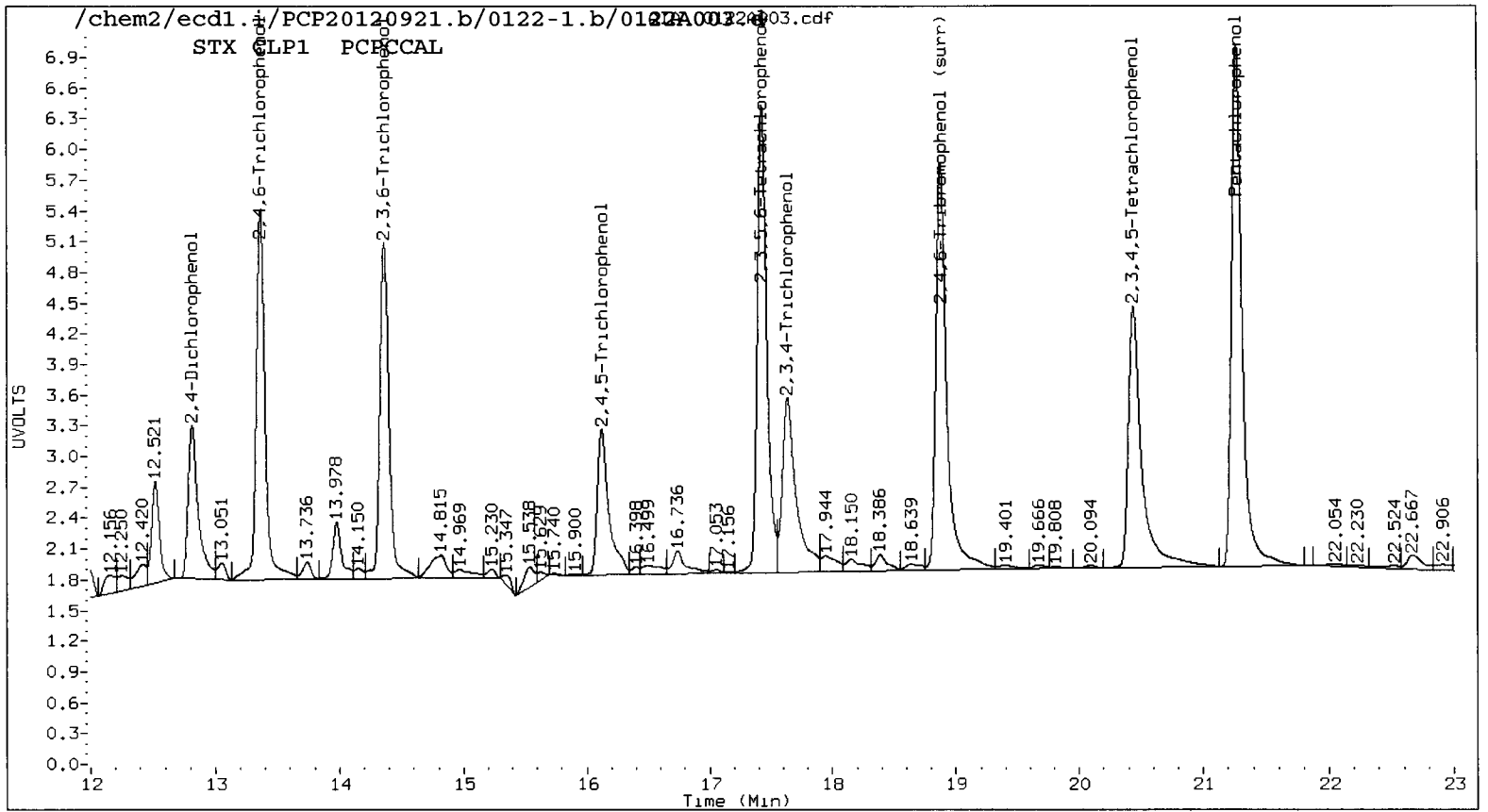
Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

Data file 1: /chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A003.d ARI ID: PCPCCAL *Y2 01/23/13*
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 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 12:43
 Compound Sublist: pcpca1 Report Date: 01/23/2013 11:16
 Instrument: ecdl.i Matrix: NONE
 Operator: ar Dilution Factor: 1.000

| RT | STX CLP1 Col Shift Response | STX CLP2 Col Shift Response | on col | STX CLP1 on col | STX CLP2 on col | RPD | STX CLP2 Compound |
|--------|--------------------------------|--------------------------------|----------|--------------------|--------------------|------|------------------------|
| 21.266 | 0.030 1506094 | 22.989 0.026 951556 | 26.3441 | 26.6626 | | 1.2 | Pentachlorophenol |
| 13.359 | 0.029 898122 | 14.364 0.026 542354 | 28.1964 | 23.0172 | | 20.2 | 2,4,6-Trichlorophenol |
| 14.360 | 0.030 826461 | 15.608 0.026 487392 | 25.3085 | 23.2643 | | 8.4 | 2,3,6-Trichlorophenol |
| 16.120 | 0.032 463005 | 17.525 0.026 298393 | 22.9668 | 23.1658 | | 0.9 | 2,4,5-Trichlorophenol |
| 17.633 | 0.031 666139 | 19.072 0.026 391274 | 27.5246 | 24.0560 | | 13.4 | 2,3,4-Trichlorophenol |
| 17.422 | 0.030 1234608 | 18.853 0.026 728997 | 26.2722 | 25.2374 | | 4.0 | 2,3,5,6-Tetrachloroph |
| 20.437 | 0.030 970317 | 22.117 0.026 542974 | 27.0411 | 26.2020 | | 3.2 | 2,3,4,5-Tetrachlorophe |
| 12.814 | 0.029 421308 | 13.877 0.026 224236 | 271.4237 | 214.3137 | | 23.5 | 2,4-Dichlorophenol |
| 18.874 | 0.031 1228819 | 20.970 0.026 768313 | 26.3 | 25.5 | | 3.3 | 2,4,6-Tribromophenol (|

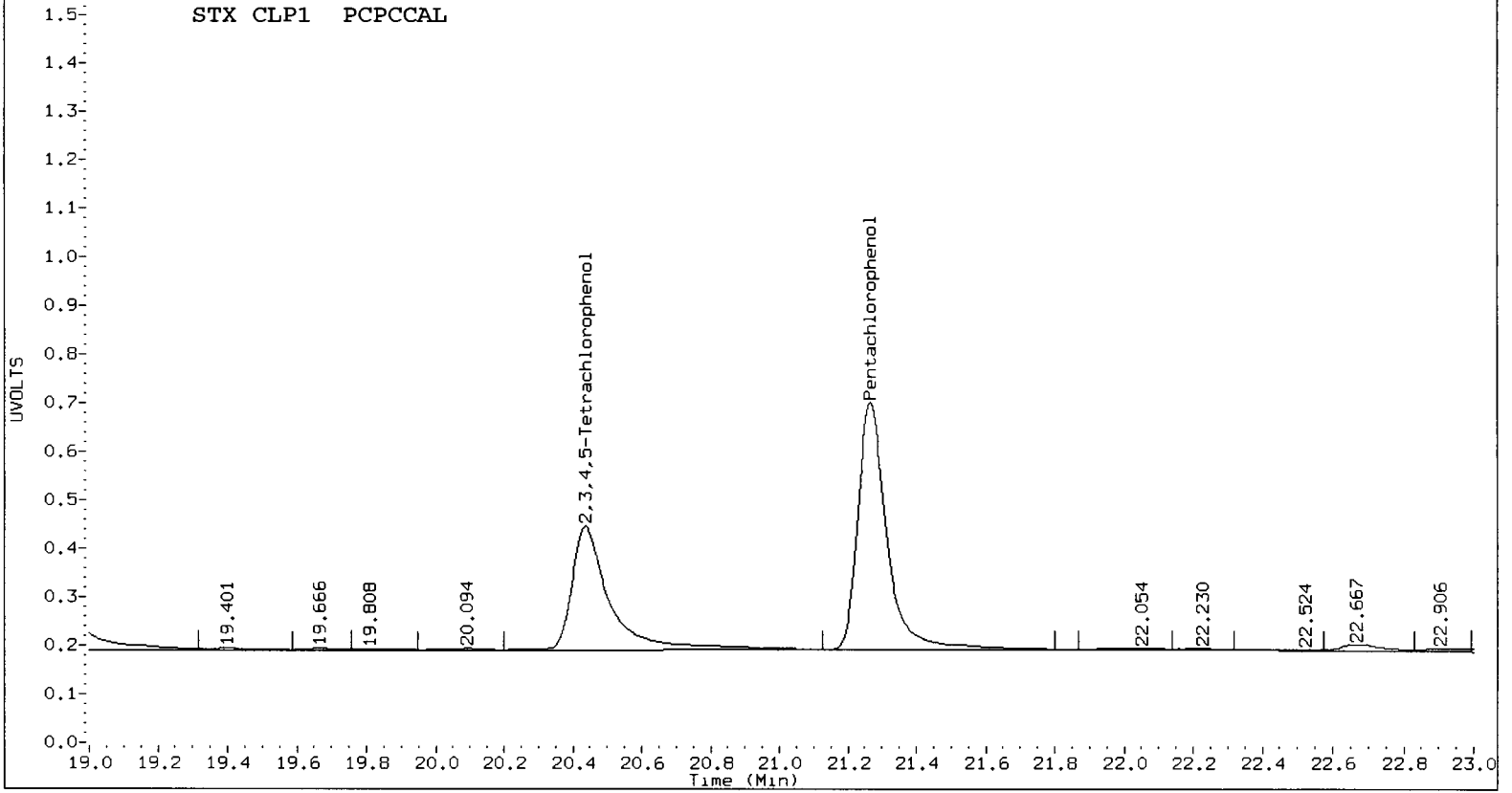
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|---------------------------|-------|-------|
| Pentachlorophenol | 105.4 | 106.7 |
| 2,4,6-Trichlorophenol | 112.8 | 92.1 |
| 2,3,6-Trichlorophenol | 101.2 | 93.1 |
| 2,4,5-Trichlorophenol | 91.9 | 92.7 |
| 2,3,4-Trichlorophenol | 110.1 | 96.2 |
| 2,3,5,6-Tetrachlorophenol | 105.1 | 100.9 |
| 2,3,4,5-Tetrachlorophenol | 108.2 | 104.8 |
| 2,4-Dichlorophenol | 108.6 | 85.7 |
| 2,4,6-TBP (surr) | 105.3 | 101.9 |



/chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A003.d

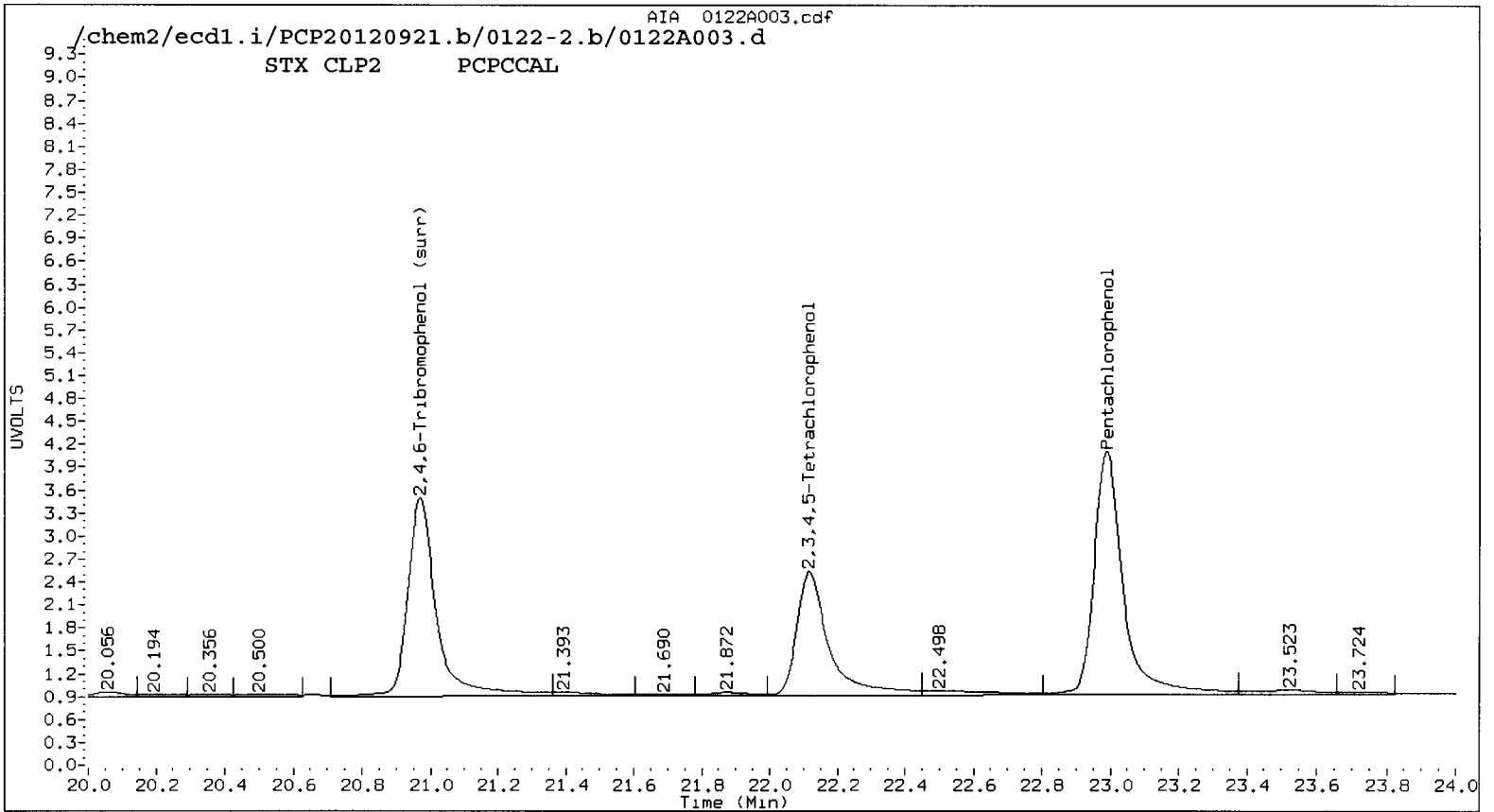
STX CLP1 PCPCAL



AIA 0122A003.cdf

/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A003.d

STX CLP2 PCPCAL



Analytical Resources Inc.
 Dual Column 8041 Chlorinated Phenols Quantitation Report

