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VOL II

THERMAL DESORPTION/ULTRAVIOLET PHOTOLYSIS PROCESS TECHNOLOGY RESEARCH, TEST, AND EVALUATION PERFORMED AT THE NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MS, FOR THE USAF INSTALLATION RESTORATION PROGRAM, VOLUME II

R.W. HELSEL, R.W. THOMAS

EG&G IDAHO, INC.
P.O. BOX 1625
IDAHO FALLS ID 83415

DECEMBER 1987

FINAL REPORT

MAY 1985 - JULY 1985

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TYNDALL AIR FORCE BASE, FLORIDA 32403

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)
The objective of this effort was to examine the feasibility of using a thermal desorption/ ultraviolet (TD/UV) destruction technology to treat Herbicide Orange (HO)-contaminated soil at the Naval Construction Battalion Center (NCBC), Gulfport, Mississippi. The IT Corporation pilot -scale TD/UV apparatus was used to successfully treat 1700 pounds of sandy-loam, cement stabilized, soil that had been contaminated with HO and 2,3,7,8 tetrachlorobenzo-p-dioxin (TCDD). The TD/UV process volatilizes organic compounds from the soil matrix; collects the desorbed organics in a solvent; and, destroys the contaminants with high-intensity ultraviolet light. The desorption process occurs between 850 to 1150 degrees F. in a nitrogen atmosphere to prevent combustion of the organics. Analysis of feedstock showed TCDD levels ranged from 233-272 parts per billion (ppb). Concentration in the treated soil, measured as the sum of all dioxin/furan congeners, was less than 1ppb, the USAF criterion. The TD/UV process demonstrated the capability to treat dioxin-contaminated soil

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No. 19 continued

and a scaled up version could be considered as a bulk reduction process for restoration of sites contaminated with chlorinated organic compounds including other DOD Herbicide Orange contaminated sites. Sensitivity analyses of six variables (geographic) location, soil quantity, electrical power prices, labor, capital equipment use charge, and transportation) were performed to estimate the cost for conditions other than those found at NCBC. The cost to treat one ton of contaminated soil using a scaled up system, based on treatment of 20,000 tons at NCBC, is $402/ton. The process may have application for treatment of other chlorinated organic compounds. The process may have unique application in geographical areas where incineration would not be accepted.

One negative aspect is that the photolysed solvent remains a hazardous waste and must be handled appropriately. Additional R&D is required to establish an alternate photolysis unit to overcome the problem.

This report is organized into four volumes: Volume I presents the final report on the performance of the Thermal Desorption/Ultraviolet Photolysis process for use in decontaminating soil containing Herbicide Orange/Dioxin. Volume II contains appendices A through O. Volume III contains appendix P. Volume IV contains appendices Q through V.

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PREFACE

This report was prepared for the Air Force Engineering and Services Center, Engineering and Services Laboratory, Tyndall AFB, Florida, under Job Order Number (JON) 2103 9027. The principal contractor, EG&G Idaho, Inc., is the prime contractor for the Department of Energy, Idaho National Engineering Laboratory. The major subcontractor for the project is the International Technologies Corporation, Knoxville, Tennessee.

This report is organized into four volumes: Volume I presents the final report on the performance of the Thermal Desorption/Ultraviolet Photolysis process for use in decontaminating soil containing Herbicide Orange/dioxin. Volume II contains appendices A through O. Volume III contains appendix P. Volume IV contains appendices Q through V.

Other contributors to this report include: E. Alperin, W.A. Prop, A.E. Grey, D.L. Miller, H.J. Welland, D.J. Harvego, H.D. Williams, and G. Peterson.

This report has been reviewed by the Public Affairs Office (PAO) and is releasable to the National Technical Information Services (NTIS). At NTIS, it will be available to the general public, including foreign nationals.

This report has been reviewed and approved for publication.

Terry L Stoddart

TERRY L. STODDART, Maj, USAF, BSC
Chief, Environmental Restoration R&D

Thomas J Walker

THOMAS J. WALKER, Lt Col, USAF, BSC
Chief, Environics Division

F. Thomas Lubozynski

F. THOMAS LUBOZYNSKI, Maj, USAF, BSC
Chief, Environmental Engineering Branch

LAWRENCE D. HOKANSON, Colonel, USAF
Director, Engineering and Services Laboratory

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LIST OF APPENDICES

Appendix	Title	Page
A	REQUEST FOR AND EPA AUTHORIZATION LETTERS FOR AIR FORCE ENVIRONMENTAL RESTORATION TECHNOLOGY, RESEARCH, AND TEST EVALUATION PROGRAM AT NCBC	1
B	REQUEST FOR AND EPA AUTHORIZATION LETTERS FOR DIOXIN-CONTAMINATED WASTE DISPOSAL	7
C	PUBLIC NOTIFICATION AND LOCAL NEWS ARTICLES ON TECHNOLOGY, RESEARCH, AND TEST EVALUATION PROGRAM AT NCBC	13
D	PROPERTIES OF SOLVENT USED IN UV PHOTOLYSIS TESTING	19
E	ITC HEALTH AND SAFETY PLAN FOR SITE DEMONSTRATION OF THE THERMAL DESORPTION/UV PHOTOLYSIS PROCESS	23
F	MODIFIED PRIORITY POLLUTANT LIST FOR HERBICIDE ORANGE CONTAMINATION	53
G	MODIFIED EPA CARCINOGEN ASSESSMENT GROUP's (CAG) LIST FOR HERBICIDE ORANGE CONTAMINATION	61
H	MODIFIED LIST OF COMPOUNDS INDIGENOUS TO HERBICIDE ORANGE	65
I	ITC INDUSTRIAL HYGIENE MONITORING REPORT IN SUPPORT OF NCBC DEMONSTRATION TESTS	69
J	ITC WIPE SAMPLING PROCEDURES	77
K	COPIES OF UNIFORM HAZARDOUS WASTE SHIPMENT FORMS FOR SHIPMENTS THAT INCLUDED DIOXIN-CONTAMINATED WASTES FROM ITC NCBC TESTS	83
L	ECOLOGY AND ENVIRONMENT, INC. SAMPLING PROTOCOL FOR ITC NCBC TEST	93
M	PACKING LISTS FOR ITC NCBC TEST-RELATED SAMPLES BEING SHIPPED TO ANALYTICAL LABORATORIES	99
N	CALIFORNIA ANALYTICAL LABORATORIES PROTOCOL FOR ANALYSIS OF DIOXINS AND FURANS	127
O	CALIFORNIA ANALYTICAL LABORATORIES DATA SHEETS FOR DIOXIN/FURAN ANALYSES, ORGANIC COMPOUND ANALYSES, AND INORGANIC ANALYSES	165

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APPENDIX A

REQUEST FOR AND EPA AUTHORIZING LETTERS FOR AIR FORCE ENVIRONMENTAL RESTORATION TECHNOLOGY, RESEARCH, AND TEST EVALUATION PROGRAM AT NCBC

Page

Exhibit 1 Letter from Hazardous Waste Program transmitting technical information for USAF research and test evaluation 3

Exhibit 2 Letter from the EPA to Colonel Boyer at Tyndall Air Force Base 5

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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EG&G Idaho, Inc.
P.O. BOX 1625, IDAHO FALLS, IDAHO 83415

bcc: K. L. Falconer KF
F. C. Fogarty
T. H. Smith
D. L. Uhl
Central Files
H. D. Williams File

March 14, 1985

Mr. Paul des Rosier
Deputy Chairman, Dioxin Disposal Advisory Group
Environmental Protection Agency
401 M Street SW
Washington, DC 20460

TRANSMITTAL OF TECHNICAL INFORMATION FOR USAF RESEARCH AND TEST EVALUATION -HDW-4-85

Dear Mr. des Rosier:

Based on previous discussions with the Dioxin Disposal Advisory Group (DDAG) and following the guidance provided by DDAG, EG&G Idaho, Inc. has prepared the attached document for review by DDAG. The document presents technical information concerning the Research Test and Evaluation activities of the United States Air Force (USAF) Environmental Restoration Program for former Herbicide Orange storage sites.

Captain T. L. Stoddart, USAF, Engineering Services Center, (HQ AFESC) has arranged for a presentation of this information to the DDAG in Washington, DC, on March 21, 1985 at 1000 hours. Representatives of EG&G Idaho, Inc. and its subcontractors, the IT Corporation and J.M. Huber Company, will be present to provide additional information or answer questions as they arise. Enclosed are eleven copies of the document for you to distribute at your discretion.

On behalf of the USAF Engineering Services Center and our subcontractors, we are pleased to present this information to you and will look forward to further discussions on March 21, 1985. If questions arise prior to that date, please contact me at FTS 583-1763 or K. L. Falconer at FTS 583-1559.

Very truly yours,

H. D. Williams
Senior Program Specialist
Hazardous Waste Program

ag

Enclosure:
as Stated

cc: I. Aoki, DOE-ID
M. Cook, EPA
K. Kleveno, EPA
J. McGraw, EPA
T. L. Stoddart, Captain, USAF
J. O. Zane, EG&G Idaho (w/o Enclosure)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 25 1985

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Colonel Robert Boyer
HQ AFESC/RD
Tyndall Air Force Base, FL 32403

Dear Colonel Boyer:

We have reviewed your document entitled "Environmental Restoration Technology--Research and Test Evaluation," informing the Environmental Protection Agency (EPA) of your intent to treat soils contaminated with 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). We understand that you wish to conduct a series of research tests on less than 3,700 pounds of soil (less than two tons, or two cubic yards) contaminated with approximately 200 ppb of 2,3,7,8-TCDD. The 2,3,7,8-TCDD-contaminated soil is located at the Naval Construction Battalion Center (NCBC), Gulfport, MS, the site of the research tests. We also understand that you plan to destroy the 2,3,7,8-TCDD in the soil by testing two treatment units for approximately three to five weeks. The two units are: 1) thermal pyrolysis using the Advanced Electric Reactor developed by the J. M. Huber Company, and 2) thermal desorption followed by ultraviolet light destruction, developed by the IT Corporation. Because the destruction tests are being conducted for research purposes, you have requested a waiver from notification under 40 CFR Part 775.

On March 21, 1985, the Dioxin Disposal Advisory Group (DDAG) met with the U.S. Air Force to discuss the details of the planned research and evaluation studies. As a result, the DDAG determined that the proposal involves potentially feasible technologies, that the technical, safety, and environmental factors have been adequately addressed, and that the research activities will provide useful information in the destruction of 2,3,7,8-TCDD-contaminated soils. Thus, a research waiver from the notification requirements under 40 CFR Part 775 is hereby granted to the U.S. Air Force (HQ AFESC) to conduct the research tests. The waiver is being granted since the quantity of soil is small, the equipment being used for the research is pilot scale, and the tests to be conducted are of short duration. If testing should continue beyond July 15, 1985, the effective date of the RCRA dioxin regulation (50 FR 1978-2006; January 14, 1985), the activities will be subject to the provisions of that rule.

Your research at Johnston Island, however. will occur after July 15, 1985. As such, it will be subject to the RCRA dioxin listing. As discussed with members of your staff, EPA is proceeding with the preparation of a research development and demonstration permit. If you have any questions, please feel free to contact Dr. Howard Fribush, Office of Solid Waste, on (202) 475-6678.

Sincerely yours,

/s/ Jack W. McGraw

Jack W. McGraw
Acting Assistant Administrator

cc: Captain Terry Stoddart
HQ AFESC/RDVW
Tyndall Air Force Base

APPENDIX B

REQUEST FOR AND EPA AUTHORIZING LETTERS FOR DIOXIN-CONTAMINATED WASTE DISPOSAL

		Page
Exhibit 1	Air Force letter requesting EPA approval of disposal of TCDD contaminated waste	9
Exhibit 2	EPA letter to Air Force regarding disposal of waste materials contaminated with 2,3,7,8-TCDD	11

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE ENGINEERING AND SERVICES CENTER
TYNDALL AIR FORCE BASE, FL 32403

APR 25 1985

REPLY TO ATTN OF: RDVW

SUBJECT: Notification of Disposal of TCDD (Dioxin) Contaminated Waste from Air Force Environmental Restoration Activities

TO:
Mr. Jack McGraw
Acting Assistant Administrator for
Pesticides and Toxic Substances
U.S. Environmental Protection Agency
Waterside Mall
401 "M" Street, S.W.
Washington D.C. 20460

1. The U.S. Air Force Installation Restoration Program is involved with two major research activities at former Herbicide Orange storage sites. The purpose of this application/notification is to provide for the disposal of dioxin contaminated personnel protection and sampling equipment generated during various phases of our two programs. Presently, surface and subsurface sampling is being conducted at the Naval Construction Battalion Center (NCBC), Gulfport MS and Eglin AFB (EAFB), Fort Walton Beach FL, to determine the profile and extent of contamination. Follow on phases involve testing soil decontamination technologies at NCBC.

2. Application for approval is made for disposal of TCDD contaminated waste under provisions of 40CFR, Part 775, 190(b). Disposal will be accomplished prior to 15 Jul 85.

a. Name and address of firm: HQ Air Force Engineering & Services Center
Engineering and Services Laboratory
(HQ AFESC/RD)
Tyndall AFB FL 32403 6001
ID No. FL 1570024124

b. Site 1: Naval Construction Battalion Center, Gulfport MS, ID #MS2170022626.

Site 2: Eglin AFB, Fort Walton Beach FL, ID# FL572024366.

c. Point of Contact: Capt Terry L. Stoddart
HQ AFESC/RDVW
Tyndall AFB FL 32403
(904) 283-2942

d. A review of current analytical data indicates the maximum levels of 2,3,7,8 TCDD contamination in soils from NCBC and EAFB is 300 ppb. The average concentration in these soils ranges from 20-30 ppb. Based on these data we anticipate that the drummed waste will contain substantially lower concentrations of 2,3,7,8 TCDD. The soil is also contaminated with varying concentrations of 2,4,D and 2,4,5T, ID Nos. D016 and D077, respectively.

d. Quantity of Waste: The first phase of soil sampling at NCBC resulted in the generation of 27 drums of contaminated clothing. The subsurface sampling scheduled for NCBC in early May will generate another 22 drums. Similar activities at EAFB are anticipated to generate 22 drums of contaminated clothing. The follow on phase of the project, which involves testing of soil decontamination technologies, scheduled for Jun 85, will generate approximately 54 drums of contaminated clothing. Currently, no technology demonstrations are scheduled for Eglin AFB FL. One of the technologies scheduled for demonstration at NCBC will produce 75 gallons of dioxin-contaminated solvent. The solvent, Solitrol®, is a petroleum product manufactured by Phillips. The solvent has a flashpoint of 185°F, pH 7, and a copper strip corrosion of 1.0. It is anticipated that the dioxin contamination in the solvent will be less than 100 ppb. A total of 127 drums are scheduled for disposal. The waste to be disposed consists of 125 drums of contaminated chemical protective equipment and two drums of contaminated solvents.

e. All waste will be packaged, labeled, and transported in accordance with existing EPA, DOT, and state regulations. Wastes will be disposed by incineration at Rollins Environmental Services, Inc., Deer Park TX, EPA ID No. TXD055141378.

f. Status of Waste: The 27 fiber drums of contaminated wastes are stored in a open-sided metal storage shed at NCBC. The shed has a concrete floor. It is surrounded by a 6 foot high chain link fence topped with barbed wire. The drums are stacked one high on wood pallets and covered with 6-mil plastic sheeting. This storage facility is located inside the contaminated area, which is surrounded by a fence and posted as a restricted area. Waste presently generated will be stored in a similar manner until pickup for transportation to Rollins Environmental Services, Inc., which is scheduled for the last week of Jun 85.

3. Your time and effort for consideration of this approval request is appreciated. If questions should arise, please contact Capt Terry Stoddart, Headquarters Air Force Engineering and Services Center, Engineering and Services Laboratory (HQ AFESC/RDV), Tyndall AFB FL 32403-6001; (904) 283-2942.

James R. VanOrman

JAMES R. VAN ORMAN
Deputy Director of
Engineering & Services Laboratory

cc: EG&G Idaho (Mr. Williams)
U.S. EPA, Region 4
Mr. DesRosier, EPA/ORD
Mr. Kleveno, EPA/HRSD
Mr. Cummins, EPA/OSWER
325CES/DEEV
AD/DEV
NCBC/Code 470

Int cc AFESC/DEV

2

WH-562B/H. Fribush/ht/S242K/475-6726/05-23-85/02/ht/26

MAY 31 1985

Mr. James R. Van Orman
Deputy Director of
Engineering & Services Laboratory
Department of the Air Force
Deadquarters Air Force Engineering and Services Center
Tyndall Air Force Base, FL 32403

Dear Mr. Van Orman:

We have reviewed your letter of April 25, 1985, informing the Environmental Protection Agency (EPA) of your intent to dispose of waste materials contaminated with 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). We understand that you have about 125 drums of 2,3,7,8-TCDD-contaminated clothing and two drums of 2,3,7,8-TCDD-contaminated solvent. We also understand that you wish to dispose of this waste by incineration at Rollins Environmental Services, Deer Park, Texas.

The Agency's Dioxin Disposal Advisory Group (DDAG) has no objections to your planned disposal. We recommend that the incinerator be operated under the conditions that have demonstrated a destruction and removal efficiency (DRE) of 99.9999 percent for PCBs.

