Gobz

Department of Energy

Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

RECEIVED HAZARDOUS WASTE PROGRAM

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Edward Kelley, Director
Water and Waste Management Division
New Mexico Environment Department
1190 St. Francis Drive
P. O. Box 26110
Santa Fe, New Mexico 87502

May 4, 1995

Dear Mr. Kelley:

Subject: Transmittal of NMHWA Compliance Order 95-03, Thirty-Day Response

On behalf of the University of California and the Department of Energy (DOE), this letter transmits the *"LANL Response to 30-day Ordered Actions, NMED March 22, 1995 Compliance Order 95-03"* to the New Mexico Environment Department (NMED). This is being submitted on May 5, 1995 by DOE and the Los Alamos National Laboratory (LANL) in response to NMED's Compliance Order 95-03 (hereinafter referred to as the "Order"). Note that LANL officially received the Order on March 24, 1995.

In response to the Order, LANL has performed the corrective actions required to be completed within five, ten and thirty working days, as stated on page 11 of the Order. This submittal contains documents responsive to the 30-day Ordered Actions, namely:

Within thirty (30) working days from the receipt of this Order, provide analyses of the wastes noted in paragraphs 52 through 55.

A set of documents is enclosed herewith in response to each of the conclusions 52, 53, 54, and 55. Each set of documents is identified by finding number and conclusion number, and is prefaced by a brief description of the contents of the package.

Please contact James Nunz of my staff at (505) 667-0573, or Paul Schumann, ESH-19, LANL, at (505) 667-5840, if you have any questions regarding this document.

Sincerely,

Joseph C. Vozella
Assistant Area Manager
Office of Environment and Projects

LAAMEP:2JN-003

Enclosures

cc:
See page 2

16648

cc w/o enclosures:
D. Erickson, ESH-DO, LANL,
MS-K491

bcc w/enclosures:
J. Nunz, AAMEP, LAAO

bcc w/o enclosures:
J. Mack, AAMEP, LAAO
M. Devaurs, ER/WM, LANL,
MS-J591
J. White, ESH-19, LANL,
MS-K490
J. Rochelle, LC-Gen, LANL,
MS-A187
A. Grieggs, ESH-19, LANL,
MS-K498
P. Schumann, ESH-19, LANL,
MS-K498
ESH-19 (95-0189.PS), LANL,
MS-K490
R. Nevarez, WMD, AL
T. Sena, EPD, AL

FINDING NUMBER: 14

CONCLUSION NUMBER: 52

FINDING NUMBER : 14

CONCLUSION NUMBER: 52

DISCUSSION:

Compliance Order NMHWA 9503 requires that within thirty (30) working days from the receipt of this Order, the U.S. Department of Energy and Los Alamos National Laboratory must provide analysis on a one liter bottle of anodizing dye at TA-3, building 32, Room 104 satellite accumulation point.

Attached are the following documents:

- Waste Profile Request dated 9/16/91, showing that the material was not hazardous waste. This Waste Profile was completed and verified on 6/9/94.
- Copy of "EM-9 Analytical Report", showing the waste as not hazardous.

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

HSE & USE ONLY
Reference Number

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Mail completed form to: ATTN: WPRF, MS K490

Division Group	Telephone	Mail Stop	Technical Area	Building	Room
P-10	7-4133	K764	TA3	SM32	109/outside

☒ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

Choose one or more of the items below which best describes your waste:

☐ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☐ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☐ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
300 cc labeled "Dye for Anodizing"

General Description Of Waste (check at least one block for each column):

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☐ Solid	☐ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ < 50 ppm
☐ Cemented Sludge	☐ 100 to 139	☒ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☒ Semi-Solid/Sludge	☒ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☐ > 500 ppm
☐ Absorbed Liquid	☐ Greater Than 200	☐ Not Applicable	☐ Sulfides	☒ No PCBs
☐ Liquid	☐ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☒ Non-Reactive	
☐ Suspended Solids				
☒ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:

☒ Not Radioactive (Go To Next Section)

☐ < 2.0 nC/g	☐ Alpha
☐ > 2.0 nC/g	☐ Beta
☐ > 10.0 nC/g	☐ Gamma
☐ > 100.0 nC/g	☐ Tritium

List Known Radioisotopes:

☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Generator's Name (Last, First MI)	Z Number	Generator's Signature	Date
Greg Swift	92710	Greg Swift	9/16/91

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional).

Print Group Waste Coordinator's Name (Last, First MI)	Mail Stop
HARVEY HAAGENSTAD	9/26/91

Heavy Metals (indicate whether the following heavy metals exist in your waste at the posted concentration)

	None			KOP	Analysis	TCLP	Other
Arsenic	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Barium	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Cadmium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Chromium	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Lead	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Mercury	☒	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐
Nickel	☒	☐ < 134.0 ppm	☐ ≥ 134.0 ppm	☐	☐ →	☐	☐
Selenium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Silver	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Thallium	☒	☐ < 130.0 ppm	☐ ≥ 130.0 ppm	☐	☐ →	☐	☐

Organic Compounds (indicate if the following organic compounds exist in your waste, at the posted concentration)

	None			KOP	Analysis	TCLP	Other
Benzene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Carbon Tetrachloride	☒	☐ <0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Chlorobenzene	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Chloroform	☒	☐ <6.0 ppm	☐ ≥ 6.0 ppm	☐	☐ →	☐	☐
Cresol	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
1,4-Dichlorobenzene	☒	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☐	☐ →	☐	☐
1,2-Dichloroethane	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
1,1-Dichloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
2,4-Dinitrotoluene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobenzene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobutadiene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Hexachloroethane	☒	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☐	☐ →	☐	☐
Methyl Ethyl Ketone	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
Nitrobenzene	☒	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
Pentachlorophenol	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Pyridine	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Tetrachloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
Trichloroethylene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
2,4,5-Trichlorophenol	☒	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☐	☐ →	☐	☐
6-Trichlorophenol	☒	☐ < 2.0 ppm	☐ ≥ ppm	☐	☐ →	☐	☐
Chloride	☒	☐ < 0.2 ppm	☐ ≥ . 4 ppm	☐	☐ →	☐	☐

CHECK ONE

☐ Additional hazardous components in the waste are listed below:

☐ There are no additional hazardous constituents in this waste

Compound Name	Concentration	Compound Name	Concentration
1.		5.	
2.		6.	
3.		7.	
4.		8.	

HSE-8/HSE-7 USE ONLY (Do Not Write Below This Line)

WASTE CLASSIFICATION

☒ Non-Radioactive, Non-Hazardous
- ☐ Solid Waste
- ☒ Non-~~Regulated~~ Hazardous Chemical Waste
- ☐ Sanitary Waste
- ☐ Other Non-Disposable Waste

☐ Radioactive
- ☐ Low-Level Radioactive Waste
- ☐ Transuranic Waste
- ☐ Special Nuclear Material

☐ Hazardous or Mixed
- ☐ Hazardous Waste
- ☐ Mixed Low-Level Waste
- ☐ Mixed Transuranic Waste

Hazardous or Mixed Waste Codification:

Waste Code 1	Waste Code 2	Waste Code 3	Waste Code 4	Waste Code 5	Waste Code 6	Waste Code 7

H viewer's Signature	Date	Cost Center/ProgramCode For HSE Analysis Su
Michelle Cash	6/9/94	

REPORT NUMBER: 28846

********** EM-9 ANALYTICAL REPORT **********

Prepared by: M. KOZUBAL on 1-Nov-1994

REQUEST NUMBER: 19335 MATRIX: MS ANALYST: OES PROGRAM CODE: CK67

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: Y04156 PAGE: 236

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
9408105	96.26468	CD	ICPES	< 0.4		UG/G	10/28/94	

****

REPORT NUMBER: 28846 (continued)

********** EM-9 QUALITY ASSURANCE REPORT *********

Prepared by: M. KOZUBAL on 1-Nov-1994

REQUEST NUMBER: 19335 MATRIX: MS ANALYST: OES PROGRAM CODE: CK67

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: Y04156 PAGE: 236

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT
00.00680	AG	270.	27.	UG/G	291.		10/31/94	UNDER CONTROL
00.00680	CR	290.	29.	UG/G	298.	5.	10/31/94	UNDER CONTROL
00.00680	PB	270.	27.	UG/G	305.		10/31/94	UNDER CONTROL

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

___ Only qualitative data requested

✓ Only Open (non-blind) QC samples run with this sample batch.

___ No QC samples run with this sample batch.

___ No QC samples for this constituent and matrix type available within EM-9

REPORT NUMBER: 28846

Analyst	Reviewer	Section Leader	QA Officer
11-1-94	11-1-94	11/2/94	11/3/94
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20.

****

FINDING NUMBER: 15

CONCLUSION NUMBER: 53

FINDING NUMBER: 15

CONCLUSION NUMBER: 53

DISCUSSION:

Compliance Order NMHWA 95-03 requires that within thirty (30) working days from the receipt of this Order, the U.S. Department of Energy and Los Alamos National Laboratory must provide analyses of the contents of a 55 gallon container located outside of Room 105 near the loading dock and adjacent sump.

Attached are the following documents:

- Copy of a letter dated October 7, 1994, "SUBCONTRACT NO. 9-X86-Y7575-1, RECENT NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) RCRA INSPECTION - APPARENT FINDING FOR JCI."
- Copy of a memo dated November 4, 1994, "CST-12 Volatile Organic Analysis Summary of Analytical Results." Showing that the waste was not hazardous.
- Copy of a memo dated 12/18/94, "CST-12 Semivolatile Organic Analysis Summary of Analytical Results." Showing that the waste was not hazardous.

Johnson Contrc s World Services Inc
Laboratory Support Division
Post Office Box 50
Los Alamos, NM 87544-0050

JOHNSON CONTROLS

October 07, 1994
JENV.95-008

Los Alamos National Laboratory
Los Alamos, NM 87545

ATTN: Tony Grieggs, ESH-8, K490

THRU: Richard Perkins, Environmental Compliance Supervisor, JENV

SUBJECT: SUBCONTRACT NO. 9-X86-Y7575-1, RECENT NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) RCRA INSPECTION - APPARENT FINDING FOR JCI

The recent New Mexico Environment Department (NMED) RCRA inspection listed "TA-3-38-105 - JCI - A 55 gallon container holding the contents of a sump was noticed. It had been there for approximately six months. Why was it not characterized?." Information about the time period the drum was on site is incorrect. The drum was holding water from the pumping of a sump outside TA-38, Room 105, the Electric Shop. The drum was approximately one half-full. The water was pumped to the drum by JENV on August 22, 23, 24, and 25, in an effort to take a composite sample of the water that comes into the sump through (mostly) rainwater and (few) steam cleaning operations. The sample was submitted to LANL's Health & Environmental Chemistry Section (CST-9) on August 30, 1994, for semi-volatiles and volatile analysis.

The drum was labeled "Attention, this material is being analyzed for various chemical constituents. Removal of the container must be reported immediately to the JCI Environmental Laboratory, JENV, at 7-0104." The drum has now been emptied back into the sump where the water was found in the beginning. The drum has been removed at this time, and the results of the sampling analysis have not been received but should arrive by October 14, 1994. **The water from this sump is piped to the sanitary sewer and is not and never was suspected of being a hazardous waste.** The water was sampled because the pipe is clogged with sand and the sampling is routine for the cleanout procedure.

The CST-9 Analytical Service Agreement showing when the sample was collected and submitted has been attached to this memo for verification. Since the NMED RCRA inspection occurred in September, and the pumping of the sump occurred during the week of August 22, the finding stating the drum was there for approximately six months is incorrect. The empty drum was placed near the sump in the beginning of July, awaiting a rain event that would produce enough water in the sump to obtain a sample. Workers in the area may have incorrectly answered as to the length of time the drum was on site and contained water. The drum was empty from early July until August 22. Please change this finding to reflect these changes. Please direct any questions or concerns to Michael Brown or Michael Bailey, at 667-0104, M.S. A-199, JENV.

Very truly yours,

Michael Bailey

Michael Bailey,
Environmental Engineer, JENV

Attachments: (1-Page), "EM-9 Analytical Service Agreement," Request Number 18722

cy:
T. Christopherson, BUS-5, MS P274
S. J. Calanni, VP/Gen Manager, JMGR
G. Vavra, Manager, Operations, OMDO
J. J. Lopez, Manager, JHSE
S. Eklund, FSS-1, MS P913
Michael Brown, JENV
Joe Richardson, JENV
file
Reading file

CST-12 VOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TO: Michael Bailey **DATE:** Nov 4, 1994
THRU: Anthony Lombardo, CST-12 Organic Analysis Task Area Leader
FROM: Michael Guttman, CST-12 Organic Section

MATRIX: WATER **REQUEST NUMBER:** 18722

Results Summary
Below is a tabulation of samples submitted for volatiles analysis, their analytical results, and their dates collected and analyzed.

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/L)	LOQ (ug/L)	DATE COLLECTED	DATE ANALYZED
S94.20581	Acetone	54	20	25-Aug-94	6-Sep-94
	Xylene	17	5		

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.
LOQ: Limit of Quantitation

TICs (tentatively identified compounds) were found in the samples submitted.

Method Summary
Samples were analyzed using EPA Method 8260. In summary, a measured volume of sample, usually 5 mL, is analyzed using the purge and trap method combined with capillary column GC/MS. A Delta Perspective PTA-30 Autosampler and a Tekmar 3000 Purge and Trap Concentrator are interfaced to a Hewlett-Packard 5890 Gas Chromatograph / 5971 Mass Selective Detector to perform the analyses. The analytical column used is a J&W Scientific DB624, 75 m by 0.53 mm ID, 3 micron film or equivalent.

Anomalies and analysis notes
Below is a summary of QA/QC criteria as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occured during the analyses.

Surrogate recoveries were within criteria for all analyses.
Internal standard responses were within criteria for all analyses.
Matrix spike and matrix spike duplicate were not analyzed.
Holding times were met for all sample analyses.

If you have any questions regarding this data, please call Anthony Lombardo at 667-5889.

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TO: Michael Baily
FROM: Anthony Lombardo, CST-12 TL 12/19/94

REQUEST NUMBER: 18722
MATRIX: Water
SUMMARY DATE: December 18, 1994

1. Results Summary

One sample was recieved for semivolatile analysis. Sample was collected o August 25, 1994. Sample extraction was started on August 31, 1994. Sample were analyzed on September 12, 1994. All hold times were met. Below is tabulation of the analytical results:

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/L)	LOQ (ug/L)	TICs
94. (Blank)	NONE			
94.20580	Benzyl alcohol	<10	10	N
	2,4-Dimethylphenol	13	10	Y
	Bis(2-ethylhexyl)-phthalate	17		
		1600		

LOQ: Limit Of Quantitation
TICs: Tentatively identified compounds

TICs were not identified or quantitated for this analysis. Further information on TICs can be provided at customer request.

2. Method Summary

Samples were extracted by continuous liquid-liquid extraction method. a measured volume of sample, usually 1 liter, is placed in a continuous liquid-liquid extractor. pH is adjusted to >11 (base-neutral extraction) and the sample is extracted for 18 to 24 hours. The sample pH is then adjusted to <2 (acid extraction) and methylene chloride extraction is repeated for an additional 18 to 24 hours. Sample extracts were then combined, dried and concentrated to 1.0 ml final volume. Appropriate surrogate standards were added prior to extraction. Analysis was performed by capillary column GC/MS methods. Extraction and analysis methods are consistent with EPA SW-846 methods 3520 and 8270. Analytical column used was a J&W Scientific DB5-MS 30M by 0.25 mm ID, 0.25 micron film or equivalent.

3. Anomalies and analysis notes.

Sample analyses met all QA/QC criteria as outlined in EPA-SW846 methods and LANL SOPs, except where noted below.

The sample was analyzed undiluted and at a 1:10 dilution due to the high concentration of Bis(2-ethylhexyl)phthalate. Both analyses were reported.

_rogates 2-fluorophenol and terphenyl-d14 recoveries were below QC criteria in the sample analysis. Re-analysis was at a dilution. There was insufficient sample to re-extract. Many TICs as well as an elevated baseline indicate that the poor surrogate recoveries were due to matrix interference.

Internal standard responses were within criteria for all analyses. All hold times were met.

If you have any question regarding this data, please call Anthony Lombardo at 667-5889.

TL 12/19/94

FINDING NUMBER: 16

CONCLUSION NUMBER: 54

FINDING NUMBER: 16

CONCLUSION NUMBER: 54

DISCUSSION:

Compliance Order NMHWA 95-03 requires that within thirty (30) working days from the receipt of this Order, the U.S. Department of Energy and Los Alamos National Laboratory must provide analyses on contents of a five gallon container located at TA-55, Bldg. PF-4 storage area.

Attached are the following documents:

- Copy of memo dated January 3, 1995, "CST-12 Volatile Organic Analysis Summary of Analytical Results."
- Copy of Waste Profile (WPF) #20026, signed and dated 1/31/95.

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 20026

To: !TRUJILLO, LORENZO

From: STADELMEYER, ALBERT

MS:E501,

MS:J579

Please review the waste profile information and the characterization information on the following pages. If there are any questions, please call me at 5-4000. If the information is correct, please sign and date this form in the spaces provided below, make a copy for your files and return the original to MS J579.