12 01/23/13

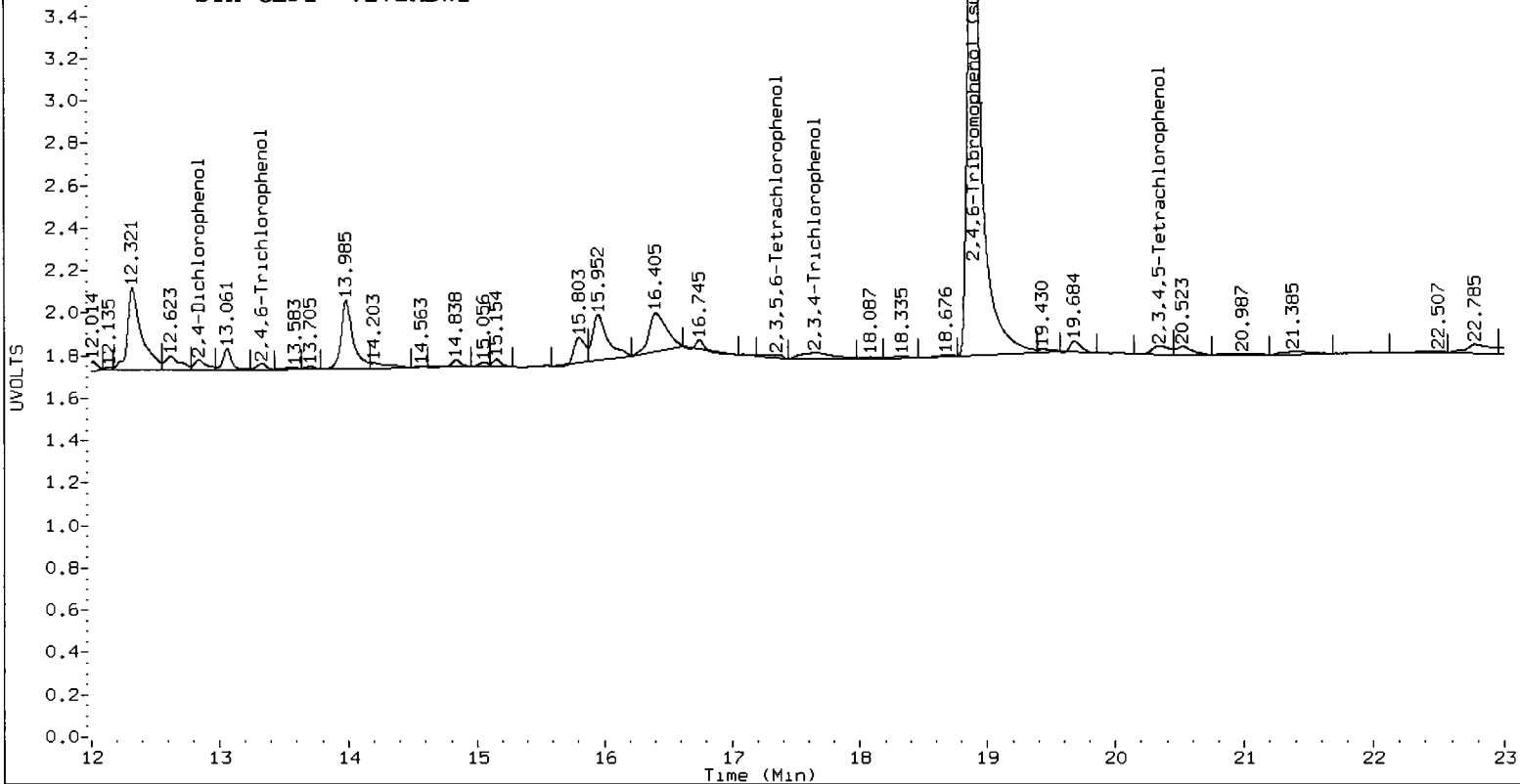
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 Data file 2: /chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A004.d Client ID: VZ72MBW1
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 13:19
 Compound Sublist: pcpca1 Report Date: 01/23/2013 10:56
 Instrument: ecd1.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

| STX CLP1 Col | | | STX CLP2 Col | | | STX CLP1 | STX CLP2 | |
|--------------|--------|----------|--------------|--------|----------|----------|----------|--------------|
| RT | Shift | Response | RT | Shift | Response | on col | on col | RPD Compound |
| ---- | | | 23.004 | 0.041 | 4032 | 0.0000 | 0.1130 | --- |
| 13.330 | -0.001 | 6935 | 14.385 | 0.047 | 3716 | 0.2177 | 0.1347 | 47.1* |
| ---- | | | 15.553 | -0.029 | 4844 | 0.0000 | 0.1898 | --- |
| ---- | | | ---- | | | 0.0000 | 0.0000 | --- |
| 17.646 | 0.044 | 25911 | ---- | | | 0.8097 | 0.0000 | --- |
| 17.347 | -0.045 | 7826 | 18.861 | 0.035 | 3194 | 0.1665 | 0.1106 | 40.4* |
| 20.345 | -0.062 | 19633 | 22.121 | 0.030 | 4365 | 0.4488 | 0.2106 | 72.2* |
| 12.843 | 0.058 | 15696 | ---- | | | 8.5967 | 0.0000 | --- |
| 18.893 | 0.051 | 924370 | 20.982 | 0.038 | 560296 | 19.1 | 18.6 | 2.5 |

PERCENT RECOVERY

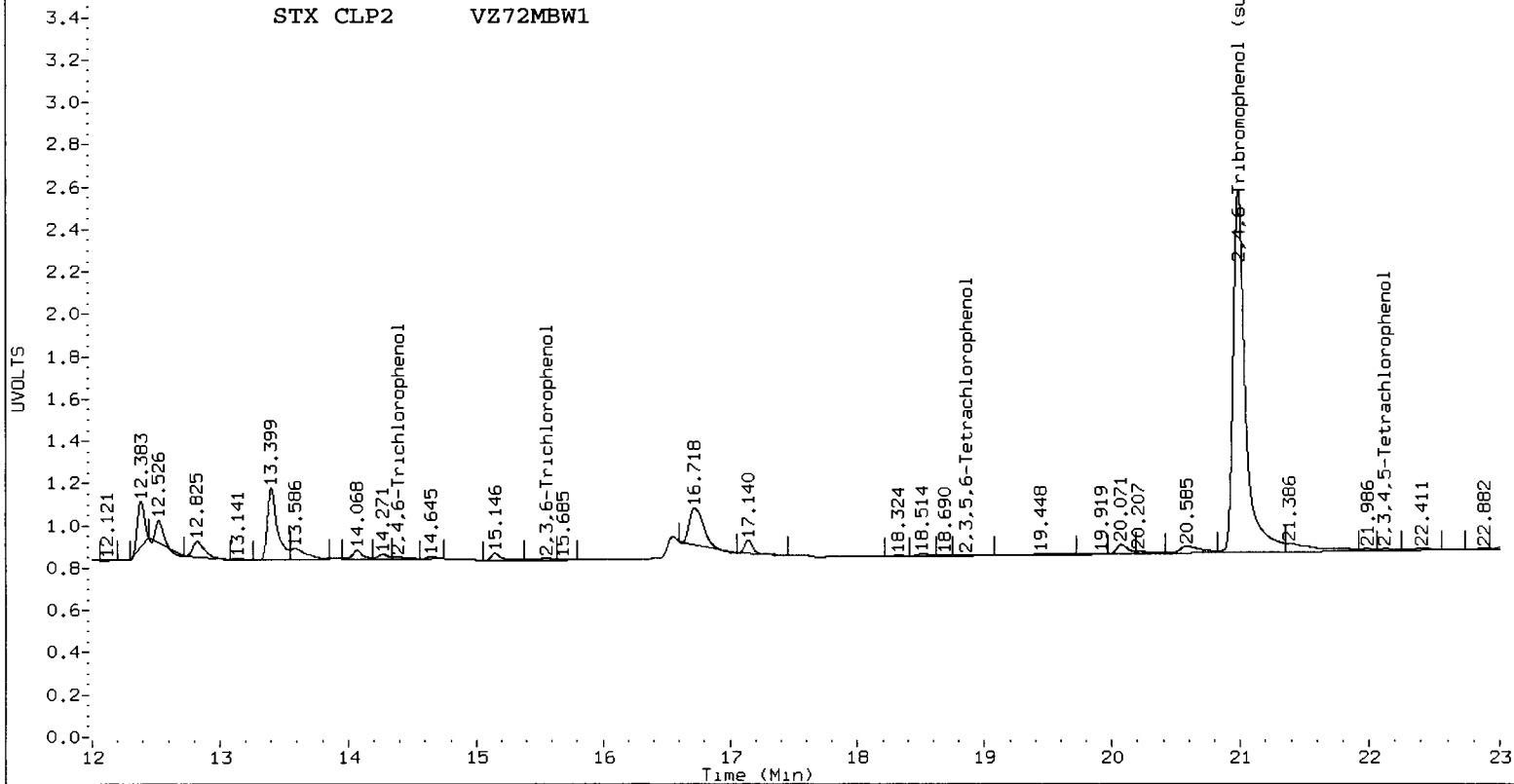
| COMPOUND | Col1 | Col2 |
|------------------|------|------|
| 2,4,6-TBP (surr) | 76.2 | 74.3 |

STX CLP1 VZ72MBW1



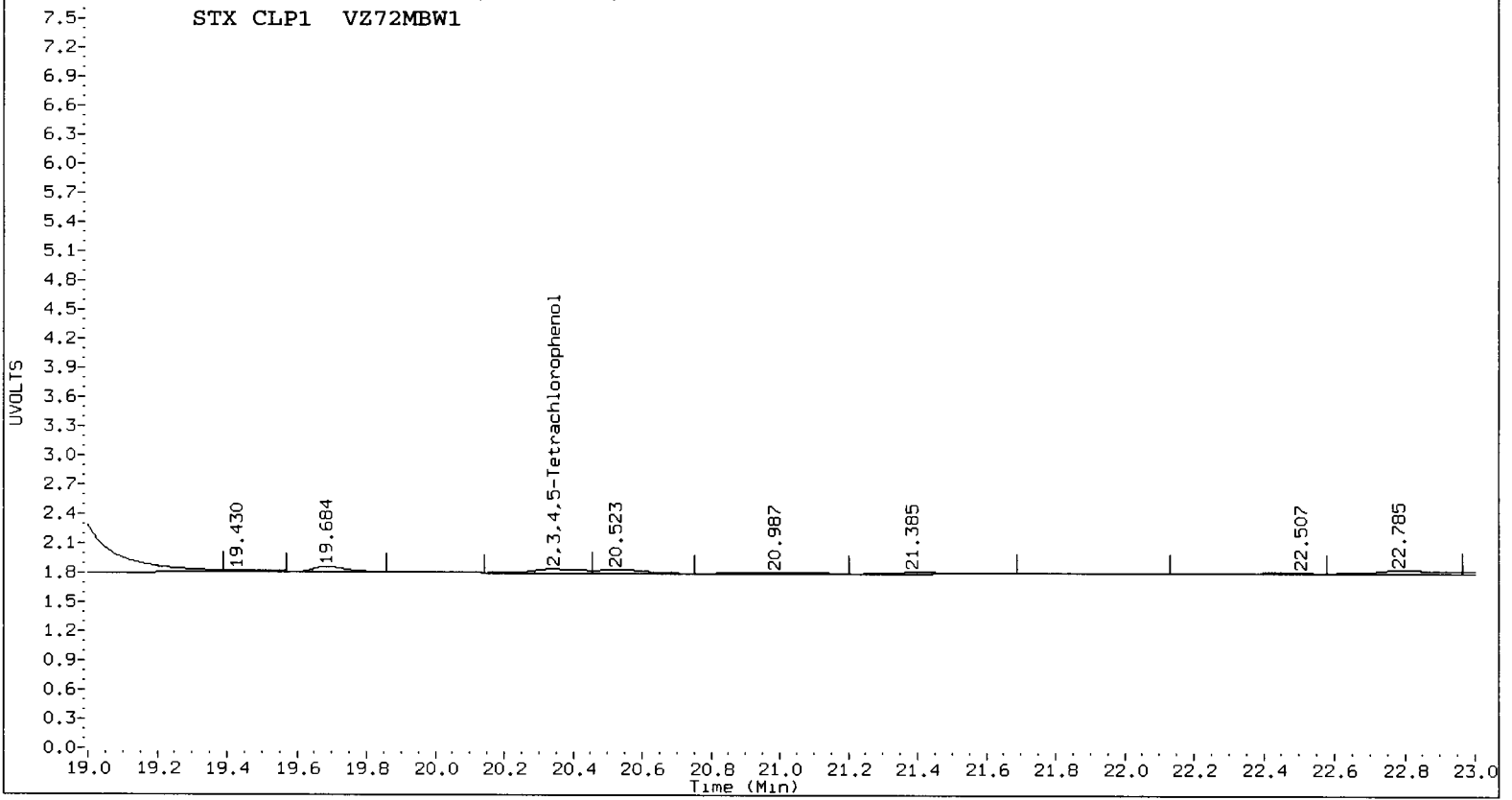
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STX CLP2 VZ72MBW1



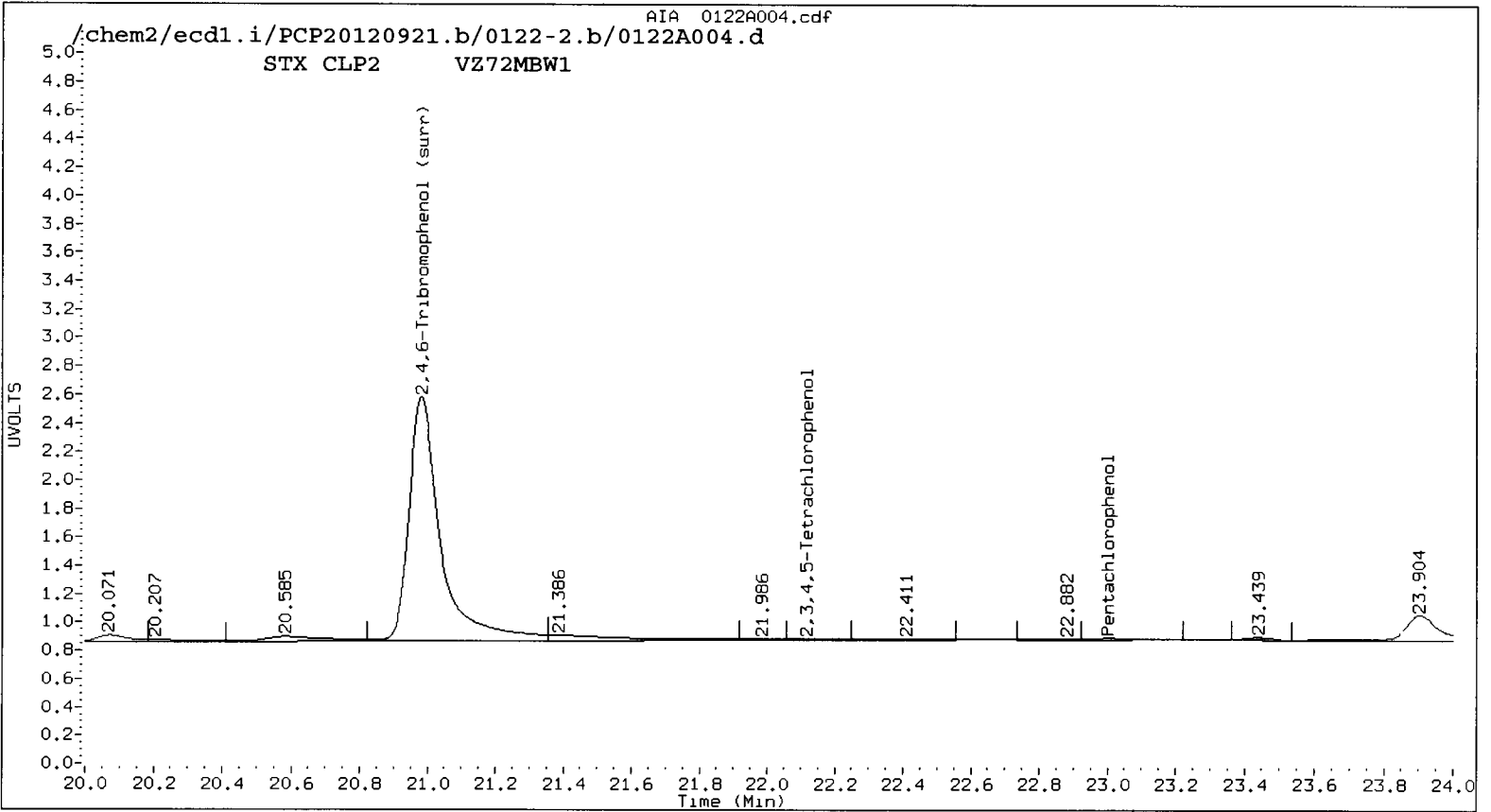
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STX CLP1 VZ72MBW1