If you are unable to proceed with the planned disposal or if you choose an alternative method, please be advised that you are required to submit a new notification prior to disposing of 2,3,7,8-TCDD-contaminated waste materials. It should be noted that, after July 15, 1985, the effective date of the RCRA listing regulation (50 FR 1978-2006; January 14, 1985), which designates certain 2,3,7,8-TCDD-contaminated wastes as hazardous, you will be subject to the provisions of that rule. If you have any questions, please feel free to contact Dr. Howard Fribush, Office of Solid Waste, on (202) 475-6726.

Sincerely,

Jack W. McGraw
Acting Assistant Administrator

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APPENDIX C

PUBLIC NOTIFICATION AND LOCAL NEWS ARTICLES ON
TECHNOLOGY, RESEARCH, AND TEST EVALUATION PROGRAM AT NCBC

Page

Exhibit 1 Public notification of availability of TOSCA document, "Environmental Restoration Technologies: Research Test and Evaluation" 15

Exhibit 2 News article: "Permits for Soil Tests Not Needed" 16

Exhibit 3 News article: "Air Force's Dioxin Tests Won't Require State Permits" 17

Exhibit 4 News article: "Workers Begin Decontaminating Dioxin-Tainted Soil at Seabee" 18

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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PUBLIC NOTIFICATION

Notice is hereby given of the public availability of a Toxic Substance Control Act (TOSCA) document titled "Environmental Restoration Techologies: Research Test and Evaluation" covering work to be conducted by the United States Air Force, at the Naval Construction Battalion Center, Gulfport, Mississippi. The document, available for review at the Gulfport-Harrison County, Library, 21st Avenue, Gulfport, Mississippi, covers the scope, procedures, background and goals of research to be conducted by the Engineering and Services Laboratory, Air Force Engineering and Services Center, Tyndall AFB, Florida. The research is aimed at discovering the most efficient, cost-effective method(s) of removing environmental contaminants from soil. For questions beyond the scope of this document, please contact the Directorate of Public Affairs, Air Force Engineering and Services Center, Tyndall AFB, Florida 32403, Telephone: (904) 283-6476, V-76.adv.22.4f.

Gulfport
The Daily Herald
FRI. May 24, 1985

Permits for soil tests not needed

By TOM CHARLIER
STAFF WRITER

The U.S. Air Force will not need Mississippi environmental permits to carry out testing next week on dioxin-contaminated soil at the Gulfport Seabee Center, state officials said.

The Pollution Control Permit Board, which was briefed Tuesday on work to be done at the base, will not require the Air Force, or its two contractors in the work, to undergo the normal permitting procedure, said Jack McMillan, who heads the Bureau of Pollution Control's solid-waste section.

The two companies selected to do the testing — J.M. Huber Co. of Atlanta, and the IT Corp. of Washington, D.C. — have begun delivering equipment to the base in preparation for the work, which is scheduled to take place June 3. The contractors will test experimental methods involving the use of heat and chemicals to remove dioxin from soil.

"Right now, we don't see any reason for issuing a permit, because it's just such a minute amount (of dioxin) they'll be dealing with," McMillan said.

The state, however, will require permits before any full-scale cleanup effort begins at the site, he added.

Sgt. Jim Denny, a spokesman for the Engineering and Services Laboratory at Tyndall Air Force Base, Fla., said the Air Force has provided the Bureau of Pollution Control with complete details of the work, which he said will not

See AGENT, Page A-2

Agent

Continued from Page A-1

pose any environmental threat.

"Everything we're going to be doing is perfectly OK with them," he said.

The soil to be tested is on a sealed-off 12-acre portion of the base where thousands of drums of Agent Orange, a herbicide used to defoliate jungles during the Vietnam War, were stored from 1966 to 1977. The herbicide contained dioxin, a contaminant produced during its manufacture, which remains in soil at the site as a result of leaks in the drums.

Dioxin has been shown to be extremely toxic in laboratory studies, with doses of as little as 5 parts per trillion producing cancerous tumors in test animals, according to some researchers. But the substance's effects on humans are not fully understood.

In soil samples taken at the Seabee Center, dioxin has been detected in concentrations of up to 200 to 300 parts per billion. According to the Centers for Disease Control in Atlanta, a concentration of 1 part per billion in soil is sufficient to warrant concern.

The testing is part of a $1.7-million research and development program from which the Air Force will devise a plan for the cleanup of three dioxin-contaminated sites — the Seabee Center, Eglin Air Force Base, Fla., and Johnston Island, located west of Hawaii in the Pacific Ocean.

The cleanup, designed to make the sites suitable for normal use, probably will not begin until late this year or early next year, Denny said.

IT Corp 5/29/85

Daily Herald 5/29/85

Air Force's dioxin tests won't require state permits

By TOM CHARLIER
Staff Writer

The U.S. Air Force will not need Mississippi environmental permits to carry out testing next week on dioxin-contaminated soil at the Gulfport Seabee Center, state officials said.

The Pollution Control Permit Board, which was briefed Tuesday on work to be done at the base, will not require the Air Force, or its two contractors in the work, to undergo the normal permitting procedure, said Jack McMillan, who heads the Bureau of Pollution Control's solid-waste section.

The two companies selected to do the testing — J.M. Huber Co. of Atlanta, and the IT Corp. of Washington, D.C. — have begun delivering equipment to the base in preparation for the work, which is scheduled to take place June 5. The contractors will test experimental methods involving the use of heat and chemicals to remove dioxin from soil.

"Right now, we don't see any reason for issuing a permit, because it's just such a minute amount (of dioxin) they'll be dealing with," McMillan said.

The state, however, will require permits before any full-scale cleanup effort begins.

Sgt. Jim Denny, a spokesman for the Engineering and Services Laboratory at Tyndall Air Force Base, Fla., said the Air Force has provided the Bureau of Pollution Control with complete details of the work.

The soil to be tested is on a sealed-off 12-acre portion of the base where thousands of drums of Agent Orange, a herbicide used to defoliate jungles during the Vietnam War, were stored from 1968 to 1977. The herbicide contained dioxin, a contaminant produced during its manufacture, which remains in soil at the site as a result of leaks.

Dioxin has been shown to be extremely toxic in laboratory studies, with doses of as little as 5 parts per trillion producing cancerous tumors in test animals, according to some researchers. But the substance's effects on humans are not fully understood.

In soil samples taken at the Seabee Center, dioxin has been detected in concentrations of up to 200 to 300 parts per billion. According to the Centers for Disease Control in Atlanta, a concentration of 1 part per billion in soil is sufficient to warrant concern.

The Sun 6/6/85

Workers begin decontaminating dioxin-tainted soil at Seabee

By TOM CHARLIER
STAFF WRITER

Technicians on Wednesday began processing dioxin-contaminated soil at the Seabee Center in Gulfport in a test that could lead to an eventual cleanup of a site where the herbicide Agent Orange was stored.

Specially-suited workers from IT Corp. of Knoxville, Tenn., were scheduled late last night to begin treating soil by an untested device designed to evaporate and destroy dioxin through the use of heat, microwaves and ultraviolet light. The work had been rescheduled from afternoon to nighttime because of the heat.

Later this month, crews from another firm, J.M. Huber Co. of Borger, Texas, are slated to demonstrate an experimental process using a device known as an advanced electrical reactor. That process destroys dioxin with extremely high temperatures.

Both firms are under contract with the U.S. Air Force to process a total of 2,000 pounds of contaminated soil from here. The work is part of a research effort [illegible] by the Air Force, the U.S. Environmental Protection Agency and the U.S. Department of Energy to identify a "useful technology" to treat contaminated soil at three military installations — the Gulfport base, Eglin Air Force Base, Fla., and Johnston Island, in the Western Pacific Ocean.

With the tests, "we'll be able to determine whether or not it will be economically feasible to clean up the site," Air Force Maj. Jim Hasberg said.

It now costs between $800 and $1,000 a cubic yard to dispose of contaminated soil at high-tech incinerators throughout the country. Decontaminating the soil may offer a less-expensive alternative, the Air Force officials said.

IT Corp. [illegible] workers were at Johnston Island, will remove about [illegible] while Huber [illegible] handled the remaining [illegible].

A $500,000 portion of the $17 million earmarked for the research effort — which includes soil sampling and other monitoring already done at the three bases — will be spent in Gulfport. The higher costs are attributed to the problems posed by the unique soil conditions there, officials said.

"We're pulling out all stops against the most difficult problem," said Wayne R. Mathis, an EPA engineer.

Hasberg said the section of the storage site is composed of engineers of asphalt, pea gravel and crushed shell.

Agent Orange, used to defoliate jungles during the Vietnam War, was stored at a 12-acre site on the Seabee Center between 1968 and 1977. The more than 840,000 gallons kept at the base in later years were among the 2.4 million gallons of the herbicide destroyed on a waste-burning ship in the Pacific.

Dioxin, a byproduct of the manufacture of Agent Orange, has been shown to be extremely toxic in tests on laboratory animals. Soil samples at the former storage area have revealed dioxin concentrations of as high as 200 parts per billion — well above widely established safe levels.

The storage area is sealed off, and state and federal officials contend no significant contamination has been found off the site.

The testing at the Seabee Center must be completed by July 15. EPA and the Mississippi Bureau of Pollution Control have waived the usual hazardous-waste permit requirements for the testing until that date.

THE SUN 6-6-85

APPENDIX D

PROPERTIES OF SOLVENT USED IN UV PHOTOLYSIS TESTING

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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APPENDIX D. PROPERTIES OF SOLVENT USED IN UV PHOTOLYSIS TESTING

Property	Soltrol 170[a] value
Distillation range	
Initial boiling point, °F	424
10%	433
50%	437
90%	448
Dry pt	462
API gravity, 60°F	50.5
Specific gravity, 60/60°F	0.778
Density, lb/gal	6.48
Flash pt, °F	185
Kinematic viscosity	
CS at 32°F	6.65
CS at 100°F	2.47
Purity, %	99 + % iso
Automatic content - total	nil (est.)
Sulfur	0.0008
Bv. No.	1.5
Odor	None
Color, Saybolt	+30
Acidity, Distill Redistribution	Neutral
Cu corrosion	1
Vn sulfonated residue	98.5
Doctor test	Negative
Kauri butanol	24
Aniline point	192.6

a. A product of Phillips Petroleum Co.

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APPENDIX E

ITC HEALTH AND SAFETY PLAN FOR SITE DEMONSTRATION OF THE THERMAL DESORPTION/UV PHOTOLYSIS PROCESS

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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HEALTH AND SAFETY PLAN

FOR

EG&G/AIR FORCE SITE DEMONSTRATION OF
THE THERMAL DESORPTION/UV PHOTOLYSIS PROCESS

by

IT Corporation
Knoxville, Tennessee

Revised May 16, 1985

Reviewed and approved by

R Helsel
ITC Project Manager

Harry A. Pillum
ITC Health and Safety Officer

IT CORPORATION

Memorandum

To: E. Alperin, R. Fox, H. Pullum, H. Williams Date: May 21, 1985

From: R. Helsel

Subject: ADDENDUM TO HEALTH & SAFETY PLAN FOR SITE DEMO AT NCBC

The enclosed Attachments (2-10) to the previously distributed text of the subject plan should be stapled to the text.

jjh

Attachment

IT Corporation

Health and Safety Plan
for
EG&G/Air Force Site Restoration Demonstration

1. Purpose

This health and safety plan prescribes workplace procedures which must be followed in order to protect the employees who are working with 2,3,7,8 tetrachloridibenzodioxin and other hazardous materials which may be present at the Naval Construction Battallion Center and Johnston Island. The requirements listed may change as work progresses due to changing conditions, but no changes will be made without prior approval by the ITC Regional Manager, Health and Safety Division. The program outlined is for both ITC employees and ITC's subcontractor personnel.

2. Discussion

2,3,7,8 tetrachloridibenzodioxin can be found as a contaminant of chemicals such as 2,4,5-trichlorophenoxyacetic acid (a herbicide), 2,4,5-trichlorophenol (used in the production of pesticides or herbicides), or hexachlorophene (a skin cleaner). It can also be a breakdown product resulting from the exposure of chlorinated hydrocarbons, such as PCBs, to intense heat. Like other organochlorine compounds, such as DDT and PCBs, dioxin is persistent in the environment and accumulates in living tissues.

3. Program Structure

The Project Occupational Safety and Health Officer will be responsible for the coordination of this plan. He, or one of his representatives, will be on site for the principal portion of the job. Liaison with officers or representatives of USAF or EG&G on matters relating to safety and health will be handled by the health and safety representative in conjunction with the ITC Project Leader.

The Project Leader is responsible for field implementations of the health and safety plan. This includes communicating the specific requirements to all personnel, conducting audits, and consulting with the health and safety representative regarding appropriate changes in safety and health requirements.

All on-site personnel are responsible for understanding and complying with the requirements of this plan, and must sign a statement that they have read, understood, and will abide by the plan (Attachment 1). Failure to comply with this plan will result in disciplinary action, which could lead to termination.

4. Worker Health Protection

All employees on this job shall have completed a preemployment medical examination and/or a periodic/update physical examination within two months of assignment. The follow-up examination must be repeated within one month of project completion. The medical examination must be reviewed by a physician specializing in occupational medicine and a report must be submitted to ITC which medically approves the employee for work with hazardous materials. Examples of a "medical examination report" and a "physical activity restriction" report are attached, Attachments 2 and 3, respectively.

The preemployment examinations must include at least the information included on the IT Preemployment Medical Examination form, Attachment 4. The periodic/update physical examination must include at least the information included on the Periodic/Update Physical Examination form, Attachment 5.

In the event of any injury or accident a "Supervisor Employee Injury Report" (Attachment 6) shall be completed by a supervisor as soon as practical after the event. This shall be reviewed by the senior manager and the health and safety coordinator on site. If an employee has been absent due to a work-related injury or illness, a "Return to Work Authorization Following Medical Absence" form (Attachment 7) must be completed prior to returning to the job assignment. This form shall have a medical release from a physician attached. If appropriate, a "physical activity restriction" report shall be included.

5. Procedures

A. Permissible Exposure Limits

1. 2,3,7,8 TCDD

Review of 2,3,7,8 TCDD risk assessments (performed by regulatory agencies and related to PCB Transformer Fires at Binghamton, NY and One Market Plaza, CA) indicates that a limit of 18 picograms per cubic meter (pg/m^3) is appropriate. Therefore, until further research is done, the limit will be 18 pg/m^3 for 2,3,7,8 TCDD.

2. Herbicide Orange

2,4-D -10 mg/m^3 air

2,4,5-T -10 mg/m^3 air

3. Other Materials

The permissible exposure limits for other materials are:

- Soltrol 170 - 14 parts per million parts of air
- Isopropyl alcohol - 400 parts per million parts of air

4. Engineering controls and operational procedures shall be used to maintain levels of hazardous materials within the limits set forth above. This may be accomplished by the use of dust-suppression techniques with 2,3,7,8 TCDD and closed systems and ventilation controls. These controls will be coupled with protective equipment of the appropriate level for exposures encountered.

B. Employee Training and Information

All employees who work on site shall have completed a formal training program which shall include, as a minimum, the following:

1. Basic Safety Training - This course stresses fundamentals such as the cause and prevention of slip, trip, and fall hazards, safe drum handling and opening, safe lifting techniques, heat stress illnesses and their prevention, etc.

2. Hazards and Protection - This course deals with the identification, recognition, and safe work procedures involving toxic materials. Understanding the use and limitations of applicable protective clothing, respirators, and decontamination procedures is an important part of this course. Respirator fit testing is given to each attendee.

3. First Aid and Cardiopulmonary Resuscitation - At least two employees at the site will have completed these standard Red Cross First Aid and CPR courses.

4. 2,3,7,8 TCDD Hazard Awareness - This course discusses the specific nature of the operations which could result in exposure to 2,3,7,8 TCDD, a description of the medical surveillance program, the specific protective clothing and respirators to be worn on the job, the adverse health effects associated with exposure to 2,3,7,8 TCDD, the routes of exposure (skin penetration, inhalation, ingestion), and the safe work procedures associated with the employee's job assignment.

5. Other Hazard Awareness - Information will be given concerning other materials to which the employee may be exposed. Information will include routes of exposure, toxic effects, appropriate protective equipment, medical surveillance, and the specific nature of the job which could result in exposure.

6. The following training sessions and informational materials will be provided on site:

   a. Tailgate Safety Meeting - A tailgate safety meeting will be conducted at the beginning of each shift or whenever new employees arrive at the job site once the job commences. This meeting discusses the health and safety considerations for that day's activities, and outlines protective equipment necessary. Attachment 8 shows a copy of a Tailgate Safety Meeting form.

   b. Material Safety Data Sheets (MSDS) - Completed MSDS for the toxic materials present at the site shall be posted at the job site. An example of an MSDS for 2,3,7,8 TCDD is attached (Attachment 9).

C. Regulated Areas

1. Delineated Zones - The site shall be divided into three well-delineated zones, as follows:

   a. Contaminated Zone - This zone includes the actual areas of contamination. This zone has the highest inhalation exposure potential and/or presents a high probability of skin contact with cutaneous- or percutaneous-effecting chemicals.

   b. Contamination Reduction Zone - This zone includes the areas immediately surrounding the Contamination Zone. This zone has the next highest inhalation hazard, but does not have a high probability of skin contact with cutaneous- or percutaneous-effecting chemicals.

   c. Clean Zone - This zone covers all areas outside the contamination-reduction zone. Adverse exposure to chemicals is unlikely.

2. Access - Access to 2,3,7,8 TCDD-contamination work areas (contaminated and contamination reduction zones) shall be regulated and limited to authorized persons. A daily roster shall be kept of all persons entering such areas.