Waste Generator Certification: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations

Generator Signature: Lorenzo Trujillo

Date: 1-31-95

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 20026

Status:REVCOM

Account Info- CC:KB12 PC:6407 CA:5000 WP: VI:

Generator:TRUJILLO, LORENZO Z#:086076

WMC:TRUJILLO, LORENZO Z#:086076

Group:NMT2 Phone:72317 MS:E501 TA:55 BLDG:0004 ROOM:3

Waste Type: PROCESS WASTE/SPENT CHEMICAL

Waste Classes: ONE TIME GENERATION

Waste Category: NOT APPLICABLE

Waste Sources: RESEARCH AND DEVELOPMENT

Waste Matrix: ORGANIC LIQUID

Matrix Type: HOMOGENEOUS

Waste/Process Description:
BLUE LIQUID - ANALYSIS ATTACHED

Ignitability: 140 - 200 DEGREES F

Corrosivity: 6.1 - 9.0

Reactivity: NON REACTIVE

Boiling Point: GREATER THAN 95 DEGREES F.

Toxicity Characteristic Metals and Organic Compounds

Contaminant	LTR	Min	Max	Unit	Method
BARIUM		.42	.7	PPM	
CHROMIUM		2	4.8	PPM	
MERCURY		.01	.03	PPM	

Additional Chemical Constituents and Contaminants

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 20026

Constituent	CAS NO	MIN	MAX	UOM
ACETONE		.5	4.5	PPM
BIS(2-ETHYLHEXYL)-PHTHALATE		10	10	PPM
BUTYLBENZYL - PHTHALATE		3.8	3.8	PPM
DI-N-OCTYLPHTHALATE		6.9	6.9	PPM
METHYLENE CHLORIDE		1.6	2.6	PPM
PHENOL		.6	1.6	PPM
TETRACHLOROETHANE		.05	1.05	PPM
TOLUENE		3.6	4.6	PPM

WASTE CHARACTERIZATION INFORMATION

Waste Classification: HAZARDOUS WASTE

EPA Hazardous Waste Codes: F002
F005

FINDING NUMBER: 17

CONCLUSION NUMBER: 55

FINDING NUMBER: 17

CONCLUSION NUMBER: 55

DISCUSSION:

Compliance Order NMHWA 95-03 requires that within thirty (30) working days from the receipt of this Order, the U.S. Department of Energy and Los Alamos National Laboratory must perform analyses on two 55 gallon containers marked as "acetone", one 55 gallon container marked "MEK", one 30 gallon container with unknown contents, one 5 gallon container reported to be marked as "chloroform" (actually marked "Chlorethene"), one box labeled "marking ink", one box marked "electroetching solution ph 0.50", and one 2 gallon container marked "kodak developer", located at TA-16, Bldg 207, satellite accumulation point.

Attached are the following documents:

- Copies of the following MSDSs:

  1. Kodak Ektaprint K Developer
  2. Justrite Kling Ink - Black
  3. *Electrolytes
  4. *Lectroetch #2 Cleaner
  5. *Lectoretch #3 Cleaner
  6. *Letroetch 117A Electrolyte
  7. *Lectroetch 210A Electrolyte
  8. *Lectroetch 220A Electrolyte
  9. *Lectroetch 250A Electrolyte
  10. *Lectroetch 260A Electrolyte
  11. *Lectroetch 2611A Electrolyte
  12. *Lectroetch LNC-3 Electrolyte
  13. *Electrolyte Formula F10
  14. *Electrolyte #10 Modified Sol.
  15. *Electrolyte #13 Modified Sol.
  16. 1-1-1 Trichlorethane (Chlorothene)

  - (note: * indicates those solutions which were in the box marked "electoroetching solution ph 0.50"0).

- Copies of analytical results on the two 55 gallon containers marked as "acetone", and the one 2.0 gallon TYPE I, metal safety can marked "Chlorothene".

FINDING NUMBER: 17

CONCLUSION NUMBER: 55

MATERIAL SAFETY DATA SHEET

000001035/F/USA - C-0064.500M
Approval Date: 05/26/1993
Print Date: 05/29/1993
Page 1

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK EKTAPRINT K Developer

Catalog Number(s): 100 1247 - 3 kilogram(s)
190 0174 - 440 gram(s)
138 0955 - 3 kilogram(s)
821 5410 - 3 kilogram(s)

Manufacturer/Supplier: EASTMAN KODAK COMPANY, Rochester, New York 14650

For Emergency Health, Safety & Environmental Information, call: 716-722-5151

For Other Information, call the Marketing and Distribution Center in Your Area.

Synonym(s): KAN 427867; C-0064.500; PTN 247239; PTN 247897

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight %	Component - (CAS Registry No.)
95-99	Iron powder (007439-89-6)
1-5	Styrene methylmethacrylates copolymer (063149-52-0)
< 1	Carbon black (001333-86-4)

3. HAZARDS IDENTIFICATION

LOW HAZARD FOR RECOMMENDED HANDLING

Additional hazard precautions for containers greater than 1 gallon of liquid or 5 pounds of solid:

CAUTION! POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURES

4. FIRST-AID MEASURES

Inhalation: If symptomatic, move to fresh air. Get medical attention if symptoms persist.

Eyes: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

Skin: Wash with soap and water. Get medical attention if symptoms occur.

Ingestion: Drink 1-2 glasses of water. Seek medical attention.

MATERIAL SAFETY DATA SHEET

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, carbon dioxide (CO2), dry chemical

Special Fire-Fighting Procedures: None

Hazardous Combustion Products: Carbon dioxide, carbon monoxide

Unusual Fire and Explosion Hazards: Powdered material may form explosive dust-air mixtures.

6. ACCIDENTAL RELEASE MEASURES

Sweep material onto paper and place in a fiber carton. Clean surface thoroughly to remove residual contamination.

7. HANDLING AND STORAGE

Personal Precautionary Measures: Avoid breathing dust. Use with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: Keep from contact with oxidizing materials. Minimize dust generation and accumulation. Refer to NFPA Pamphlet No. 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastics Industries." Use with adequate ventilation.

Storage: Keep container closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Carbon black: 3.5 mg/m3 TWA

OSHA (USA) Permissible Exposure Limit (PEL):

Carbon black: 3.5 mg/m3 TWA

Ventilation: Good ventilation (typically 4-6 room volumes per hour) should be used. Ventilation rates should be matched to conditions.

Personal Protection: Good industrial hygiene practice should be followed which includes preventing eye contact and minimizing skin contact and inhalation.

MATERIAL SAFETY DATA SHEET

Respiratory Protection: None should be needed.

Eye Protection: It is a good industrial hygiene practice to minimize eye contact.

Skin Protection: For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

Recommended Decontamination Facilities: Washing facilities

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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Solid (powder)
Color: Black
Odor: Slight
Specific Gravity (water = 1): 2.3
Vapor Pressure: Negligible
Vapor Density (Air = 1): Negligible
Evaporation Rate (n-butyl acetate = 1): Negligible
Volatile Fraction by Weight: Negligible
Melting Point: Not available
Solubility in Water: Negligible
pH: Not applicable
Flash Point: Not applicable, combustible solid

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10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility: Strong oxidizing agents

Hazardous Polymerization: Will not occur.

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11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

Inhalation: Expected to be a low hazard for recommended handling.

Eyes: No specific hazard known. May cause transient irritation.

Skin: Expected to be a low hazard for recommended handling.

Ingestion: Expected to be a low ingestion hazard.

Overexposure to carbon black dust may result in irritation of the

MATERIAL SAFETY DATA SHEET

respiratory tract and benign deposition of carbon black in the lung. Dust sampling performed by Eastman Kodak Company during typical Eastman Kodak copier operation has indicated that levels are well below occupational exposure guidelines and do not present a respirable dust hazard. A Health Profile Study of electrographic toner manufacturing employees found no evidence of increased health risk when compared to other hourly employees.

Mutagenicity/Genotoxicity Data:

Salmonella typhimurium assay (Ames test): Negative

12. ECOLOGICAL INFORMATION

This material has not been tested for environmental effects. In a spill situation this material may be visually unpleasant; however, it is not expected to cause any adverse environmental effects.

13. DISPOSAL CONSIDERATIONS

Incinerate or landfill. Can be incinerated when in compliance with local regulations. Discharge, treatment, or disposal may be subject to national, state, or local laws.

14. TRANSPORT INFORMATION

- For transportation information regarding this product, please phone the Eastman Kodak Distribution Center nearest you: Rochester, NY (716) 588-3536 or 588-3573 or 588-3035; Oak Brook, IL (312) 956-6080; Chamblee, GA (404) 455-0123; Dallas, TX (214) 241-1611; Whittier, CA (213) 945-1255; Honolulu, HI (808) 833-1661.

15. REGULATORY INFORMATION

- Material(s) known to the State of California to cause cancer: None
- Material(s) known to the State of California to cause adverse reproductive effects: None

- Carcinogenicity Classification (components present at 0.1% or more):
  - International Agency for Research on Cancer (IARC): None
  - American Conference of Governmental Industrial Hygienists (ACGIH): None
  - National Toxicology Program (NTP): None
  - Occupational Safety and Health Administration (OSHA): None

- Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: None

MATERIAL SAFETY DATA SHEET

000001035/F/USA - C-0064.500M
Approval Date: 05/26/1993
Print Date: 05/29/1993

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16. OTHER INFORMATION

US/Canadian Label Statements:

LOW HAZARD FOR RECOMMENDED HANDLING

For additional information, see Material Safety Data Sheet (MSDS) for this material.

Additional hazard precautions for containers greater than 1 gallon of liquid or 5 pounds of solid:

CAUTION! POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURES

Minimize dust generation and accumulation.

Use with adequate ventilation.

IN CASE OF FIRE: Use water spray, carbon dioxide (CO2), dry chemical

IN CASE OF SPILL: Sweep or scoop up and remove. Flush residual spill or area with water.

The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

H F R P
3 3 0 B
HMTS

IDENTITY (As Used on Label and List)
JUSTRITE KLING INK - BLACK

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I UN # 1993 (OVERSEAS)

Manufacturer's Name
LOUIS MELIND COMPANY

Address (Number, Street, City, State, and ZIP Code)
3524 N. Clark Street
Chicago, Il 60657

Emergency Telephone Number
(815) 268 - 7201

Telephone Number for Information
(815) 268 - 7201

Date Prepared
Sept. 21, 1989

Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
META CRESOL				
CAS # 108394		5 PPM		
PARA CRESOL				
CAS # 106445		5 PPM		
PROPYLENE GLYCOL MONOMETHYL ENTER ACETATE	NOT ESTABLISHED			
CAS # 108656				
SOLVENT BLACK 7				
CAS # 8005025	NOT ESTABLISHED			

Section III — Physical/Chemical Characteristics

Boiling Point 395°/397° F.		Specific Gravity (H_2O = 1) 1.040	
Vapor Pressure (mm Hg.) < 1 @	20° C	Melting Point	15.5°C
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water Moderate	3.70		NA

Appearance and Odor
Black liquid with strong carbolic odor.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 140° F C.C.	Flammable Limits @ 302° F	LEL 1.06	UEL 15.5°C.

Extinguishing Media
Use water spray, dry chemical, alcohol foam, or CO2.

Special Fire Fighting Procedures
Wear full protective clothing. Toxic vapors may be given off in a fire. Use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards
Sealed containers can build up pressure if exposed to heat (fire). Water can be used to cool containers.

(Reproduce locally)

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		Open flame, high temperatures, electric arc.
	Stable	X	

Incompatibility (Materials to Avoid)
Avoid contact with strong oxidizing agents.

Hazardous Decomposition or Byproducts
Can produce carbon dioxide and carbon monoxide.

Hazardous Polymerization			Conditions to Avoid
	May Occur		
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? NDA Skin? LD 50 Dermal rats: 620 mg/kg M-cresol 750 O-cresol Ingestion? LD 50 oral rats 242 mg/kg M-cresol 207 O-c

Health Hazards (Acute and Chronic)
Available literature indicates this material is readily absorbed through skin & may cause damage to lung, liver, eyes, kidneys, skin, mucous membranes, & nervous system.

Carcinogenicity: NTP? no IARC Monographs? no OSHA Regulated? no

Signs and Symptoms of Exposure
Vapors cause irritation to eyes, nose, throat. Contact with skin or eyes may cause moderate burns.

Medical Conditions
Generally Aggravated by Exposure Not listed

Emergency and First Aid Procedures Remove to fresh air & provide oxygen if breathing difficult. Flush e with plenty of water while holding eye lids open. Wash skin with soap & water. Use emollie kin creams. If irritation persists in both the eyes and skin consult a physicain. If nnested drink large amounts of water. Seek medical attention.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Eliminate all ignition sources. Small spills may be collected with absorbent material. For large spills flush area with water spray. Prevent runoff from entering drains, sewers, or streams.

Waste Disposal Method
Dispose of in accordance with lical, state and federal regulations.

Precautions to Be Taken in Handling and Storing
Eliminate ignition sources use explosion proof equipment. Conveying and processing equipmer should be spark proof, well bonded & grounded.

Other Precautions
Wash with soap & water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse.

Section VIII — Control Measures

Respiratory Protection (Specify Type)
NIOSH approved dust respirator.

Ventilation		
Local Exhaust: Needed if vapors above TLV	Special	
Mechanical (General): Acceptable for most applications	Other	

Protective Gloves: cotton, leather, rubber, or neoprene
Eye Protection: Chemcial Goggles

Other Protective Clothing or Equipment
Wear other protective equipment as required to minimized skin contact.

Work/Hygienic Practices
Wash hands with soap & water after use. Reasonable care & caution.

This information is given without warranty, representation, inducement or license of any kind. We assume no legal responsibility for use or reliance upon same. It is the user's obligation to determine the conditions of safe use of the product.

MARKING METHODS, INC.
P. O. BOX 53
SAN GABRIEL, CALIFORNIA
CUMBERLAND 3-5531

ELECTROLYTES

RECOMMENDED ELECTROLYTES FOR MARKING METALS AND ALLOYS

METALS and ALLOYS	ELECTROLYTES	POWER SUPPLY	COLOR OF ETCH	CLEANER*	COMMENTS
ALUMINUM 99.7% Pure	210-A	D.C. Normal Circuit	Black	No. 3	Allow few seconds for color to develop before cleaning.
	250-A	D.C. Normal Circuit	White	No. 3	Often used on bright finished or polished surfaces.
ALUMINUM ALLOYS	210-A	D.C. Normal Circuit	Black	No. 3	Allow few seconds for color to develop before cleaning.
	250-A	D.C. Normal Circuit	White	No. 3	Often used on bright finished or polished surfaces.
ALUMINUM Containing 10% or more Magnesium	250-A	D.C. Normal Circuit	White	No. 3	High Magnesium bearing Alloys cannot be color marked.
ALUMINUM Containing 5% or more Silica	250-A	D.C. Normal Circuit	White	No. 3	High Silica bearing Alloys cannot be color marked.
ANODIZED ALUMINUM	250-A	D.C. Normal Circuit	White	No. 3	MUST BE MARKED BEFORE ANODIZING.
ALUMINUM BRONZE	220-A or ~~K400~~	D.C. Normal Circuit	Clear	No. 3	80–90 — Copper, Iron and Tin.
		A.C. Circuit	Black	No. 3	2–10 — Aluminum.
ALUMINUM SILICON BRONZE	See Aluminum Bronze				
BRONZE, PHOSPHOR	See Aluminum Bronze				
BRONZE	117-A, 220-A or ~~K400~~	D.C. Normal Circuit	Clear	No. 3	Electrolyte depends upon Elemental Composition.
		A.C. Circuit	Black	No. 3	
BRASS	See Bronze				
CARBIDES					
BORON BEARING	250-A	A.C. Circuit	Black	No. 2	All Carbides should be marked with a P-100 Power Unit.
TANTALUM BEARING	250-A	A.C. Circuit	Black	No. 2	
TITANIUM BEARING	~~250-A~~	A.C. Circuit	Black	No. 2	
TUNGSTEN BEARING	250-A	A.C. Circuit	Black	No. 2	
COBALT ALLOYS, STELLITES	2611-A or 260-A	D.C. Normal Circuit	Clear	No. 2	Sandblast Surface should contain slight oil film before marking.
		A.C. Circuit	Black	No. 2	
COPPER and ALLOYS	~~K400~~, 220-A or 117-A	D.C. Normal Circuit	Clear	No. 3	Electrolyte depends upon Surface and Metal Composition.
		A.C. Circuit	Black	No. 3	
DISCALOY	260-A	A.C. Circuit	Black	No. 2	
GOLD and ALLOYS	2611-A, 260-A	D.C. Normal Circuit	Clear	No. 3	
		A.C. Circuit	Black	No. 3	
HASTELLOYS	~~110-A~~, 2611-A	A.C. Circuit	Black	No. 2	
INCONEL	2611-A	A.C. Circuit	Black	No. 3	
IRON and ALLOYS					
1. IRON (Pure)	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
2. STEELS		D.C. Normal Circuit	Clear	No. 2	May be marked using either an A.C. Circuit or a D.C. Normal Circuit, depending upon surface finish and results desired.
(a) Low Carbon and Mild	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
(b) Low Alloy Steels					
Machined	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
Polished	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
Vapor blast Sandblast	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	Oil open structure surface with light oil film before marking.
Descaled	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
Nitrided	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
Carburized	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
(c) High Alloy and Tool Steel	2611-A, 260-A, ~~221-A~~	A.C. Circuit	Black	No. 2	
(d) Saw Steel	2611-A, ~~112-A~~	A.C. Circuit	Black	No. 2	
(e) Stainless		D.C. Normal Circuit	Clear	No. 2	Circuit used depends upon Surface finish and results desired.
300 and 400 Series	250-A, 260-A, ~~K400~~	A.C. Circuit	Black	No. 2	