/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A004.d

STX CLP2 VZ72MBW1



VZ72 : 5/11/92

Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

Data file 1: /chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A005.d ARI ID: VZ72LCSW1
 Data file 2: /chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A005.d Client ID: VZ72LCSW1
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 13:56
 Compound Sublist: pcpca1 Report Date: 01/23/2013 10:56
 Instrument: ecd1.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

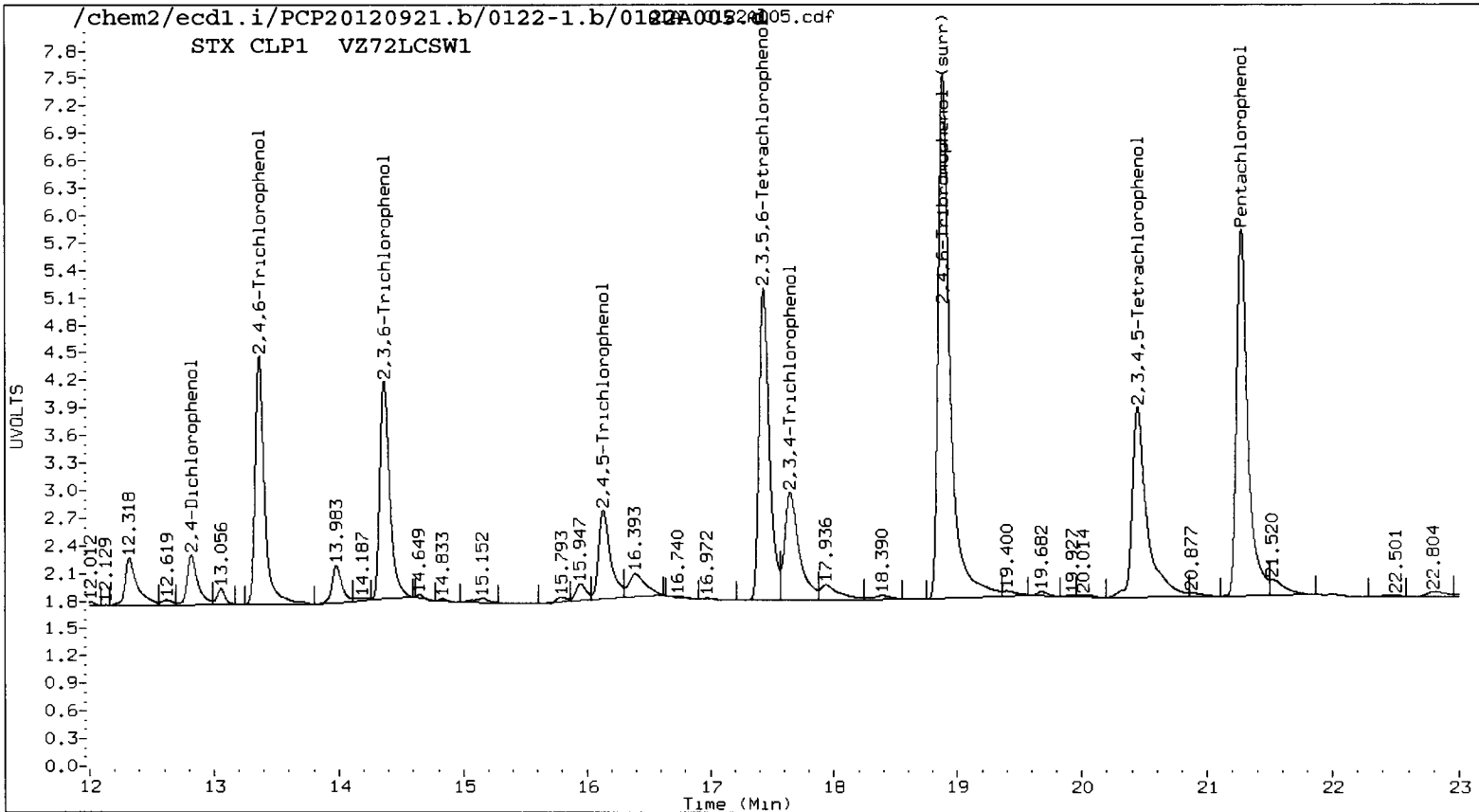
y/z 01/23/13

| STX CLP1 Col | | | STX CLP2 Col | | | STX CLP1 | STX CLP2 | | |
|--------------|-------|----------|--------------|-------|----------|----------|----------|------|------------------------|
| RT | Shift | Response | RT | Shift | Response | on col | on col | RPD | Compound |
| 21.276 | 0.039 | 1271897 | 22.995 | 0.032 | 756141 | 21.7453 | 21.1870 | 2.6 | Pentachlorophenol |
| 13.362 | 0.032 | 703943 | 14.367 | 0.029 | 396504 | 22.1002 | 16.1632 | 31.0 | 2,4,6-Trichlorophenol |
| 14.365 | 0.035 | 635410 | 15.613 | 0.031 | 380844 | 18.3598 | 17.4586 | 5.0 | 2,3,6-Trichlorophenol |
| 16.134 | 0.045 | 327820 | 17.533 | 0.035 | 184162 | 14.9432 | 12.1712 | 20.4 | 2,4,5-Trichlorophenol |
| 17.649 | 0.047 | 468252 | 19.082 | 0.036 | 318871 | 17.8904 | 17.9980 | 0.6 | 2,3,4-Trichlorophenol |
| 17.433 | 0.040 | 993330 | 18.860 | 0.033 | 579551 | 21.1379 | 20.0637 | 5.2 | 2,3,5,6-Tetrachlorophe |
| 20.449 | 0.042 | 854152 | 22.124 | 0.033 | 440724 | 23.2809 | 21.2678 | 9.0 | 2,3,4,5-Tetrachlorophe |
| 12.820 | 0.035 | 161572 | 13.882 | 0.031 | 87876 | 94.1027 | 72.9674 | 25.3 | 2,4-Dichlorophenol |
| 18.886 | 0.043 | 1952276 | 20.977 | 0.034 | 1194685 | 45.7 | 39.6 | 14.2 | 2,4,6-Tribromophenol |

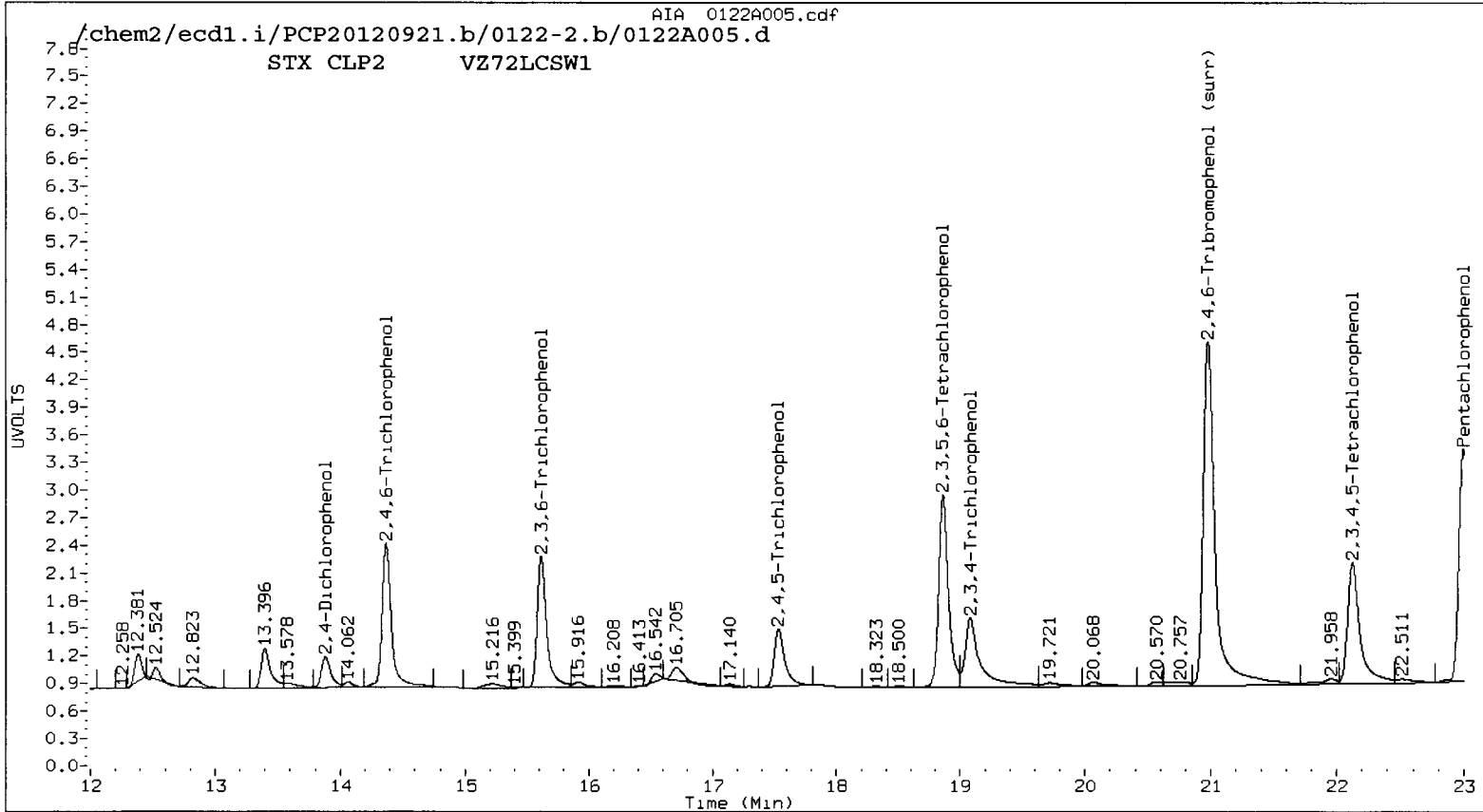
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|---------------------------|------|------|
| Pentachlorophenol | 87.0 | 84.7 |
| 2,4,6-Trichlorophenol | 88.4 | 64.7 |
| 2,3,6-Trichlorophenol | 73.4 | 69.8 |
| 2,4,5-Trichlorophenol | 59.8 | 48.7 |
| 2,3,4-Trichlorophenol | 71.6 | 72.0 |
| 2,3,5,6-Tetrachlorophenol | 84.6 | 80.3 |
| 2,3,4,5-Tetrachlorophenol | 93.1 | 85.1 |
| 2,4-Dichlorophenol | 37.6 | 29.2 |
| 2,4,6-TBP (surr) | 91.3 | 79.2 |

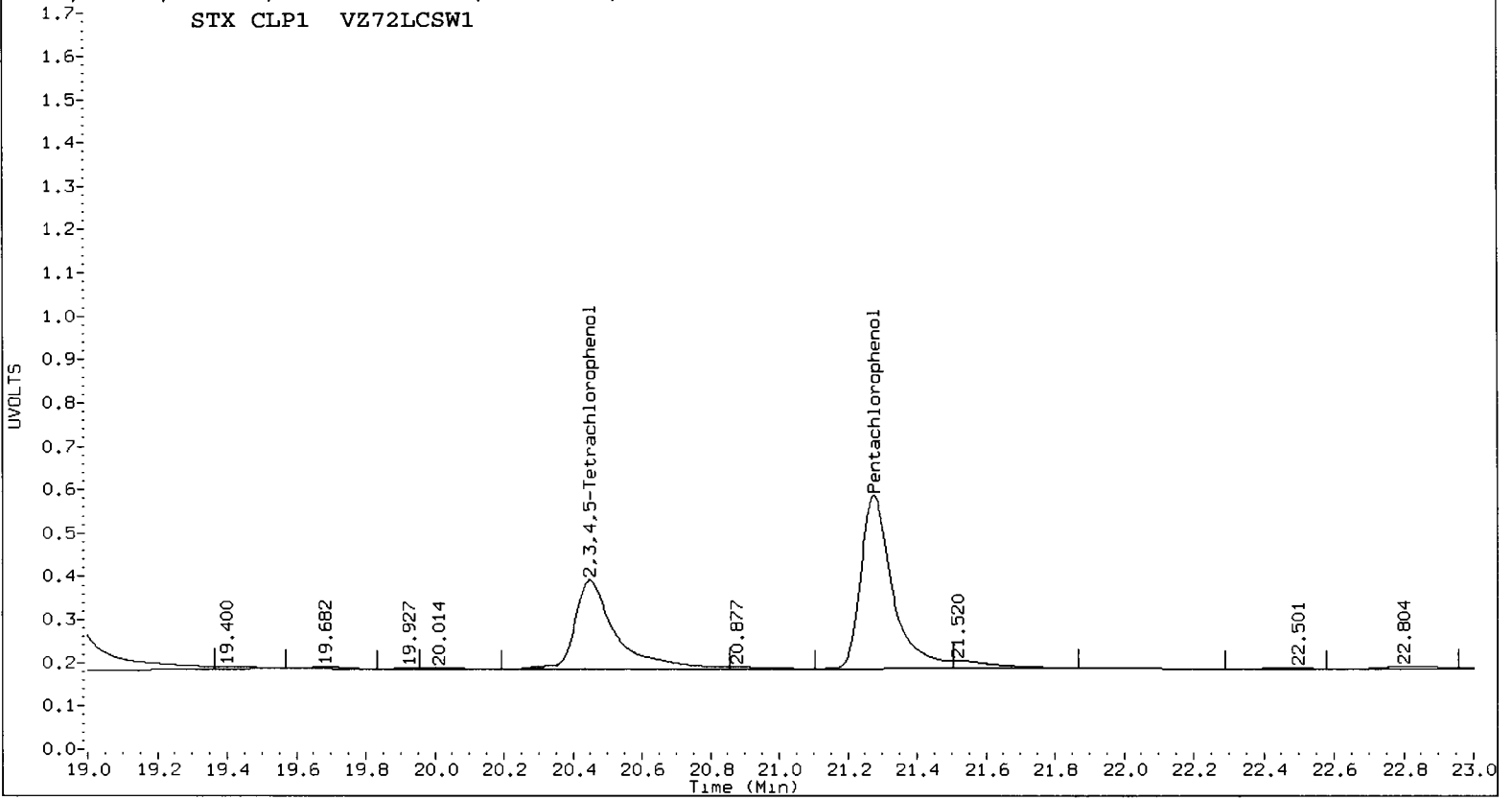
/chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A005.d
STX CLP1 VZ72LCSW1