3. Posting - Warning signs shall be affixed in readily visible locations in or near 2,3,7,8 TCDD (Dioxin) work areas. The information contained thereon shall be arranged as in the following example:

CAUTION

DIOXIN CONTAMINATED AREA

AUTHORIZED PERSONNEL ONLY

D. Employee Decontamination

1. A decontamination unit shall be positioned at the entrance to the contamination-reduction zone with a step-off area just inside the contamination-reduction zone. All persons entering the contamination zones shall pass through the decontamination unit to change from street clothing to protective clothing. All persons leaving the contamination zones shall pass through the unit to remove the protective clothing and shower before donning their street clothing. An example of a decontamination unit is shown as Attachment 10.

2. All employees shall be required to shower in the decontamination unit at the end of the work shift.

3. The decontamination unit shall have clean change rooms equipped with separate storage facilities which prevent cross-contamination for protective clothing and equipment and street clothing

4. An area shall be designated as the break area. Employees shall wash their faces and hands before eating, drinking or smoking.

5. An eyewash and shower shall be provided in the immediate work area for employees who may come into contact with contaminated materials

6. If there is a rip or tear in an employee's protective clothing and if there was contact with potentially contaminated material, the employee shall return to the decontamination unit immediately, wash the affected skin area, and report the incident to the on-site health and safety officer. The officer will then determine and authorize, if appropriate, the employee to don new protective clothing and return to the work area.

7. The decontamination procedure is outlined in Appendix A.

E. Respiratory Protection

The respiratory protection to be used is outlined as follows:

1. For initial set-up of work activities, such as assembling the thermal desorber, a half-face air purifying respirator, with organic vapor/highly toxic particulate (HEPA) cartridges, shall be worn. Respirators with higher protective factors, such as a full-face, air-purifying respirator, powered air purifying respirators (PAPR), or air supplied respirators, may also be worn.

2. All operations involving contaminated soil handling, including the collection of soil, crushing of soil, placing the soil in the storage drums, and transferring the soil to the thermal desorber will require the use of air-supplied respirators.

3. For operation of the thermal desorption or UV photolysis systems, full-face air-purifying respirators or PAPR will be required. This assumes no soil-handling activity in the area.

4. An industrial hygienist will be on site during initial start-up activities. If monitoring results indicate potential exposures which are higher, or lower, than expected, or if the industrial hygienist observes operations which indicate that respiratory protection needs to be changed, then protection will be upgraded, or downgraded, as appropriate.

5. Cartridges for air-purifying respirators will be replaced at the end of each shift. The PAPR will be checked with the flow meter before each day's use to determine if filters need to be changed.

6. Only employees who have had pre-issue qualitative fit tests, and annual fit tests thereafter, shall be allowed to work in atmospheres where respirators are required.

7. If an employee has demonstrated difficulty in breathing during the fitting test or during use, he or she shall have a physical examination to determine whether the employee can wear a respirator while performing the required duty.

8. No employee shall be assigned to tasks requiring the use of respirators if, based on the most recent examination, a physician determines that the employee will be unable to function normally wearing a respirator, or that the health or safety of the employee or other employees will be impaired by use of a respirator.

9. The employee shall be permitted to change cartridges whenever an increase in breathing resistance is detected.

F. Protective Clothing

1. The protective clothing to be worn during initial set-up will be:

   a. Polyethylene coated tyvek coveralls with hoods
   b. Nitrile gloves
   c. Polyvinyl chloride (PVC) boots
   d. Hard hat
   e. Eye protection

2. The protective clothing to be worn during dirt-loading activities, such as loading the dirt into drums, will be:

   a. Medium to heavy weight PVC coveralls with hood
   b. PVC or leather outer gloves with nitrile and surgical undergloves
   c. PVC boots
   d. Hard hat

3. The protective clothing to be worn during operation of the thermal desorber/UV photolysis process will be:

   a. Polyethylene coated tyvek coveralls with hoods
   b. White tyvek or cotton coveralls as an undergarment
   c. Viton gloves with surgical undergloves for the thermal desorber/UV photolysis process. Leather outer gloves may be worn to protect the viton gloves where appropriate. These leather gloves can be used, but must be left on site and disposed of at the end of the job. High temperature gloves must be worn during handling of hot treated soil containers or when in contact with the desorber furnace. Leather gloves should be used as outer gloves when working near the hot desorber.
   d. PVC boots
   e. Hard hat

4. The protective clothing sleeves will be taped to the gloves, the legs taped to the boots, and the hood to the respirator (if appropriate). All openings shall be sealed.

5. The protective coveralls shall be removed in the inside out fashion.

G. Monitoring

Industrial hygiene monitoring will be conducted at the beginning of the job and periodically thereafter to determine the employee's exposures to 2,3,7,8 TCDD and other materials. The results of the monitoring will dictate the selection of the personal protective equipment.

The industrial hygiene dioxin samples will be collected by using a personal pump sampling air at a rate of 3.0 liters per minute. The dioxin will be collected on a glass fiber filter in a three-piece cassette, operated in the open-face mode. A minimum sampling time of 420 minutes (1260 liters) will be necessary. Appropriate analytical methods can detect a level of 0.5 nanograms per sample; therefore, the lower detection limit will be 0.4 nanograms per cubic meter for 1260 liters of air collected. Note that this level is above the PEL established, but, since full-face, air-purifying respirators are minimal protection required when working with 2,3,7,8 TCDD, this level is below the exposure level when applying the respiratory protection factor. Any measure concentration above 0.5 mg/m^3 requires the use of air-supplied respirators.

Since TCDD has a low vapor pressure, very little gaseous phase TCDD is expected to be present. Therefore, sorbent tube samples will be taken only during the early phases of the job. If no TCDD is detected, this sampling method will be discontinued. To obtain these samples, XAD-2 sorbent tubes will be used as a back-up to the filters described previously. Therefore, the same volume of air will be sampled and the same detection limits will be used. Also, the analytical procedures will be the same.

The dioxin samples taken will be prepared for analysis by extraction of the filters (or sorbent tubes) with subsequent cleanup by liquid chromatography. Analysis will be high-resolution gas chromatography/low-resolution mass spectrometry operating in a selected ion mode. Turnaround time for analyses will be no greater than 48 hours.

The NIOSH Sampling and Analytical Methods will be followed when evaluating other chemical hazards (outlined in Section 5.A.2.) at the site. The amount of sampling activity will vary according to the location of work crews. The Regional Manager for Health and Safety will coordinate the sampling for these chemicals.

The quality assurance/quality control will be as follows:

- o The personal sampling pumps will be calibrated before and after each use with the standard bubble meter. All volumes will be adjusted to standard temperature and pressure, if necessary.

- o A chain-of-custody form will be kept for each sample. The form will be signed by the person taking the sample, the person(s) transferring the sample to the laboratory, and by the laboratory receiving the sample.

- o There will be one blank filter and one blank spike with 0.5-2.5 nanograms of dioxin included with each set of dioxin samples sent to the laboratory. The blanks and spikes will be labeled in such a way as to be indistinguishable from the field sample. The blanks and spikes will be utilized to determine precision and accuracy of the laboratory.

H. General Work Practices

1. At least one copy of this procedure shall be available at each 2,3,7,8 TCDD job work site.

2. Contaminated protective equipment, such as respirators, hoses, boots, etc., shall not be removed from the regulated area until it has been cleaned, or properly packaged and labeled.

3. Legible and understandable precautionary labels shall be affixed prominently to containers of contaminated scrap, waste, debris, and clothing.

4. Removal of dioxin-contaminated soil from protective clothing or equipment by blowing, shaking, or any other means which disperses contaminated material into the air is <u>prohibited</u>.

5. No food or beverages shall be present or consumed in the regulated area.

6. No tobacco products shall be present or used, and cosmetics shall not be applied in the regulated area.

7. 2,3,7,8 TCDD-contaminated materials shall be stored in tightly closed containers in well ventilated areas.

8. Containers shall be moved only with the proper equipment and shall be secured to prevent dropping or loss of control during transport.

9. Emergency equipment shall be located outside storage areas in readily accessible locations which will remain minimally contaminated with 2,3,7,8 TCDD.

10. All areas that have been determined as uncontaminated inside the regulated area will be clearly marked as such. No personnel, equipment, etc. shall be in these areas until they have been decontaminated.

11. The ultraviolet process shall be controlled as follows:

    a. Shielding of the lamp is necessary to prevent burns to the skin and eyes. The shields must be fireproof, opaque, and not degenerate under the UV.

    b. There shall be no direct light visible to the operators.

    c. The exposure to reflected light shall be avoided. This may be accomplished by coating reflective surfaces with black UV-adsorbing paint.

    d. Protective lenses on the respirators shall be utilized if shielding is not complete.

    e. Since the UV light operates at a very high temperature, exposed hot surfaces shall have guards.

    f. Signs shall be affixed in the UV area warning of UV radiation and potential hot surfaces.

12. For operation of rotating equipment, such as grinders, rotary desorber, and screw feeder, appropriate guards must be in place. Standard lock-out/red tag procedures must be followed for any maintenance or inspection.

I. Heat Stress

The heat stress of employees on site will be monitored by the Wet Bulb Globe Temperature Index (WBGT) technique. This method will require the use of a heat stress monitoring device, such as the Wibget Heat Stress Monitor (Renter Stokes).

The WGBT shall be compared to the Threshold Limit Values (TLV) outlined in the ACGIH TLV's Manual, and a work-rest regimen established, as necessary, according to the WBGT obtained. Note that 3°C must be subtracted from the TLVs for heat stress listed to compensate for the wearing of impermeable protective clothing.

One or more of the following control measures can be used to help control heat stress:

1. Provision of adequate liquids to replace lost body fluids. Employees must replace water and salt lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.

2. Replacement fluids can be a 0.1% salt water solution, commercial mixes such as Gatorade or Quick Kick, or a combination of these with fresh water. Employees should be encouraged to salt their foods more heavily.

3. Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.

4. Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments.

5. All breaks are to be taken in a cool rest area (77°F is best).

6. Employees shall remove impermeable protective garments during rest periods.

7. Employees shall not be assigned other tasks during rest periods.

8. All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

9. Since the UV process can generate radiant heat, employees should avoid this area as much as practical.

6. Emergency Actions

In the event of an emergency, the following procedures will be followed:

A. All employees on site will become familiar with the emergency procedures of the facility. These procedures will be followed in case of an incident.

B. Facilities will be located in the work area to enable employees to immediately wash any affected skin area or the eyes if they come into contact with contaminated materials.

C. If an injury/illness is the result of a chemical exposure, information about the specific chemical will be given to the attending physician. Data on the chemicals involved will be distributed to the nearest medical facilities at both sites. At NCBC, a community hospital is located immediately outside the base, and at JI, a dispensary with two doctors is available.

D. At least two fire extinguishers shall be located in the thermal desorber/UV photolysis area. These extinguishers shall have a minimal rating of 10B:C.

E. Emergency shutdown procedures for the process equipment will be included in the Standard Process Operating Procedures and will be posted at the equipment. All ITC operational personnel will be trained in their use.

Attachment 1

PERSONNEL DECONTAMINATION

I. Decontamination and Break Area 1 Set-Up

The decontamination area, approximately an 8' X 20' area, and break area 1, approximately a 10' X 14' area, will be completely covered by a double layer of polyethylene sheeting. The edges of the poly sheeting will be secured by appropriate means (such as blocks, sand bags, timbers, ect.).

II. Sequence for Total Decontamination

Once an employee is ready to exit the site, the following procedures will be followed:

A. Station 1 - Wash
A large wash tub (approximately 3' in diameter) will be filled with a detergent (such as trisodium phosphate)/water solution. The employee will step into this tub and a scrub brush will be available to remove gross decontamination from the boots, protective suit, and gloves. Artificial turf will be placed in the bottom of the tub to assist in cleaning the soles of the boots.

B. Station 2 - Rinse
A large wash tub will be filled with water. The employee will step directly from the wash tub to this tub for total rinse.

C. Station 3 - Tape and Outer Glove Removal
A trash container with heavy duty trash bags will be available to deposit tape and outer gloves. Note: Viton gloves will be desposited in a separate smaller bucket made available.

D. Station 4 - Suit and Boot Removal
A trash container with heavy duty trash bags will be available to deposit disposable suits. A rack will be availabe to hang reusuable protective suits. Boots will be placed next to the trash container. Note: Suits are to be removed in an inside out fashion.

E. Station 5 - Respirator Removal
A rack will be available to hang the respirators on.

F. Station 6 - Inner Glove and Undergarment Removal
A trash container with heavy duty trash bags will be available to deposit inner gloves and disposable undergarments.

G. Decontaminat on - Trailer
All employee will thoroughly shower in the doncontamination trailer before leaving the site. Street clothes will be donned in the clean side of the trailer.

III. Break Procedures

A. Lunch
All employees will do total decontamination as described in Section II prior to lunch. The lunch break will be taken at Break Area 2.

B. Breaks
For break purposes, the following procedures will be followed:

1. Follow steps A-C of the total decontamination procedure.

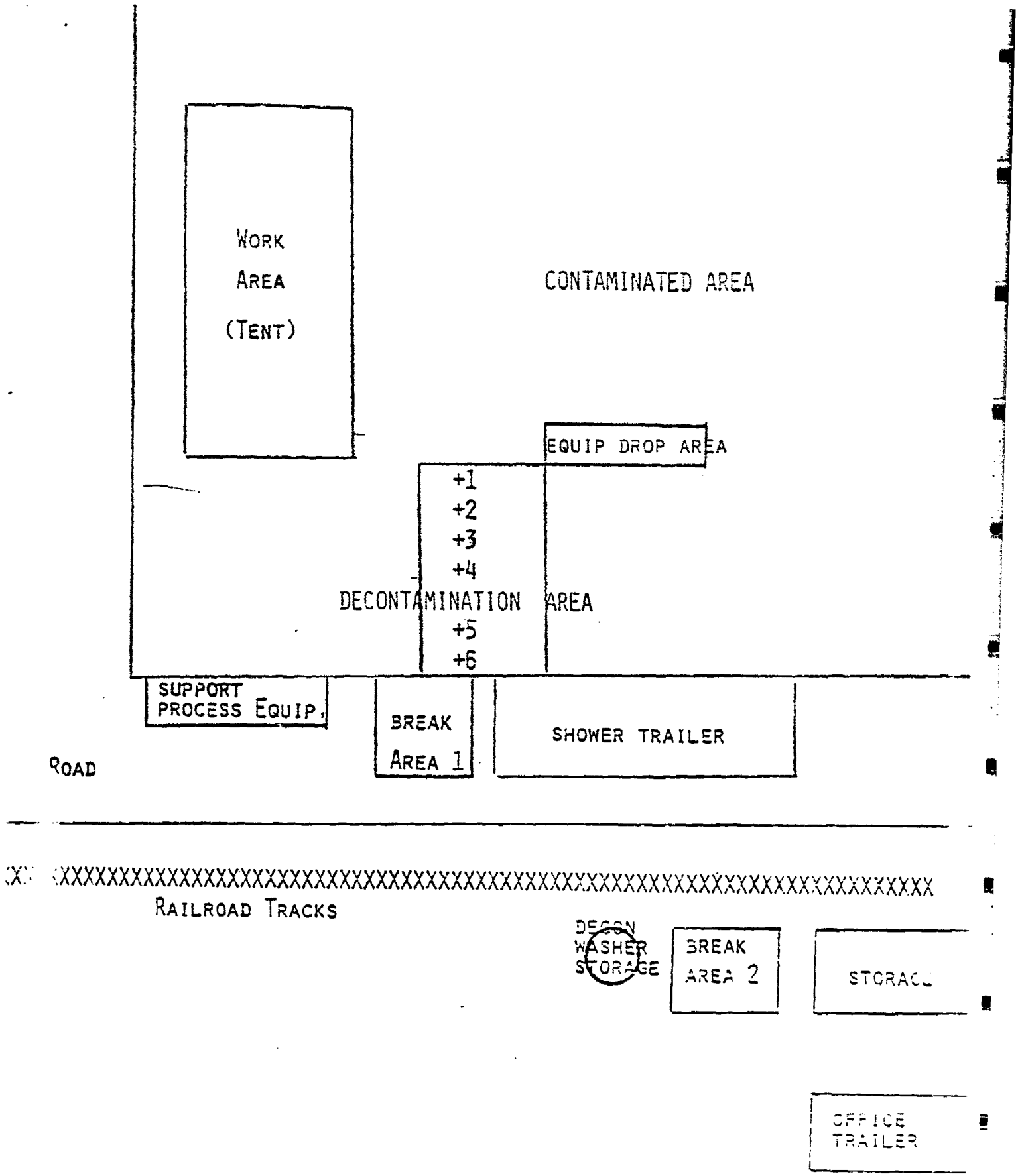
2. At Station 4, if disposable yellow tyvek suits are worn, remove boots and suit (for disposal). Don white tyvek booties to wear to break area 1. If PVC suits are worn, leave boots and suit on and open the suit to the waist.

3. At Station 5, remove the respirator. The respirator will be identified and you will don it after break. Alcohol wipe pads will be available to clean the respirator.

4. At Station 6, remove inner gloves

5. Wash face and hands in the break area prior to drinking or smoking. Food is <u>not</u> allowed in the break area.

6. Protective clothing will be available in the break area to don prior to reentry into the contaminated zone. The boots and respirators left at Stations 4 and 6 will be donned. Clean the respirator with an alcohol wipe prior to putting it on.