CONTINUED ON NEXT PAGE

ELECTROLYTES

RECOMMENDED ELECTROLYTES FOR MARKING METALS AND ALLOYS

METALS and ALLOYS	ELECTROLYTES	POWER SUPPLY	COLOR OF ETCH	CLEANER*	COMMENTS
LEAD and ALLOYS	250-A	D.C. Normal Circuit	Clear	No. 3	
		A.C. Circuit	Black	No. 3	
MAGNESIUM and ALLOYS	250-A	D.C. Normal Circuit	Clear	No. 3	Must be marked before Galvanic Anodize. Apply slight oil film before marking.
MONEL METALS	2611-A, 117-A	D.C. Normal Circuit	Clear	No. 3	Circuit used depends upon surface finish and results desired.
		A.C. Circuit	Black	No. 3	
NICKEL and ALLOYS	250-A, 220-A	A.C. Circuit	Black	No. 3	
TIN and ALLOYS	117-A	A.C. Circuit	Black	No. 3	
TITANIUM and ALLOYS	~~251-A~~, 260-A	A.C. Circuit	Dark	No. 3	Due to Surface Oxide, marking should be done with P-100 Power Unit.
ZINC and ALLOYS	~~113-A~~, 117-A	A.C. Circuit	Black	No. 3	
SUPPLEMENTAL COATINGS — ELECTROPLATE					
BRASS ELECTROPLATE	See Brass and Bronze Alloys				
CADMIUM ELECTROPLATE ON STEEL	~~113-A~~, 117-A	A.C. Circuit	Black	No. 3	No composite coating, generally direct.
CHROMIUM — Hard	230-A	A.C. or D.C. Circuit	Clear	No. 3	No composite coating.
Decorative	230-A, ~~260-A~~	D.C. Normal Circuit	Clear	No. 3	Usually a composite coating of copper nickel & chromium, or nickel & chromium.
		A.C. Circuit	Black	No. 3	
COPPER ELECTROPLATE ON STEEL	~~1680~~, 220-A, 117-A	A.C. Circuit	Black	No. 3	
GOLD PLATE	See Gold Metal and Alloys				
LEAD PLATE	See Lead Metal and Alloys				
NICKEL (Electrolytic)	250-A, ~~251-A~~	A.C. Circuit	Black	No. 3	Clear etch obtained with D.C. Normal Circuit.
NICKEL (Electroless)	250-A, ~~260-A~~	A.C. Circuit	Black	No. 3	
SILVER PLATE	117-A, ~~251-A~~	D.C. Normal Circuit	Clear	No. 3	Etch depends upon base metal, and composition of composite coatings.
		A.C. Circuit	Black	No. 3	
TIN — ELECTROPLATE	117-A	A.C. Circuit	Black	No. 3	
HOT DIP	117-A	A.C. Circuit	Black	No. 3	
ZINC ELECTROPLATE	~~113-A~~, 117-A	A.C. Circuit	Black	No. 3	
HOT DIP	~~113-A~~, 117-A	A.C. Circuit	Black	No. 3	
CHROMATED CADMIUM and ZINC ELECTROPLATE	250-A, 260-A	D.C. Normal Circuit	White	No. 3	Such surfaces are partially passivated and require a P-100 Power Unit.
BLACK OXIDE ON STEEL	~~260-A~~, 250-A, 260-A	D.C. Normal Circuit	White	No. 2	Selection of electrolyte depends upon method of developing coating and thickness.
BLUED FURNACE OXIDE ON STEEL	~~251-A~~, 250-A, 260-A	D.C. Normal Circuit	White	No. 2	Use P-100 Power Unit.
PHOSPHATED STEEL	A Non-Conductive Coating cannot be Marked Unless Coating is Very Thin.				

NOTE: (1) All surfaces must be conductive to successfully mark with the LECTROETCH Process. Non-conductive films such as paints, lacquers or enamels cannot be electrolytically etched. Anodized aluminum (Electrolytic or Chemical), and galvanic anodized magnesium are non-conductive and must be marked before anodizing. Heavy phosphated steel is non-conductive.

(2) Porous surfaces produced from acid pickling, sand or vapor blast, or the likes, should contain a THIN Film of oil before marking.

(3) Partially Passivated Surfaces require the power of a P-100 Unit to produce quick, satisfactory marking.

*(4) New Lectroetch chemically treated wiper tissues are recommended in place of liquid cleaners for most applications.

(5) Where more than one electrolyte is shown, they are listed in order of their desirability.

(6) Where high resistance oxides are encountered, refer to Lectroetch Company for Special Apparatus and technical service.

Material Safety Data Sheet

Lectroetch #2 Cleaner
QUICK IDENTIFIER
(Common Name: used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No: (216)934-1249

Other Information Calls: (216)934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared: [illegible]

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO
Phosphates (2)	(Non-Hazardous)			2-6	
Glycerine	(Non-Hazardous)			10	
Water	(Non-Hazardous)			88	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O=1): Approx 1.01

Vapor Pressure (mm Hg): Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid, slight odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None F. C.

Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable [ ] Stable [X] — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur [ ] Will Not Occur [X] — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

Signs and Symptoms of Exposure:
1. Acute: Eye and skin irritation.
2. Chronic: Prolonged contact may result in skin irritation.

Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen: National Toxicology Program Yes [ ] No [X] — I.A.R.C. Monographs Yes [ ] No [X] — OSHA Yes [ ] No [X]

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation: Local Exhaust X — Mechanical (General) X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

CU-F1R Printed by Labelmaster, Division of American Labelmark Company, Inc. Chicago, IL 60648-6719 1-800-621-5808 • (321) 478-0900

Material Safety Data Sheet

Lectroetch #3 Cleaner
QUICK IDENTIFIER
(Common Name used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No: (216) 934-1249

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared:

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common names)	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS No.
Phosphate	(Non-Hazardous)			1	
Anionic Surfactant	(Skin and eye irritant)			1	
Water	(Non-Hazardous)			98	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O = 1): Approx 1.01

Vapor Pressure mm Hg: Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid, slight odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None F. C. Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable / Stable X — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur / Will Not Occur X — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation.

2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes / No X — I.A.R.C. Monographs: Yes / No X — OSHA: Yes / No X

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations. unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation: Local Exhaust X — Mechanical (General) X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

Material Safety Data Sheet

Lectroetch 117A Electrolyte
QUICK IDENTIFIER
Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard. 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

Emergency Telephone No.: (216) 934-1249

City, State, and ZIP: Sheffield Village, OH 44054

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared: 2-18-94

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Nitrate Salt	(Non-Hazardous)			9	
Chloride Salt	(Non-Hazardous)			4	
Anionic Surfactant	(Skin and eye irritant)			3	
Water	(Non-Hazardous)			84	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H₂O=1): Approx 1.03

Vapor Pressure (mm Hg): Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid, pleasant odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None F. C. Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable ___ Stable X — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur ___ Will Not Occur X — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation. 2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes ☐ No ☒ — I.A.R.C. Monographs: Yes ☐ No ☒ — OSHA: Yes ☐ No ☒

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation — Local Exhaust: X — Mechanical (General): X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest

Material Safety Data Sheet

Lectroetch 210A Electrolyte
QUICK IDENTIFIER
Common Name (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No.: (216) 934-1249

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared:

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common names)	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO
Thiocyanate Salt (KSCN)	(Moderate Hazard)			6	000333200
Chloride Salts (2)	(Non-Hazardous)			30	
Anionic Surfactant	(Skin and eye irritant)			3	
Water	(Non-Hazardous)			61	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H_2O=1): Approx 1.12

Vapor Pressure mm Hg: Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Purplish liquid, slight odor

Melting Point: Approx. 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None F. C.

Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable [ ] Stable [X] — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur [ ] Will Not Occur [X] — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation.
2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes [ ] No [X] — I.A.R.C. Monographs: Yes [ ] No [X] — OSHA: Yes [ ] No [X]

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation: Local Exhaust X — Mechanical (General) X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT
Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard. 29CFR 1910. 1200. Standard must be consulted for specific requirements.

Lectroetch 220A Electrolyte
QUICK IDENTIFIER
Common Name: (used on label and list)

SECTION I -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No.: (216) 934-1249

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared: 2-18-94

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Chromic Acid	(Hazardous material)			5	0077389
Nitrate Salt	(Non-Hazardous)			5	
Anionic Surfactant	(Skin and eye irritant)			3	
Water	(Non-Hazardous)			87	

SECTION 3 – PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O=1): Approx 1.02

Vapor Pressure (mm Hg): Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Yellowish liquid, sour odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None C. Method Used: N/A

Flammable Limits - in Air % by Volume - LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable / Stable X — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur / Will Not Occur X — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation.
2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes ☐ No ☒ — I.A.R.C. Monographs: Yes ☐ No ☒ — OSHA: Yes ☐ No ☒

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation — Local Exhaust: X — Mechanical (General): X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

Material Safety Data Sheet

Lectroetch 250A Electrolyte
QUICK IDENTIFIER
Common Name (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No.: (216) 934-1249

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared: 2-18-94

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Chloride Salt	(Non-Hazardous)			4	
Nitrate Salt	(Non-Hazardous)			4	
Sequestering Agent (Citric)	(Slight irritant)			3	
Acetic Acid	(Hazardous material)			< 5	000064197
Oxalic Acid	(Hazardous material)			0.1	000144627
Anionic Surfactant	(Skin and eye irritant)			3	
Water	(Non-Hazardous)			81	

SECTION 3 – PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O=1): Approx 1.03

Vapor Pressure mm Hg: Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid, pungent odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None F. C.

Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A; UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Stable X; Unstable; Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur; Will Not Occur X; Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

Acute: Eye and skin irritation.

Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen: National Toxicology Program Yes No X; I.A.R.C. Monographs Yes No X; OSHA Yes No X

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation: Local Exhaust X; Mechanical (General) X; Special: None; Other: None

Protective Gloves: May be needed for sensitive skin.

Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest

Material Safety Data Sheet

Lectroetch 260A Electrolyte
QUICK IDENTIFIER
Common Name (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200. Standard must be consulted for specific requirements

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

Emergency Telephone No.: (216) 934-1249

City, State, and ZIP: Sheffield Village, OH 44054

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared:

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO
Chloride Salt	(Non-Hazardous)			15	
Bifluoride Salt	(Hazardous material)			4	001341497
Acetic Acid	(Hazardous material)			2	000064197
Anionic Surfactant	(Skin and eye irritant)			3	
Methyl Salicylate	(Hazardous material)			.1	
Water	(Non-Hazardous)			76	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O=1): Approx 1.05

Vapor Pressure (mm Hg): Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid, pungent odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None °F °C. Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable / Stable X — Conditions to Avoid: None known

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur / Will Not Occur X — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation. 2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes / No X — I.A.R.C. Monographs: Yes / No X — OSHA: Yes / No X

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation: Local Exhaust X — Mechanical (General) X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

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Material Safety Data Sheet

Lectroetch 2611A Electrolyte
QUICK IDENTIFIER
Common Name used on label and list

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

City, State, and ZIP: Sheffield Village, OH 44054

Emergency Telephone No: (216) 934-1249

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared:

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Components (chemical & common names)	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS No.
Nitrate Salt	(Slight skin irritant)			5	
Chloride Salts (2)	(Non-Hazardous)			8	
Sequestering Agent (Citric)	(Slight irritant)			2	
Anionic Surfactant	(Skin and eye irritant)			2	
Water	(Non-Hazardous)			83	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H2O=1): Approx 1.03

Vapor Pressure mm Hg: Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Reddish liquid, slight odor

Melting Point: 32° F. (0° C.)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None °F

Method Used: N/A

Flammable Limits in Air % by Volume — LEL Lower: N/A — UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable [ ] Stable [X] — Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur [ ] Will Not Occur [X] — Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation.
2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes [ ] No [X] — I.A.R.C. Monographs: Yes [ ] No [X] — OSHA: Yes [ ] No [X]

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation — Local Exhaust: X — Mechanical (General): X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. — Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

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NEXT FRAME

Material Safety Data Sheet

Lectroetch LHC-3 Electrolyte
QUICK IDENTIFIER
Common Name (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name: The Lectroetch Company

Address: 5342 Evergreen Parkway

Emergency Telephone No: (216) 934 1249

City, State, and ZIP: Sheffield Village, OH 44054

Other Information Calls: (216) 934-1249

Signature of Person Responsible for Preparation (Optional):

Date Prepared:

SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS No.
Chloride Salt	(Non-Hazardous)			15	
Sequestering Agent (Citric)	(Slight irritant)			7	
Citrate	(Non-Hazardous)			3	
Anionic Surfactant	(Skin and Eye Irritant)			3	
Water	(Non-Hazardous)			72	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: Approx. 212° F.

Specific Gravity (H_2O=1): Approx.1.09

Vapor Pressure (mm Hg): Unknown

Vapor Density (Air = 1): Unknown

Solubility in Water: Complete - water solution

Reactivity in Water: None - water solution

Appearance and Odor: Clear liquid-pleasant odor

Melting Point: 32° F. (0° C)

SECTION 4 – FIRE & EXPLOSION DATA

Flash Point: None C.

Method Used: N/A

Flammable Limits in Air % by Volume: LEL Lower: N/A; UEL Upper: N/A

Auto-Ignition Temperature: None

Extinguisher Media: None required

Special Fire Fighting Procedures: None required

Unusual Fire and Explosion Hazards: None

SECTION 5 – PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: Unstable [ ] Stable [X] Conditions to Avoid: None known

Incompatability (Materials to Avoid): None known

Hazardous Decomposition Products: Unknown

Hazardous Polymerization: May Occur [ ] Will Not Occur [X] Conditions to Avoid: None known

SECTION 6 – HEALTH HAZARDS

1. Acute: Eye and skin irritation.
2. Chronic: Prolonged contact may result in skin irritation.

Signs and Symptoms of Exposure: Dryness/redness of skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, renal disorders.

Chemical Listed as Carcinogen or Potential Carcinogen — National Toxicology Program: Yes [ ] No [X] — I.A.R.C. Monographs: Yes [ ] No [X] — OSHA: Yes [ ] No [X]

Emergency and First Aid Procedures: See below.

ROUTES OF ENTRY

1. Inhalation: Remove to fresh air.
2. Eyes: Flush with water at least 15 minutes - consult physician.
3. Skin: Wash hands thoroughly after using - apply lubricating lotion.
4. Ingestion: If taken in large amounts, call physician immediately.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep container closed to prevent evaporation. Keep from freezing. Store in a cool place, out of direct sunlight.

Other Precautions: Do not contaminate with other materials. Do not mix formulations, unless instructed by the factory. Do not pour used material back in bottle.

Steps to be Taken in Case Material is Released or Spilled: Small amount-flush with water. Large amount-pick up with absorbent material and place in suitable containers for disposal.

Waste Disposal Methods (Consult federal, state, and local regulations): Dispose in accordance with federal, state, and local regulations.

SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type): None required.

Ventilation — Local Exhaust: X — Mechanical (General): X — Special: None — Other: None

Protective Gloves: May be needed for sensitive skin. Eye Protection: Do not splash into eyes.

Other Protective Clothing or Equipment: None.

Work/Hygienic Practices: Use in well-ventilated area. Wash hands thoroughly after use. Do not ingest.

IMPORTANT
Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

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MATERIAL SAFETY DATA SHEET 16207-.2

PRODUCT NAME: Electrolyte Formula F10 Issue Date: Oct. 1990

Emergency Assistance Call
(800) 424-9300

HAZARD RATING (NFPA)

Health = 1	0 = minimal
Flammability = 0	1 = slight
Reactivity = 0	2 = moderate
Special = 0	3 = serious
	4 = severe

Manufacturer
Marking Methods, Inc.
301 S. Raymond Avenue
Alhambra, CA 91803
(818) 282-8823

16207 .3

PRODUCT CLASSIFICATION

Acid, based on pH

HAZARDOUS INGREDIENTS

Chemical Names	% (by weight)	CAS Number	ACGIH TLV	OSHA PEL

All materials in this product are not considered toxic as defined in the Hazard Communication Standard.

PHYSICAL PROPERTIES

Vapor Density	Heavier than air
Specific Gravity	1.08
Solubility in Water	Soluble
Vapor Pressure, PSI	ND
Volatile Organic Compound	< 50 gm/l (EPA Method 24)
Appearance/Odor	Light red liquid. Slight spearmint odor.
Melting Point or Range	NA
Boiling Point	212 F. (100 C)
Evaporation Rate	ND
pH	2.8

REACTIVITY DATA

Stability	Stable
Conditions to Avoid	Avoid drying and heating product above 248 F. (120 C.). Consult Marking Methods Instruction Manual for proper use of product.
Incompatibility	Avoid exposure to strong alkalies, combustibles and oxidizers.
Hazardous Decomposition products	Although this product is nonflammable, thermal decomposition may release irritating and noxious gases such as oxides of nitrogen and carbon.
Hazardous Polymerization	Will not occur.

FIRE AND EXPLOSION

Flash point:	NA
Auto Ignition Temperature	NA
Flammable limits in air volume %	Nonflammable liquid
Fire Extinguishing Method	Appropriate for surrounding materials.
Firefighting procedures	Use self contained breathing apparatus. If containers cannot be removed from fire area safely, use water to cool container.
Unusual Fire/Explosion Hazards	Closed containers exposed to extreme heat may rupture due to pressure build up.

HEALTH HAZARD INFORMATION

Symptoms of Overexposure

Inhalation:

Inhalation of product mist can cause irritation of nose and throat, running nose, coughing and chest pain.

Skin/eye contact:

May cause burning sensation and tearing. Severe irritation can occur if product is splashed into the eyes. Mild to severe irritation can occur upon skin contact.