/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A005.d
STX CLP2 VZ72LCSW1

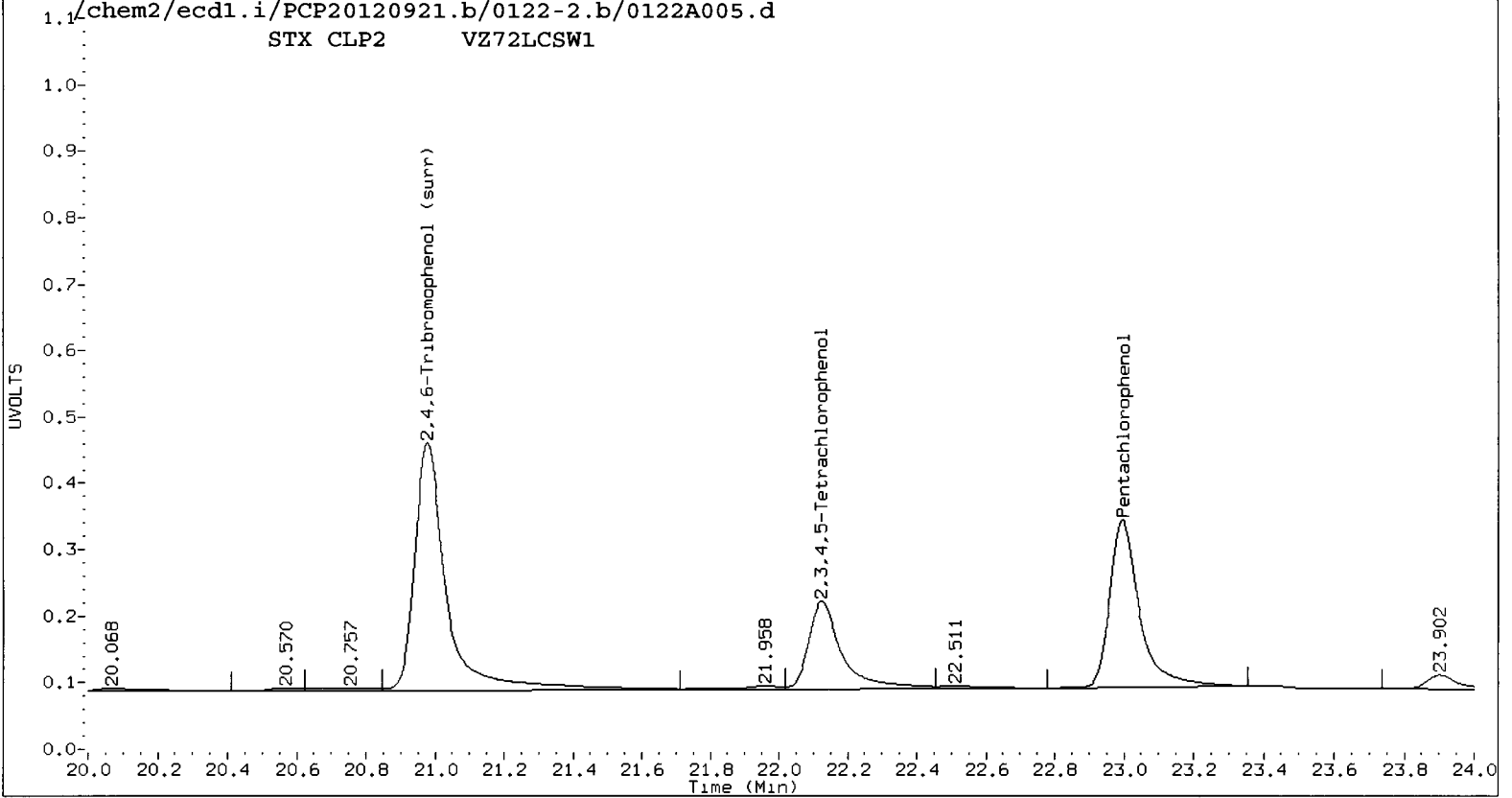


STX CLP1 VZ72LCSW1



/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A005.d

STX CLP2 VZ72LCSW1



Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

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 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 14:32
 Compound Sublist: pcpal Report Date: 01/23/2013 10:56
 Instrument: ecdl.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

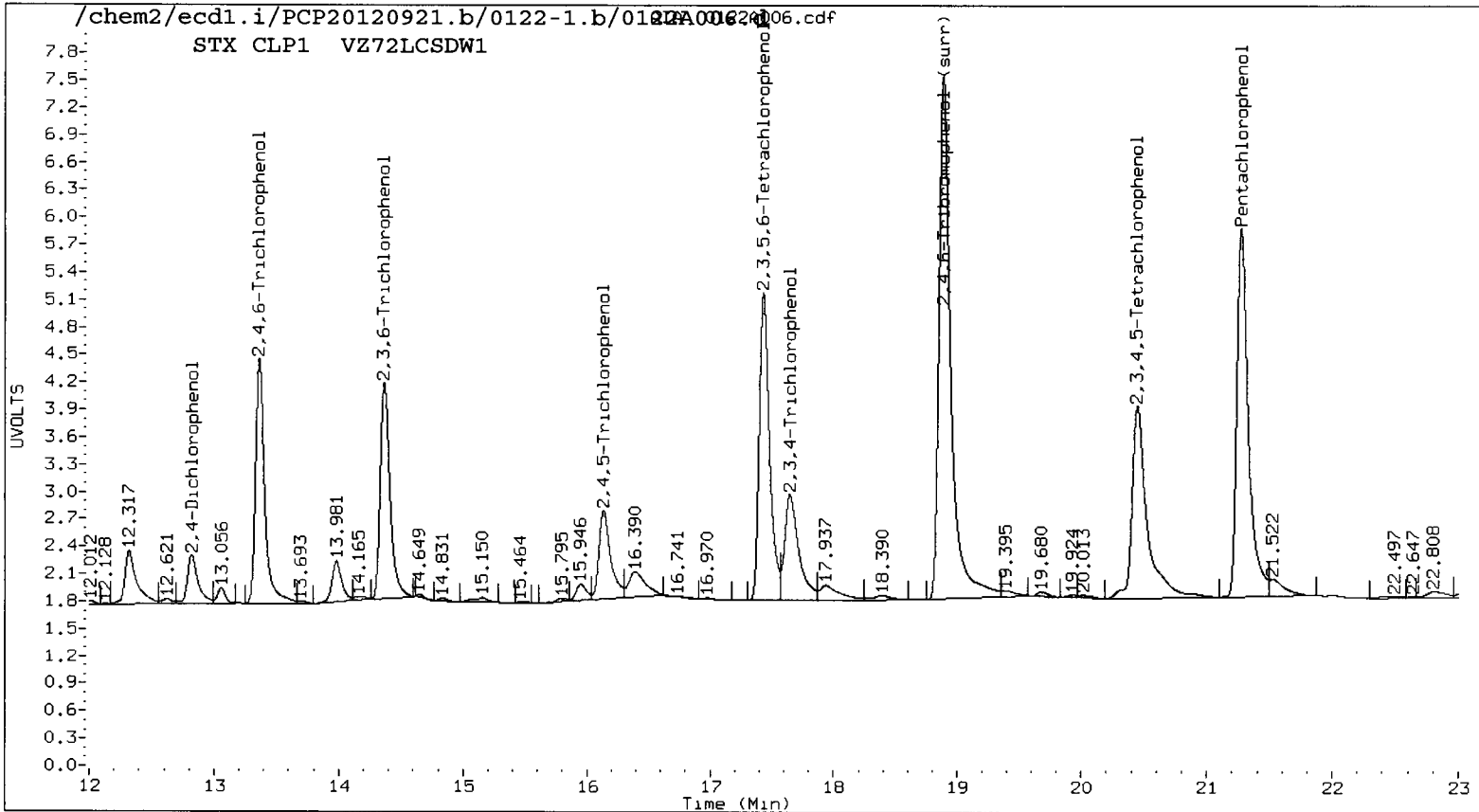
1/2 off 3/2

| STX CLP1 Col | | | STX CLP2 Col | | | STX CLP1 | STX CLP2 | |
|--------------|-------|----------|--------------|-------|----------|----------|----------|-----------------------------|
| RT | Shift | Response | RT | Shift | Response | on col | on col | RPD Compound |
| 21.274 | 0.038 | 1279983 | 22.995 | 0.031 | 763113 | 21.9010 | 21.3824 | 2.4 Pentachlorophenol |
| 13.361 | 0.031 | 698629 | 14.367 | 0.029 | 400410 | 21.9333 | 16.3404 | 29.2 2,4,6-Trichlorophenol |
| 14.365 | 0.035 | 633906 | 15.612 | 0.030 | 380715 | 18.3077 | 17.4518 | 4.8 2,3,6-Trichlorophenol |
| 16.133 | 0.045 | 322197 | 17.533 | 0.035 | 181787 | 14.6330 | 11.9706 | 20.0 2,4,5-Trichlorophenol |
| 17.648 | 0.046 | 455423 | 19.082 | 0.035 | 303302 | 17.3084 | 16.7907 | 3.0 2,3,4-Trichlorophenol |
| 17.431 | 0.039 | 982215 | 18.859 | 0.032 | 578179 | 20.9013 | 20.0162 | 4.3 2,3,5,6-Tetrachlorophe |
| 20.448 | 0.041 | 882537 | 22.123 | 0.032 | 439793 | 24.1865 | 21.2229 | 13.1 2,3,4,5-Tetrachlorophe |
| 12.819 | 0.035 | 162051 | 13.882 | 0.030 | 86355 | 94.4002 | 71.5843 | 27.5 2,4-Dichlorophenol |
| 18.885 | 0.043 | 1930592 | 20.977 | 0.033 | 1177442 | 45.0 | 39.0 | 14.2 2,4,6-Tribromophenol |

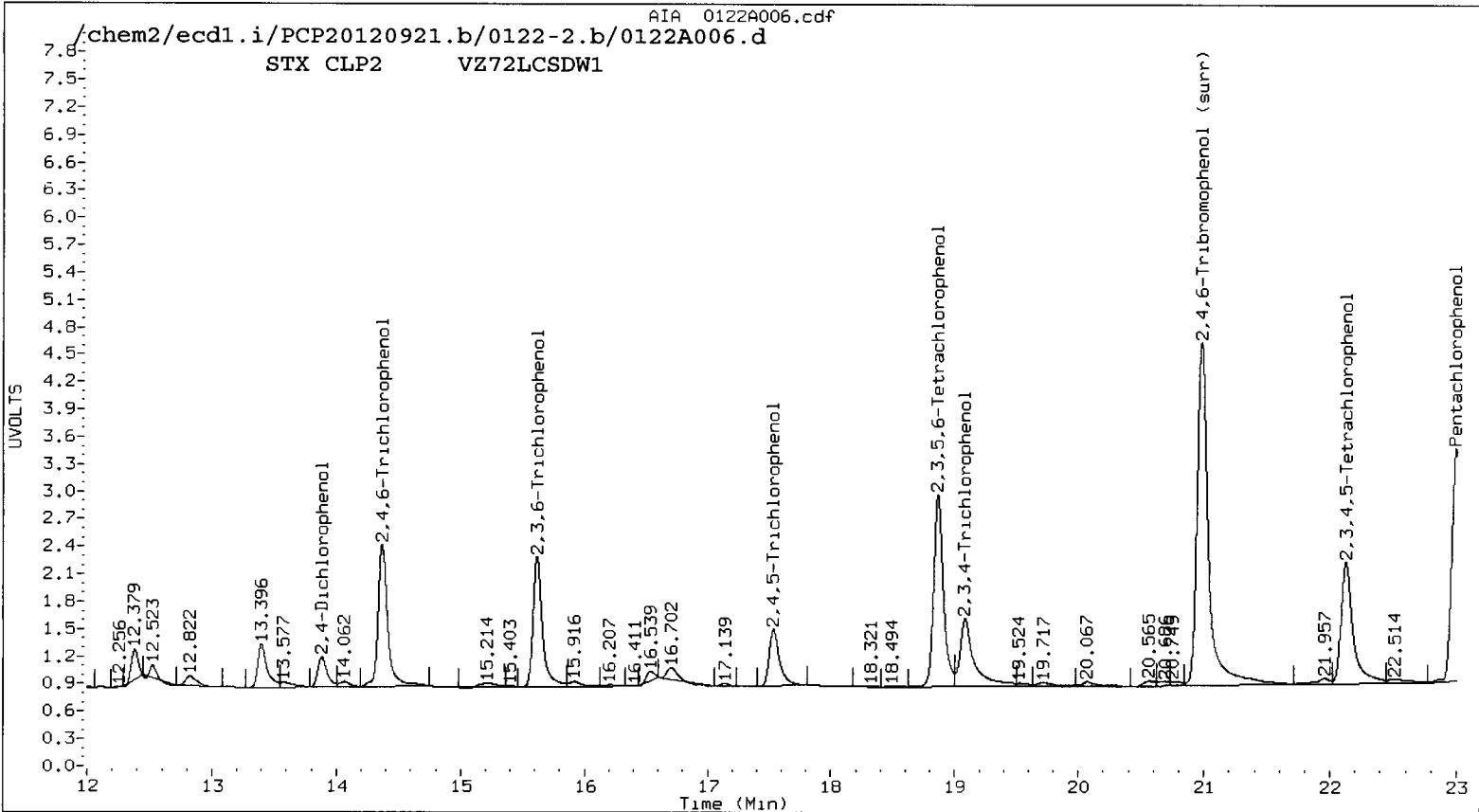
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|---------------------------|------|------|
| Pentachlorophenol | 87.6 | 85.5 |
| 2,4,6-Trichlorophenol | 87.7 | 65.4 |
| 2,3,6-Trichlorophenol | 73.2 | 69.8 |
| 2,4,5-Trichlorophenol | 58.5 | 47.9 |
| 2,3,4-Trichlorophenol | 69.2 | 67.2 |
| 2,3,5,6-Tetrachlorophenol | 83.6 | 80.1 |
| 2,3,4,5-Tetrachlorophenol | 96.7 | 84.9 |
| 2,4-Dichlorophenol | 37.8 | 28.6 |
| 2,4,6-TBP (surr) | 90.1 | 78.1 |