WORK
AREA
(TENT)
CONTAMINATED AREA
EQUIP DROP AREA
+1
+2
+3
+4
DECONTAMINATION AREA
+5
+6
SUPPORT
PROCESS EQUIP.
BREAK
AREA 1
SHOWER TRAILER
ROAD
RAILROAD TRACKS
DECON
WASHER
STORAGE
BREAK
AREA 2
STORAGE
OFFICE
TRAILER

Attachment 2

IT CORPORATION

MEDICAL EXAMINATION REPORT

Date

To: _____

Company: _____

Location: _____

_____ has received the appropriate:

- ☐ preemployment examination
- ☐ baseline examination
- ☐ periodic examination
- ☐ DOT examination
- ☐ Other _____

and has been found to be:

- ☐ acceptable, without restriction
- ☐ acceptable, subject to the attached "Physical Activity Restriction"*
- ☐ not acceptable

as a:

- ☐ casual employee
- ☐ permanent employee

_____
Occupational Safety & Health

* For "Physical Activity Restriction":
1. Have employee read and sign restriction
2. Provide manager signature
3. Retain a copy
4. Return to the Occupational Safety & Health Department

Distribution: Occupational Safety & Health
Regional Administration
Corporate Personnel
Manager

Form IC-125 (rev. 10/79)

Attachment 3

IT CORPORATION

Physical Activity Restriction

EMPLOYEE'S NAME _____ DATE _____

DIVISION _____ LOCATION _____

DATE OF INJURY/EXAM _____ JOB TITLE _____

Employee is subject to the following physical activity restriction(s):

_____

_____

_____

_____

_____

_____

_____

☐ Acceptable for work under restriction stated above

☐ Not acceptable for work under restriction stated above

By _____

Date _____

Duration: ☐ Permanent

☐ Temporary

From: _____

To: _____

_____ Employee Date

_____ Manager Date

_____ Health & Safety Date

Distribution: Occupational Safety & Health
Regional Administration
Manager

ITC Form 94108
(rev. 3/83)

IT CORPORATION

☐ CORPORATION ☐ ENVIROSCIENCE ☐ ENVIRONMENTAL

☐ SERVICES ☐ TRANSPORTATION ☐ NUCLEAR SERVICES

☐ BATON ROUGE ☐ BENSON RIDGE ☐ CINCINNATI ☐ EDISON

☐ IMPERIAL VALLEY ☐ KNOXVILLE ☐ LOS ANGELES ☐ MARTINEZ

☐ SAN DIEGO ☐ SAN JOSE ☐ TAFT ☐ MIDLAND

PERSONAL HISTORY RECORD

Attachment 4

NAME _____ SEX _____ AGE _____ BIRTH DATE _____ SOC. SEC. NO. _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____ TELEPHONE NO. ( ) _____

APPLICANT NOTE - READ CAREFULLY

THIS INFORMATION IS TO HELP PLACE YOU IN A JOB SAFE TO YOURSELF AND TO OTHERS ACCORDING TO YOUR PHYSICAL ABILITY. ANSWER EVERY QUESTION (✓).

DO YOU OR HAVE YOU EVER HAD: (CHECK EVERY ITEM)

	YES	YEAR	NO		YES	YEAR	NO		YES	YEAR	NO		YES	YEAR	NO
1 GLASSES FOR READING				28 MENINGITIS				55 HIGH BLOOD PRESSURE				81 PAINFUL OR SWOLLEN JOINTS			
2 GLASSES FOR DISTANCE				29 A "STROKE"				56 GAINED OR LOST WEIGHT PAST YEAR				82 RHEUMATISM			
3 EYE TROUBLE. Other than glasses				30 PARALYSIS				57 BLEEDING OR BRUISING TENDENCY				83 ARTHRITIS			
4 EYE IRRITATION				31 NERVOUS ATTACKS				58 FREQUENT NAUSEA				84 A KNEE INJURY			
5 NOSE TROUBLE				32 MENTAL TROUBLE				59 FREQUENT VOMITING				85 SWOLLEN ANKLES			
6 BROKEN NOSE				33 SHOCK TREATMENT				60 ULCERS				86 FOOT TROUBLE OR PAINFUL FEET			
7 SINUS INFECTION				34				61 STOMACH TROUBLE				87 BACK TROUBLE			
8 HAY FEVER				35 ALLERGIES				62 CHRONIC INDIGESTION				88 SPINE TROUBLE			
9 MOUTH TROUBLE				36				63 ABDOMINAL PAIN				89 OSTEOMYELITIS (BONE INFECTION)			
10 CONSIDERABLE TEETH TROUBLE				37 SKIN TROUBLE OR RASHES				64 APPENDICITIS				90 ALCOHOLISM			
11				38 CHANGE IN SKIN COLOR				65 GALL BLADDER TROUBLE				91 DIABETES			
12 BAD HEARING				39 A GOITER				66 JAUNDICE				92 MALARIA			
13 EAR TROUBLE				40 CHEST PAIN				67 BOWEL TROUBLES				93 ANEMIA OR OTHER BLOOD CONDITION			
14 RUNNING EAR				41 BREAST TROUBLE				68 COLITIS				94 CANCER			
15 RINGING IN THE EAR				42 CHRONIC CHEST CONDITION				69 PILES				95 GROWTHS OR TUMORS			
16 PUNCTURED EAR DRUM				43 LUNG DISEASE				70 DARK URINE				96 ANY CHRONIC AILMENT			
17 SORE THROAT				44 SHORTNESS OF BREATH				71 DO YOU SMOKE				97 BLOOD DISORDERS IN FAMILY			
18 FAINTING				45 A FEELING OF TIGHTNESS IN CHEST				72 HAVE YOU EVER SMOKED				98 TETANUS SHOT LAST 10 YEARS FOR EMPLOYEE OR SPOUSE (S)			
19 FREQUENT HEADACHES				46 ASTHMA				73 MORNING COUGH				99 NUMBER OF PREGNANCIES			
20 HEAD INJURY				47 NIGHT SWEATS				74 KIDNEY TROUBLE				100 NUMBER OF MISCARRIAGES			
21 SKULL FRACTURE				48 TUBERCULOSIS				75 URINARY BLADDER TROUBLE				101 FEMALE SURGERY			
22 BRAIN CONCUSSION				49 SILICOSIS				76 VENEREAL DISEASE				102 DATE LAST PREGNANCY FOR FEMALE APPLICANTS			
23 DIZZY SPELLS				50 CHRONIC COUGH				77 SWOLLEN FACE OR ANKLES				103 ARE YOUR PERIODS REGULAR			
24 FAINTING SPELLS				51 COUGHING UP OF BLOOD				78 RUPTURE OR HERNIA				104 DATE LAST PERIOD			
25 CONVULSIONS				52 HEART TROUBLE OR A HEART ATTACK				79							
26 EPILEPSY				53 FREQUENT COLDS				80 BROKEN BONES OR DISLOCATIONS							
27 LIGHT HEADED															

EXPLAIN FULLY ITEMS CHECKED YES: _____

WHAT ILLNESS HAVE YOU HAD IN THE PAST 5 YEARS: _____

WHEN DID YOU LAST SEE A DOCTOR? _____ FOR WHAT? _____

NAME AND ADDRESS OF PERSONAL PHYSICIAN _____ DATE OF LAST VISIT _____ REASON _____

WHAT MEDICINES ARE YOU NOW TAKING? _____

HAVE YOU EVER BEEN REJECTED FOR ANY ... _____

Attachment 4

OCCUPATIONAL HISTORY

LIST KINDS OF WORK DONE	WHAT MACHINES AND MATERIALS HAVE YOU HANDLED?	NO. OF YEARS

ALL OCCUPATIONAL ILLNESS & INJURIES

DATE	NATURE OF ILLNESS OR INJURIES	NAME OF COMPANY & CITY

MILITARY SERVICE - CONNECTED DISABILITIES

NATURE OF DISABILITY	%	ANT. REC. PER NO.	BRANCH OF SERVICE	SERIAL NO.	CLAIM NO.	V.A. REGIONAL OFFICE

HOSPITALIZATION _____ WHY _____ WHEN _____ WHERE _____

ALL HOSPITALIZATIONS - ACCIDENTS - SICKNESS - (EXCEPT OCCUPATIONAL)

DATE	NATURE	DATE	NATURE
1.		3.	
2.		4.	

ALL PHYSICAL DEFECTS OR ABNORMALITIES AT THIS TIME

PARTS OF BODY	EXTENT OF DEFECT

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THE FOREGOING ANSWERS ARE COMPLETE AND CORRECT AND I UNDERSTAND THAT ANY FALSIFICATION OF THIS RECORD IS CAUSE FOR TERMINATION. I FURTHER UNDERSTAND THAT THIS PHYSICAL EXAMINATION IS CONDUCTED FOR THE EMPLOYER AS A PREREQUISITE TO EMPLOYMENT. I AGREE THAT THIS FORM AND ANY INFORMATION ACQUIRED AS A RESULT OF THIS EXAMINATION WILL BECOME THE PROPERTY OF THE EMPLOYER. I HEREBY GRANT PERMISSION TO OBTAIN RECORDS FROM MY PREVIOUS PHYSICIAN(S) OR HOSPITAL(S) WHERE I HAVE BEEN TREATED. UPON MY TERMINATION OF EMPLOYMENT I AGREE TO PARTICIPATE IN A COMPANY MEDICAL EXAMINATION.

JOB POSITION _____ DATE _____ SIGNATURE _____

PHYSICIAN'S REVIEW OF THE ABOVE HISTORY _____

MEDICAL EXAMINATION

HEIGHT_____ WEIGHT_____ RESPIRATORY_____ B.P._____ PULSE_____ TEMPERATURE_____

	WITHOUT GLASSES RIGHT	WITHOUT GLASSES LEFT	GLASSES/CONTACTS RIGHT	GLASSES/CONTACTS LEFT
1. DISTANT VISION SNELLEN	20/	20/	20/	20/
2. NEAR VISION SLOAN	20/	20/	20/	20/

	NORMAL YES	NORMAL NO	TEST NOT PERFORMED	MEDICAL EXAMINER'S FINDINGS
. Psychiatric-Neurologic				
. General Appearance - Physique				
. Head & Neck				
. Chest				
. Cardiovascular				
. Abdomen				
. Back				
. Hernia - Genicalia				
. Arms - Legs				
. Skin				
. Rectal				
ABORATORY				
. Urinalysis				
. CBC				
. Chemistry Panel				
. Audiometry				
. Spirometry				
. EKG				
. Chest x-ray				
. Back x-ray				
. DOT				
. May wear respirator				
. May work with carcinogens				

SUMMARY OF EXAMINATION -WORK RESTRICTONS- RECOMMENDATIONS

_____

_____

_____

_____

_____

_____

_____

AMINING PHYSICIAN

NAME (Please Print) _____ PROFESSIONAL DEGREE

SIGNATURE _____ DATE _____ PHONE NO. _____

ADDRESS _____ CITY _____ STATE _____

PORATION

Attchment 5

UPDATE/PERIODIC PHYSICAL EXAMINATION

DATE_____

NAME_____ WORK POSITION_____ SEX_____ AGE_____

ADDRESS_____ CITY_____ STATE_____

BIRTH DATE_____ SS#_____ PHONE NO._____

IT IS IMPORTANT TO BRING TO THE ATTENTION OF THE DOCTOR ANY CHANGES IN YOUR HEALTH STATUS OCCURRING SINCE YOUR LAST HEALTH EXAMINATION. THEREFORE PLEASE CAREFULLY ANSWER THE FOLLOWING QUESTIONS. EXPLAIN ALL ITEMS CHECKED YES.

		YES	NO
1.	Have you had any injury of illness other than colds?		
2.	Have you been hospitalized for any reason?		
3.	Have you had any surgery (in or out of the hospital)?		
4.	Have you been under the care of a physician or other medical practitioner?		
5.	Have you had any abnormal x-rays or electrocardiograms; any abnormal blood, urine, or laboratory tests?		
6.	Have you been nervous, depressed, or tense or had any emotional trouble?		
7.	Have you had headaches, dizzy spells or black-outs?		
8.	Have you had trouble with your eyes - change in vision, blurring, seeing double, pain or glaucoma?		
9.	Have you had trouble with nose and throat - persistent hoarseness, voice change?		
10.	Have you had trouble with ears - pain, change in hearing; noise exposure?		
11.	Have you had chronic cough; any sputum that was bloody, excessive or colored; any pain on breathing?		
12.	Have you had shortness of breath, difficulty breathing, any swelling of the ankles?		
13.	Have you had any chest pain, or history of heart trouble or high blood pressure?		
14.	Have you had abdominal pain (or distress) or persistent vomiting?		
15.	Have you had any change in bowel habits; any bloody or tarry black stools?		
16.	Have you had trouble starting, stopping, or holding urine, any bloody or very dark urine; any discharge?		
17.	Are you now taking any medication?		
18.	Have you had skin rashes, sores, new or growing lumps, or changing moles?		
19.	Have you gained or lost 10 pounds or more?		
20.	Have you had any pain, swelling or stiffness of back or joints?		
21.	Have you been bleeding or bruising more than at time of last examination?		
22.	Has there been any change in the family medical history, such as appearance of diabetes, heart disease, strokes, blood problems or conditions that you think may be inherited?		
23.	Are you a Diabetic?		
24.	Are you pregnant?		
25.	Have you had a Tetanus Immunization within the last 10 years?		

26. If you still smoke, how much?_____ How many years have you smoked?_____

27. Present use of alcohol: social_____ moderate_____ heavy_____

28. If you have any medical problems you wish to discuss, please write them in.

EXPLAIN ITEMS CHECKED YES

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THE FOREGOING ANSWERS ARE COMPLETE AND CORRECT AND I UNDERSTAND THAT ANY FALSIFICATION OF THIS RECORD IS CAUSE FOR TERMINATION. I AGREE THAT THIS FORM AND INFORMATION ACQUIRED AS A RESULT OF THIS EXAMINATION WILL BECOME THE PROPERTY OF THE EMPLOYER. I [illegible] PERMISSION TO OBTAIN RECORDS FROM MY PREVIOUS PHYSICIAN(S) OR HOSPITAL(S) WHERE I HAVE BEEN [illegible]

Attachment b

SUPERVISORS EMPLOYEE INJURY REPORT

☐ State Compensation
☐ Federal L & H

Date Received

Date Employer's First Submitted

This is an official document to be initiated by the Supervisor. Be thorough and accurate. Answer all questions.

Injured's Name _____ Sex ____ SS # _____ Birthdate _____

Home Address _____ City _____ Phone _____

Classification _____ Hourly Wage _____ Hire Date _____

IT Division _____ Location _____

Who work was being performed for? _____ Address _____

Exact location of incident _____

Date of Injury _____ Time Shift Began _____ Time Injured _____

Time Reported _____ Did employee leave work? _____ Left When? _____

Date & Time Employee Returned To Work _____

Supervisor/foreman _____ Leadman _____

Nature of Injury _____ Exact Body Part Affected _____

☐ NEAR MISS ☐ FIRST AID ☐ DOCTOR CASE ☐ HOSPITALIZED

Doctor's Name _____ Address _____ City _____

Hospital _____ Address _____ City _____

SUPERVISOR

What was employee doing at time of incident? _____

How did incident occur? _____

Incident witnesses _____ Statements Attached ☐ Yes ☐ No Did you witness incident? ☐ Yes ☐ No

Why did incident occur? _____

Has corrective action been initiated to prevent recurrence? ☐ Yes ☐ No Explain _____

Supervisor's Signature | Date Report Prepared | Injured's Signature | Date

MANAGER

What unsafe condition or act caused incident? _____

Your recommendation? _____

Signature | Date

OCCUPATIONAL SAFETY & HEALTH

Concur with action taken? ☐ Yes ☐ No Remarks _____

Signature | Date

Distribution: Insurance
Medical
Safety
Manager

ITC FORM 9300 1-I (August 1980)

IT CORPORATION

RETURN TO WORK AUTHORIZATION FOLLOWING MEDICAL ABSENCE

_____
Date

To: _____

Company: _____

Location: _____

_____ has been absent from work due to a:

- ☐ work related illness or injury _____ (Date of injury)
- ☐ nonindustrial illness or injury
- ☐ other

and has provided a satisfactory medical release certificate for:

- ☐ return to work, without restriction
- ☐ return to work subject to the attached "Physical Activity Restriction"*

_____
Occupational Safety and Health

*For "Physical Activity Restriction":
1. Have employee read and sign restriction
2. Provide manager signature
3. Retain a copy
4. Return to the Occupational Safety & Health Department

Distribution: Occupational Safety & Health
Regional Administration
Corporate Personnel
Manager

ITC 9001-T (replaces 10-1441)

Attachment 8

TAILGATE SAFETY MEETING

Division/Subsidiary _____ Facility _____

Date: _____ Time: _____ Job Number: _____

Customer _____ Address: _____

Specific Location: _____

Type of Work: _____

Chemicals Used: _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: _____

Chemical Hazards: _____

Physical Hazards: _____

Emergency Procedures: _____

Hospital / Clinic: _____ Phone:( ) _____ Paramedic Phone:( ) _____

Hospital Address _____

Special Equipment _____

Other _____

ATTENDEES

NAME PRINTED	SIGNATURE

Meeting conducted by: _____ _____

NAME PRINTED SIGNATURE

SUPERVISOR _____ MANAGER _____

Occupational Safety -

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: N/A	EMERGENCY TELEPHONE NO.: N/A
ADDRESS (Number, Street, City, State, and ZIP Code): N/A	
CHEMICAL NAME AND SYNONYMS: Dioxin, 2,3,7,8 tetrachlor-dibenzo-p-dioxin	TRADE NAME AND SYNONYMS: 2,3,7,8-TCDD, TCDD, TCDBD
CHEMICAL FAMILY: Chlorinated hydrocarbon	FORMULA: $C_{12} H_4 Cl_4 O_2$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%
PIGMENTS			BASE METAL	
CATALYST			ALLOYS	
VEHICLE N/A			METALLIC COATINGS N/A	
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX	
ADDITIVES			OTHERS	
OTHERS				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%
An impurity in herbicide 2,4,5-T	
CAS Number 1746-01-6	
RTECS HP 3500000	

SECTION III - PHYSICAL DATA

BOILING POINT (°F) @ 1ATM >1292F	Decomposes	SPECIFIC GRAVITY (H_2O=1)	N
VAPOR PRESSURE (mm Hg.) @-77°F	1.7×10^{-6} mm Hg	PERCENT, VOLATILE BY VOLUME (%) Unknown	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1) Unknown	
SOLUBILITY IN WATER G/100 G water at 20°C 200ppm		Melting point	5
APPEARANCE AND ODOR Colorless, crystalline solid, Decomposes when exposed to UV			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS: LEL N/A
EXTINGUISHING MEDIA: Use alcohol foam, CO_2, dry chemical, or water fog on surrounding areas	
SPECIAL FIREFIGHTING PROCEDURES: Wear SCBA and full protective clothing	
UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A	

Chloracne, kidney/liver damage, skin/eye irritation, fatique, cough

CNS depression, cancer (lab animals)

EMERGENCY AND FIRST AID PROCEDURES

Wash eyes 15 minutes with copious amounts of water and skin with water and soap. Aft exposure by inhalation remove to fresh air immediately. Upon ingestion seek medical attention immediately. Seek medical attention after any exposure.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID N/A
	STABLE	X	

INCOMPATABILITY (Materials to avoid)

Unknown

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Contain dry or liquid material and keep from spreading poisonous solid N.O.S. or Poison B, Solid, N.O.S.