Ingestion:

Accidental ingestion of large quantities of product may produce gastrointestinal tract irritation, vomiting, cramping, diarrhea, metabolic acidosis and methemoglobinemia.

Chronic Health Effects

None expected from normal use of product. Repeated skin contact may cause acid burns, irritation and dermatitis.

Medical Conditions Aggravated By Exposure

Dermatitis upon repeated skin contact.

FIRST AID

Eye:

Flush eyes with clean water for at least 15 minutes making sure to hold eyelids open. If irritation persists, call a physician.

Skin:

Wash contaminated skin with soap and water. Remove contaminated clothing. Launder clothing before reuse.

Inhalation:

Not expected to be an inhalation problem.

Ingestion:

Give victim large quantities of cold water or milk. Call a physician for advice. DO NOT give anything by mouth to an unconscious person.

SPECIAL HANDLING INFORMATION

Ventilation and engineering controls:

In this diluted form, general ventilation should provide adequate protection from inhalation of toxic fumes under normal working conditions.

Respiratory protection:

If working conditions create high levels of mist or vapor, a NIOSH approved respirator is recommended.

Eye protection:

Chemical splash goggles or other type of safety goggles are recommended.

Skin protection:

The use of water proof gloves when handling product is recommended.

Special clothing or equipment:

Protective clothing such as uniforms, lab coats or aprons are recommened.

Work/hygienic practices:

Contact lenses should not be worn when working with this product. Wash hands after handling product.

Other handling/storage requirements:

(See Incompatability and Materials to Avoid). Store in cool, dry place away from combustibles. Protect containers from physical damage.

SPILL, LEAK, DISPOSAL PROCEDURES

Spill: Remove unnecessary personnel from spill site. Absorb with sand earth or other noncombustible absorbant material and transfer to closed containers for disposal.

Disposal: Dispose in accordance with federal, state and local regulations.

CARCINOGENICITY

This product's ingredients are not listed as carcinogens by the following agencies: Federal OSHA, NTP, IARC.

Section 313 Supplier Notification

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

Cobalt Nitrate < 5% by weight CAS number 10049-48-0

All other ingredients in this product to the best of our knowledge are not reportable.

This information must be included in all MSDSs that are copied and distributed for this material.

This Material Safety Data Sheet is not a representation or warranty about the merchantability and fitness of this product for a particular use. Detailed information about indications for use and restrictions can be found in the Marking Methods Instruction Manual. As conditions of use are beyond the control of Marking Methods, users are solely responsible for all liabilities and risks associated with the use, handling and disposal of this product. Information contained herein was obtained from reliable sources by Marking Methods staff, but it was not directly verified. Therefore, Marking Methods cannot guarantee the accuracy of the data and leaves the ultimate responsibility of verifying the data for a particular application to the user of the product.

FAX

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List): Electrolyte #10 Modified Sol.

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: INTERNATIONAL MARKING GROUP	Emergency Telephone Number: (315) 735-7591
Address (Number, Street, City, State, and ZIP Code): 206 Kossuth Ave	Telephone Number for Information: Same as above
Utica, NY 13501	Date Prepared: April 14, 1992
	Signature of Preparer (optional):

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS#	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Nickel Nitrate	13478-00-7	--	0.1mg/m^3		
Nickel Chloride	7718-54-9	1mg/m^3	0.1mg/m^3		
Ammonium Chloride	12125-02-9	none established			
Acetic Acid	64-19-7				

Nickel Compounds are classified as Group 1 carcinogins. The only scientific studies showing an excess of cancer of the respiratory tract have been demonstrated to result from certain steps in the process of nickel production.

Section III — Physical/Chemical Characteristics

Boiling Point: Greater than 100 degC		Specific Gravity (H_2O = 1): 1.054	
Vapor Pressure (mm Hg.): N/A		Melting Point: N/A	
Vapor Density (AIR = 1): N/A		Evaporation Rate (Butyl Acetate = 1): N/A	
Solubility in Water: Miscible			

Appearance and Odor: Green/Odorless

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): N/A	Flammable Limits: N/A	LEL,	UEL

Extinguishing Media: Water or appropriate to surrounding area

Special Fire Fighting Procedures: Wear proper protective equipment and self-contained breathing apparatus operated in positive pressure mode.

Unusual Fire and Explosion Hazards: Toxic gases may be produced.

(Reproduce locally)

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid): Avoid contact with strong mineral acids

Hazardous Decomposition or Byproducts: Oxides of nitrogen, ammonia.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
		X	X

Health Hazards (Acute and Chronic)
Acute-irritation of eyes, skin and respiratory system. Ingestion may cause nausea and vomiting. Chronic exposure to dusts or mists of nickel compounds can increase risk of lung and nasal cancer.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	yes	NO	yes, as dry component

Signs and Symptoms of Exposure: Eye, skin and nasal irritation. Nausea and vomiting.

Medical Conditions Generally Aggravated by Exposure: None identified.

Emergency and First Aid Procedures
In case of contact, immediately flush with water. If in contact with eyes, flush with water for at least 15 minutes. Avoid ingestion.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Wear suitable protective clothing. Absorb with vermiculite, paper, etc., and remove. Flush area with water.

Waste Disposal Method
Dispose of in accordance with all applicable federal, state and local environmental regulations.

Precautions to Be Taken in Handling and Storing
Keep container closed.

Other Precautions
None

Section VIII — Control Measures

Respiratory Protection (Specify Type)
None

Ventilation	Local Exhaust	Special
	X	
	Mechanical (General)	Other

Protective Gloves	Eye Protection
Neoprene or rubber	Safety glasses with side shields

Other Protective Clothing or Equipment
Uniform or apron recommended

Work/Hygienic Practices
Wash hands after use.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List): Electrolyte #13 Modified Sol.

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: INTERNATIONAL MARKING GROUP

Emergency Telephone Number: (315) 735-7591

Address (Number, Street, City, State, and ZIP Code): 206 Kossuth Ave, Utica, NY 13501

Telephone Number for Information: Same as above

Date Prepared: April 14, 1992

Signature of Preparer (optional): Bruce H. Bates

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS #	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Nickel Chloride	7718-54-9	1 mg/m^3	0.1 mg/m^3		

Nickel compounds are classified as Group 1 carcinogins. The only scientific studies showing an excess of cancer of the respiratory tract have been demonstrated to result from certain steps in the process of nickel production.

Section III — Physical/Chemical Characteristics

Boiling Point: Greater than 100 degC	Specific Gravity (H_2O = 1): 1.172
Vapor Pressure (mm Hg.): N/A	Melting Point: N/A
Vapor Density (AIR = 1): N/A	Evaporation Rate (Butyl Acetate = 1): N/A
Solubility in Water: Miscible	

Appearance and Odor: Green/Odorless

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): N/A

Flammable Limits: N/A LEL: UEL:

Extinguishing Media: Water or appropriate to surrounding area

Special Fire Fighting Procedures: Wear proper protective equipment and self-contained breathing apparatus operated in positive pressure mode.

Unusual Fire and Explosion Hazards: Hydrogen cyanide or oxides of nitrogen may be produced.

(Reproduce locally)

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Heat, flame or other source of ignition

Incompatibility (Materials to Avoid) Strong reducing agents.

Hazardous Decomposition or Byproducts: Oxides of nitrogen, hydrogen cyanide, oxides of sulfur.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
		X	X

Health Hazards (Acute and Chronic)
Acute-irritation of eyes, skin and respiratory system. Ingestion may cause nausea and vomiting. Chronic exposure to dusts or mists of nickel compounds can increase risk of lung and nasal cancer.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	yes	NO	yes, as dry component

Signs and Symptoms of Exposure
Ingestion may cause nausea and vomiting. Contact with skin or eyes may cause irritation.

Medical Conditions Generally Aggravated by Exposure None identified.

Emergency and First Aid Procedures
In case of contact, immediately flush with water. If in contact with eyes, flush with water for at least 15 minutes. Avoid ingestion.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Wear suitable protective clothing. Absorb with vermiculite, paper, etc., and remove. Flush area with water.

Waste Disposal Method
Dispose of in accordance with all applicable federal, state and local environmental regulations.

Precautions to Be Taken in Handling and Storing
Keep container closed.

Other Precautions
None

Section VIII — Control Measures

Respiratory Protection (Specify Type)
None

Ventilation	Local Exhaust	Special
	X	
	Mechanical (General)	Other

Protective Gloves	Eye Protection
Neoprene or rubber	Safety glasses with side shields

Other Protective Clothing or Equipment
Uniform or apron recommended

Work/Hygienic Practices
Wash hands after use.

MATERIAL SAFETY DATA SHEET

Sigma-Aldrich Corporation
1001 West Saint Paul Ave, Milwaukee, WI 53233 USA

Vs..d 11/93- 1/94

		Sigma	Aldrich
For Emergency	Contact USA/Canada	800-325-5832	800-231-8327
	Outside USA/Canada	314-771-5765	414-273-3850

SECTION 1. - - - - - - - - - - CHEMICAL IDENTIFICATION- - - - - - - - - - -
PRODUCT #: Z5889 NAME: 1-1-1-TRICHLOROETHANE
SECTION 2. - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - - -
CAS #:71-55-6
SYNONYMS
AEROTHENE TT * CF 2 * CHLOROETENE * CHLOROETHENE * CHLOROETHENE NU * CHLOROFORM, METHYL- * CHLOROTHANE NU * CHLOROTHENE * CHLOROTHENE(INHIBITED) * CHLOROTHENE NU * CHLOROTHENE SM * CHLOROTHENE VG * CHLORTEN * ETHANA NU * ICI-CF 2 * INHIBISOL * METHYLCHLOROFORM * METHYL CHLOROFORM (ACGIH,DOT,OSHA) * METHYLTRICHLOROMETHANE * NCI-C04626 * RCRA WASTE NUMBER U226 * SOLVENT 111 * STROBANE * ALPHA-T * TAFCLEAN * 1,1,1-TCE * 1,1,1-TRICHLOORETHAAN (DUTCH) * 1,1,1-TRICHLORAETHAN (GERMAN) * TRICHLOROETHANE * TRICHLORO-1,1,1-ETHANE (FRENCH) * ALPHA-TRICHLOROETHANE * 1,1,1-TRICHLOROETHANE * 1,1,1-TRICHLOROETHANE (DOT, OSHA) * 1,1,1-TRICLOROETANO (ITALIAN) * TRICHLOROMETHYLMETHANE * TRI-ETHANE * UN2831 (DOT) *
SECTION 3. - - - - - - - - - - HAZARDS IDENTIFICATION - - - - - - - - - -
LABEL PRECAUTIONARY STATEMENTS
HARMFUL
HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
POSSIBLE RISK OF IRREVERSIBLE EFFECTS.

2½ gal used dispensing

POSSIBLE MUTAGEN.
CAUSES SEVERE IRRITATION.
TARGET ORGAN(S):
LIVER, KIDNEYS
IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE (SHOW THE LABEL WHERE POSSIBLE).
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING.
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.

SECTION 4. - - - - - - - - - - - FIRST-AID MEASURES- - - - - - - - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.
ASSURE ADEQUATE FLUSHING OF THE EYES BY SEPARATING THE EYELIDS WITH FINGERS.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.
WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. - - - - - - - - - - FIRE FIGHTING MEASURES - - - - - - - - - -

EXTINGUISHING MEDIA
WATER SPRAY.
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

SECTION 6. - - - - - - - - - ACCIDENTAL RELEASE MEASURES- - - - - - - - -

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.
COVER WITH DRY LIME OR SODA ASH, PICK UP, KEEP IN A CLOSED CONTAINER AND HOLD FOR WASTE DISPOSAL.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - - - - - - - HANDLING AND STORAGE- - - - - - - - - - -

REFER TO SECTION 8.

ADDITIONAL INFORMATION
1,1,1-TRICHLOROETHANE HAS BEEN REPORTED TO REACT VIOLENTLY WITH ACETONE, NITRITES, AND OXYGEN.

SECTION 8. - - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION- - - - - -

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.
USE ONLY IN A CHEMICAL FUME HOOD.
SAFETY SHOWER AND EYE BATH.
FACESHIELD (8-INCH MINIMUM).
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
WASH THOROUGHLY AFTER HANDLING.
HARMFUL LIQUID.
SEVERE IRRITANT.
POSSIBLE MUTAGEN.
KEEP TIGHTLY CLOSED.

HYGROSCOPIC
HANDLE AND STORE UNDER NITROGEN.
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - - - - -

APPEARANCE AND ODOR
COLORLESS LIQUID
BOILING POINT: 74 C TO 76 C
MELTING POINT: -35 C
FLASHPOINT NONE BY:
AUTOIGNITION TEMPERATURE: 998 F
UPPER EXPLOSION LEVEL: 15% 25 C
LOWER EXPLOSION LEVEL: 7.5% 25 C
VAPOR PRESSURE: 100MM 20 C
VAPOR DENSITY: 4.6
SPECIFIC GRAVITY: 1.338

SECTION 10. - - - - - - - - - STABILITY AND REACTIVITY- - - - - - - - - - -

INCOMPATIBILITIES
STRONG OXIDIZING AGENTS
ALUMINUM
AND ITS ALLOYS.
MAGNESIUM
AND ITS ALLOYS.
ZINC
STRONG BASES
REACTS VIOLENTLY WITH:
POTASSIUM
SODIUM

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
TOXIC FUMES OF:
CARBON MONOXIDE, CARBON DIOXIDE
HYDROGEN CHLORIDE GAS
PHOSGENE GAS

SECTION 11. - - - - - - - - - - TOXICOLOGICAL INFORMATION - - - - - - - - -

ACUTE EFFECTS
HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.
CAUSES SEVERE IRRITATION.
HIGH CONCENTRATIONS ARE EXTREMELY DESTRUCTIVE TO TISSUES OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND SKIN.
SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.
EXPOSURE TO AND/OR CONSUMPTION OF ALCOHOL
MAY INCREASE TOXIC EFFECTS.
PROLONGED EXPOSURE CAN CAUSE:
NARCOTIC EFFECT
DERMATITIS

CHRONIC EFFECTS
LABORATORY EXPERIMENTS HAVE SHOWN MUTAGENIC EFFECTS.
DAMAGE TO THE LIVER
DAMAGE TO THE KIDNEYS
TARGET ORGAN(S):
LIVER, KIDNEYS
CENTRAL NERVOUS SYSTEM
CARDIOVASCULAR SYSTEM

RTECS NO: KJ2975000
ETHANE, 1,1,1-TRICHLORO-

IRRITATION DATA

EYE-MAN 450 PPM/8H	BJIMAG 28,286,71
SKN-RBT 5 GM/12D-I MLD	AIHAAP 19,353,58
SKN-RBT 20 MG/24H MOD	85JCAE -,94,86
EYE-RBT 100 MG MLD	AIHAAP 19,353,58
EYE-RBT 2 MG/24H SEV	85JCAE -,94,86

TOXICITY DATA

ORL-RAT LD50:9600 MG/KG	GNAMAP 29,45,90
IHL-RAT LC50:18000 PPM/4H	28ZPAK -,28,72
IPR-RAT LD50:3593 MG/KG	ENVRAL 40,411,86
ORL-MUS LD50:6 GM/KG	GNAMAP 29,45,90
IHL-MUS LC50:3911 PPM/2H	SAIGBL 13,226,71
IPR-MUS LD50:3636 MG/KG	SAIGBL 13,290,71
SCU-MUS LD50:16 GM/KG	JPETAB 123,224,58
ORL-DOG LD50:750 MG/KG	FMCHA2 -,C310,91
IPR-DOG LD50:3100 MG/KG	TXAPA9 10,119,67
IHL-CAT LC50:24400 MG/M3	GISAAA 35(8),127,70
ORL-RBT LD50:5660 MG/KG	AIHAAP 19,353,58
SKN-RBT LD50:>5 GM/KG	WRPCA2 9,119,70
ORL-GPG LD50:9470 MG/KG	AIHAAP 19,353,58

TARGET ORGAN DATA

SENSE ORGANS AND SPECIAL SENSES (CONJUNCTIVA IRRITATION)
BEHAVIORAL (HALLUCINATIONS, DISTORTED PERCEPTIONS)
BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)
BEHAVIORAL (IRRITABILITY)
BEHAVIORAL (CHANGE IN PSYCHOPHYSIOLOGICAL TESTS)
GASTROINTESTINAL (HYPERMOTILITY, DIARRHEA)
GASTROINTESTINAL (NAUSEA OR VOMITING)
GASTROINTESTINAL (OTHER CHANGES)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (CARDIOVASCULAR SYSTEM)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

SECTION 12. - - - - - - - - - - ECOLOGICAL INFORMATION - - - - - - - - - - -

DATA NOT YET AVAILABLE.