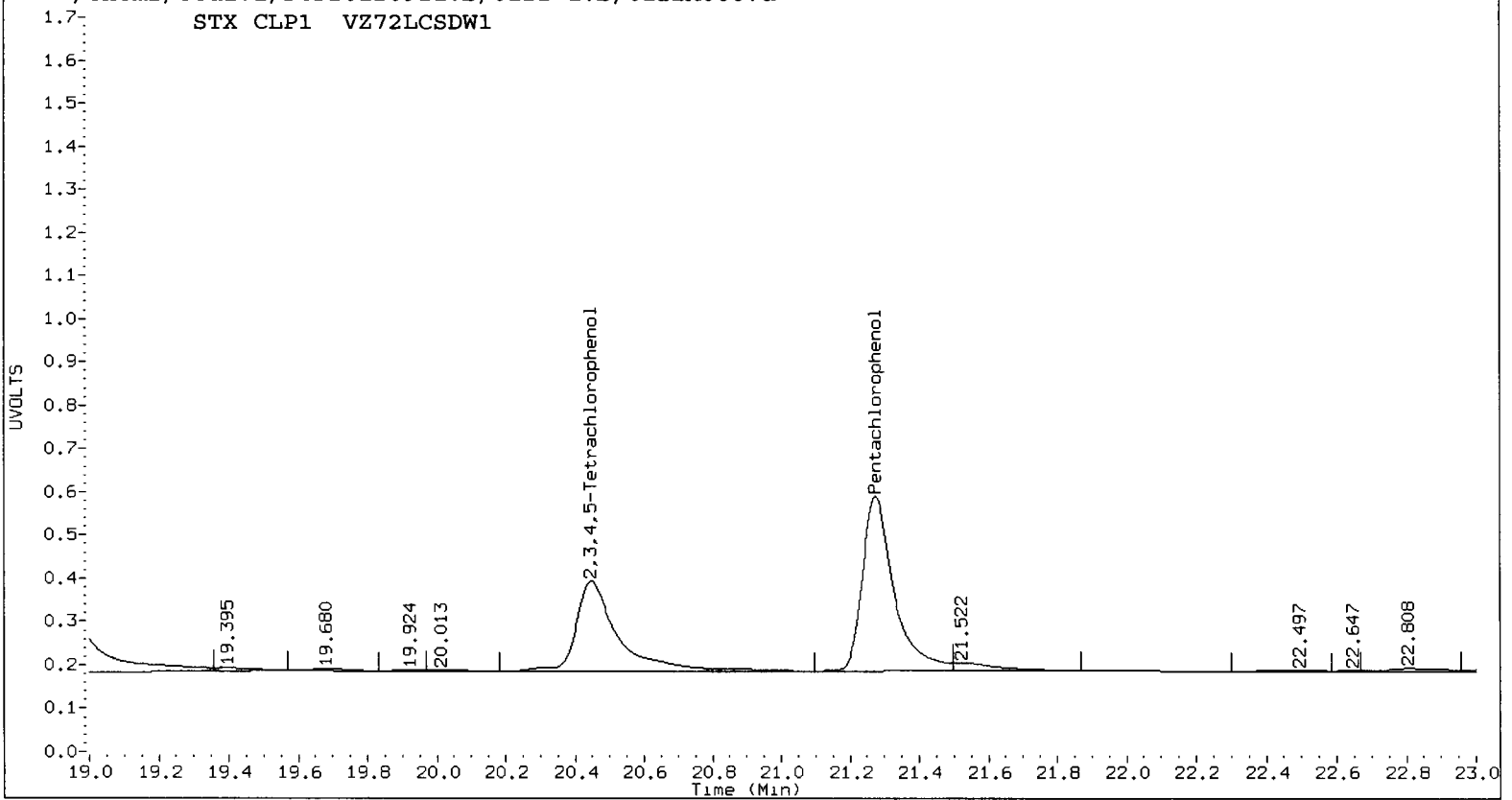
STX CLP1 VZ72LCSDW1



STX CLP2 VZ72LCSDW1

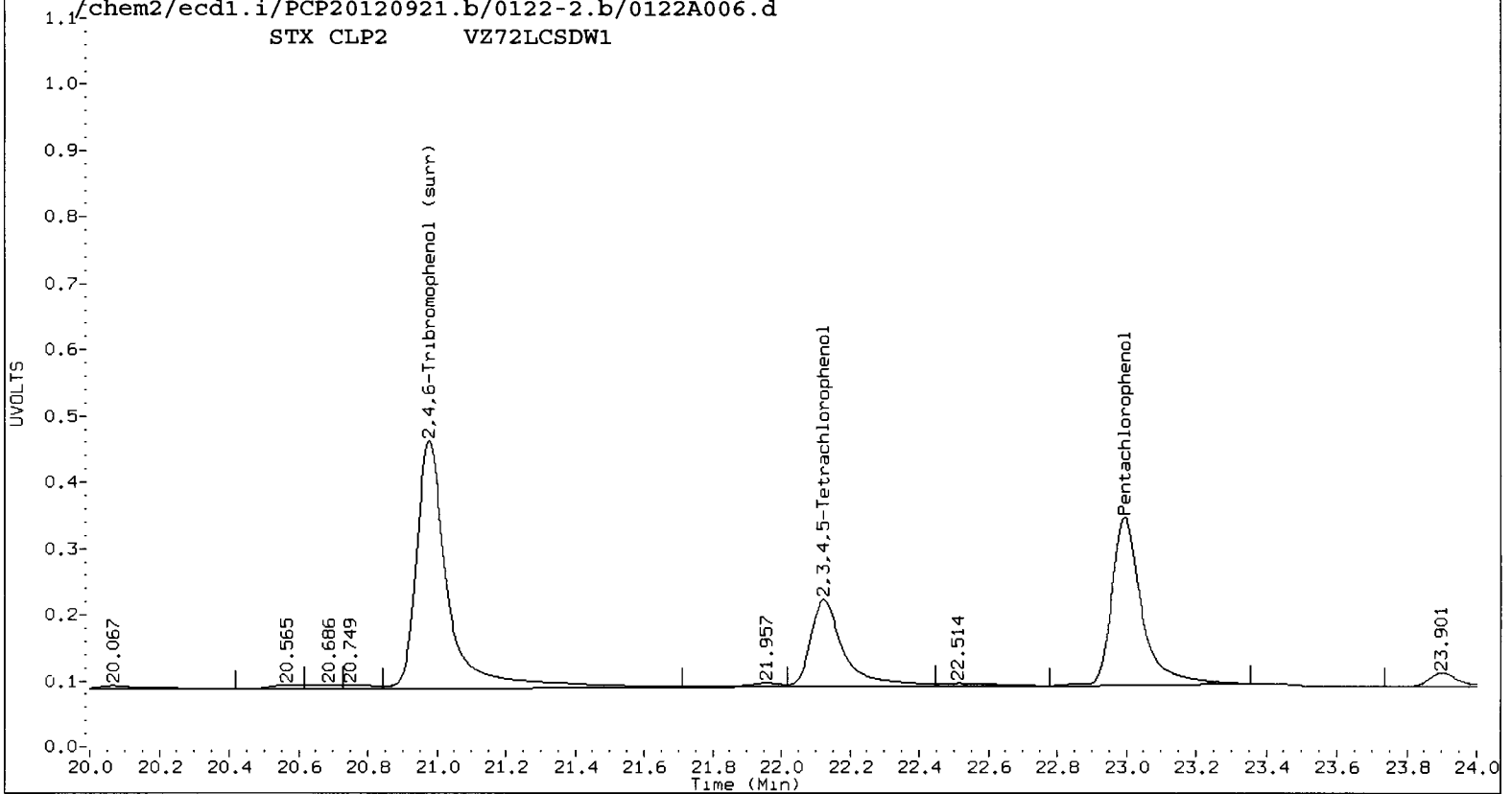


STX CLP1 VZ72LCSDW1



/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A006.d

STX CLP2 VZ72LCSDW1



Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

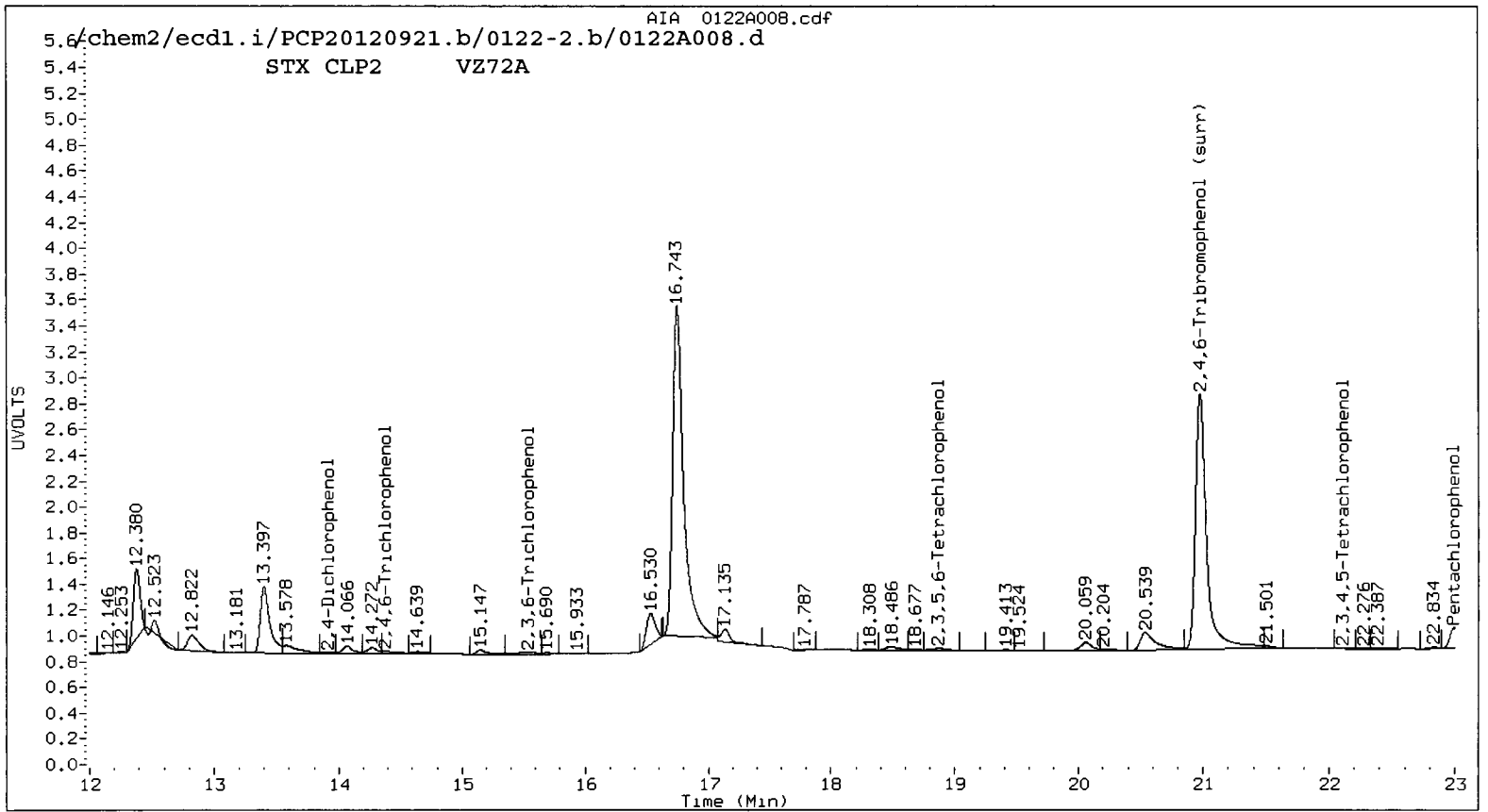
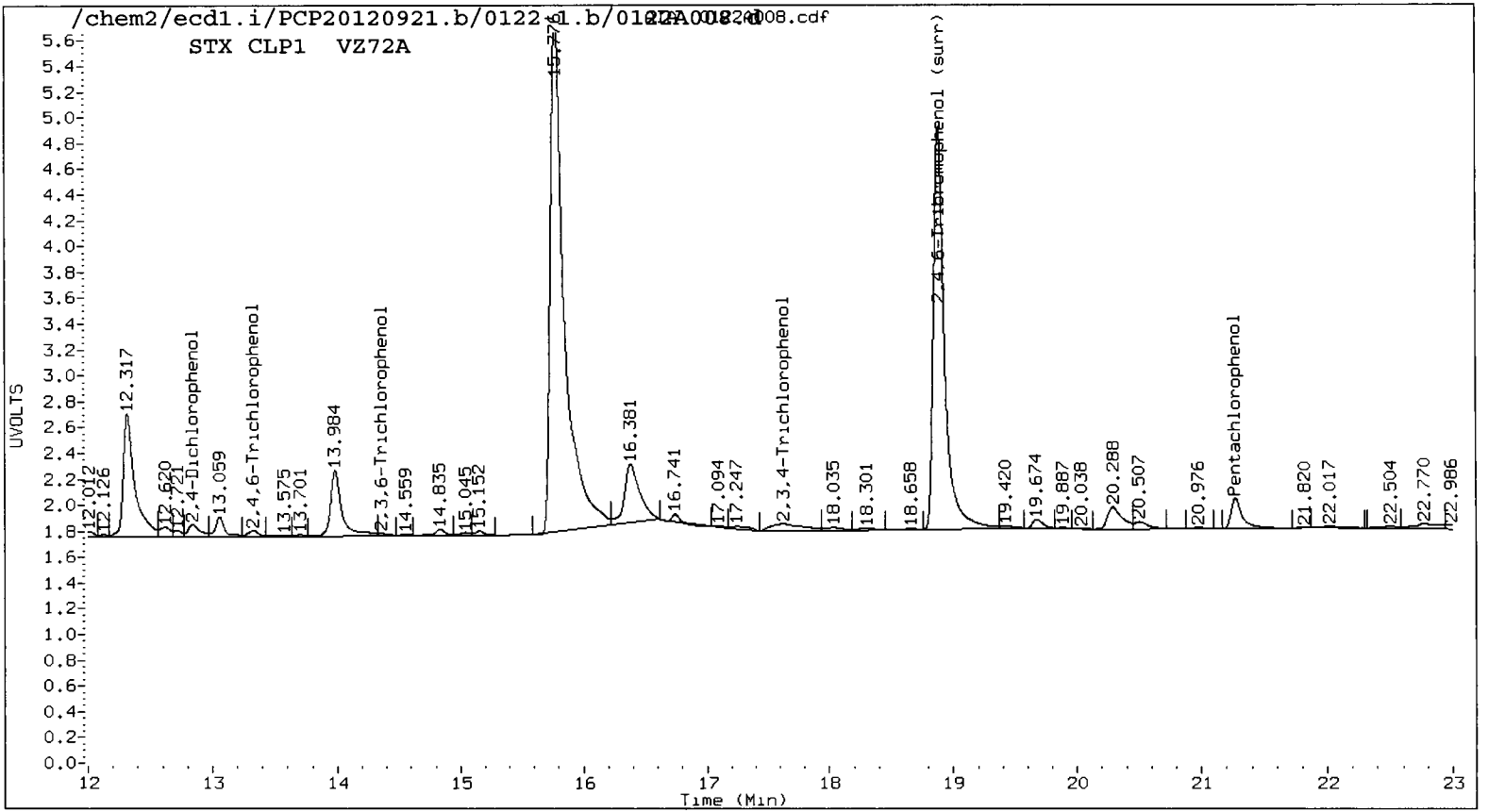
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 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 15:45
 Compound Sublist: pcpca1 Report Date: 01/23/2013 11:01
 Instrument: ecd1.i Matrix: WATER
 Operator: ar Dilution Factor: 1.000