Reportable Quantities 2 lb

WASTE DISPOSAL METHOD

UN 2811

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Fullface air purifying respirator with organic vapor cartridges with dust, fume, mist

VENTILATION	LOCAL EXHAUST: Use whenever possible	SPECIAL: Supplied air or SCBA
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES: Viton gloves with PVC or Neoprene (OG) Outer Glove

EYE PROTECTION: Faceshield, goggles or FF Respirator

OTHER PROTECTIVE EQUIPMENT

PVC suits/poly Tyvek depending on the situation; PVC or Neoprene boots with disposabl shoe coverlets. Taping necessary

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Eyewash and shower in vicinity. Eating, smoking, drinking, etc prohibitied in the work area. Minimize contact at all times

OTHER PRECAUTIONS

Material is very persistant in the environment. Highly toxic. Carcinogen, mutagen, teratogen in animals

*with higher concentrations or greater potential per exposure

APPENDIX F

MODIFIED PRIORITY POLLUTANT LIST FOR HERBICIDE ORANGE CONTAMINATION

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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APPENDIX F

MODIFIED PRIORITY POLLUTANT LIST FOR HERBICIDE ORANGE CONTAMINATION

The Priority Pollutant List (PPL) referenced in Section 307.(a)(1) of the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 consisted of 129 toxic pollutants or combinations of pollutants. This list was subsequently reduced to 126 by formal deletions presented in the Federal Register (di- and tri-chlorofluoromethanes, January 8, 1981, 46 FR 2266; and bis-(chloromethyl) ether, February 4, 1981, 46 FR 10723).

Based on a review of this list by Chemical Sciences personnel at EG&G Idaho, Inc., the list of 125 priority pollutants in Table F-1 was evaluated as necessary for laboratory analysis of the treated soil to support soil restoration evaluation. The one chemical not included is 1,2-diphenylhydrazine (PPL #37) because its reactivity rules out the presence of the chemical because of the time since the HO storage area was used.

The list is organized into six groups: purgeable organics, base/neutral extractable organic compounds, acid extractable organic compounds, pesticides/PCBs, metals, and miscellaneous. The PPL number and chemical analysis serial (CAS) number are included for cross reference.

TABLE F-1. MODIFIED PPL FOR HO CONTAMINATION

Priority Pollutant Number	Name	CAS Number
	Purgeable Organics (28)	
	Acrolein	107-02-8
	Acrylonitrile	107-13-1
4V	Benzene	71-43-2
6V	Carbon tetrachloromethane (carbon tetrachloride)	56-23-5
7V	Chlorobenzene	108-90-7
10V	1,2-Dichloroethane	107-06-2
11V	1,1,1-Trichloroethane	71-55-6
13V	1,1-Dichloroethane	75-34-3
14V	1,1,2-Trichloroethane	79-00-5
15V	1,1,2,2-Trichloroethane	79-34-5
16V	Chloroethane (ethyl chloride)	75-00-3
19V	2-Chloroethyl vinyl ether	100-75-8
23V	Trichloromethane (chloroform)	67-66-3
29V	1,1-Dichloroethene	75-35-4
30V	Trans-1,2-dichloroethene	156-60-5
32V	1,2-Dichloropropane	78-87-5
33V	1,3-Dichloropropane	10061-01-05
38V	Ethyl benzene	100-41-4
44V	Dichloromethane (methylene chloride)	75-09-2
44V	Chloromethane (methyl chloride)	74-87-3
46V	Bromomethane (methyl bromide)	74-83-9
47V	Tribromomethane (bromoform)	75-25-2
48V	Bromodichloromethane	75-27-4
51V	Dibromochloromethane	124-48-1
85V	Tetrachloroethene	127-18-4
86V	Tuolene	108-88-3
87V	Trichloroethene	79-01-6
88V	Chloroethene (vinyl chloride)	75-01-4
	Base/Neutral Extractable Organic Compounds (45)	
1B	Acenaphthene	83-32-9
5B	Benzidine	92-87-5
8B	1,2,4-Trichlorobenzene	120-82-1

TABLE F-1. MODIFIED PPL FOR HO CONTAMINATION
(CONTINUED)

Priority Pollutant Number	Name	CAS Number
9B	Hexachlorobenzene	118-74-1
12B	Hexachloroethane	67-72-1
18B	bis (2-Chloroethyl) ether	111-44-4
20B	2-Chloronaphthalene	91-50-1
25B	1,2-Dichlorobenzene	95-58-1
26B	1,3-Dichlorobenzene	541-73-1
27B	1,4-Dichlorobenzene	106-46-7
28B	3,3'-Dichlorobenzidine	91-94-1
33B	2,4-Dinitrotoluene	131-11-3
36B	2,6-Dinitrotoluene	606-20-3
39B	Fluoranthene	206-44-0
40B	4-Chlorophenyl phenyl ether	7005-72-3
41B	4-Bromophenyl phenyl ether	101-55-3
42B	bis (2-Chloroisopropyl) ether	108-60-1
43B	bis (2-Chloroethoxy) methane	111-91-1
52B	Hexachlorobutadiene	87-68-3
53B	Hexachlorocyclopentadiene	77-47-4
54B	Isophorone	78-59-1
55B	Naphthalene	91-20-3
56B	Nitrobenzene	98-95-3
62B	Diphenyl nitrosamine (N-nitrosodiphenylamine)	62-75-9
63B	Di-n-propyl nitrosamine (N-Nitrosodi-n-propylamine)	621-64-7
66B	bis (2-Ethylhexyl) phthalate	117-81-7
67B	Benzyl butyl phthalate	85-68-7
68B	Di-n-butyl phthalate	84-74-2
69B	Di-n-octyl phathalate	117-84-0
70B	Diethyl phathalate	84-66-2
71B	Dimethyl phathalate	131-11-3
72B	Benzo(a)anthracene	56-55-3
73B	Benzo(a)pyrene	50-32-8
74B	Benzo(b)fluoranthene	205-99-2
75B	Benzo(k)fluoranthene	207-08-9
76B	Chrysene	218-01-9

TABLE F-1. MODIFIED PPL FOR HO CONTAMINATION
(CONTINUED)

Priority Pollutant Number	Name	CAS Number
77B	Acenaphthylene	208-96-8
78B	Anthracene	120-12-7
79B	Benzo(g,h,i)perylene	191-24-2
80B	Fluorene	86-73-7
81B	Phenathrene	81-01-8
82B	Dibenzo(a)anthracene	53-70-3
83B	Indeno(1,2,3-c,d)pyrene	193-39-5
84B	Pyrene	129-00-0
?	Dimethyl nitrosamine (N-nitrosodimethylamine)	86-30-6
	Acid Extractable Organic Compounds (11)	
21A	2,4,6-Trichlorophenol	88-06-2
22A	4-Chloro-3-methylphenol (p-Chloro-m-cresol)	59-50-7
24A	2-Chlorophenol	95-57-8
31A	2,4-Dichlorophenol	120-83-2
34A	2,4-Dimethylphenol	105-67-9
57A	2-Nitrophenol	88-75-2
58A	4-Nitrophenol	100-02-7
59A	2,4-Dinitrophenol	51-28-5
60A	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-o-cresol)	534-52-1
64A	Pentachlorophenol	87-86-5
65A	Phenol	108-95-1
	Pesticides/PCBs (26)	
	Aldrin	309-00-2
	Alpha-BHC	319-84-6
	Beta-BHC	319-85-7
	Gamma-BHC (Lindane)	58-89-9
	Delta-BHC	319-86-8
	Chlordane	57-74-9
	4,4'-DDD	72-55-8
	4,4'-DDE	72-54-8

TABLE F-1. MODIFIED PPL FOR HO CONTAMINATION
(CONCLUDED)

Priority Pollutant Number	Name	CAS Number
	4,4'-DDT	50-29-3
	Dieldrin	60-57-1
	Endosulfan I	959-98-8
	Endosulfan II	33212-65-9
	Endosulfan sulfate	1031-07-8
	Endrin	72-20-8
	Endrin aldehyde	7421-93-4
	Heptachlor	76-44-8
	Heptachlor epoxide	1024-57-3
	Toxaphene	800-35-2
	PCB-1016	12674-11-2
	PCB-1221	1104-28-2
	PCB-1232	11141-16-5
	PCB-1242	53469-21-9
	PCB-1248	12672-29-6
	PCB-1254	11097-69-1
	PCB-1260	11096-82-5
	Metals (13)	
	Antimony	
	Arsenic	
	Beryllium	
	Cadmium	
	Chromium	
	Copper	
	Lead	
	Mercury	
	Nickel	
	Selenium	
	Silver	
	Thallium	
	Zinc	
	Miscellaneous (1)	
	Total Cyanides	

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APPENDIX G

MODIFIED EPA CARCINOGEN ASSESSMENT GROUP'S (CAG) LIST FOR HERBICIDE ORANGE CONTAMINATION

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APPENDIX G

MODIFIED EPA CARCINOGEN ASSESSMENT GROUP'S (CAG) LIST FOR HERBICIDE ORANGE CONTAMINATION

A copy of the draft "The Carcinogen Assessment Group's List of Carcinogens, July 14, 1980", dated 1984, was obtained from EPA (Headquarters) to review for compounds which could be associated with Herbicide Orange (HO). The Carcinogen Assessment Group's (CAG) list consists of chemicals for which there is substantial evidence of carcinogenicity.

Due to the generality of the CAG list, many of the listed chemicals are not applicable. Based on a screening review by Chemical Sciences personnel at EG&G Idaho, Inc., creosote and identified chemicals that are also on the EPA Priority Pollutant List (PPL) were determined as applicable for analytical testing of the treated NCBC soil to support the soil restoration evaluation. The PPL modified for HO is shown in Appendix F.

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APPENDIX H

MODIFIED LIST OF COMPOUNDS INDIGENOUS TO HERBICIDE ORANGE

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APPENDIX H

MODIFIED LIST OF COMPOUNDS INDIGENOUS TO HERBICIDE ORANGE

Prior to the destruction of the Herbicide Orange (HO) stored at the NCBC, samples were taken from drums so that the chemical composition of HO by each manufacturing source could be determined. Analytical results were presented in Aerospace Research Laboratories Report AD-A011 597, Analytical Methodology for Herbicide Orange. Volume 1: Determination of Chemical Composition, May 1975. While a number of chemicals were common to each manufacturer's HO, some chemicals of low concentration were found to be unique to a single manufacturer. Based on a review of the report data by Chemical Sciences personnel of EG&G Idaho, Inc., the following list of chemicals in Table H-1 was prepared as a spectrum of possible HO chemical constituents in the treated NCBC soil that should be analytically tested for the soil restoration evaluation.

TABLE H-1. MODIFIED SUMMARY OF COMPOSITION OF HERBICIDE ORANGE

CHEMICAL COMPOUND
2,4-Dichlorophenol
2,4,6-Trichlorophenol
Trichloroanisole
Dichloro-Methoxyanisole
Butoxydichlorophenol
Butoxytrichlorophenol
Butyl-monochlorophenoxyacetate
Butyl-dichlorophenoxyacetate
Butyl-trichlorophenoxyacetate
Butyl-methoxy-dichlorophenoxyacetate
Octyl-dichlorophenoxyacetate
Octyl-dichlorophenoxypropinonate
Octyl-trichlorophenoxyacetate
1,1-Dibutoxy-2-trichlorophenoxyethane
Octyl-methoxy-dichlorophenoxyacetate
Butyl-bis-dichlorophenoxyacetate
Butyl ester of bis Trichlorophenoxyacetic acid
Butyl ester of Trichlorophenoxy-(methoxy-dichlorophenoxy)-acetic acid
2,4-Dichlorophenoxyacetic acid (free acid)
2,4,5-Trichlorophenoxyacetic acid (free acid)

APPENDIX I

ITC INDUSTRIAL HYGIENE MONITORING REPORT IN SUPPORT OF NCBC DEMONSTRATION TESTS

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IT CORPORATION

Memorandum

To D. Helsel, IT
Robin L. Ballau, EG&G

Date August 29, 1985

From. H. Pullum HTAP

Subject. **EG&G/Air Force Site Demonstration of the Thermal Desorption/UV Photolysis Process - Health and Safety Report**

A health and safety plan was prepared and approved on May 16, 1985 for the referenced project. Coordination of this plan was performed on-site on the following dates:

May 22-23, 1985 (Corey Briggs)
May 28-31, 1985
June 5-7, 1985
June 21-24, 1985

The purpose of the on-site coordination was for initial implementation of the health and safety plan, atmosphere monitoring to assess employees potential exposure, and auditing the continuing implementation, by project management, of the plan.

The health and safety plan was followed as written with minor exceptions. The employees on the project should be commended for their awareness and concerns for health and safety. Two changes of the plan were made during my visit. They were:

1. The polyethylene coated (yellow) tyvek appeared to be strong enough to be worn when doing soil grinding, crushing, and loading activities. It was therefore decided to use the yellow tyvek instead of PVC for these activities.

2. Since no contaminated clothing was worn into the break area, and the break area was cleaned frequently, food in wrappers, such as candy bars, were allowed to be eaten in this area.

These amendments have been made in the health and safety plan for the Johnston Island demonstration.

The results of atmospheric monitoring are given in Table 1. These results are summarized as follows:

1. Employees grinding soil inside the grinding room had potential exposures of up to 35,658 picograms 2,3,7,8 TCDD per cubic meter of air (pg/m^3).

2. Employees pulverizing soil inside the grinding room had potential exposure of up to 63,241 pg/m^3.

3. Employees in the tent (outside the grinding room) operating the thermal desorber and/or UV photolysis process had potential exposures of less than 827 pg/m^3, with one measured potential exposure of 675 pg/m^3. These measurements were taken during grinding of soil inside the grinding room with 2,3,7,8 TCDD exposures outside the grinding room attributed to leaks from the room.

4. Area samples in the tent during grinding, but outside the grinding room, showed concentrations of less than 608 pg/m^3, with one measured concentration of 238 pg/m^3.

5. An area sample in the decontamination area showed a concentration of less than 877 pg/m^3.

Conclusions made from the atmospheric monitoring are as follows:

1. Employees grinding soil wore supplied air respirators which have a protection factor (PF) of 2000. Using a permissible exposure limit of 18 pg/m^3 for 2,3,7,8 TCDD would give a protection for these respirators of 36,000 pg/m^3. All measured concentrations for the employees grinding soil were less than 36,000 pg/m^3.

2. Employees pulverizing soil in the grinding room also wore supplied air respirators with a PF of 2000, giving protection of up to 36,000 pg/m^3. These employees were potentially exposed to concentrations of up to 63,241 pg/m^3. Since exposure time was short (several hours at most) and the respirators operated without any problems, adverse health effects for these employees in extremely minimal. In the future, all pulverizing operations will be done in self contained breathing apparatus, which has a PF of 10,000 plus.

3. Employees working outside the grinding room operating the other equipment (thermal desorber UV photolysis, etc.) wore powered air purifying respirators (PAPR). The PF for PAPR is listed as 1000, but there is general disagreement on this PF. Many authorities on the subject indicate the PF should be much lower, but no value has been established. These employees had potential exposures of less than 827 pg/m^3. A PF of 46 would be necessary to protect these workers, and it can be confidently assumed that a PAPR would have a PF of much greater than 46.

4. Visitors and other employees entering the work area (outside of the grinding room) wore full face air purifying respirators, with organic vapor/HEPA cartridges, which have a listed PF of 50, giving a protection of up to 900 pg/m^3. Area samples showed potential exposures of less than 608 pg/m^3 for these employees.