SECTION 13. - - - - - - - - - - DISPOSAL CONSIDERATIONS - - - - - - - - - -

DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - - - - - - TRANSPORT INFORMATION - - - - - - - - - -

CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - - - - - - REGULATORY INFORMATION - - - - - - - - - -

REVIEWS, STANDARDS, AND REGULATIONS

ACGIH TLV-TWA 350 PPM; STEL 450 PPM	85INA8 5,382,86
IARC CANCER REVIEW:ANIMAL INADEQUATE EVIDENCE	IMEMDT 20,515,79
IARC CANCER REVIEW:HUMAN NO ADEQUATE DATA	IMEMDT 20,515,79
IARC CANCER REVIEW:GROUP 3	IMSUDL 7,56,87

EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR RE-REGISTRATION
FEREAC 54,7740,89

MSHA STANDARD-AIR:TWA 350 PPM (1900 MG/M3)
DTLVS* 3,161,71

OSHA PEL:8H TWA 350 PPM (1900 MG/M3)
FEREAC 54,2923,89

OSHA PEL FINAL:8H TWA 350 PPM (1900 MG/M3);STEL 450 PPM (2450 MG/M3)
FEREAC 54,2923,89

OEL-AUSTRALIA:TWA 125 PPM (680 MG/M3) JANUARY 1993

OEL-BELGIUM:TWA 350 PPM (1910 MG/M3);STEL 450 PPM (2460 MG/M3)
JANUARY 1993
OEL-CZECHOSLOVAKIA:TWA 500 MG/M3;STEL 2000 MG/M3 JANUARY 1993
OEL-DENMARK:TWA 100 PPM (540 MG/M3) JANUARY 1993
OEL-FINLAND:TWA 100 PPM (540 MG/M3);STEL 250 PPM (1400 MG/M3) JANUARY 1993
OEL-FRANCE:TWA 300 PPM (1650 MG/M3);STEL 450 PPM (2500 MG/M3) JANUARY 1993
OEL-GERMANY:TWA 200 PPM (1080 MG/M3) JANUARY 1993
OEL-HUNGARY:TWA 100 MG/M3;STEL 300 MG/M3;SKIN JANUARY 1993
OEL-JAPAN:TWA 200 PPM (1100 MG/M3) JANUARY 1993
OEL-THE NETHERLANDS:TWA 200 PPM (1080 MG/M3);STEL 500 PPM (2700 MG/M3)
JANUARY 1993
OEL-THE PHILIPPINES:TWA 350 PPM (1900 MG/M3) JANUARY 1993
OEL-RUSSIA:TWA 200 PPM;STEL 20 MG/M3 JANUARY 1993
OEL-SWEDEN:TWA 50 PPM (300 MG/M3);STEL 90 PPM (500 MG/M3) JANUARY 1993
OEL-SWITZERLAND:TWA 200 PPM (1080 MG/M3);STEL 1000 PPM (5400 MG/M3)
JANUARY 1993
OEL-TURKEY:TWA 350 PPM (1900 MG/M3) JANUARY 1993
OEL-UNITED KINGDOM:TWA 350 PPM (1900 MG/M3);STEL 450 PPM (2450 MG/M3)
JANUARY 1993
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA, NEW ZEALAND, SINGAPORE,
VIETNAM CHECK ACGIH TLV
NIOSH REL TO 1,1,1-TRICHLOROETHANE-AIR:CL 350 PPM/15M
NIOSH* DHHS #92-100,92
NOHS 1974: HZD 46970; NIS 412; TNF 109850; NOS 205; TNE 1511801
NOES 1983: HZD 46970; NIS 417; TNF 120527; NOS 243; TNE 2528300; TFE 762399
EPA GENETOX PROGRAM 1988, POSITIVE: CELL TRANSFORM.-RLV F344 RAT EMBRYO
EPA GENETOX PROGRAM 1988, NEGATIVE: SPERM MORPHOLOGY-MOUSE
EPA GENETOX PROGRAM 1988, INCONCLUSIVE: CARCINOGENICITY-MOUSE/RAT;
MAMMALIAN MICRONUCLEUS
EPA TSCA CHEMICAL INVENTORY, JUNE 1990
EPA TSCA 8(A) PRELIMINARY ASSESSMENT INFORMATION, FINAL RULE
FEREAC 47,26992,82
EPA TSCA SECTION 8(E) STATUS REPORT 8EHQ-0283-0471
S;8EHQ-0980-0365;8EHQ-0982-0457
EPA TSCA SECTION 8(E) STATUS REPORT 8EHQ-0979-0310
ON EPA IRIS DATABASE
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 1993
NIOSH CURRENT INTELLIGENCE BULLETIN 27, 1978
NIOSH ANALYTICAL METHODS: SEE HYDROCARBONS, HALOGENATED, 1003
NCI CARCINOGENESIS BIOASSAY (GAVAGE);INADEQUATE STUDIES:MOUSE,RAT
NCITR* NCI-TR-3,77
NTP CARCINOGENESIS STUDIES;ON TEST (PRECHRONIC STUDIES), JANUARY 1993
OSHA ANALYTICAL METHOD #14
THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.

SECTION 16. - - - - - - - - - - - OTHER INFORMATION- - - - - - - - - - - -

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Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information	Reference Number

For rapid processing, complete all sections in black or blue ink and mail this form to Waste Services Group at MS J579

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber
[illegible] Shenrick			

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room
E-11	5-6443	0931	16	50 F	103

Waste Accumulation
Check as many as apply.

- [X] Satellite accumulation area --> site no.: _____
- [ ] Less than 90 day accumulation area --> site no.: _____
- [ ] Radioactive Materials Management Area (RMMA) --> site no.: _____
- [ ] None of the above

Method of Characterization
Check as many as apply.

- [ ] Knowledge of Process (KOP)
- [X] Analysis attached --> sample/request no. 94DS108
- [ ] MSDS attached
- [ ] Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- [ ] Unused/unspent chemical
  Check Waste Classes and Associated Documentation Only
- [X] Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- [ ] On-going generation
- [X] One-time generation
- [ ] Radioactive (complete Sec. 2)
- [X] Non-radioactive
- [ ] Wastewater (complete Sec. 3)
- [ ] Classified/Sensitive

Associated Documentation
Check as many as apply.

- [ ] Process SOP --> no.: _____
- [ ] RMMA OP --> no.: _____
- [ ] WM SOP --> no.: _____
- [ ] Other --> _____
- [X] None --> describe below

Waste Category
Check as many as apply.

- [ ] Solvent
- [ ] Degreaser
- [ ] Dioxin
- [ ] Electroplating
- [ ] Treated hazardous waste residue
- [ ] Explosive process waste
- [ ] Infectious/biological waste
- [ ] Beryllium
- [ ] Asbestos-friable
- [ ] Asbestos-nonfriable
- [ ] Empty containers
- [ ] PCB (<50 ppm)
  - [ ] PCB (50 - 500 ppm)
  - [ ] PCB (> 500 ppm)
  - id. no.: _____
- [X] Not applicable --> describe below

Waste Sources
Check as many as apply.

- [X] Research and development
- [ ] Maintenance
- [ ] Construction
- [ ] Material processing
- [ ] Decon/decom
- [ ] Investigation derived
- [ ] Remediation
- [ ] UST - petroleum
- [ ] UST - non-petroleum
- [ ] Generator treatment
- [ ] Interim/permitted treatment
- [ ] Industrial sludge
- [ ] Sanitary sludge
- [ ] Abatement

Waste Matrix
Check only one.

Gas
- [ ] ≤ 1.5 Atmospheres
- [ ] > 1.5 Atmospheres

Liquid
- [ ] Aqueous
- [X] Organic
- [ ] Inorganic

Solid
- [ ] Powder/ash
- [ ] Solid
- [ ] Absorbed liquid

Matrix Type
Check only one.

- [X] Homogeneous
- [ ] Heterogeneous --> describe below

Waste/Process Description

55 gallon drum - Unpaired - Analysis attached

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☒ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☐ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☒ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☒ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☒ Not applicable

Identify presence of contaminants.

			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Toxicity Characteristic Metals						
Arsenic	☐ None	☐ < 5.0 ppm		to		☐ TCLP ☐ Total
Barium	☐ None	☐ < 100.0 ppm		to		☐ TCLP ☐ Total
Cadmium	☐ None	☐ < 1.0 ppm		to		☐ TCLP ☐ Total
Chromium	☐ None	☐ < 5.0 ppm		to		☐ TCLP ☐ Total
Lead	☐ None	☐ < 5.0 ppm		to		☐ TCLP ☐ Total
Mercury	☐ None	☐ < 0.2 ppm		to		☐ TCLP ☐ Total
Selenium	☐ None	☐ < 1.0 ppm		to		☐ TCLP ☐ Total
Silver	☐ None	☐ < 5.0 ppm		to		☐ TCLP ☐ Total
Toxicity Characteristic Organic Compounds						
Benzene	☐ None	☐ < 0.5 ppm		to		☐ TCLP ☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm		to		☐ TCLP ☐ Total
Chlorobenzene	☐ None	☐ < 100.0 ppm		to		☐ TCLP ☐ Total
Chloroform	☐ None	☐ < 6.0 ppm		to		☐ TCLP ☐ Total
Cresol	☐ None	☐ < 200.0 ppm		to		☐ TCLP ☐ Total
1,4-dichlorobenzene	☐ None	☐ < 7.5 ppm		to		☐ TCLP ☐ Total
1,2-Dichloroethane	☐ None	☐ < 0.5 ppm		to		☐ TCLP ☐ T
1,1-Dichloroethylene	☐ None	☐ < 0.7 ppm		to		☐ TCLP ☐
2,4-Dinitrotoluene	☐ None	☐ < 0.13 ppm		to		☐ TCLP ☐ To
Hexachlorobenzene	☐ None	☐ < 0.13 ppm		to		☐ TCLP ☐ Total
Hexachlorobutadiene	☐ None	☐ < 0.5 ppm		to		☐ TCLP ☐ Total
Hexachloroethane	☐ None	☐ < 3.0 ppm		to		☐ TCLP ☐ Total
Methyl ethyl ketone	☐ None	☐ < 200.0 ppm		to		☐ TCLP ☐ Total
Nitrobenzene	☐ None	☐ < 2.0 ppm		to		☐ TCLP ☐ Total
Pentachlorophenol	☐ None	☐ < 100.0 ppm		to		☐ TCLP ☐ Total
Pyridine	☐ None	☐ < 5.0 ppm		to		☐ TCLP ☐ Total
Perchloroethylene or tetrachloroethylene	☐ None	☐ < 0.7 ppm		to		☐ TCLP ☐ Total
Trichloroethylene	☐ None	☐ < 0.5 ppm		to		☐ TCLP ☐ Total
2,4,5-Trichlorophenol	☐ None	☐ < 400.0 ppm		to		☐ TCLP ☐ Total
2,4,6-Trichlorophenol	☐ None	☐ < 2.0 ppm		to		☐ TCLP ☐ Total
Vinyl chloride	☐ None	☐ < 0.2 ppm		to		☐ TCLP ☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum	Maximum	Unit (ppm or % only)
			to	
			to	
			to	
			to	
			to	
			to	
			to	
			to	
			to	

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
General				
☐ Alpha		to		
☐ Beta		to		
☐ Gamma		to		
TRU radionuclides				
☒ None present				
☐ Am-241		to		
☐ Am-243		to		
☐ Cf-249		to		
☐ Cf-251		to		
☐ Cm-243		to		
☐ Cm-245		to		
☐ Cm-247		to		
☐ Pu-238		to		
☐ Pu-239		to		
☐ Pu-240		to		
☐ Pu-242		to		
Fission products				
☒ None present				
☐ Be-140		to		
☐ Ce-144		to		
☐ Cs-134		to		
☐ Cs-137		to		
☐ I-129		to		
☐ I-133		to		
☐ Kr-85		to		
☐ Nb-95		to		
☐ Ru-106		to		
☐ Sb-125		to		
☐ Sr-90		to		
☐ Tc-99		to		
☐ Zr-93		to		
☐ Zr-95		to		
Activation products				
☒ None present				
☐ As -74		to		
☐ Be-7		to		
☐ C-14		to		
☐ Co-56		to		
☐ Co-57		to		
☐ Co-58		to		
☐ Co-60		to		
☐ Cr-51		to		
☐ Eu-152		to		
☐ Mn-52		to		
☐ Mn-54		to		
☐ Nb-94		to		
☐ Ni-59		to		
☐ Ni-63		to		
☐ Rb-83		to		
☐ Rb-84		to		
☐ Se-75		to		
☐ Sr-82		to		
☐ Sr-85		to		
☐ V-48		to		
☐ Y-88		to		
☐ Zn-65		to		
☐ Zr-88		to		

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
Other				
☒ None present				
☐ Am-242		to		
☐ Bi-207		to		
☐ Bi-210		to		
☐ Cf-250		to		
☐ Cf-252		to		
☐ Cm-244		to		
☐ H-3		to		
☐ Pa-231		to		
☐ Pb-210		to		
☐ Po-210		to		
☐ Pu-236		to		
☐ Pu-241		to		
☐ Ra-226		to		
☐ Ra-228		to		
☐ Th-230		to		
☐ Th-232		to		
☐ U-232		to		
☐ U-233		to		
☐ U-234		to		
☐ U-235		to		
☐ U-236		to		
☐ U-238		to		
Add'l radionuclides				
☒ No additional radionuclides present				
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		

Contamination Type: *Check as many as apply.*

☐ Volume Contamination

☐ Surface Contamination

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Aluminum	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Boron	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Zinc	☐ None	☐ < 95.4 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ **Acid line** ☐ **Caustic line** ☐ **Industrial waste line**

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JDT on 4-Jan-1995

REQUEST NUMBER: 19385 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: XG8M NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.25111 Date Collected: 9/29/94 Date Received: 10/04/94 Date Extracted: Date Analyzed: 10/14/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94DS108	94.25111	67641	< 20.		UG/L	12/22/94	N	Acetone
94DS108	94.25111	71432	< 5.		UG/L	12/22/94	N	Benzene
94DS108	94.25111	108861	< 5.		UG/L	12/22/94	N	Bromobenzene
94DS108	94.25111	74975	< 5.		UG/L	12/22/94	N	Bromochloromethane
94DS108	94.25111	75274	< 5.		UG/L	12/22/94	N	Bromodichloromethane
94DS108	94.25111	75252	< 5.		UG/L	12/22/94	N	Bromoform
94DS108	94.25111	74839	< 10.		UG/L	12/22/94	N	Bromomethane
94DS108	94.25111	78933	< 20.		UG/L	12/22/94	N	2-Butanone
94DS108	94.25111	104518	< 5.		UG/L	12/22/94	N	n-Butylbenzene
94DS108	94.25111	135988	< 5.		UG/L	12/22/94	N	sec-Butylbenzene
94DS108	94.25111	98066	< 5.		UG/L	12/22/94	N	tert-Butylbenzene
94DS108	94.25111	75150	< 5.		UG/L	12/22/94	N	Carbon disulfide
94DS108	94.25111	56235	< 5.		UG/L	12/22/94	N	Carbon tetrachloride
94DS108	94.25111	108907	< 5.		UG/L	12/22/94	N	Chlorobenzene
94DS108	94.25111	124481	< 5.		UG/L	12/22/94	N	Chlorodibromomethane
94DS108	94.25111	75003	< 10.		UG/L	12/22/94	N	Chloroethane
94DS108	94.25111	67663	< 5.		UG/L	12/22/94	N	Chloroform
94DS108	94.25111	74873	< 10.		UG/L	12/22/94	N	Chloromethane
94DS108	94.25111	95498	< 5.		UG/L	12/22/94	N	o-Chlorotoluene
94DS108	94.25111	106434	< 5.		UG/L	12/22/94	N	p-Chlorotoluene
94DS108	94.25111	96128	< 10.		UG/L	12/22/94	N	1,2-Dibromo-3-chloropropane
94DS108	94.25111	74953	< 5.		UG/L	12/22/94	N	Dibromomethane
94DS108	94.25111	95501	< 5.		UG/L	12/22/94	N	o-Dichlorobenzene (1,2)
94DS108	94.25111	541731	< 5.		UG/L	12/22/94	N	m-Dichlorobenzene (1,3)
94DS108	94.25111	106467	< 5.		UG/L	12/22/94	N	p-Dichlorobenzene (1,4)
94DS108	94.25111	75718	< 10.		UG/L	[illegible]/94	N	Dichlorodifluoromethane

********** CST ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94DS108	94.25111	75343	< 5.		UG/L	12/22/94	N	1,1-Dichloroethane
94DS108	94.25111	107062	< 5.		UG/L	12/22/94	N	1,2-Dichloroethane
94DS108	94.25111	75354	< 5.		UG/L	12/22/94	N	1,1-Dichloroethene
94DS108	94.25111	156605	< 5.		UG/L	12/22/94	N	trans-1,2-Dichloroethene
94DS108	94.25111	156592	< 5.		UG/L	12/22/94	N	cis-1,2-Dichloroethylene
94DS108	94.25111	78875	< 5.		UG/L	12/22/94	N	1,2-Dichloropropane
94DS108	94.25111	142289	< 5.		UG/L	12/22/94	N	1,3-Dichloropropane
94DS108	94.25111	594207	< 5.		UG/L	12/22/94	N	2,2-Dichloropropane
94DS108	94.25111	563586	< 5.		UG/L	12/22/94	N	1,1-Dichloropropene
94DS108	94.25111	10061015	< 5.		UG/L	12/22/94	N	cis-1,3-Dichloropropene
94DS108	94.25111	10061026	< 5.		UG/L	12/22/94	N	trans-1,3-Dichloropropene
94DS108	94.25111	100414	< 5.		UG/L	12/22/94	N	Ethylbenzene
94DS108	94.25111	106934	< 5.		UG/L	12/22/94	N	Ethylene dibromide
94DS108	94.25111	591786	< 20.		UG/L	12/22/94	N	2-Hexanone
94DS108	94.25111	98828	< 5.		UG/L	12/22/94	N	Isopropylbenzene
94DS108	94.25111	99876	< 5.		UG/L	12/22/94	N	4-Isopropyltoluene
94DS108	94.25111	74884	< 5.		UG/L	12/22/94	N	Methyl iodide
94DS108	94.25111	108101	< 20.		UG/L	12/22/94	N	4-Methyl-2-pentanone
94DS108	94.25111	75092	< 5.		UG/L	12/22/94	N	Methylene chloride
94DS108	94.25111	103651	< 5.		UG/L	12/22/94	N	Propylbenzene
94DS108	94.25111	100425	< 5.		UG/L	12/22/94	N	Styrene
94DS108	94.25111	630206	< 5.		UG/L	12/22/94	N	1,1,1,2-Tetrachloroethane
94DS108	94.25111	79345	< 5.		UG/L	12/22/94	N	1,1,2,2-Tetrachloroethane
94DS108	94.25111	127184	< 5.		UG/L	12/22/94	N	Tetrachloroethylene
94DS108	94.25111	108883	< 5.		UG/L	12/22/94	N	Toluene
94DS108	94.25111	76131	< 5.		UG/L	12/22/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
94DS108	94.25111	71556	< 5.		UG/L	12/22/94	N	1,1,1-Trichloroethane
94DS108	94.25111	79005	< 5.		UG/L	12/22/94	N	1,1,2-Trichloroethane
94DS108	94.25111	79016	< 5.		UG/L	12/22/94	N	Trichloroethene
94DS108	94.25111	75694	< 5.		UG/L	12/22/94	N	Trichlorofluoromethane
94DS108	94.25111	96184	< 5.		UG/L	12/22/94	N	1,2,3-Trichloropropane
94DS108	94.25111	95636	< 5.		UG/L	12/22/94	N	1,2,4-Trimethylbenzene
94DS108	94.25111	108678	< 5.		UG/L	12/22/94	N	1,3,5-Trimethylbenzene
94DS108	94.25111	75014	< 10.		UG/L	12/22/94	N	Vinyl chloride
94DS108	94.25111	1330207	< 5.		UG/L	12/22/94	N	Mixed-Xylenes (o ± m ± p)

CST-12 VOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TABLE 1. Summary of results of sample analyses for volatiles, dates collected and dates analyzed.