11- 01/23/13

| STX CLP1 Col | | | STX CLP2 Col | | | STX CLP1 | STX CLP2 | | |
|--------------|--------|----------|--------------|--------|----------|----------|----------|--------|-------------------------|
| RT | Shift | Response | RT | Shift | Response | on col | on col | RPD | Compound |
| 21.271 | 0.035 | 74869 | 22.994 | 0.030 | 46446 | 1.1289 | 1.3014 | 14.2 | Pentachlorophenol |
| 13.327 | -0.003 | 11486 | 14.377 | 0.039 | 5202 | 0.3606 | 0.1887 | 62.6* | 2,4,6-Trichlorophenol |
| 14.359 | 0.029 | 3564 | 15.539 | -0.043 | 8836 | 0.0826 | 0.3467 | 123.0* | 2,3,6-Trichlorophenol |
| ---- | | | ---- | | | 0.0000 | 0.0000 | --- | 2,4,5-Trichlorophenol |
| 17.629 | 0.028 | 50285 | ---- | | | 1.5906 | 0.0000 | --- | 2,3,4-Trichlorophenol |
| ---- | | | 18.869 | 0.042 | 6713 | 0.0000 | 0.2324 | --- | 2,3,5,6-Tetrachlorophe |
| ---- | | | 22.108 | 0.017 | 819 | 0.0000 | 0.0395 | --- | 2,3,4,5-Tetrachlorophe |
| 12.843 | 0.058 | 29653 | 13.912 | 0.061 | 2774 | 16.3394 | 2.0863 | 154.7* | 2,4-Dichlorophenol |
| 18.883 | 0.040 | 987956 | 20.976 | 0.032 | 594075 | 20.5 | 19.7 | 4.1 | 2,4,6-Tribromophenol (s |

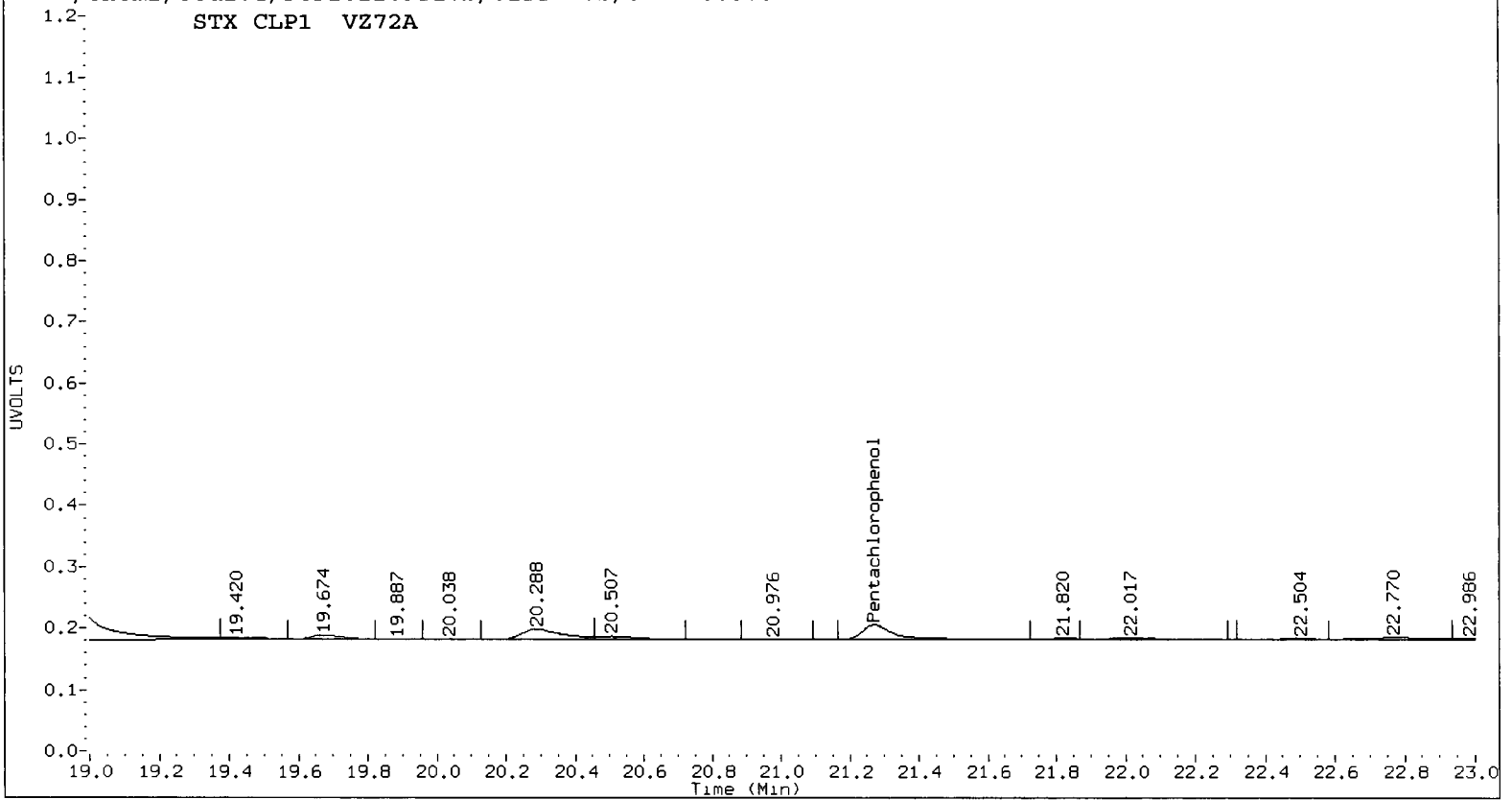
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|------------------|------|------|
| 2,4,6-TBP (surr) | 82.1 | 78.8 |



/chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A008.d

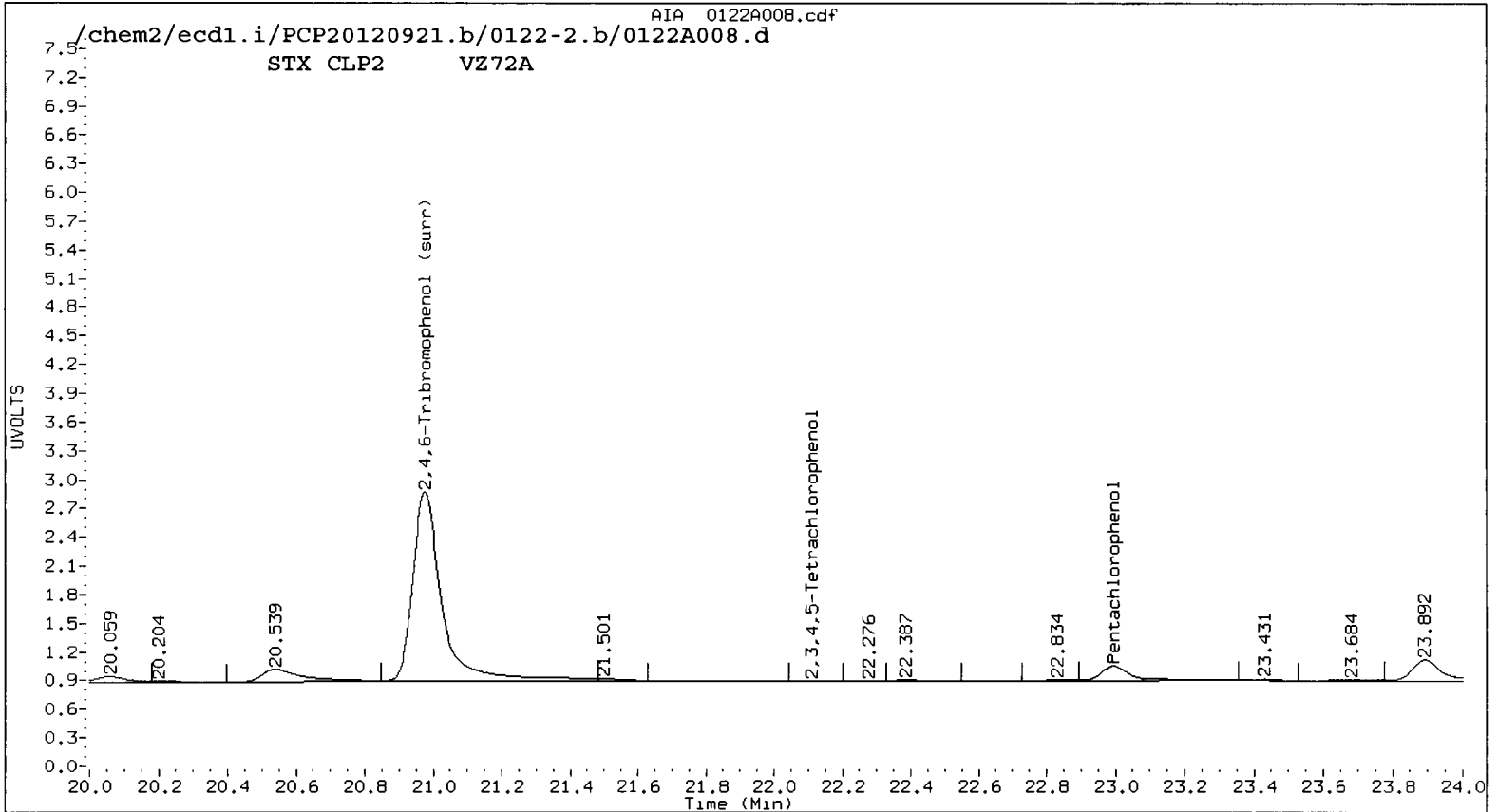
STX CLP1 VZ72A



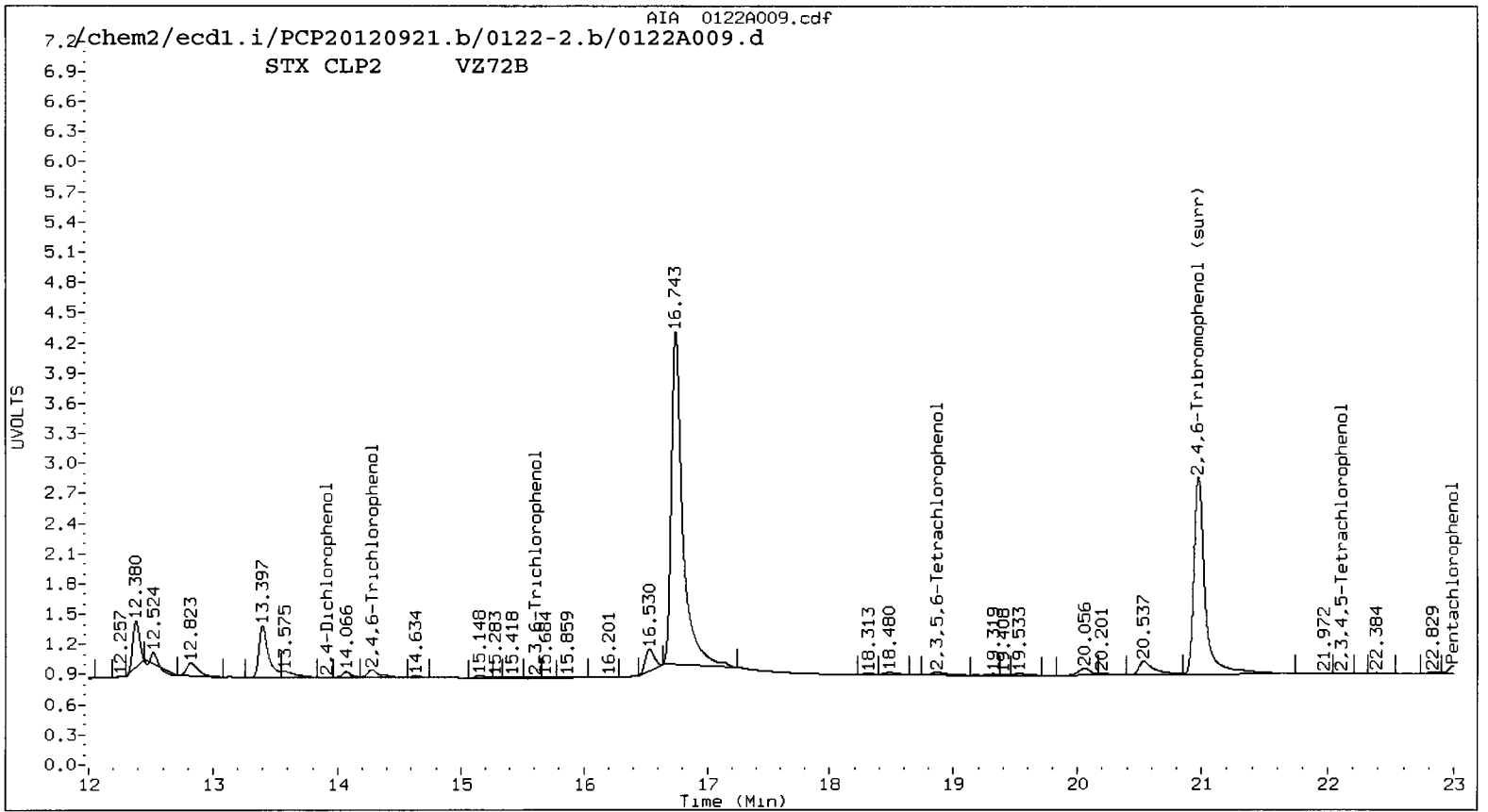
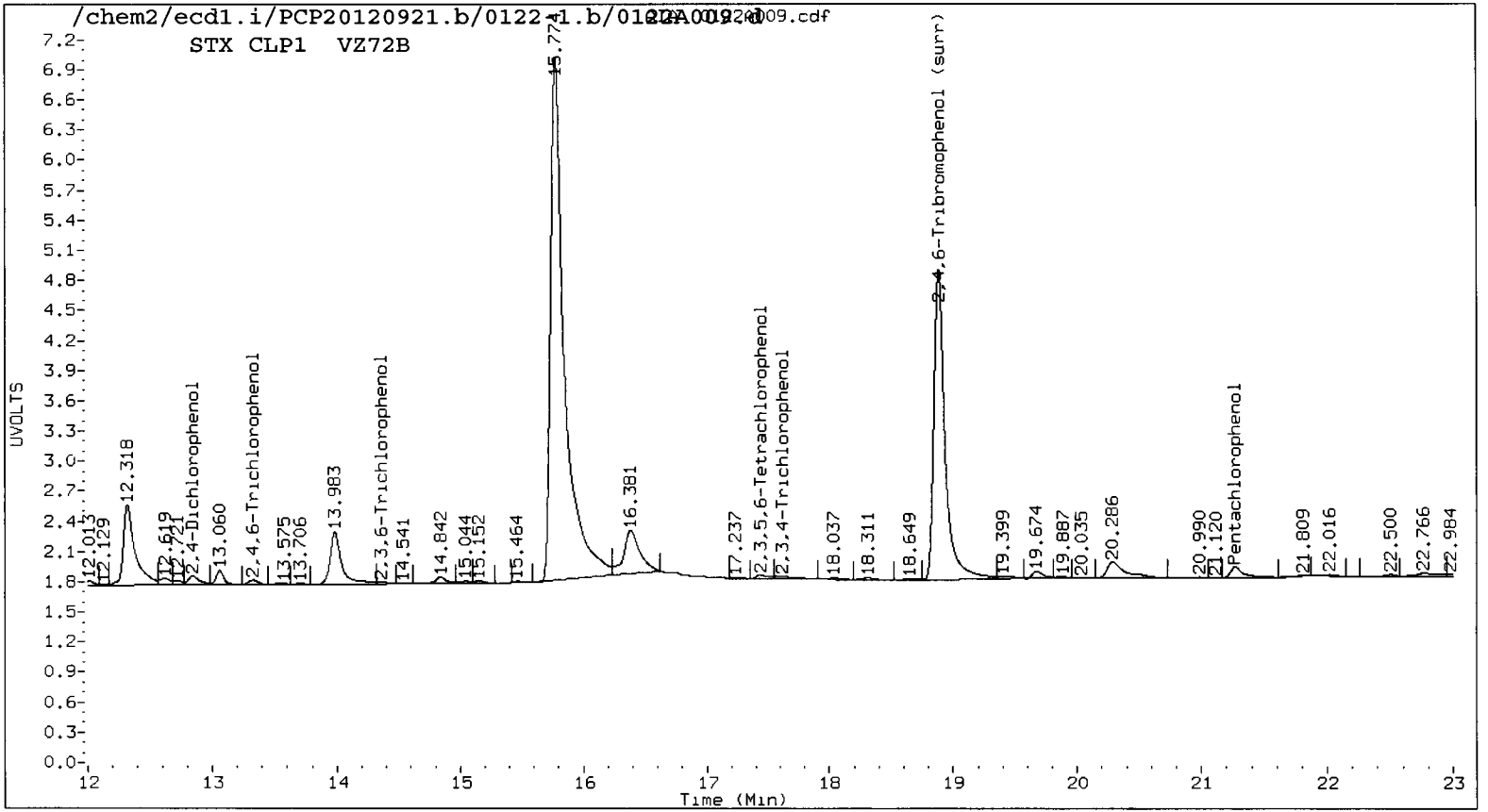
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STX CLP2 VZ72A