5. Spiked samples from this job, and other jobs, show a recovery of approximately 65% of labeled 2,3,7,8 TCDD from filters taken to the field. Some spikes have air drawn through them (such as Sample J4017 which had a recovery of 67%) and some spikes

do not (such as Sample J4027 which had a recovery of 68%). This indicates that the spiking method used by the laboratory is only 68% effective. It is also important to note that Sample J4017, a GFF, was spiked and a XAD-2 sorbent tube was used as a back-up to collect any labeled 2,3,7,8 TCDD which might be lost. The analysis of the XAD-2 tube showed nondetectable concentrations (at 260 pg) for both the labeled and other 2,3,7,8 TCDD. From this data it is apparent that the 2,3,7,8 TCDD is being collected on the glass fiber filter since there is no evidence that it is being lost and collected in the XAD-2 sorbent tube. Therefore, XAD-2 back-up tubes will not be used at Johnston Island for atmospheric monitoring.

Noise readings were taken on April 30, 1985 in the hearing zone of the grinding operator. The highest sound level was 85 dB(A). Hearing protection was provided and worn by the operator. Noise readings were taken on June 5, 1985 in the hearing zone of the thermal desorber operator. The sound level ranged form 84-86 dB(A) with an average of 85 dB(A) during operation. Hearing protection was also available for these operators.

Isopropyl alcohol readings were taken at the UV photolysis operation on June 6, 1985. None was detected on the Drager detector tube. The permissible exposure limit for isopropyl alcohol is 400 parts per million parts of air.

Heat stress readings using the WBGT method were taken throughout the demonstration. Work was performed at night due to the tremendous heat during the day. The heat stress reading established a work/rest regimen, and this regimen was followed during all on-site activities. There was no evidence of heat stress related illnesses during the job.

The health and safety log for this job is located in my office in Knoxville. This log has all calibration data for sampling pumps, heat stress readings, atmospheric monitoring data, general comments, etc. Please contact me if you need any of this information.

jn

TABLE I
ATMOSHPERIC MONITORING 2,3,7,8, TCDD
GULFPORT, MISSISSIPPI DEMONSTRATION

Date	Sample Number	Filter Media	Type of Sample	Location	Activity	Volume of Air Sampled, Cubic Meters	2,3,7,8 TCDD On Sample, Nanograms	Results, Picogram per Cubic Meter
4/30/85	J4012	XAD-2* Back-up to J4013	Area	Inside work tent, outside and adjacent to grinding room next to thermal desorber	Grinding soil and Thermal Desorber set-up	2.136	ND** at 1.30	<608.6
4/30/85	J4013	GFF***	Area	Same as J4012	Same as J4012	2.136	ND at 0.35	<164.9
4/30/85	J4013	GFF - Spiked with labeled 2,3,7,8 TCDD - Recovery of 51%						
4/30/85	J4014	XAD-2 Back-up to J4015	Area	Decontamination area where respirators are taken off	Grinding soil and Thermal Desorber set-up	1.938	ND at 0.67	<345.7
4/30/85	J4015	GFF	Area	Same as J4014	Same as J4014	1.938	ND at 1.7	<877.2
4/30/85	J4016	XAD-2 Back-up to J4017	Personnel	Rick Auten	Grinding soil	0.81	ND at 0.26	<321.0
4/30/85	J4017	GFF	Personnel	Same as J4016	Same as J4016	0.81	28	34560
4/30/85	J4017	GFF - Spiked with labeled 2,3,7,8 TCDD - Recovery of 67%						
4/30/85	J4018	GFF	Personnel	Bryant Wright	Grinding soil	1.542	55	35668
4/30/85	J4019	GFF	Personnel	Tom Geisler	Set-up of Thermal Desorber (outside grinding room)	1.482	1.0	675

*XAD Sorbent Tube
**None detected
***Glass Fiber Filter

TABLE I (cont.)

Date	Sample Number	Filter Media	Type of Sample	Location	Activity	Volume of Air Sampled, Cubic Meters	2,3,7,8 TCDD On Sample, Nanograms	Results Picogram per Cubic Meter
4/30/85	J4020	GFF	Field Blank				ND at 0.61	
4/30/85	J4021	XAD-2	Field Blank				ND at 0.95	
6/5/85	J4022	GFF	Personnel	Tom Geisler - Operating Thermal Desorber	Grinding soil and operating Thermal Desorber	1.451	ND at 1.2	<827.0
6/5/85	J4023	GFF	Personnel	Ken Fureson - Same as J4022	Same as J4022	1.533	ND at 0.82	<534.9
6/5/85	J2024	GFF	Area	Feed end of Thermal Desorber	Same as J4023	5.031	1.2	238.5
6/6/85	J4025	GFF	Personnel	Rick Auten - Grinding soil (for part of shift)	Grinding soil, operating Thermal Desorber, and operating UV photolysis	1.085	5.9	5437.8
6/6/85	J4026	GFF	Personnel	Arie Greon - Operating UV Photolysis	Same as J4025	1.430	ND at 0.58	<405.6
6/6/85	J4027	GFF	Field Blank				ND at 0.12	
6/6/85	J4027	GFF - Spiked with labeled 2,3,7,8 TCDD - Recovery of 68%						
6/7/85	J4028	GFF	Personnel	Rick Auten - Pulverizing and screening soil	Pulverizing soil and operating Thermal desorber	1.012	64	63241.1

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APPENDIX J

ITC WIPE SAMPLING PROCEDURES

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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APPENDIX J

ITC WIPE SAMPLING PROCEDURES

The following ITC NCBC equipment was identified to be decontaminated after the testing. Wipe sample locations are indicated.

a. Desorber

- Inside feed hopper
- Outside furnace/frame
- Inside inlet plenum or bellows section

b. Solvent scrubber skid

- Inside bottom of decanter tank
- Outside under filters-frame or filter housings

c. Photolysis system

- Outside bottom of feed tank and framing

d. Grinder-outside surface-not frame

e. Control panel-exterior side

f. Electrical panel-interior bottom and lower side

g. Tools and small items-composite wipe from several different items. No wipe from nonmetallic materials-assume contaminated.

The standard operating procedures established for collecting wet wipe samples are as follows:

a. Materials and Apparatus

- 3 inch x 3 inch sterile cotton gauze pads, individually wrapped
- Sample bottles, glass with Teflon^{R}-lined caps
- Hexane (pesticide grade)
- Distilled water
- Glass graduated cylinder
- Sample labels
- Sample log and chain-of-custody records
- Indelible ink pen
- Ruler or square area guide
- Tape or other marking material to outline wipe area

b. Select area for collecting a series of wet wipe samples for a matrix type. Ensure surface area is sufficient to collect all required samples.

c. Mark the location of the wipe on the item(s).

d. To collect a wipe sample, use the following procedure:

- Put on a clean pair of disposable gloves
- Remove a pad from its individually wrapped package
- Hold pad in hand
- Soak pad with 8 ml of hexane using the graduated cylinder to measure volume. Fill cylinder from laboratory squeeze bottle.

e. Sample an area by applying pressure to the pad, then draw it across the area in both directions, ensuring that the entire area is well contacted.

f. Upon completion of the wet wipe sample, carefully fold the pad over at least twice, being careful not to touch the contaminated side of the wipe pad, and place in labeled sample collection bottle. Bottles should be temporarily stored in plastic bags until all samples have been collected.

g. The sampling person in charge of field data should ensure the following information is accurately recorded.

- Sample description/item description
- Sample date and time
- Area date and time
- Area sampled
- Observations/problems, if pertinent
- Names of sampling personnel

h. Change gloves after taking each sample.

i. Upon removal of samples from the site, a Chain-of-Custody form shall be established for the samples. The Chain-of-Custody will act as a transmittal form from sampling personnel to laboratory personnel and will be signed at this time to document that samples are properly delivered and received by appropriate staff members.

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APPENDIX K

COPIES OF UNIFORM HAZARDOUS WASTE SHIPMENT FORMS FOR SHIPMENTS THAT INCLUDED DIOXIN-CONTAMINATED WASTES FROM ITC NCBC TESTS

		Page
Exhibit 1	E&E Letter on Hazardous Waste Shipment	85
Exhibit 2	Uniform Hazardous Waste Manifest for First Shipment	88
Exhibit 3	Uniform Hazardous Waste Manifest for Second Shipment	90

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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ecology and environment, inc.
195 SUGG ROAD, P.O. BOX D, BUFFALO, NEW YORK 14225, TEL. 716-632-4491, TELEX 91-9183
International Specialists in the Environment

May 22, 1985

Naval Construction Battalion Center
Code Orange
Gulfport, Mississippi 39501
ATTN: Harry Williams
864-0056

Dear Mr. Williams:

Ecology and Environment, Inc. (E & E) has been conducting sampling at the Naval Construction Battalion Center and Eglin Air Force Base for dioxin under a contract to EG&G Idaho, Inc. During this sampling, sampling wastes consisting of protective clothing, sampling equipment (spoons, drills, aluminum trays, etc.), and drill borings (soil) have been generated. The sampling wastes were packaged in fiber drum containers and left on the respective sites. These wastes are now being processed for disposal by Rollins Environmental Services, Inc.

Paragraph 6 of Rollins form 101-81 (attached) presents a list of chemicals unacceptable to Rollins. None of the chemicals listed in paragraph 6 are in the fiber drums filled by E & E. It is further noted that the requirement for steel drums has been changed by Rollins to fiber drums.

Sincerely,

Louis W. Adams
Project Manager

Rollins Environmental Services (TX) Inc.

P.O. Box 808, Deer Park, Texas 77536 (713) 479-6001

101-81

RES Ref. No. _____

This letter, upon receipt by Rollins Environmental Services (TX) Inc. ("RES"), of your acceptance, shall be the agreement between RES and _____("Company") with respect to Waste (defined below), term, price and representations:

WARRANTY-RES. To comply with all existing laws, ordinances and regulations of the United States and of any state, county, township or municipal subdivision thereof, or other governmental agency which may be applicable to the removal of Waste. RES shall obtain all permits, licenses and other forms of documentation required in order to comply with such laws and regulations.

RES INDEMNIFICATION. Following loading and departure from Company's plant, if RES provides transportation or, following delivery f.o.b. RES' facility, if Company provides transportation, Company shall be relieved of responsibility and RES shall become solely responsible for any and all loss, damage or injury to persons or property and RES shall indemnify and hold Company harmless from any and all liability, damages, costs, claims, demands, and expenses of whatever type or nature, including, but not limited to, pollution or other damage, which shall be caused by, arise out of, or in any manner be connected with the Waste, except as provided in COMPANY INDEMNIFICATION below.

COMPANY WARRANTS. Company represents and warrants that the Waste loaded and removed under this Agreement shall be the Waste defined on Schedule "A", attached hereto and made a part hereof, and has been thoroughly characterized on the waste data sheet submitted to RES. Company agrees to prepare and execute RES' waste data sheet for each shipment of Waste. If the Waste is packaged, Company warrants that such Waste shall be prepared for shipment and packaged in containers specified by the then current and applicable regulations of the United States Department of Transportation, Environmental Protection Agency or any successors thereto and/or any state, municipal and/or Federal agency having jurisdiction, as the case may be. Company shall be responsible for packaged Waste on RES' trailers if RES is providing transportation.

COMPANY INDEMNIFICATION. Company will indemnify and hold harmless RES from any and all loss, damages, including damage or undue wear and tear to equipment, claims, suits, or costs which shall arise or grow out of any injury to any person or persons or any property (including the person or property of Company or its employees) caused by or resulting in any way from Company's failure to comply with Company's Warranty concerning the Waste. Company shall be responsible for and indemnify RES against any and all liability, damages, costs, claims, demands, and expenses of whatever type or nature resulting from the acts and/or omissions of Company and/or its employees, until departure of RES vehicles from Company's plant, if RES provides transportation or, if Company provides transportaiton, until delivery f.o.b. RES' facility.

1. TERM. Subject to the right of either party to terminate this Agreement at any time upon thirty (30) days prior written notice, this Agreement shall automatically terminate on _____

2. PAYMENT. RES shall invoice Company for the hauling and treatment of Waste at the rates and terms set forth on Schedule "A" attached hereto and made part hereof. RES shall add an amount equal to one and one-half percent (1½%) or the maximum legally permissible amount to invoices which remain unpaid for more than thirty (30) days after date of invoice. Like charges may be made for each subsequent thirty (30) day period that such invoice remains unpaid.

3. RES REJECTION. Company understands and agrees that RES, upon notice to Company, has the absolute and unqualified right to reject any shipment of Waste which does not conform to the description of Schedule "A" (the "Waste Data Sheet") supplied by Company to RES. After any such rejection, RES will, with Company's assistance and approval, pursue all other reasonable means of disposal. If the Waste is rejected, Company shall be obligated (a) to pay the cost of transportation to RES' facility if such transportation was performed by RES, and (b) to pay the cost of return transportation from RES' facility to Company's premises (Company having the right to select the carrier) and (c) to pay all other reasonable charges incurred by RES with the prior consent of Company.

4. TITLE. Following loading and departure from Company's plant, if RES provides transportation or, following delivery f.o.b. RES' facility, if Company provides transportation, Company shall be relieved of title responsibility and risk of loss for the Waste, and RES shall take title, responsibility and risk of loss. However, title, risk of loss and all other incidents of ownership to non-conforming Waste shall be deemed to revest in the Company at the time revocation of acceptance is communicated to Company and RES shall be responsible for its own negligence or willful acts.

FORCE MAJEURE. Delays or failure of either party in the performance of its required obligations shall be excused if caused by circumstances beyond the reasonable control of the party affected, including but not limited to, acts of God, strikes, labor holiday, fire, flood, windstorm, explosion, riot, war, sabotage, action or request of governmental authority, accident, inability to obtain material, equipment or transportation, provided that a prompt notice of such delay is given and the parties shall be diligent in attempting to remove such cause(s).

...r. OSHA. Company represents and warrants that Waste does not contain the following substances in concentrations greater than those specified below:

2-acetylaminofluorene, Chemical Abstracts Service Registry No. 62759	1%
alpha-naphthylamine, Chemical Abstracts Service Registry No. 134327	1%
...odiphenyl, Chemical Abstracts Service Registry No. 92671	0.1%
...ine, Chemical Abstracts Registry No. 92875	0.1%
...a-naphthylamine, Chemical Abstracts Service Registry No. 91598	0.1%
beta-propiolactone, Chemical Abstracts Service Registry No. 57578	1%
bis-chloromethyl ether, Chemical Abstracts Service Registry No. 542881	0.1%
3,3'-dichlorobenzidine, Chemical Abstracts Service Registry No. 91941, and its salts	1%
4-dimethylaminoazobenzene, Chemical Abstracts Service Registry No. 60117	1%
ethyleneimine, Chemical Abstracts Service Registry No. 151564	1%
methyl chloromethyl ether, Chemical Abstracts Service Registry No. 107302	0.1%
4,4'-methylene bis (2-chloroaniline), Chemical Abstracts Service Registry No. 101144	1%
4-nitrobiphenyl, Chemical Abstracts Service Registry No. 92933	0.1%
N-nitrosodimethylamine, Chemical Abstracts Service Registry No. 62759	1%
polychlorinated biphenyls	0.005%

Additions may be made by RES to the foregoing list of substances from time to time, such additions by RES becoming effective and binding after three days' written notice to Comapny.

Company agrees that all Waste containing asbestos (including actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite) fibers longer than 5 micrometers detectable by phase contrast microscopy shall be subject to the following conditions.

a. The presence of asbestos in the Waste shall be clearly noted on RES' waste data sheet.

b. Waste shall be packaged in closed steel drums bearing a label which conforms with 29 CFR 1910.1001.

Company further represents and warrants that, to the best of its knowledge, Waste does not contain vinyl chloride monomer in a liquid or gaseous form except as specified on RES' waste data sheet.

All previous representations, including but not limited to, proposal(s), purchase order(s) and/or invoice(s), either written or oral are hereby annulled and superseded. No modification shall be binding unless in writing and executed by RES and Company.

Please indicate your agreement to the above recitals by executing and returning a copy of this letter.