REQUEST NUMBER: 19385

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (mg/L)	LOQ (mg/L)	DATE COLLECTED	DATE ANALYZED
B94.25112	None			NA	13-Oct-94
S94.25110	None		0.2	29-Sep-94	13-Oct-94
B94.25113	None			NA	14-Oct-94
S94.25111	None		0.02	29-Sep-94	14-Oct-94
S94.25109	1,1,1-Trichloroethane	1300000	40000		

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of Quantitation. LOQs normally range between 5 and 20 ug/L, depending on the compound, unless otherwise noted.

NA: Not Applicable

TICs (tentatively identified compounds) were found in the samples submitted.

Note: The results for samples S94.25110 and S94.25111 are for acetone only as requested on the analytical service agreement. The LOQs listed are for acetone. Also note the units (mg/L).

12/21/94

********** CST ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94DS107	94.25110	75343	< 50.		UG/L	12/22/94	N	1,1-Dichloroethane
94DS107	94.25110	107062	< 50.		UG/L	12/22/94	N	1,2-Dichloroethane
94DS107	94.25110	75354	< 50.		UG/L	12/22/94	N	1,1-Dichloroethene
94DS107	94.25110	156605	< 50.		UG/L	12/22/94	N	trans-1,2-Dichloroethene
94DS107	94.25110	156592	< 50.		UG/L	12/22/94	N	cis-1,2-Dichloroethylene
94DS107	94.25110	78875	< 50.		UG/L	12/22/94	N	1,2-Dichloropropane
94DS107	94.25110	142289	< 50.		UG/L	12/22/94	N	1,3-Dichloropropane
94DS107	94.25110	594207	< 50.		UG/L	12/22/94	N	2,2-Dichloropropane
94DS107	94.25110	563586	< 50.		UG/L	12/22/94	N	1,1-Dichloropropene
94DS107	94.25110	10061015	< 50.		UG/L	12/22/94	N	cis-1,3-Dichloropropene
94DS107	94.25110	10061026	< 50.		UG/L	12/22/94	N	trans-1,3-Dichloropropene
94DS107	94.25110	100414	< 50.		UG/L	12/22/94	N	Ethylbenzene
94DS107	94.25110	106934	< 50.		UG/L	12/22/94	N	Ethylene dibromide
94DS107	94.25110	591786	< 200.		UG/L	12/22/94	N	2-Hexanone
94DS107	94.25110	98828	< 50.		UG/L	12/22/94	N	Isopropylbenzene
94DS107	94.25110	99876	< 50.		UG/L	12/22/94	N	4-Isopropyltoluene
94DS107	94.25110	74884	< 50.		UG/L	12/22/94	N	Methyl iodide
94DS107	94.25110	108101	< 200.		UG/L	12/22/94	N	4-Methyl-2-pentanone
94DS107	94.25110	75092	< 50.		UG/L	12/22/94	N	Methylene chloride
94DS107	94.25110	103651	< 50.		UG/L	12/22/94	N	Propylbenzene
94DS107	94.25110	100425	< 50.		UG/L	12/22/94	N	Styrene
94DS107	94.25110	630206	< 50.		UG/L	12/22/94	N	1,1,1,2-Tetrachloroethane
94DS107	94.25110	79345	< 50.		UG/L	12/22/94	N	1,1,2,2-Tetrachloroethane
94DS107	94.25110	127184	< 50.		UG/L	12/22/94	N	Tetrachloroethylene
94DS107	94.25110	108883	< 50.		UG/L	12/22/94	N	Toluene
94DS107	94.25110	76131	< 50.		UG/L	12/22/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
94DS107	94.25110	71556	6800.	2040.	UG/L	12/22/94	N	1,1,1-Trichloroethane
94DS107	94.25110	79005	< 50.		UG/L	12/22/94	N	1,1,2-Trichloroethane
94DS107	94.25110	79016	< 50.		UG/L	12/22/94	N	Trichloroethene
94DS107	94.25110	75694	< 50.		UG/L	12/22/94	N	Trichlorofluoromethane
94DS107	94.25110	96184	< 50.		UG/L	12/22/94	N	1,2,3-Trichloropropane
94DS107	94.25110	95636	< 50.		UG/L	12/22/94	N	1,2,4-Trimethylbenzene
94DS107	94.25110	108678	< 50.		UG/L	12/22/94	N	1,3,5-Trimethylbenzene
94DS107	94.25110	75014	< 100.		UG/L	12/22/94	N	Vinyl chloride
94DS107	94.25110	1330207	< 50.		UG/L	12/22/94	N	Mixed-Xylenes (o ± m ± p)

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JDT on 4-Jan-1995

REQUEST NUMBER: 19385 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: XG8M NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.25110 Date Collected: 9/29/94 Date Received: 10/04/94 Date Extracted: Date Analyzed: 10/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94DS107	94.25110	67641	< 200.		UG/L	12/22/94	N	Acetone
94DS107	94.25110	71432	< 50.		UG/L	12/22/94	N	Benzene
94DS107	94.25110	108861	< 50.		UG/L	12/22/94	N	Bromobenzene
94DS107	94.25110	74975	< 50.		UG/L	12/22/94	N	Bromochloromethane
94DS107	94.25110	75274	< 50.		UG/L	12/22/94	N	Bromodichloromethane
94DS107	94.25110	75252	< 50.		UG/L	12/22/94	N	Bromoform
94DS107	94.25110	74839	< 100.		UG/L	12/22/94	N	Bromomethane
94DS107	94.25110	78933	< 200.		UG/L	12/22/94	N	2-Butanone
94DS107	94.25110	104518	< 50.		UG/L	12/22/94	N	n-Butylbenzene
94DS107	94.25110	135988	< 50.		UG/L	12/22/94	N	sec-Butylbenzene
94DS107	94.25110	98066	< 50.		UG/L	12/22/94	N	tert-Butylbenzene
94DS107	94.25110	75150	< 50.		UG/L	12/22/94	N	Carbon disulfide
94DS107	94.25110	56235	1000.	300.	UG/L	12/22/94	N	Carbon tetrachloride
94DS107	94.25110	108907	< 50.		UG/L	12/22/94	N	Chlorobenzene
94DS107	94.25110	124481	< 50.		UG/L	12/22/94	N	Chlorodibromomethane
94DS107	94.25110	75003	< 100.		UG/L	12/22/94	N	Chloroethane
94DS107	94.25110	67663	< 50.		UG/L	12/22/94	N	Chloroform
94DS107	94.25110	74873	< 100.		UG/L	12/22/94	N	Chloromethane
94DS107	94.25110	95498	< 50.		UG/L	12/22/94	N	o-Chlorotoluene
94DS107	94.25110	106434	< 50.		UG/L	12/22/94	N	p-Chlorotoluene
94DS107	94.25110	96128	< 100.		UG/L	12/22/94	N	1,2-Dibromo-3-chloropropane
94DS107	94.25110	74953	< 50.		UG/L	12/22/94	N	Dibromomethane
94DS107	94.25110	95501	< 50.		UG/L	12/22/94	N	o-Dichlorobenzene (1,2)
94DS107	94.25110	541731	< 50.		UG/L	12/22/94	N	m-Dichlorobenzene (1,3)
94DS107	94.25110	106467	< 50.		UG/L	12/22/94	N	p-Dichlorobenzene (1,4)
94DS107	94.25110	75718	< 100.		UG/L	12/94	N	Dichlorodifluoromethane

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants

			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Aluminum	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP
Boron	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Zinc	☐ None	☐ < 95.4 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		Range maximum	Unit (Cv/g or Cv/l)
General				
☐ Alpha	_____	to	_____	_____
☐ Beta	_____	to	_____	_____
☐ Gamma	_____	to	_____	_____
TRU radionuclides				
☒ None present				
☐ Am-241	_____	to	_____	_____
☐ Am-243	_____	to	_____	_____
☐ Cf-249	_____	to	_____	_____
☐ Cf-251	_____	to	_____	_____
☐ Cm-243	_____	to	_____	_____
☐ Cm-245	_____	to	_____	_____
☐ Cm-247	_____	to	_____	_____
☐ Pu-238	_____	to	_____	_____
☐ Pu-239	_____	to	_____	_____
☐ Pu-240	_____	to	_____	_____
☐ Pu-242	_____	to	_____	_____
Fission products				
☒ None present				
☐ Ba-140	_____	to	_____	_____
☐ Ce-144	_____	to	_____	_____
☐ Cs-134	_____	to	_____	_____
☐ Cs-137	_____	to	_____	_____
☐ I-129	_____	to	_____	_____
☐ I-133	_____	to	_____	_____
☐ Kr-85	_____	to	_____	_____
☐ Nb-95	_____	to	_____	_____
☐ Ru-106	_____	to	_____	_____
☐ Sb-125	_____	to	_____	_____
☐ Sr-90	_____	to	_____	_____
☐ Tc-99	_____	to	_____	_____
☐ Zr-93	_____	to	_____	_____
☐ Zr-95	_____	to	_____	_____
Activation products				
☒ None present				
☐ As -74	_____	to	_____	_____
☐ Be-7	_____	to	_____	_____
☐ C-14	_____	to	_____	_____
☐ Co-56	_____	to	_____	_____
☐ Co-57	_____	to	_____	_____
☐ Co-58	_____	to	_____	_____
☐ Co-60	_____	to	_____	_____
☐ Cr-51	_____	to	_____	_____
☐ Eu-152	_____	to	_____	_____
☐ Mn-52	_____	to	_____	_____
☐ Mn-54	_____	to	_____	_____
☐ Nb-94	_____	to	_____	_____
☐ Ni-59	_____	to	_____	_____
☐ Ni-63	_____	to	_____	_____
☐ Rb-83	_____	to	_____	_____
☐ Rb-84	_____	to	_____	_____
☐ Se-75	_____	to	_____	_____
☐ Sr-82	_____	to	_____	_____
☐ Sr-85	_____	to	_____	_____
☐ V-48	_____	to	_____	_____
☐ Y-88	_____	to	_____	_____
☐ Zn-65	_____	to	_____	_____
☐ Zr-88	_____	to	_____	_____

	Range minimum		Range maximum	Unit (Cv/g or Cv/l)
Other				
☒ None present				
☐ Am-242	_____	to	_____	_____
☐ Bi-207	_____	to	_____	_____
☐ Bi-210	_____	to	_____	_____
☐ Cf-250	_____	to	_____	_____
☐ Cf-252	_____	to	_____	_____
☐ Cm-244	_____	to	_____	_____
☐ H-3	_____	to	_____	_____
☐ Pa-231	_____	to	_____	_____
☐ Pb-210	_____	to	_____	_____
☐ Po-210	_____	to	_____	_____
☐ Pu-236	_____	to	_____	_____
☐ Pu-241	_____	to	_____	_____
☐ Ra-226	_____	to	_____	_____
☐ Ra-228	_____	to	_____	_____
☐ Th-230	_____	to	_____	_____
☐ Th-232	_____	to	_____	_____
☐ U-232	_____	to	_____	_____
☐ U-233	_____	to	_____	_____
☐ U-234	_____	to	_____	_____
☐ U-235	_____	to	_____	_____
☐ U-236	_____	to	_____	_____
☐ U-238	_____	to	_____	_____
Add'l radionuclides				
☒ No additional radionuclides present				
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination

☐ Surface Contamination

Form 1346 (11/94)

Tentatively Identified Compounds in Customer Sample # 94.25110

none

CST-12 VOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TABLE 1. Summary of results of sample analyses for volatiles, dates collected and dates analyzed.

REQUEST NUMBER: 20278

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/L)	LOQ (ug/L)	DATE COLLECTED	DATE ANALYZED
B94.30610	None			NA	12-Dec-94
B94.30611	None			NA	13-Dec-94
S94.30609	Acetone	2500	2000	16-Nov-94	12-Dec-94 & 13-Dec-94
	Methylene Chloride	2100	500		
	Toluene	4100	500		
	Tetrachloroethene	550	500		

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of Quantitation. LOQs normally range between 5 and 20 ug/L, depending on the compound, unless otherwise noted.

NA: Not Applicable

TICs (tentatively identified compounds) were found in the samples reported here.

82
1/4/95

LOS ALAMOS NATIONAL LABORATORY
HEALTH, SAFETY AND ENVIRONMENT DIVISION
HSE-9
SURROGATE RECOVERIES FOR VOLATILES
IN WATER TYPE MATRICES

REQUEST #: 20278

NUMBER OF SAMPLES: 3
MATRIX NOL
ANALYST: MG
Date: 01/03/95

SURROGATE RECOVERIES

SURROGATE RECOVERIES IN PERCENT (%)

	SAMPLE NUMBERS	TYPE	d4-1,2-dichloroethane	toluene-(d8)	4-bromofluorobenzene.
1	894.30610	BLANK	95	95	98
2	894.30611	BLANK	87	107	100
3	894.30609	SAMPLE	92	98	140 *
4					
5					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Average % Surrogate Recovery...	92	100	112
Defined Lower QC Limits (%)....	67	76	77
Defined Upper QC Limits (%)....	149	119	133
Observed Lower QC Limits (%)...	87	95	98
Observed Upper QC Limits (%)...	95	107	140

80
1/4/95

If % Surrogate Recovery is Followed by a "*", it is out of QC Limits.

Reviewed By:

LOS ALAMOS NATIONAL LABORATORY
HEALTH, SAFETY AND ENVIRONMENT DIVISION
HSE-9
MATRIX SPIKE RECOVERIES FOR VOLATILES

		DRY WT/VOL (G or ML)	DILUTION FACTOR	AMOUNT SPIKED	LOQ (UG/KG OR UG/
REQUEST #:	20278				
NUMBER OF SAMPLES:	3				
SPIKE ID: (STARTS M OR E)		SPIKE	ERR	ERR	
SPIKE DUP ID: (STARTS D OR F)		SPIKE-DUP	ERR	ERR	
RAW DATA WITH:	—				
ANALYST:	MG				

	SPIKE REC.	SPIKE-DUP REC.	SPIKE % REC.	SPIKE-DUP % REC.	RPD	LOW. REC. LIM.	UPP. REC. LIM.	RPD LIM.
1-Dichlorethene	<LOQ	<LOQ			ERR	61	145	14
Benzene	<LOQ	<LOQ			ERR	76	127	11
Trichlorethene	<LOQ	<LOQ			ERR	71	120	14
Toluene	<LOQ	<LOQ			ERR	76	125	13
Chlorobenzene	<LOQ	<LOQ			ERR	75	130	13

82
1/4/95

"*" If % Matrix Recovery is Followed by a "*", it is out of QC Limits.