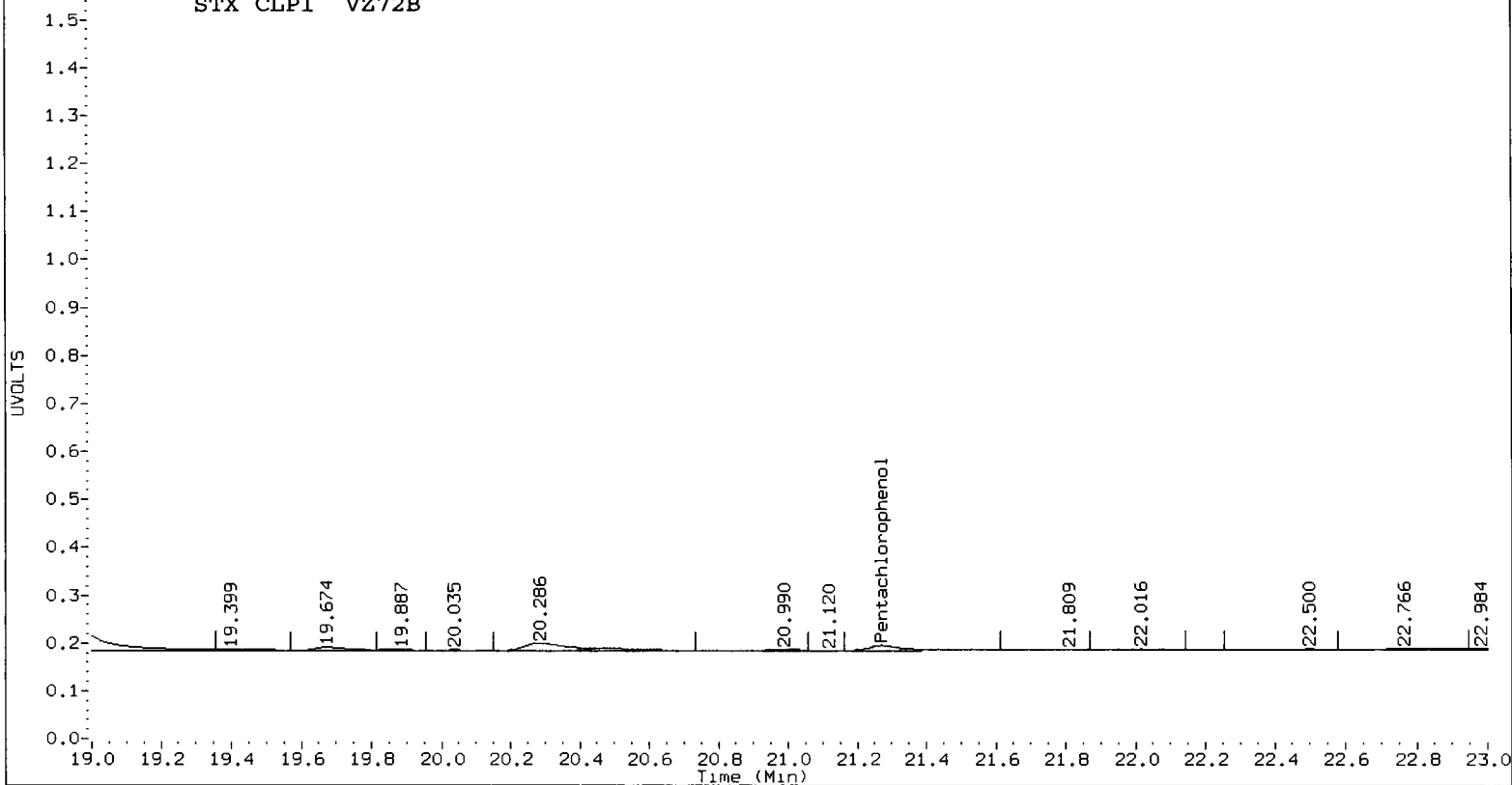


VZ 72 : 50100



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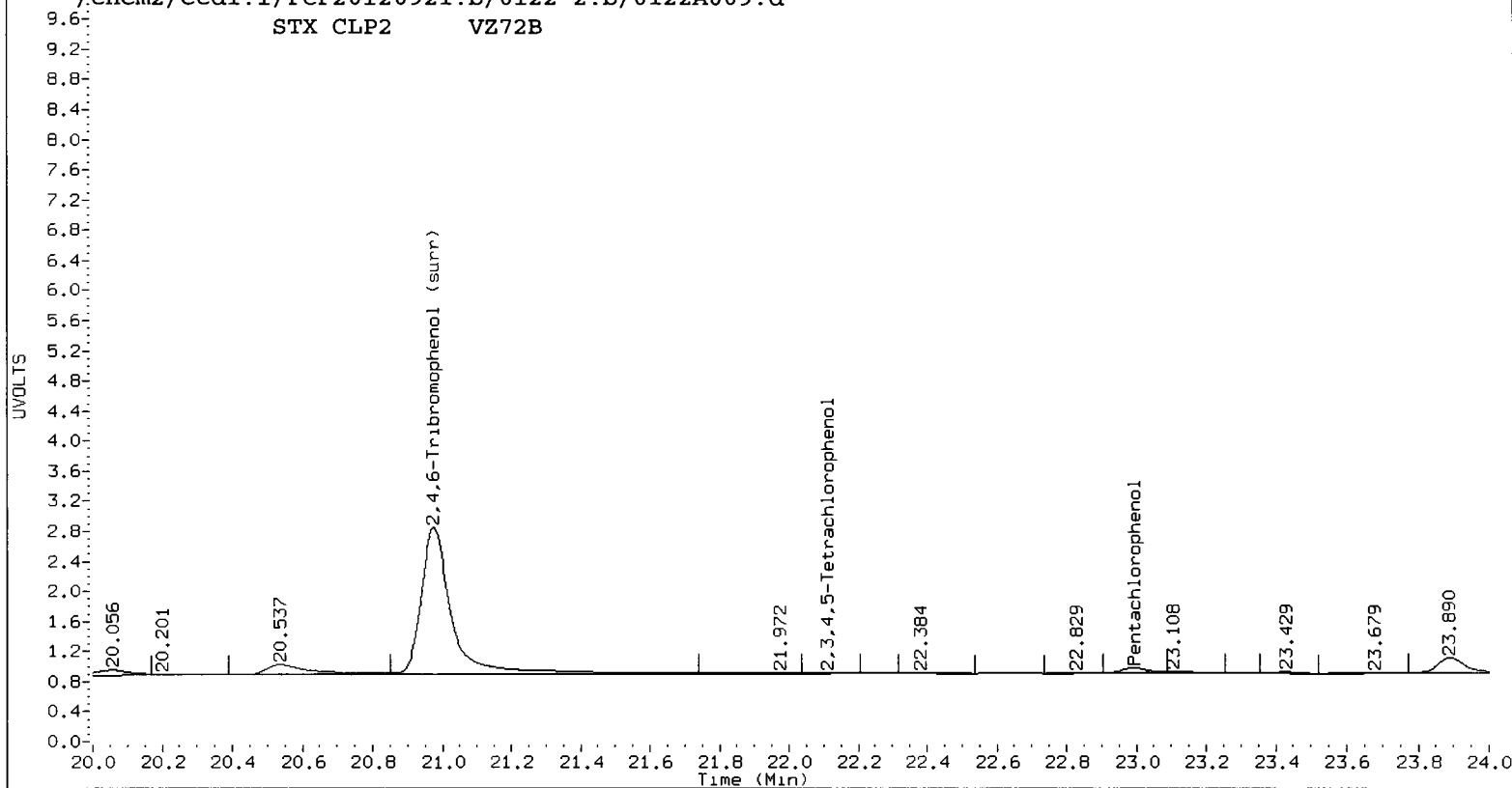
STX CLP1 VZ72B



AIA 0122A009.cdf

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STX CLP2 VZ72B



Analytical Resources Inc.
Dual Column 8041 Chlorinated Phenols Quantitation Report

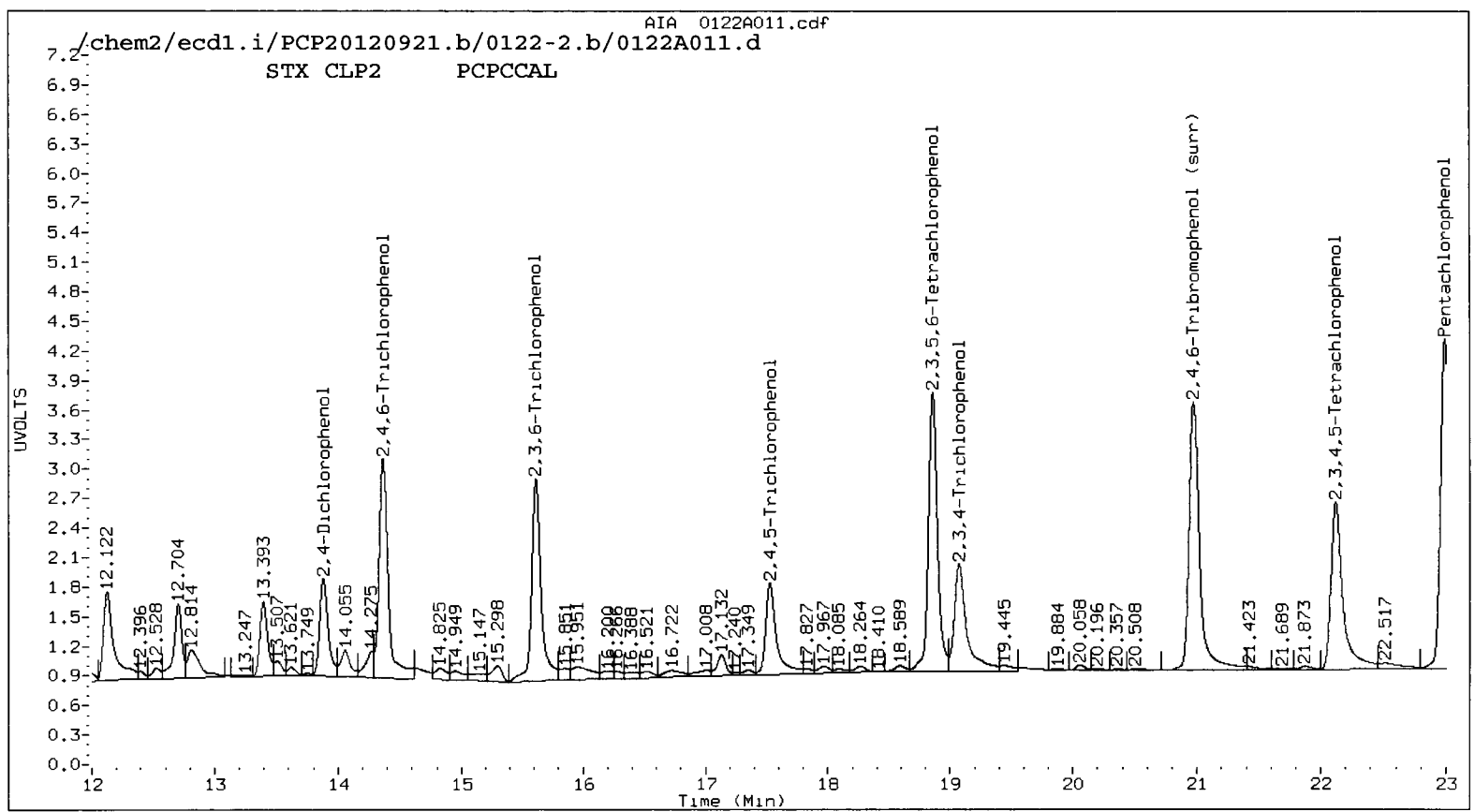
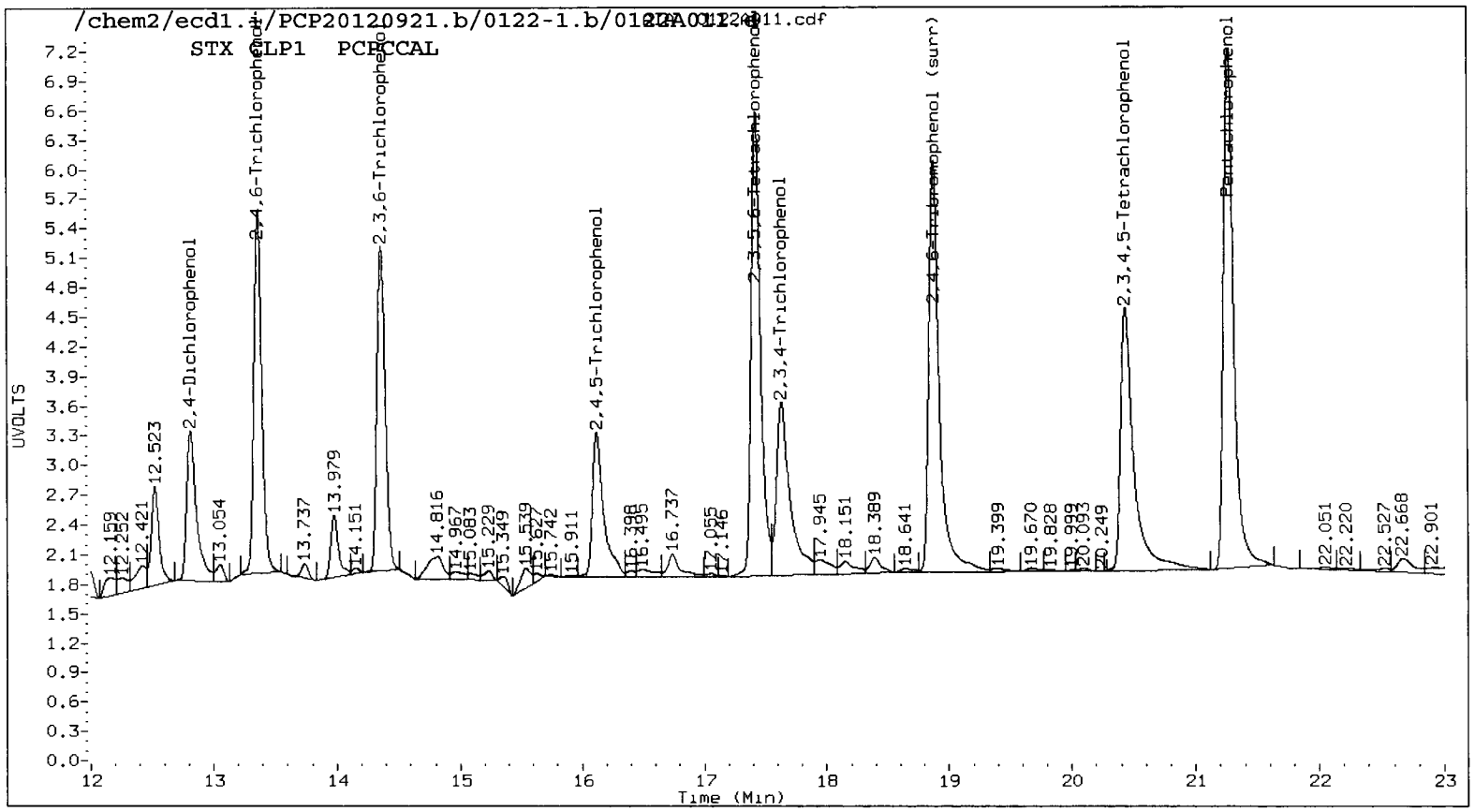
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 Data file 2: /chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A011.d Client ID:
 Method: /chem2/ecdl.i/PCP20120921.b/PCP.m Injection Date: 22-JAN-2013 17:33
 Compound Sublist: pcpca Report Date: 01/23/2013 11:16
 Instrument: ecd1.i Matrix: NONE
 Operator: ar Dilution Factor: 1.000