...TED this 11 day of June, 19 85

HQAFESC /RDVW ("Company")

BY: Terry L. Stoddart

Address: Capt USAF BSC
Project Manager

ROLLINS ENVIRONMENTAL SERVICES (TX) INC. ("RES")

BY: _____

Address: P.O. Box 609
Deer Park, Texas 77536

Appendix K, Exhibit 2

print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0404. Expires 7-31-85

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.
MS 2170022626	EG1050-3		

3. Generator's Name and Mailing Address
United States Navy
Naval Construction Battalion Center
Gulfport, MS 39501
ATTN CODE 470
4. Generator's Phone (601) 865-2484

A. State Manifest Document Number
B. State Generator's ID 99928

5. Transporter 1 Company Name: Tri State Motor Transit Co., Inc.
6. US EPA ID Number: MOD 095038998
C. State Transporter's ID
D. Transporter's Phone 800-641-7580

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Rollins Environmental Services
2027 Battleground Road
Deer Park, Texas 71536
10. US EPA ID Number: TXD 055141378
G. State Facility's ID
H. Facility's Phone (713) 479-6001

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. X Hazardous Waste Solid N.O.S. ORM-E NA9189	40	DF DM TES	3,113	P/T/B	D017
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Disposable clothing and/or sampling equipment contained in the drums may be contaminated with 2,4,5-trichlorophenol or its pesticide derivative (TCDD). Do not open or reuse containers. Handle with care.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name	Signature	Date (Month Day Year)
CLUFF, JAMES H.	James H Cluff	6 26 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
TRI-STATE H. STRUDE	H Strude	6 26 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date (Month Day Year)

99

EPA Form 8700-22 (9-84)

SHIPMENT RECEIPT [illegible]

[illegible] Steele, Motor	USN, CBC, Gulf, Ms
INVITATION NUMBER	14. CONTRACT NUMBER

ITEM	6. DESCRIPTION OF MATERIAL EG1050-3	7. UNIT	8. QUANTITY RELEASED
1-	Haz- Waste	1	T/C
	Sem VAN		
	escorted to East Gate and Deported NCBC 0955 hr 6/26/85 T Maddox		

SHIPMENT NUMBER	9A. "X" TYPE OF SHIPMENT	10. TIME LOADED	11. VEHICLE LICENSE NO.
1	☐ PARTIAL ☒ FINAL		

12. RELEASED BY (Signature of PDO or Authorized Representative) [signature]	13. TITLE OF AUTHORIZED DISPOSAL REPRESENTATIVE RELEASING PROPERTY Traffic Bs
14. SIGNATURE OF PURCHASER OR AGENT T L Maddox Capt USAF	15. DATE PROPERTY IS RELEASED 6/26/85

TO BE COMPLETED BY SECURITY PERSONNEL ONLY

16. [illegible] SHIPMENT LEAVES INSTALLATION	17. SENTRY'S INITIALS

LA FORM 1367 MAY 74 REPLACES DD FORM 1460 WHICH MAY BE USED UNTIL EXHAUSTED SHEET 1 OF 1 SH

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0404. Expires 7-31-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.
MS 2170022626	001059-3		

GENERATOR

3. Generator's Name and Mailing Address
United States Navy
Naval Construction Battalion Center ATTN CODE 470
Gulfport, MS 39501
Generator's Phone (601) 865-2484

A. State Manifest Document Number

B. State Generator's ID 99928

TRANSPORTER

5. Transporter 1 Company Name: Tri State Motor Transit Co., Inc.
6. US EPA ID Number: MOD 095038998
C. State Transporter's ID
D. Transporter's Phone 800-641-7580

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

FACILITY

9. Designated Facility Name and Site Address
Rollins Environmental Services
2027 Battleground Road
Deer Park, Texas 71536
10. US EPA ID Number: TXD 055141378
G. State Facility's ID
H. Facility's Phone (713) 479-6001

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. X Hazardous Waste Solid N.O.S. ORM-E NA9189 (4)	31	DF DM	6,245	P	D017
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Disposable clothing and/or sampling equipment contained in the drums may be contaminated with 2,4,5-trichlorophenol or its pesticide derivative (TCDD). Do not open or reuse containers. Handle with care.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name	Signature	Date (Month Day Year)
CLIFF, JAMES H		5 24 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)

ie F15-6 Labelmaster, Chicago, IL 60646

EPA Form 8700-22 (3-84)

Appendix K, Exhibit 3

GENERATOR COPY

THIS MEMORANDUM is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is unlimited copy for filing or record.

RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

FREIGHT BILL NUMBER

SHIPPER'S NUMBER

DATE SHIPPED

AT

ORIGINATING CARRIER

EXECUTIVE OFFICES
P.O. BOX 113, JOPLIN, MO 64801

CONSIGNED TO (Mail or other address of consignee – For purposes of notification only)

DESTINATION | STATE | COUNTY

DELIVERY ADDRESS (To be filled in only when shipper wants and governing tariff provides for delivery service)

CONNECTING CARRIER(S) | DELIVERING CARRIER | TRACTOR NO. | TRAILER NO.

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of charges and all other lawful charges.

(Signature of consignor)

If charges are to be prepaid write or stamp here "To be Prepaid."

Received $ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per

(The signature here acknowledges only the amount prepaid.)

Charges advanced: $

NUMBER PACKAGES	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	*WEIGHT (Subject to Correction)	CLASS OR RATE	CK. COL.

DIMENSIONS OF CARGO	LENGTH	WIDTH	HEIGHT	TOTAL FEET OF TRAILER SPACE OCCUPIED
	FT. IN	FT. IN.	FT IN.	FT. IN

UNLESS A GREATER VALUE IS DECLARED, THE SHIPPER HEREBY RELEASES THE VALUE TO $5000.00 PER TON OF 2000 POUNDS FOR EACH ARTICLE

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION, ACCORDING TO THE APPLICABLE REGULATION OF THE DEPARTMENT OF TRANSPORTATION.

UNLESS OTHERWISE NOTED VEHICLE CONTAINS HAZARDOUS MATERIALS PROPERLY PLACARDED IN ACCORDANCE WITH 49CFR172.506.

ARRIVED AT SHIPPER	DATE	TIME A.M. P.M.	PREARRANGED SCHEDULE ☐YES ☐NO	DATE	TIME A.M. P.M.	LOADING STARTED	DATE	TIME A.M. P.M.
LOADING COMPLETED	DATE	TIME A.M. P.M.	VEHICLE RELEASED	DATE	TIME A.M. P.M.	SHIPPER'S SIGNATURE		

1st THIRD PARTY BILLING, BILL TO: | SHIPPER, PER | AGENT, PER

SIGNATURE (ALLY RECEIPT — Must be filled out and signed at origin and each time the shipment changes custody

DATE SHIPMENT RECEIVED FROM CONSIGNOR: DATE	TIME	TRACTOR NO.	2ND TIME CARGO CHANGED CUSTODY: DATE	TIME	TRACTOR NO	4TH TIME CARGO CHANGED CUSTODY: DATE	TIME	TRACTOR NO
DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL	
DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL	

1ST TIME CARGO CHANGED CUSTODY: DATE	TIME	TRACTOR NO	3RD TIME CARGO CHANGED CUSTODY: DATE	TIME	TRACTOR NO	5TH TIME CARGO CHANGED CUSTODY: DATE	TIME	TRACTOR NO
DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL	
DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL		DRIVER'S SIGNATURE	HOME TERMINAL	

ARRIVED AT CONSIGNEE	DATE	TIME A.M. P.M.	PREARRANGED SCHEDULE ☐YES ☐NO	DATE	TIME A.M. P.M.	UNLOADING STARTED	DATE	TIME A.M. P.M.
UNLOADING COMPLETE	DATE	TIME A.M. P.M.	VEHICLE RELEASED	DATE	TIME A.M. P.M.	CONSIGNEE'S SIGNATURE		

RECEIVED THE ABOVE DESCRIBED PROPERTY IN GOOD CONDITION EXCEPT AS NOTED

X

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APPENDIX L

ECOLOGY AND ENVIRONMENT, INC., SAMPLING PROTOCOL FOR ITC NCBC TEST

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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APPENDIX L

ECOLOGY AND ENVIRONMENT, INC., SAMPLING PROTOCOL
FOR ITC NCBC TEST

General

A bound sampling logbook will be individually assigned to each site. The logbook will be kept by the onsite sampling team. Field data sheets also will be used. At a minimum, the following information will be kept in the logbook and on the field data sheets:

- Site name
- Demonstration project name
- Test run number
- Sample test point number
- Sample number
- Date and time sampled
- Ambient air temperature
- General weather conditions
- Name of sampler
- Name of laboratory performing the analysis
- Date sample was shipped
- Airbill number.

To enhance decontamination, a small plastic bag will be placed around the outside of the sample bottles and held in place by a rubber band so that any sample spilled during the collection or compositing process will not contaminate the outside of the jar. After sample collection, the sample bottles will be decontaminated by first removing and discarding the rubber band and outer plastic bag. The sample bottle will be washed with clean water, dried, and placed in a clean bag; then the bag will be sealed.

Process Sampling

Soil samples will be collected in disposable aluminum trays using stainless steel scoops or spoons. Enough soil will be collected to fill two 16-ounce wide-mouth jars. Pretreated soils will be sampled as they are fed into the furnace feed bins. Treated soil exits the furnace at extremely high temperatures and will be sampled after it has cooled to ambient air temperature. All soil samples will be composites of at least five aliquots. They will be sieved into the wide-mouth jars through 10-mm screen, and the jars will be sealed with aluminum-lined caps.

Representative carbon filter bed samples will be collected during the equipment purging and cleaning cycle. They will be placed in two 16-ounce wide-mouth jars and sealed with aluminum-lined caps.

Effluent water samples will be collected hourly throughout the test run and will be composited. It is expected that the demonstration test apparatus will have valve test ports to withdraw the samples. Four sets of samples will be collected. It is assumed that each test run will be at least 8 hours. Water will be collected as follows:

- One quart of water every hour. At the end of the test run, the eight 1-quart bottles will be composited into four half-gallon amber bottles.

- Two 40-mL volatile organic analysis (VOA) bottles of water every hour. Immediately upon collecting the samples, bottles will be packed in ice. These samples will be composited by the laboratory prior to analysis.

- One plastic 125-mL bottle of water every hour. Nitric acid will be added as a preservative. At the end of the test run, the eight bottles will be composited into two 500-mL plastic bottles.

- One plastic 125-mL bottle of water every hour. Sodium hydroxide will be added as a preservative. At the end of the test run, the eight bottles will be composited into two 500-mL plastic bottles.

The scrubber/quench liquid samples from the ITC process will be collected at the end of the test run. Since they are recycled continuously through UV destruction, they will be drawn directly into four half-gallon amber bottles and two 40-mL VOA bottles at the end of the run. The VOA bottles immediately will be packed in ice.

Sampling of vent gas and off-gases from the two thermal desorption technologies will be performed using procedures and techniques developed for permitting requirements of the Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA) for hazardous waste incinerators. Sampling of the gas streams will be conducted for subsequent analysis of 2,3,7,8-TCDD and isomers of CDD and CDF, volatile organics, molecular weight, oxygen (O_2), carbon dioxide (CO_2), N_2, hydrogen chloride (HCl), total organic carbon (TOC), nitrogen oxides (NO_x), and particulates. Flow rates of each process will be determined.

Ambient Air Sampling

An ambient air sampling program will be conducted to determine the fugitive particulate matter (FPM) concentrations during pretest activities (i.e., soil crushing). FPM will be sampled using flow-controlled, high-volume (hi-vol) samplers operating at a minimum flow rate of 40 cfm.

The hi-vols will be operated during the soil-crushing operation (i.e., 8 to 10 hours per work day) for three work days. Three samplers, one located upwind from the operation and two located downwind, will be used. The units will be calibrated and operated in accordance with 40 CFR 50, Appendix B, "Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere" (1983). Filters collected during this phase will be forwarded to the laboratory for gravimetric analysis.

Packaging and Shipment of Samples

All samples will be packaged in accordance with the User's Guide to the EPA Contract Laboratory Program, EPA Region VII protocol, and the appropriate United States Department of Transportation (DOT) regulations. Shipment of NCBC samples in the continental United States will be via Federal Express.

Disposition of Waste Generated During Sampling

The demonstration sampling program will result in the generation of contaminated disposable clothing and sampling supplies. It is estimated that eighteen 32-gallon fiber drums of waste will be generated at NCBC.

APPENDIX M

PACKING LISTS FOR ITC NCBC TEST-RELATED SAMPLES BEING SHIPPED TO ANALYTICAL LABORATORIES

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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Cooler No.: NCBC #1
Date Shipped: 6/14/85
Federal Express Airbill No.: 289-581-106

PACKING LIST

USAF SAMPLING & ANALYTIC PROGRAM
ENVIRONMENTAL RESTORATION & TECHNOLOGY
RESEARCH & TEST EVALUATION PROJECT

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Quant.	Container	Sample # / Description
2	16 oz jars	IT-NCBC-R1-01 Run 1 soil prior to pyrolysis
2	16 oz jars	IT-NCBC-R2-01 Run 2 soil prior to pyrolysis
1	16 oz jar	IT-NCBC-R1-03 Run 1 scrubber solv before photolysis
5	TOTAL CONTAINERS	

Requested Analyses:

Sample # IT-NCBC-R1-01 taken 5/31/85 at 2300 no preservatives
Sample # IT-NCBC-R2-01 taken 5/31/85 at 2315 no preservatives

2,3,7,8-TCDD DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb

Modified CAG list DL < = 10 ppb

Modified PPL list DL < = 1 ppm

Organics indigenous to herbicide orange DL < = 10 ppb

Sample # IT-NCBC-R1-03 taken 6/6/85 at 2210 no preservatives

2,3,7,8-TCDD DL < = 0.1 ppb

Cooler No.: NCBC #2
Date Shipped: 6/14/85
Federal Express Airbill No.: 289-581-106

PACKING LIST

USAF SAMPLING & ANALYTIC PROGRAM
ENVIRONMENTAL RESTORATION & TECHNOLOGY
RESEARCH & TEST EVALUATION PROJECT

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Quant.	Container	Sample # / Description
2	16 oz jars	IT-NCBC-R3-01 Run 3 soil prior to pyrolysis
2	16 oz jars	IT-NCBC-R4-01 Run 4 soil prior to pyrolysis
2	16 oz jars	IT-NCBC-R5-01 Run 5 soil prior to pyrolysis
6	TOTAL CONTAINERS	

Requested Analyses:

Sample # IT-NCBC-R3-01 taken 5/31/85 at 2330 no preservatives
Sample # IT-NCBC-R4-01 taken 5/31/85 at 2345 no preservatives
Sample # IT-NCBC-R5-01 taken 5/31/85 at 2400 no preservatives

---

2,3,7,8-TCDD DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb

Modified CAG list DL < = 10 ppb

Modified PPL list DL < = 1 ppm

Organics indigenous to herbicide orange DL < = 10 ppb

Cooler No.: NCBC #3
Date Shipped: 6/14/85
Federal Express Airbill No.: 289-581-106

PACKING LIST

USAF SAMPLING & ANALYTIC PROGRAM
ENVIRONMENTAL RESTORATION & TECHNOLOGY
RESEARCH & TEST EVALUATION PROJECT

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Quant.	Container	Sample # / Description
2	16 oz jars	IT-NCBC-R1-02 Run 1 soil after pyrolysis
2	16 oz jars	IT-NCBC-R1-09 Run 1 front half of 1st gas carbon bed
2	16 oz jars	IT-NCBC-R1-09A Run 1 back half of 1st gas carbon bed
6	TOTAL CONTAINERS	

Requested Analyses:

Sample # IT-NCBC-R1-02 taken 6/5/85 at 0230 no preservatives
Sample # IT-NCBC-R1-09 taken 6/7/85 at 0520 no preservatives
Sample # IT-NCBC-R1-09A taken 6/7/85 at 0510 no preservatives

---

2,3,7,8-TCDD DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb

Modified CAG list DL < = 10 ppb

Modified PPL list DL < = 1 ppm

Organics indigenous to herbicide orange DL < = 10 ppb

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

PACKING LIST

Cooler No.: NCBC #4
Date Shipped: 6/14/85
Federal Express Airbill No.: 353-895-986

TO: California Analytical Laboratories, Inc.
2544 Industrical Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
1	IT-NCBC-R2-11 / VOST, TENAX TRIP BLANK
1	IT-NCBC-R2-12 / VOST, TENAX/CHARCOAL TRIP BLANK
1	IT-NCBC-R2-13 / VOST, TENAX, #1 GRAB
1	IT-NCBC-R2-14 / VOST, TENAX/CHARCOAL #1 GRAB
1	IT-NCBC-R2-15 / VOST, TENAX FIELD BLANK
1	IT-NCBC-R2-16 / VOST, TENAX/CHARCOAL FIELD BLANK
1	IT-NCBC-R2-17 / VOST, TENAX GRAB #2
1	IT-NCBC-R2-18 / VOST, TENAX/CHARCOAL GRAB #2
1	IT-NCBC-R2-19 / VOST, TENAX GRAB #3
1	IT-NCBC-R2-20 / VOST, TENAX/CHARCOAL GRAB #3
1	IT-NCBC-R2-21 / VOST, TENAX GRAB #4
1	IT-NCBC-R2-22 / VOST, TENAX/CHARCOAL GRAB #4
1	IT-NCBC-R2-23 / VOST, TENAX GRAB #5
1	IT-NCBC-R2-24 / VOST, TENAX/CHARCOAL GRAB #5
1	IT-NCBC-R2-25 / VOST, TENAX GRAB #6
1	IT-NCBC-R2-26 / VOST, TENAX/CHARCOAL GRAB #6
1	IT-NCBC-R2-29 STACK TEST XAD-2 SAMPLE
1	IT-NCBC-R2-30 STACK TEST XAD-2 FIELD BLANK
1	IT-NCBC-R2-33 ACETONE RINSE-PROBE, FILTER, CONDENSOR
1	IT-NCBC-R2-34 ACETONE RINSE FIELD BLANK
22	TOTAL SAMPLES

Requested Analyses:

Sample #'s IT-NCBC-R2-11 to IT-NCBC-R2-26 taken 6/12/85 from 2300 to 2400 and 6/13/85 from 0000 to 0500. Preserved with ice.

Analyze for volatile organics DL < = 1 ppm.

SAMPLE # IT-NCBC-R2-29
IT-NCBC-R2-30
IT-NCBC-R2-31
IT-NCBC-R2-32
IT-NCBC-R2-33
IT-NCBC-R2-34

Taken from 6/12/85 at 2300 to 6/13/85 at 0500. Preserved with ice.