Reviewed By:

REPORT NUMBER: 30672

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JDT on 6-Jan-1995

REQUEST NUMBER: 20278 MATRIX: NOL . ANALYST: MICHAEL GUTTMAN PROGRAM CODE: KB12 NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-8792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3MD

Customer Sample Results, Sample # 94.30609 Date Collected: 11/16/94 Date Received: 11/21/94 Date Extracted: Date Analyzed: 12/12/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94.DS129	94.30609	67641	2500.	750.	UG/L	1/04/95	N	Acetone
94.DS129	94.30609	71432	< 500.		UG/L	1/04/95	N	Benzene
94.DS129	94.30609	108861	< 500.		UG/L	1/04/95	N	Bromobenzene
94.DS129	94.30609	74975	< 500.		UG/L	1/04/95	N	Bromochloromethane
94.DS129	94.30609	75274	< 500.		UG/L	1/04/95	N	Bromodichloromethane
94.DS129	94.30609	75252	< 500.		UG/L	1/04/95	N	Bromoform
94.DS129	94.30609	74839	< 1000.		UG/L	1/04/95	N	Bromomethane
94.DS129	94.30609	78933	< 2000.		UG/L	1/04/95	N	2-Butanone
94.DS129	94.30609	104518	< 500.		UG/L	1/04/95	N	n-Butylbenzene
94.DS129	94.30609	135988	< 500.		UG/L	1/04/95	N	sec-Butylbenzene
94.DS129	94.30609	98066	< 500.		UG/L	1/04/95	N	tert-Butylbenzene
94.DS129	94.30609	75150	< 500.		UG/L	1/04/95	N	Carbon disulfide
94.DS129	94.30609	56235	< 500.		UG/L	1/04/95	N	Carbon tetrachloride
94.DS129	94.30609	108907	< 500.		UG/L	1/04/95	N	Chlorobenzene
94.DS129	94.30609	124481	< 500.		UG/L	1/04/95	N	Chlorodibromomethane
[illegible]	[illegible]	[illegible]	< 1000.		UG/L	1/04/95	N	Chloroethane
[illegible]	[illegible]	[illegible]	< 500.		UG/L	1/04/95	N	Chloroform
[illegible]	[illegible]	[illegible]	< 1000.		UG/L	1/04/95	N	Chloromethane
[illegible]	[illegible]	[illegible]	< 500.		UG/L	1/04/95	N	o-Chlorotoluene
94.DS129	94.30609	106434	< 500.		UG/L	1/04/95	N	p-Chlorotoluene
94.DS129	94.30609	96128	< 1000.		UG/L	1/04/95	N	1,2-Dibromo-3-chloropropane
94.DS129	94.30609	74953	< 500.		UG/L	1/04/95	N	Dibromomethane
94.DS129	94.30609	95501	< 500.		UG/L	1/04/95	N	o-Dichlorobenzene (1,2)
94.DS129	94.30609	541731	< 500.		UG/L	1/04/95	N	m-Dichlorobenzene (1,3)
94.DS129	94.30609	106467	< 500.		UG/L	1/04/95	N	p-Dichlorobenzene (1,4)
94.DS129	94.30609	75718	< 1000.		UG/L	1/04/95	N	Dichlorodifluoromethane

********** CST ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94.DS129	94.30609	75343	< 500.		UG/L	1/04/95	N	1,1-Dichloroethane
94.DS129	94.30609	107062	< 500.		UG/L	1/04/95	N	1,2-Dichloroethane
94.DS129	94.30609	75354	< 500.		UG/L	1/04/95	N	1,1-Dichloroethene
94.DS129	94.30609	156605	< 500.		UG/L	1/04/95	N	trans-1,2-Dichloroethene
94.DS129	94.30609	156592	< 500.		UG/L	1/04/95	N	cis-1,2-Dichloroethylene
94.DS129	94.30609	78875	< 500.		UG/L	1/04/95	N	1,2-Dichloropropane
94.DS129	94.30609	142289	< 500.		UG/L	1/04/95	N	1,3-Dichloropropane
94.DS129	94.30609	594207	< 500.		UG/L	1/04/95	N	2,2-Dichloropropane
94.DS129	94.30609	563586	< 500.		UG/L	1/04/95	N	1,1-Dichloropropene
94.DS129	94.30609	10061015	< 500.		UG/L	1/04/95	N	cis-1,3-Dichloropropene
94.DS129	94.30609	10061026	< 500.		UG/L	1/04/95	N	trans-1,3-Dichloropropene
94.DS129	94.30609	100414	< 500.		UG/L	1/04/95	N	Ethylbenzene
94.DS129	94.30609	106934	< 500.		UG/L	1/04/95	N	Ethylene dibromide
94.DS129	94.30609	591786	< 2000.		UG/L	1/04/95	N	2-Hexanone
94.DS129	94.30609	98828	< 500.		UG/L	1/04/95	N	Isopropylbenzene
94.DS129	94.30609	99876	< 500.		UG/L	1/04/95	N	4-Isopropyltoluene
94.DS129	94.30609	74884	< 500.		UG/L	1/04/95	N	Methyl iodide
94.DS129	94.30609	108101	< 2000.		UG/L	1/04/95	N	4-Methyl-2-pentanone
94.DS129	94.30609	75092	2100.	630.	UG/L	1/04/95	N	Methylene chloride
94.DS129	94.30609	103651	< 500.		UG/L	1/04/95	N	Propylbenzene
94.DS129	94.30609	100425	< 500.		UG/L	1/04/95	N	Styrene
94.DS129	94.30609	630206	< 500.		UG/L	1/04/95	N	1,1,1,2-Tetrachloroethane
94.DS129	94.30609	79345	< 500.		UG/L	1/04/95	N	1,1,2,2-Tetrachloroethane
94.DS129	94.30609	127184	550.	165.	UG/L	1/04/95	N	Tetrachloroethylene
94.DS129	94.30609	108883	4100.	1230.	UG/L	1/04/95	N	Toluene
94.DS129	94.30609	76131	< 500.		UG/L	1/04/95	N	1,1,2-Trichloro-1,2,2-trifluoroethane
94.DS129	94.30609	71556	< 500.		UG/L	1/04/95	N	1,1,1-Trichloroethane
94.DS129	94.30609	79005	< 500.		UG/L	1/04/95	N	1,1,2-Trichloroethane
94.DS129	94.30609	79016	< 500.		UG/L	1/04/95	N	Trichloroethene
94.DS129	94.30609	75694	< 500.		UG/L	1/04/95	N	Trichlorofluoromethane
94.DS129	94.30609	96184	< 500.		UG/L	1/04/95	N	1,2,3-Trichloropropane
94.DS129	94.30609	95636	< 500.		UG/L	1/04/95	N	1,2,4-Trimethylbenzene
94.DS129	94.30609	108678	< 500.		UG/L	1/04/95	N	1,3,5-Trimethylbenzene
94.DS129	94.30609	75014	< 1000.		UG/L	1/04/95	N	Vinyl chloride
94.DS129	94.30609	1330207	< 500.		UG/L	1/04/95	N	Mixed-Xylenes (o + m + p)

Tentatively Identified Compounds in Customer Sample # 96.30609

none

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
94.25109	%	102.86	100.52	102.68		0.0	22-Dec-1994	
94.25110	%	137.24	102.62	99.16		0.0	22-Dec-1994	
94.25111	%	102.16	100.46	102.8		0.0	22-Dec-1994	
94.25112	%	113.04	105.78	98.04		0.0	22-Dec-1994	B
94.25113	%	102.66	100.58	101.94		0.0	22-Dec-1994	B
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 30562

Analyst	Reviewer	Team Leader	QA Officer
Michael Guttman	Judy Drayton		mag
1/4/95	1/4/95		1/4/95
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

******** ********** **********

Tentatively Identified Compounds in Customer Sample # 94.25111

none

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information		Reference Number
	For rapid processing, complete **all sections** in black or blue ink and mail this form to Waste Services Group at MS J579	

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber
Chet Shenck			

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room
EM-11	5-6443	C931	16	207	102

Waste Accumulation
Check as many as apply.

- [x] Satellite accumulation area --> site no.: _____
- [ ] Less than 90 day accumulation area --> site no.: _____
- [ ] Radioactive Materials Management Area (RMMA) --> site no.: _____
- [ ] None of the above

Method of Characterization
Check as many as apply.

- [ ] Knowledge of Process (KOP)
- [x] Analysis attached --> sample/request no. 94D5107
- [ ] MSDS attached
- [ ] Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- [ ] Unused/unspent chemical
  Check *Waste Classes* and *Associated Documentation* Only
- [x] Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- [ ] On-going generation
- [x] One-time generation
- [ ] Radioactive (complete Sec. 2)
- [x] Non-radioactive
- [ ] Wastewater (complete Sec. 3)
- [ ] Classified/Sensitive

Associated Documentation
Check as many as apply.

- [ ] Process SOP --> no.: ____
- [ ] RMMA OP --> no.: ____
- [ ] WM SOP --> no.: ____
- [ ] Other --> ____
- [x] None --> describe below

Waste Category
Check as many as apply.

- [ ] Solvent
- [ ] Degreaser
- [ ] Dioxin
- [ ] Electroplating
- [ ] Treated hazardous waste residue
- [ ] Explosive process waste
- [ ] Infectious/biological waste
- [ ] Beryllium
- [ ] Asbestos-friable
- [ ] Asbestos-nonfriable
- [ ] Empty containers
- [ ] PCB (<50 ppm)
  - [ ] PCB (50 - 500 ppm)
  - [ ] PCB (> 500 ppm)
  - id. no. : _____
- [x] Not applicable --> describe below

Waste Sources
Check as many as apply.

- [x] Research and development
- [ ] Maintenance
- [ ] Construction
- [ ] Material processing
- [ ] Decon/decom
- [ ] Investigation derived
- [ ] Remediation
- [ ] UST - petroleum
- [ ] UST - non-petroleum
- [ ] Generator treatment
- [ ] Interim/permitted treatment
- [ ] Industrial sludge
- [ ] Sanitary sludge
- [ ] Abatement

Waste Matrix
Check only one.

Gas

- [ ] ≤ 1.5 Atmospheres
- [ ] > 1.5 Atmospheres

Liquid

- [ ] Aqueous
- [x] Organic
- [ ] Inorganic

Solid

- [ ] Powder/ash
- [ ] Solid
- [ ] Absorbed liquid

Matrix Type
Check only one.

- [x] Homogeneous
- [ ] Heterogeneous --> describe below

Waste/Process Description

55 gallon drum marked "Acetone" w/ small amount of free liquid in drum. Also [illegible] [illegible] - organic waste. Analysis attached

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☒ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☐ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☒ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☒ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☒ > 95
- ☐ Not applicable

Identify presence of contaminants.

			Minimum		Maximum	Unit (ppm or % only)	Analytical method	
Toxicity Characteristic Metals								
Arsenic	☐ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Barium	☐ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Cadmium	☐ None	☐ < 1.0 ppm		to			☐ TCLP	☐ Total
Chromium	☐ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Lead	☐ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Mercury	☐ None	☐ < 0.2 ppm		to			☐ TCLP	☐ Total
Selenium	☐ None	☐ < 1.0 ppm		to			☐ TCLP	☐ Total
Silver	☐ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Toxicity Characteristic Organic Compounds								
Benzene	☒ None	☐ < 0.5 ppm	.7	to	1.3	ppm	☐ TCLP	☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
Chlorobenzene	☒ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Chloroform	☒ None	☐ < 6.0 ppm		to			☐ TCLP	☐ Total
Cresol	☒ None	☐ < 200.0 ppm		to			☐ TCLP	☐ Total
1,4-dichlorobenzene	☒ None	☐ < 7.5 ppm		to			☐ TCLP	☐ Total
1,2-Dichloroethane	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
1,1-Dichloroethylene	☒ None	☐ < 0.7 ppm		to			☐ TCLP	☐ Total
2,4-Dinitrotoluene	☒ None	☐ < 0.13 ppm		to			☐ TCLP	☐ Total
Hexachlorobenzene	☒ None	☐ < 0.13 ppm		to			☐ TCLP	☐ Total
Hexachlorobutadiene	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
Hexachloroethane	☒ None	☐ < 3.0 ppm		to			☐ TCLP	☐ Total
Methyl ethyl ketone	☒ None	☐ < 200.0 ppm		to			☐ TCLP	☐ Total
Nitrobenzene	☒ None	☐ < 2.0 ppm		to			☐ TCLP	☐ Total
Pentachlorophenol	☒ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Pyridine	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Perchloroethylene or tetrachloroethylene	☒ None	☐ < 0.7 ppm		to			☐ TCLP	☐ Total
Trichloroethylene	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
2,4,5-Trichlorophenol	☒ None	☐ < 400.0 ppm		to			☐ TCLP	☐ Total
2,4,6-Trichlorophenol	☒ None	☐ < 2.0 ppm		to			☐ TCLP	☐ Total
Vinyl chloride	☒ None	☐ < 0.2 ppm		to			☐ TCLP	☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum		Maximum	Unit (ppm or % only)
1,1,1-trichloroethane		4.760	to	8.840	ppm
			to		
			to		
			to		
			to		
			to		
			to		
			to		
			to		

Form 1348 (11/94)

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
94.30609	%	92.42	97.52	140.14		0.0	4-Jan-1995	
94.30610	%	95.42	94.6	97.62		0.0	4-Jan-1995	B
94.30611	%	87.06	107.46	99.58		0.0	4-Jan-1995	B
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 30672

Analyst — Reviewer — Team Leader — QA Officer

1/6/95 — 1/6/95 — 1/6/95 — 1/6/95

Date — Date — Date — Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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********** EN-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

REPORT NUMBER: 30672

********** EN-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30611	79005	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2-Trichloroethane
00.30367	94.30611	79016	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Trichloroethene
00.30367	94.30611	75694	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Trichlorofluoromethane
00.30367	94.30611	96184	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2,3-Trichloropropane
00.30367	94.30611	95636	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30367	94.30611	108678	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30367	94.30611	75014	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Vinyl chloride
00.30367	94.30611	1330207	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Mixed-Xylenes (o + m + p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EN-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30611	74873	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Chloromethane
00.30367	94.30611	95498	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	o-Chlorotoluene
00.30367	94.30611	106434	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	p-Chlorotoluene
00.30367	94.30611	96128	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dibromo-3-chloropropane
00.30367	94.30611	74953	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Dibromomethane
00.30367	94.30611	95501	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30367	94.30611	541731	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30367	94.30611	106467	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30367	94.30611	75718	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Dichlorodifluoromethane
00.30367	94.30611	75343	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloroethane
00.30367	94.30611	107062	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dichloroethane
00.30367	94.30611	75354	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloroethene
00.30367	94.30611	156605	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	trans-1,2-Dichloroethene
00.30367	94.30611	156592	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30367	94.30611	78875	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dichloropropane
00.30367	94.30611	142289	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,3-Dichloropropane
00.30367	94.30611	594207	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	2,2-Dichloropropane
00.30367	94.30611	563586	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloropropene
00.30367	94.30611	10061015	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	cis-1,3-Dichloropropene
00.30367	94.30611	10061026	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	trans-1,3-Dichloropropene
00.30367	94.30611	100414	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Ethylbenzene
00.30367	94.30611	106934	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Ethylene dibromide
00.30367	94.30611	591786	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	2-Hexanone
00.30367	94.30611	98828	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Isopropylbenzene
00.30367	94.30611	99876	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	4-Isopropyltoluene
00.30367	94.30611	74884	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Methyl iodide
00.30367	94.30611	108101	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	4-Methyl-2-pentanone
00.30367	94.30611	75092	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Methylene chloride
00.30367	94.30611	103651	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Propylbenzene
00.30367	94.30611	100425	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Styrene
00.30367	94.30611	630206	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30367	94.30611	79345	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30367	94.30611	127184	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Tetrachloroethylene
00.30367	94.30611	108883	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Toluene
00.30367	94.30611	76131	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethe
00.30367	94.30611	71556	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,1-Trichloroethane

REPORT NUMBER: 30672

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30610	95636	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30367	94.30610	108678	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30367	94.30610	75014	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Vinyl chloride
00.30367	94.30610	1330207	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Mixed-Xylenes (o + m + p)

Blank Results, Sample # 94.30611 Date Collected: 11/16/94 Date Received: 11/21/94 Date Extracted: Date Analyzed: 12/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30611	67641	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	Acetone
00.30367	94.30611	71432	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Benzene
00.30367	94.30611	108861	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromobenzene
00.30367	94.30611	74975	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromochloromethane
00.30367	94.30611	75274	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromodichloromethane
00.30367	94.30611	75252	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromoform
00.30367	94.30611	74839	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromomethane
00.30367	94.30611	78933	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	2-Butanone
00.30367	94.30611	104518	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	n-Butylbenzene
00.30367	94.30611	135988	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	sec-Butylbenzene
00.30367	94.30611	98066	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	tert-Butylbenzene
00.30367	94.30611	75150	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Carbon disulfide
00.30367	94.30611	56235	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Carbon tetrachloride
00.30367	94.30611	108907	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Chlorobenzene
00.30367	94.30611	124481	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Chlorodibromomethane
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	Chloroethane
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	Chloroform

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30610	74953	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Dibromomethane
00.30367	94.30610	95501	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30367	94.30610	541731	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30367	94.30610	106467	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30367	94.30610	75718	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Dichlorodifluoromethane
00.30367	94.30610	75343	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloroethane
00.30367	94.30610	107062	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dichloroethane
00.30367	94.30610	75354	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloroethene
00.30367	94.30610	156605	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	trans-1,2-Dichloroethene
00.30367	94.30610	156592	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30367	94.30610	78875	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dichloropropane
00.30367	94.30610	142289	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,3-Dichloropropane
00.30367	94.30610	594207	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	2,2-Dichloropropane
00.30367	94.30610	563586	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1-Dichloropropene
00.30367	94.30610	10061015	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	cis-1,3-Dichloropropene
00.30367	94.30610	10061026	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	trans-1,3-Dichloropropene
00.30367	94.30610	100414	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Ethylbenzene
00.30367	94.30610	106934	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Ethylene dibromide
00.30367	94.30610	591786	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	2-Hexanone
00.30367	94.30610	98828	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Isopropylbenzene
00.30367	94.30610	99876	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	4-Isopropyltoluene
00.30367	94.30610	74884	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Methyl iodide
00.30367	94.30610	108101	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	4-Methyl-2-pentanone
00.30367	94.30610	75092	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Methylene chloride
00.30367	94.30610	103651	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Propylbenzene
00.30367	94.30610	100425	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Styrene
00.30367	94.30610	630206	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30367	94.30610	79345	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30367	94.30610	127184	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Tetrachloroethylene
00.30367	94.30610	108883	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Toluene
00.30367	94.30610	76131	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethe
00.30367	94.30610	71556	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,1-Trichloroethane
00.30367	94.30610	79005	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,1,2-Trichloroethane
00.30367	94.30610	79016	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Trichloroethene
00.30367	94.30610	75694	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Trichlorofluoromethane
00.30367	94.30610	96184	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2,3-Trichloropropane