yz 01/23/13

| RT | STX CLP1 Col Shift Response | RT | STX CLP2 Col Shift Response | on col | STX CLP1 on col | STX CLP2 RPD | STX CLP2 Compound |
|--------|--------------------------------|--------|--------------------------------|----------|--------------------|-----------------|------------------------|
| 21.267 | 0.031 1523920 | 22.990 | 0.026 992127 | 26.7017 | 27.7994 | 4.0 | Pentachlorophenol |
| 13.360 | 0.030 820568 | 14.365 | 0.027 559990 | 25.7616 | 23.8791 | 7.6 | 2,4,6-Trichlorophenol |
| 14.361 | 0.031 754536 | 15.610 | 0.028 565397 | 22.6150 | 27.7701 | 20.5 | 2,3,6-Trichlorophenol |
| 16.121 | 0.033 472096 | 17.526 | 0.028 287339 | 23.5454 | 21.9865 | 6.8 | 2,4,5-Trichlorophenol |
| 17.635 | 0.033 676059 | 19.073 | 0.027 378150 | 28.0400 | 22.9037 | 20.2 | 2,3,4-Trichlorophenol |
| 17.424 | 0.032 1265458 | 18.855 | 0.028 741998 | 26.9287 | 25.6875 | 4.7 | 2,3,5,6-Tetrachloroph |
| 20.438 | 0.031 997483 | 22.118 | 0.026 556221 | 27.9409 | 26.8413 | 4.0 | 2,3,4,5-Tetrachlorophe |
| 12.815 | 0.031 424066 | 13.879 | 0.028 239863 | 273.4789 | 232.6967 | 16.1 | 2,4-Dichlorophenol |
| 18.875 | 0.032 1271994 | 20.971 | 0.027 784100 | 27.4 | 26.0 | 5.3 | 2,4,6-Tribromophenol (|

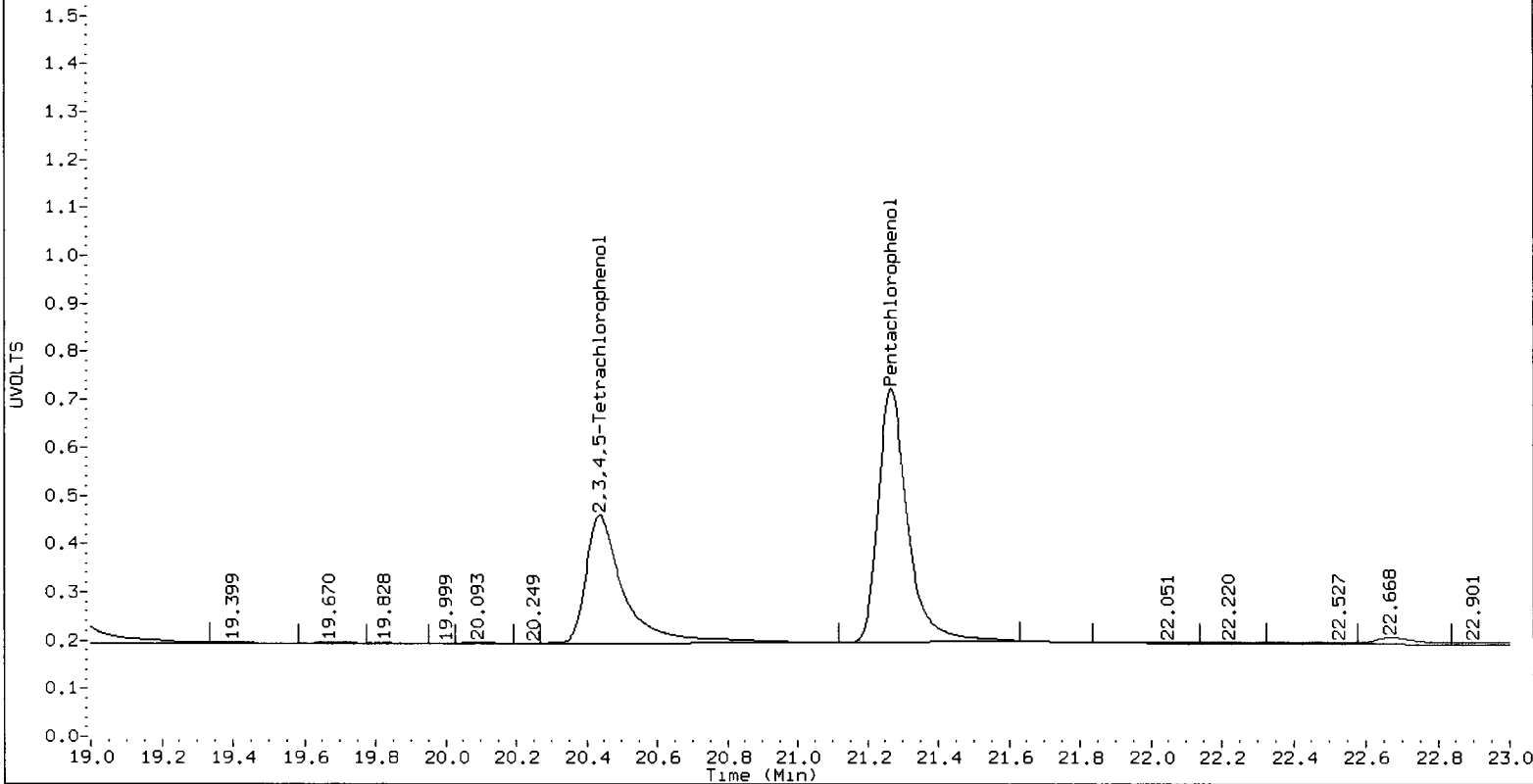
PERCENT RECOVERY

| COMPOUND | Col1 | Col2 |
|---------------------------|-------|-------|
| Pentachlorophenol | 106.8 | 111.2 |
| 2,4,6-Trichlorophenol | 103.0 | 95.5 |
| 2,3,6-Trichlorophenol | 90.5 | 111.1 |
| 2,4,5-Trichlorophenol | 94.2 | 87.9 |
| 2,3,4-Trichlorophenol | 112.2 | 91.6 |
| 2,3,5,6-Tetrachlorophenol | 107.7 | 102.8 |
| 2,3,4,5-Tetrachlorophenol | 111.8 | 107.4 |
| 2,4-Dichlorophenol | 109.4 | 93.1 |
| 2,4,6-TBP (surr) | 109.6 | 104.0 |



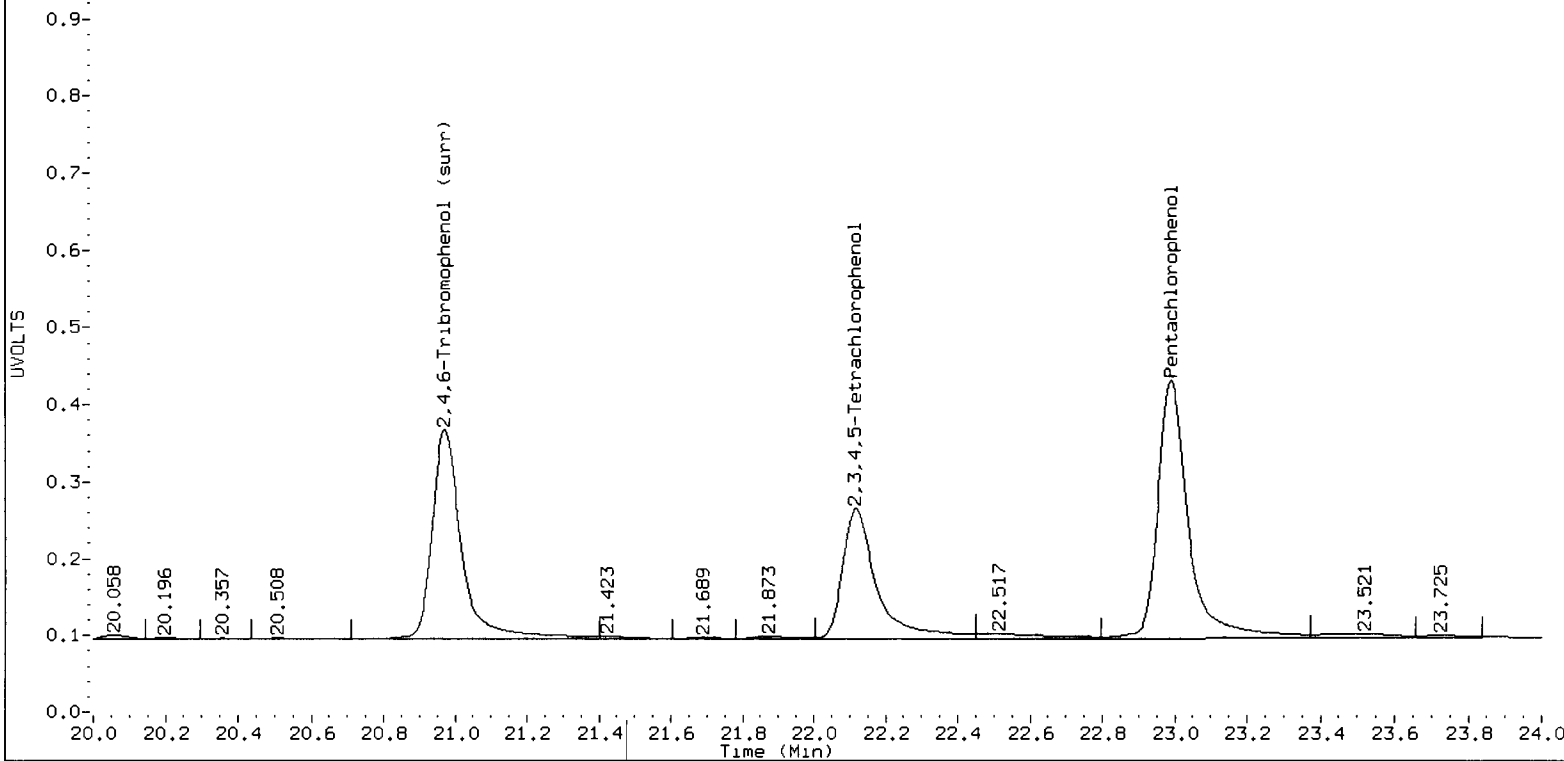
/chem2/ecdl.i/PCP20120921.b/0122-1.b/0122A011.d

STX CLP1 PCPCCAL



1.0/chem2/ecdl.i/PCP20120921.b/0122-2.b/0122A011.d

STX CLP2 PCPCCAL



Attachment 2: Weyerhaeuser Results

Weyerhaeuser Analytical & Testing Services
 32901 Weyerhaeuser Way South
 Federal Way, WA 98003

Service Request 13-
 0088
 WA Cert.# C1219

Report
Everett East (Mill B) Sample Splits with ARI
 Unit in ug/L
 Method: 8151M

% Recovery

| Client ID | Sample | | Lab ID | Pentachlorophenol | Total Tetrachlorophenols | 2,4,5 Trichlorophenol | DCAA | 2,4,6- Tribromophenol | Date Extracted | Date Analyzed |
|-------------------|----------|-------|--------|-------------------|--------------------------|--------------------------|------|--------------------------|-------------------|------------------|
| | Date | Time | | 87-86-5 | 88-06-2 | Surrogates | | | | |
| LLMW17-S | 01/11/13 | 10:20 | 001 | <0.50 | <0.50 | <0.50 | 103% | 102% | 01/16/13 | 01/18/13 |
| LLMW17-D | 01/11/13 | 10:50 | 002 | <0.50 | <0.50 | <0.50 | 100% | 92% | 01/16/13 | 01/18/13 |
| Method Blank | | | | <0.50 | <0.50 | <0.50 | 98% | 96% | 01/16/13 | 01/18/13 |
| Lab Control Spike | | | LCS | 82% | 158% | 81% | 95% | 96% | 01/16/13 | 01/18/13 |
| LLMW17-S | 01/11/13 | 10:20 | 001MS | 89% | 121% | 91% | 101% | 93% | 01/16/13 | 01/18/13 |
| LLMW17-S | 01/11/13 | 10:20 | 001MSD | 77% | 125% | 84% | 98% | 91% | 01/16/13 | 01/18/13 |