********** EN-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: JDT on 6-Jan-1995

REQUEST NUMBER: 20278 MATRIX: SOIL ANALYST: MICHAEL GUTTMAN PROGRAM CODE: KB12 NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-8792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.30610 Date Collected: 11/16/94 Date Received: 11/21/94 Date Extracted: Date Analyzed: 12/12/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	94.30610	67641	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	Acetone
00.30367	94.30610	71432	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Benzene
00.30367	94.30610	108861	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromobenzene
00.30367	94.30610	74975	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromochloromethane
00.30367	94.30610	75274	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromodichloromethane
00.30367	94.30610	75252	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromoform
00.30367	94.30610	74839	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Bromomethane
00.30367	94.30610	78933	< 20.		UG/L	0.0		1/04/95	UNDER CONTROL	2-Butanone
00.30367	94.30610	104518	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	n-Butylbenzene
00.30367	94.30610	135988	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	sec-Butylbenzene
00.30367	94.30610	98066	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	tert-Butylbenzene
00.30367	94.30610	75150	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Carbon disulfide
00.30367	94.30610	56235	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Carbon tetrachloride
00.30367	94.30610	108907	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Chlorobenzene
00.30367	94.30610	124481	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Chlorodibromomethane
00.30367	94.30610	75003	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Chloroethane
00.30367	94.30610	67663	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	Chloroform
00.30367	94.30610	74873	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	Chloromethane
00.30367	94.30610	95498	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	o-Chlorotoluene
00.30367	94.30610	[illegible]	< 5.		UG/L	0.0		1/04/95	UNDER CONTROL	p-Chlorotoluene
00.30367	94.30610	[illegible]	< 10.		UG/L	0.0		1/04/95	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: JDT on 4-Jan-1995

REQUEST NUMBER: 19385 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: XG8M NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.25112 Date Collected: 9/29/94 Date Received: 10/04/94 Date Extracted: Date Analyzed: 10/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25112	67641	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	Acetone
00.20226	94.25112	71432	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Benzene
00.20226	94.25112	108861	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromobenzene
00.20226	94.25112	74975	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromochloromethane
00.20226	94.25112	75274	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromodichloromethane
00.20226	94.25112	75252	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromoform
00.20226	94.25112	74839	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromomethane
00.20226	94.25112	78933	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	2-Butanone
00.20226	94.25112	104518	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	n-Butylbenzene
00.20226	94.25112	135988	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	sec-Butylbenzene
00.20226	94.25112	98066	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	tert-Butylbenzene
00.20226	94.25112	75150	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Carbon disulfide
00.20226	94.25112	56235	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Carbon tetrachloride
00.20226	94.25112	108907	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chlorobenzene
00.20226	94.25112	124481	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chlorodibromomethane
00.20226	94.25112	75003	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloroethane
00.20226	94.25112	67663	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloroform
00.20226	94.25112	74873	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloromethane
00.20226	94.25112	95498	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	o-Chlorotoluene
00.20226	94.25112	106434	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	p-Chlorotoluene
00.20226	94.25112	96128	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25112	74953	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Dibromomethane
00.20226	94.25112	95501	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.25112	541731	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.25112	106467	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.25112	75718	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Dichlorodifluoromethane
00.20226	94.25112	75343	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloroethane
00.20226	94.25112	107062	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dichloroethane
00.20226	94.25112	75354	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloroethene
00.20226	94.25112	156605	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.20226	94.25112	156592	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.20226	94.25112	78875	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dichloropropane
00.20226	94.25112	142289	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,3-Dichloropropane
00.20226	94.25112	594207	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	2,2-Dichloropropane
00.20226	94.25112	563586	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloropropene
00.20226	94.25112	10061015	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.20226	94.25112	10061026	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.20226	94.25112	100414	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Ethylbenzene
00.20226	94.25112	106934	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Ethylene dibromide
00.20226	94.25112	591786	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	2-Hexanone
00.20226	94.25112	98828	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Isopropylbenzene
00.20226	94.25112	99876	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	4-Isopropyltoluene
00.20226	94.25112	74884	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Methyl iodide
00.20226	94.25112	108101	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	4-Methyl-2-pentanone
00.20226	94.25112	75092	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Methylene chloride
00.20226	94.25112	103651	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Propylbenzene
00.20226	94.25112	100425	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Styrene
00.20226	94.25112	630206	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.20226	94.25112	79345	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.20226	94.25112	127184	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Tetrachloroethylene
00.20226	94.25112	108883	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Toluene
00.20226	94.25112	76131	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.20226	94.25112	71556	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,1-Trichloroethane
00.20226	94.25112	79005	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2-Trichloroethane
00.20226	94.25112	79016	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Trichloroethene
00.20226	94.25112	75694	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Trichlorofluoromethane
00.20226	94.25112	96184	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25112	95636	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.20226	94.25112	108678	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.20226	94.25112	75014	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Vinyl chloride
00.20226	94.25112	1330207	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Results, Sample # 94.25113 Date Collected: 9/29/94 Date Received: 10/04/94 Date Extracted: Date Analyzed: 10/14/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25113	67641	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	Acetone
00.20226	94.25113	71432	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Benzene
00.20226	94.25113	108861	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromobenzene
00.20226	94.25113	74975	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromochloromethane
00.20226	94.25113	75274	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromodichloromethane
00.20226	94.25113	75252	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromoform
00.20226	94.25113	74839	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Bromomethane
00.20226	94.25113	78933	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	2-Butanone
00.20226	94.25113	104518	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	n-Butylbenzene
00.20226	94.25113	135988	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	sec-Butylbenzene
00.20226	94.25113	98066	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	tert-Butylbenzene
00.20226	94.25113	75150	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Carbon disulfide
00.20226	94.25113	56235	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Carbon tetrachloride
00.20226	94.25113	108907	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chlorobenzene
00.20226	94.25113	124481	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chlorodibromomethane
00.20226	94.25113	75003	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloroethane
00.20226	94.25113	67663	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloroform

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25113	74873	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Chloromethane
00.20226	94.25113	95498	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	o-Chlorotoluene
00.20226	94.25113	106434	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	p-Chlorotoluene
00.20226	94.25113	96128	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
00.20226	94.25113	74953	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Dibromomethane
00.20226	94.25113	95501	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.25113	541731	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.25113	106467	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.25113	75718	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Dichlorodifluoromethane
00.20226	94.25113	75343	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloroethane
00.20226	94.25113	107062	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dichloroethane
00.20226	94.25113	75354	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloroethene
00.20226	94.25113	156605	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.20226	94.25113	156592	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.20226	94.25113	78875	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2-Dichloropropane
00.20226	94.25113	142289	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,3-Dichloropropane
00.20226	94.25113	594207	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	2,2-Dichloropropane
00.20226	94.25113	563586	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1-Dichloropropene
00.20226	94.25113	10061015	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.20226	94.25113	10061026	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.20226	94.25113	100414	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Ethylbenzene
00.20226	94.25113	106934	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Ethylene dibromide
00.20226	94.25113	591786	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	2-Hexanone
00.20226	94.25113	98828	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Isopropylbenzene
00.20226	94.25113	99876	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	4-Isopropyltoluene
00.20226	94.25113	74884	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Methyl iodide
00.20226	94.25113	108101	< 20.		UG/L	0.0		12/22/94	UNDER CONTROL	4-Methyl-2-pentanone
00.20226	94.25113	75092	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Methylene chloride
00.20226	94.25113	103651	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Propylbenzene
00.20226	94.25113	100425	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Styrene
00.20226	94.25113	630206	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.20226	94.25113	79345	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.20226	94.25113	127184	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Tetrachloroethylene
00.20226	94.25113	108883	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Toluene
00.20226	94.25113	76131	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.20226	94.25113	71556	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,1-Trichloroethane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.25113	79005	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,1,2-Trichloroethane
00.20226	94.25113	79016	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Trichloroethene
00.20226	94.25113	75694	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Trichlorofluoromethane
00.20226	94.25113	96184	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2,3-Trichloropropane
00.20226	94.25113	95636	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.20226	94.25113	108678	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.20226	94.25113	75014	< 10.		UG/L	0.0		12/22/94	UNDER CONTROL	Vinyl chloride
00.20226	94.25113	1330207	< 5.		UG/L	0.0		12/22/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC CHEMISTRY
VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: Michael Guttman Date Reported: 11/30/94

Request Number: 19395

Type of Anomaly (circle appropriate choices or describe):

Surrogate recovery	Retention time shift	Missed holding time
Internal standard response	(Calibration QC)	Sample matrix effect
Other (describe):		

Description: Include sample numbers, dates, etc., as appropriate.

The average response factor for Bromoform from the initial calibration run on 11-OCT-1994 was outside of criteria. The minimum allowable RF for Bromoform is 0.250; the actual RF for this initial calibration was listed as 0.250, but it was flagged by the software as being out of criteria (it was rounded up to 0.250 by the software but was actually just < 0.250; (0.2495 - 0.2499)). This calibration was used for samples run on 11-OCT, 12-OCT, and 13-OCT-1994

Corrective actions taken and disposition of affected data: Include dates taken or a schedule. If problem is ongoing, address actions taken/to be taken to prevent recurrence.

The purge time was increased on 14-OCT-1994 and the purge flow was set to 40 mL/min in an effort to prevent a recurrence of the problem. However, the slightly low RF should not have much effect on the quantitation of Bromoform found in any samples run under this calibration curve. Bromoform was not found in any of the samples associated with this request number, so the data is okay

Corrective actions taken by: Michael Guttman Date: 11/30/94

SJ
12/21/94

LOS ALAMOS NATIONAL LABORATORY
HEALTH, SAFETY AND ENVIRONMENT DIVISION
HSE-9
MATRIX SPIKE RECOVERIES FOR VOLATILES

		DRY WT/VOL (G or ML)	DILUTION FACTOR	AMOUNT SPIKED	LOQ (UG/KG OR UG/
REQUEST #:	19385				
NUMBER OF SAMPLES:	5				
SPIKE ID: (STARTS M OR E)		SPIKE	ERR	ERR	
SPIKE DUP ID: (STARTS D OR F)		SPIKE-DUP	ERR	ERR	
RAW DATA WITH:	---				
ANALYST:	MG				

	SPIKE REC.	SPIKE-DUP REC.	SPIKE % REC.	SPIKE-DUP % REC.	RPD	LOW. REC. LIM.	UPP. REC. LIM.	RPD LIM.
1,1-Dichlorethene	<LOQ	<LOQ			ERR	61	145	14
Benzene	<LOQ	<LOQ			ERR	76	127	11
Trichlorethene	<LOQ	<LOQ			ERR	71	120	14
Toluene	<LOQ	<LOQ			ERR	76	125	13
Chlorobenzene	<LOQ	<LOQ			ERR	75	130	13

If % Matrix Recovery is Followed by a "*", it is out of QC Limits.

12/21/94

Reviewed By:

LOS ALAMOS NATIONAL LABORATORY
HEALTH, SAFETY AND ENVIRONMENT DIVISION
HSE-9
SURROGATE RECOVERIES FOR VOLATILES
IN WATER TYPE MATRICES

REQUEST #: 19385

NUMBER OF SAMPLES: 5
MATRIX ML
ANALYST: MG
Date: 12/14/94

SURROGATE RECOVERIES

SURROGATE
RECOVERIES IN PERCENT (%)

	SAMPLE NUMBERS	TYPE	d4-1,2-dichloro-ethene	toluene-(d8)	4-bromo-fluoro-benzene
1	B94.25112	BLANK	113	106	98
2	S94.25110	SAMPLE	137	103	99
3	B94.25113	BLANK	103	101	102
4	S94.25109	SAMPLE	103	101	103
	S94.25111	SAMPLE	102	100	103
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Average % Surrogate Recovery...	112	102	101
Defined Lower QC Limits (%)....	67	76	77
Defined Upper QC Limits (%)....	149	119	133
Observed Lower QC Limits (%)...	102	100	98
Observed Upper QC Limits (%)...	137	106	103

If % Surrogate Recovery is Followed by a "*", it is out of QC Limits.

Reviewed By:

12/21/94

CST-12 VOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TO: Dustie L. Stephens
THRU: Anthony Lombardo, CST-12 Organic Analysis Task Area Leader
FROM: Michael Guttman, CST-12 Organic Analysis Section

DATE: 22-Dec-94

MATRIX: MISCELLANEOUS LIQUID

REQUEST NUMBER: 19385

Results Summary
Attached is a tabulation of samples submitted for volatiles analysis, their analytical results, and their dates collected and analyzed (see Table 1).

Method Summary
Samples were analyzed using EPA Method 8260. In summary, a measured volume of sample, usually 5 mL, is analyzed using the purge and trap method combined with capillary column GC/MS. A Delta Perspective PTA-30 Autosampler and a Tekmar 3000 Purge and Trap Concentrator are interfaced to a Hewlett-Packard 5890 Gas Chromatograph / 5971 Mass Selective Detector to perform the analyses. The analytical column used is a J&W Scientific DB624, 75 m by 0.53 mm ID, 3 micron film or equivalent.

Anomalies And Analysis Notes
Below is a summary of QA/QC criteria as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occured during the analyses.

Calibration QC were within criteria for all analyses except for the following anomalies. The average response factor for Bromoform from the initial calibration was outside criteria (actual RF = 0.250; criteria = 0.250). The percent difference between the initial calibration and the daily calibration check was outside criteria for Vinyl Chloride (actual % Diff = 40.6%; criteria = 25%). Neither of these compounds were found in the samples associated with this work agreement, so the sample data is okay.

Surrogate recoveries were within criteria for all analyses.
Internal standard responses were within criteria for all analyses.
Matrix spike and matrix spike duplicate were not analyzed.
Holding times were not met for these sample analyses.

If you have any questions regarding this data, please call Anthony Lombardo at 667-5889.

MG
12/21/94

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC CHEMISTRY
VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: Michael Guttman

Date Reported: 11/30/94

Request Number: 19385

Type of Anomaly (circle appropriate choices or describe):

Surrogate recovery | Retention time shift | Missed holding time

Internal standard response | Calibration QC | Sample matrix effect

Other (describe):

Description: Include sample numbers, dates, etc., as appropriate.

Vinyl Chloride in the daily calibration check for 13-OCT-1994 was outside of criteria for the % Deviation between the initial calibration and the daily calibration check (actual % Dev = 40.6 %; criteria = 25% maximum).

Corrective actions taken and disposition of affected data: Include dates taken or a schedule. If problem is ongoing, address actions taken/to be taken to prevent recurrence.

A new calibration curve was run on 14-OCT-1994. Vinyl chloride was not found in any of the samples associated with this request number, so the data is okay.

Corrective actions taken by: Michael Guttman

Date: 11/30/94

REPORT NUMBER: 30562

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JDT on 4-Jan-1995

REQUEST NUMBER: 19385 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: XG8M NOTEBOOK: PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.25109 Date Collected: 9/29/94 Date Received: 10/04/94 Date Extracted: Date Analyzed: 10/14/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
94DS106	94.25109	67641	< 160.		G/L	12/22/94	N	Acetone
94DS106	94.25109	71432	< 40.		G/L	12/22/94	N	Benzene
94DS106	94.25109	108861	< 40.		G/L	12/22/94	N	Bromobenzene
94DS106	94.25109	74975	< 40.		G/L	12/22/94	N	Bromochloromethane
94DS106	94.25109	75274	< 40.		G/L	12/22/94	N	Bromodichloromethane
94DS106	94.25109	75252	< 40.		G/L	12/22/94	N	Bromoform
94DS106	94.25109	74839	< 80.		G/L	12/22/94	N	Bromomethane
94DS106	94.25109	78933	< 160.		G/L	12/22/94	N	2-Butanone
94DS106	94.25109	104518	< 40.		G/L	12/22/94	N	n-Butylbenzene
94DS106	94.25109.	135988	< 40.		G/L	12/22/94	N	sec-Butylbenzene
94DS106	94.25109	98066	< 40.		G/L	12/22/94	N	tert-Butylbenzene
94DS106	94.25109	75150	< 40.		G/L	12/22/94	N	Carbon disulfide
94DS106	94.25109	56235	< 40.		G/L	12/22/94	N	Carbon tetrachloride
94DS106	94.25109	108907	< 40.		G/L	12/22/94	N	Chlorobenzene
94DS106	94.25109	124481	< 40.		G/L	12/22/94	N	Chlorodibromomethane
94DS106	94.25109	75003	< 80.		G/L	12/22/94	N	Chloroethane
94DS106	94.25109	67663	< 40.		G/L	12/22/94	N	Chloroform
94DS106	94.25109	74873	< 80.		G/L	12/22/94	N	Chloromethane
94DS106	94.25109	95498	< 40.		G/L	12/22/94	N	o-Chlorotoluene
94DS106	94.25109	106434	< 40.		G/L	12/22/94	N	p-Chlorotoluene
94DS106	94.25109	96128	< 80.		G/L	12/22/94	N	1,2-Dibromo-3-chloropropane
94DS106	94.25109	74953	< 40.		G/L	12/22/94	N	Dibromomethane
94DS106	94.25109	95501	< 40.		G/L	12/22/94	N	o-Dichlorobenzene (1,2)
94DS106	94.25109	541731	< 40.		G/L	12/22/94	N	m-Dichlorobenzene (1,3)
94DS106	94.25109	106467	< 40.		G/L	12/22/94	N	p-Dichlorobenzene (1,4)
94DS106	94.25109	75718	< 80.		G/L	12/22/94	N	Dichlorodifluoromethane