Combine extract from sample IT-NCBC-R2-29 (XAD-2) with condensate sample IT-NCBC-R2-31 and rinsate sample IT-NCBC-R2-33. Combine extract from IT-NCBC-R2-30 (XAD-2 blank) with condensate blank sample IT-NCBC-R2-32 and with rinsate blank sample IT-NCBC-R2-34.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

PACKING LIST

Cooler No.: NCBC #5
Date Shipped: 6/17/85
Federal Express Airbill No.: 353-895-964

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacreamento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
1	IT-NCBC-R1-04 / IT PHOTOLYSIS RUN 1 SOLVENT AFTER TREATMENT
1	IT-NCBC-R2-03 / IT PHOTOLYSIS RUN 2 SOLVENT BEFORE TREATMENT
1	IT-NCBC-R2-09A / IT PHOTOLYSIS RUN 2 REAR PART OF 1st GAS CARBON
1	IT-NCBC-R2-27 / IT STACK TEST IN-LINE PARTICULATE FILTER
1	IT-NCBC-R2-28 / IT STACK TEST FIELD BLANK PARTICULATE FILTER
1	IT-NCBC-R2-35 / IT STACK TEST KOH (IMPINGER #3)
1	IT-NCBC-R2-36 / IT STACK TEST KOH FIELD BLANK
1	EE-NCBC-R1-01 / HI-VOL SAMPLER #1, RUN 1 OFF-SITE CONTROL FILTER
1	EE-NCBC-R1-02 / HI-VOL SAMPLER #2, RUN 1 ON-SITE CONTROL FILTER
1	EE-NCBC-R1-03 / HI-VOL SAMPLER #3, RUN 1 ON-SITE DOWNWIND FILTER
1	EE-NCBC-R1-04 / HI-VOL SAMPLER #4, RUN 1 OFF-SITE DOWNWIND FILTER
11	TOTAL SAMPLES

Sample # IT-NCBC-R1-04 taken 6/7/85 at 0430. 1, 1/2 gallon jug. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins
DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 pp

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organic indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Suspended solids content.

Sample # IT-NCBC-R2-03 taken 6/14/85 at 1800. 1, 16 oz jar. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Sample # IT-NCBC-R2-09A taken 6/13/85 at 1950. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above test result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

Total amount of carbon.

Sample #'s IT-NCBC-R2-27 and IT-NCBC-R2-28 taken between 2300 on 6/12/85 and 0500 on 6/13/85, 1, 16 oz jar each. 1, petri dish each. No preservatives. IT-NCBC-R2-27 has an initial tare of 0.2533 g. IT-NCBC-R2-28 has an initial tare of 0.2543 g.

Analyze for: Particulate loading DL < = 0.0001 gr/scf.

Sample #'s IT-NCBC-R2-35 and IT-NCBC-R2-36 taken between 2300 on 6/12/85 and 0500 on 6/13/85. 1, 16 oz jar each. No preservatives.

Analyze for: Hydrogen chloride DL < = 1.0 ppm.

Sample #'s EE-NCBC-R1-01, EE-NCBC-R1-02, EE-NCBC-R1-03, and EE-NCBC-R1-04. Each contains a plastic bag with a particulate filter in a folder. Initial tares are listed below:

EE-NCBC-R1-01 (filter # 1131): 3.03360 g.
EE-NCBC-R1-02 (filter # 1132): 3.02484 g.
EE-NCBC-R1-03 (filter # 1133): 2.98913 g.
EE-NCBC-R1-04 (filter # 1134): 3.03537 g.

Volumes of air passing through each filter are as follows:

EE-NCBC-R1-01: 4845.99 cu m
EE-NCBC-R1-02: 4635.54 cu m (estimate)
EE-NCBC-R1-03: 4845.99 cu m
EE-NCBC-R1-04: 2877.06 cu m

Analyze for: Total suspended particulates.

2,3,7,8-TCDD DL < = 0.1 ppb.

PACKING LIST

Cooler No.: NCBC #6
Date Shipped: 6/17/85
Federal Express Airbill No.: 298-581-110

TO: Battelle Analytical Laboratories, Inc.
Columbus, OH

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Quant.	Sample # / Description
1	IT-NCBC-R1-01 / IT RUN 1 SOIL BEFORE TREATMENT
1	IT-NCBC-R1-02 / IT RUN 1 SOIL AFTER TREATMENT
1	IT-NCBC-R1-04 / IT RUN 1 SCRUBBER SOLVENT BEFORE PHOTOLYLSIS
3	TOTAL SAMPLES

Sample # IT-NCBC-R1-01 taken 6/3/85 at 2300. 2, 16 oz jars packed in 2-gallon paint cans. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Sample # IT-NCBC-R1-02 taken 6/5/85 at 0230. Contains 2, 16 oz jars packed in 2-gallon paint cans. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above test results in concentrations greater than those limits set for any of the contaminants in RCRA SEc. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

Sample # IT-NCBC-R1-04 taken 6/7/85 at 0430. Contains 1, 1/2-gallon jug packed in a styrofoam cooler. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Suspended solids content.

PACKING LIST

Cooler No.: NCBC #7
Date Shipped: 6/17/85
Federal Express Airbill No.: 353-895-964

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
1	HU-NCBC-R1-02 / HUBER RUN 1 SOIL AFTER TREATMENT
1	IT-NCBC-R2-02 / IT RUN 2 SOIL AFTER TREATMENT
1	IT-NCBC-R2-09 / IT RUN 2 FRONT PART OF 1st GAS CARBON BED
1	HU-NCBC-R1-09 / HUBER RUN 1 FIRST GAS CARBON DRUM
1	HU-NCBC-R1-09A / HUBER RUN 1 SECOND (DOWNSTREAM) GAS CARBON DRUM
1	IT-NCBC-R3-02 / IT RUN 3 SOIL AFTER TREATMENT
6	TOTAL SAMPLES

Sample HU-NCBC-R1-02 taken 7/14/85 at 0220. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

Sample # IT-NCBC-R2-02 taken 6/13/85 at 0624. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

Sample # IT-NCBC-R2-09 taken 6/13/85 at 1950. Contains 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Total amount of carbon present.

Sample # HU-NCBC-R1-09 taken 6/14/85 at 0315. Contains 2, 16 oz bottles. No preservat

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans
DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Total amount of carbon present.

Hydrogen chloride DL < = 1 ppm.

Nitrogen oxide DL < = 1 ppm.

Sample # HU-NCBC-R1-09A taken 6/14/85 at 0315. Contains 2, 16 oz jars. No preservatives

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins
DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans
DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Total amount of carbon present.

Hydrogen chloride DL < = 1 ppm.

Nitrogen oxide DL < = 1 ppm.

Sample # IT-NCBC-R3-02 taken 6/14/85 at 0330. Contains 2, 16 oz jars. No preservatives

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins
DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans
DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

PACKING LIST

Cooler No.: NCBC #8
Date Shipped: 6/21/85
Federal Express Airbill No.: 289-581-132

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
1	IT-NCBC-R2-04 / IT RUN 2 SOLVENT AFTER PHOTOLYSIS
1	IT-NCBC-R3-09 / IT RUN 3 FIRST 1/2 GAS CARBON BED
1	IT-NCBC-R3-09A / IT RUN 3 LAST 1/2 GAS CARBON BED
1	IT-NCBC-R4-09 / IT RUN 4 FIRST 1/2 GAS CARBON BED
1	IT-NCBC-R4-09A / IT RUN LAST 1/2 GAS CARBON BED
5	TOTAL SAMPLES

Sample # IT-NCBC-R2-04 taken 6/15/85 at 0315. Contains 1, 80 oz amber bottle. No preservatives.

Analysis for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Suspended solids content.

Sample # IT-NCBC-R3-09 taken 6/15/85 at 0330. Consists of 2, 16 oz jars. No preservatives.

Sample # IT-NCBC-R3-09A taken 6/15/85 at 0340. Consists of 2, 16 oz jars. No preservatives.

Sample # IT-NCBC-R4-09 taken 6/18/85 at 1830. Consists of 2, 16 oz jars. No preservatives.

Sample # IT-NCBC-R4-09A taken 6/18/85 at 1845. Consists of 2, 16 oz jars. No preservatives.

Analysis for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, & hexa-chloro-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange DL < = 10 ppb.

Total amount of carbon.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

PACKING LIST

Cooler No.: NCBC #9
Date Shipped: 6/21/85
Federal Express Airbill No.: 289-581-132

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
2	IT-NCBC-R3-04 / RUN 3 SOLVENT AFTER PHOTOLYSIS (16 hrs.)
1	IT-NCBC-R4-02 / RUN 4 SOIL AFTER PYROLYSIS
1	IT-NCBC-R5-02 / RUN 5 SOIL AFTER PYROLYSIS
4	TOTAL CONTAINERS

Sample # IT-NCBC-R3-04 taken 6/19/85 at 0410. Consists of 2, 80 oz amber bottles. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Suspended solids content.

Sample # IT-NCBC-R4-02 taken 6/18/85 at 0310. Consists of 2, 16 oz jars. No preservatives.

Sample # IT-NCBC-R5-02 taken 6/19/85 at 0410. Consists of 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

PACKING LIST

Cooler No.: NCBC #10
Date Shipped: 6/21/85
Federal Express Airbill No.: 289-581-132

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytical Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130686

Quant.	Sample # / Description
1	IT-NCBC-R3-03 / RUN 3 SOLVENT BEFORE PHOTOLYSIS
1	IT-NCBC-R5-09 / RUN 5 FIRST 1/2 GAS CARBON BED
1	IT-NCBC-R5-09A / RUN 5 LAST 1/2 GAS CARBON BED
1	IT-NCBC-R1-5-10 / RUNS 1 through 5 GAS CARBON GUARD BED FILTER
2	IT-NCBC-R1-5-06 / RUN 1 through 5 COMPOSITED SCRUBBER FILTER SOLIDS
6	TOTAL CONTAINERS

Sample # IT-NCBC-R3-03 taken 6/17/85 at 1915. Consists of 1, 16 oz jar.
No preservatives.

Analysis for: 2,3,7,8-TCDD to DL < = 0.1 ppb.

Sample # IT-NCBC-R5-09 taken 6/19/85 at 0300. Consists of 2, 16 oz jars.
No preservatives.

Sample # IT-NCBC-R5-09A taken 6/19/85 at 0315. Consists of 2, 16 oz jars.
No preservatives.

Sample # IT-NCBC-R1-5-10 taken 6/19/85 at 0330. Consists of 2, 16 oz jars.
No preservatives.

Analyses for: 2,3,7,8-TCDD to DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-chlorodibenzo-p-dioxins DL < = 0.1 ppb.

Total isomers of tetra-, penta-, and hexa-dibenzofurans DL < = 0.1 ppb.

Modified CAG list DL < = 10 ppb.

Modified PPL list DL < = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) DL < = 10 ppb.

Total amount of carbon.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity test.

Sample # IT-NCBC-R1-5-06 taken 6/5/85 through 6/19/85. Consists of 3, 16 oz jars. No preservatives.

Analyses for: 2,3,7,8-TCDD to DL < = 0.1 ppb.

Hydrocarbon used as scrubber/quench liquid (scrubber solvent) to DL < = 1 ppm.

Modified PPL list to DL < = 1 ppm.

Total amount present.

Packing List

Cooler No. 11
Date Shipped: 6/28/85
Federal Express Airbill No.: 353-895-942

TO: California Analytical Laboratories, Inc.
2544 Industrial Blvd.
West Sacramento, CA 95691

FROM: USAF Sampling & Analytic Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange/USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Ref: RFP # C85-130-130686

Quant.	Sample # / Description
1	HU-NCBC-R1-01 / SOIL BEFORE DESTRUCTION PROC. (HUBER RUN #1)
1	HU-NCBC-R2-01 / SOIL BEFORE DESTRUCTION PROC. (HUBER RUN #2)
1	HU-NCBC-R2-02 / SOIL AFTER DESTRUCTION PROC. (HUBER RUN #2)
1	HU-NCBC-R2-09 / HUBER RUN #2 FIRST GAS DRUM
1	HU-NCBC-R2-09A / HUBER RUN #2 SECOND GAS DRUM
1	HU-NCBC-R2-03 / HUBER RUN #2 BAGHOUSE PARTICULATE
1	EE-NCBC-R2-01 / HI VOL. SAMPLER #1, RUN #2 OFF-SITE CONTROL
1	EE-NCBC-R2-02 / HI VOL. SAMPLER #2, RUN #2 ON-SITE CONTROL
1	EE-NCBC-R2-03 / HI VOL. SAMPLER #3, RUN #2 ON-SITE DOWNWIND
1	EE-NCBC-R2-04 / HI VOL. SAMPLER #4, RUN #2 OFF-SITE DOWNWIND
1	EE-NCBC-R3-01 / HI VOL. SAMPLER #1, RUN #3 OFF-SITE CONTROL
1	EE-NCBC-R3-02 / HI VOL. SAMPLER #2, RUN #3 ON-SITE CONTROL
1	EE-NCBC-R3-03 / HI VOL. SAMPLER #3, RUN #3 ON-SITE DOWNWIND
1	EE-NCBC-R3-04 / HI VOL. SAMPLER #4, RUN #3 OFF-SITE DOWNWIND
14	TOTAL SAMPLES

Sample HU-NCBC-R1-01 taken 6/12/85 at 2135. 2, 16 oz jars. No preservatives.

Sample HU-NCBC-R2-01 taken 6/21/85 at 0130. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzo p-dioxins, to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzofurans to DL < or = 0.1 ppb.

Modified CAG list to DL < or = 10 ppb.

Modified PPL list to DL< or = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) to LD, or = 10 ppb.

Sample HU-NCBC-R2-02 taken 6/24/85 at 1910. 2, 16 oz jars. No preservatives.

Sample HU-NCBC-R2-03 taken 6/24/85 at 2020. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzo p-dioxins to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexadibenzofurans to DL < or = 0.1 ppb.

Modified CAG list to DL < or = 10 ppb.

Modified PPL list to DL < or = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) to a DL < or = 10 ppb.

If the above tests result in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), then perform an EP Toxicity Test.

Sample No's EE-NCBC-R2-01, EE-NCBC-R2-02, EE-NCBC-R2-03, EE-NCBC-R2-04, EE-NCBC-R3-01, EE-NCBC-R3-02, EE-NCBC-R3-03, EE-NCBC-R3-04, each consist of a particulate filter in a folder in a plastic bag. Initial tares are listed below.

Sample No.	Filter No.	Initial Tare	Volume Sampled
EE-NCBC-R2-01	1135	3.01042	4,547.10[a]
EE-NCBC-R2-02	1136	3.01013	4,637.07 (est.)
EE-NCBC-R2-03	1137	2.92856	4,547.10[a]
EE-NCBC-R2-04	1138	2.96794	4,721.23[b]
EE-NCBC-R3-01	1139	2.96849	1,761.05
EE-NCBC-R3-02	1140	2.95780	1,596.16 (est.)
EE-NCBC-R3-03	1141	2.97475	1,761.05
EE-NCBC-R3-04	1143	1.97590	1,828.50

a. Later found in error; corrected value is 4562.
b. Later found in error; corrected value is 4735.

Analyze Above Samples For:

Total suspended particulates
2,3,7,8-TCDD to DL < or =0.1 ppb.

Sample HU-NCBC-R2-09 taken 6/24/85 at 1940. 2, 16 oz jars. No preservatives.

Sample HU-NCBC-R2-09A taken 6/24/85 at 1900. 2, 16 oz jars. No preservatives.

Analyze for: 2,3,7,8-TCDD to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzo-p-dioxins. To DL< or = 0.1 ppb..

Total isomers of tetra-, penta-, and hexachlorodibenzofurans to DL < or = 0.1 ppb.

Modified CAG list to DL < or = 10 ppb.

Modified PPL list to DL < or = 1 ppb.

Total amount of carbon present.

Hydrogen chloride to DL < or = 1 ppm.

Nitrogen oxide to DL < or = 1 ppm.

PACKING LIST

Cooler No. 12
Date Shipped: 6/28/85
Federal Express Airbill No. 353-895-920

TO: Battelle Columbus Laboratories, Inc.
Attn: Dr. David Miller
505 King Ave.
Columbus, OH 43201

FROM: USAF Sampling & Analytic Program
Environmental Restoration & Technology
Research & Test Evaluation Project

EG&G Idaho, Inc.
Code Orange / USAF Project Trailer
Naval Construction Battalion Center
Gulfport, MS 39501
601/864-0056

Quant.	Sample # / Description
1	HU-NCBC-R2-02/HUBER RUN #2, SOIL AFTER TREATMENT
1	HU-NCBC-R1-01/HUBER RUN #1, SOIL BEFORE TREATMENT
1	IT-NCBC-R2-04/IT RUN #2 SOLVENT AFTER PHOTOLYSIS
3	TOTAL SAMPLES

Analyze for: 2,3,7,8-TCDD to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzo-p-dioxins to DL < or = 0.1 ppb.

Total isomers of tetra-, penta-, and hexachlorodibenzofurans to DL < or = 0.1 ppb.

Modified CAG list to DL < or = 10 ppb.

Modified PPL list to DL < or = 1 ppm.

Organics indigenous to herbicide orange (Appendix D) to DL < or = 10 ppb.

In addition:

Sample HU-NCBC-R2-02 taken 6/24/85 at 1910. 2, 16 oz jars. No preservatives. Requires that if any of the above tests results in concentrations greater than those limits set for any of the contaminants in RCRA Sec. 261.24, Table I (EP Toxicity), an EP Toxicity Test should be run.

Sample IT-NCRC-R2-04 taken 6/15/85 at 0315. 1, 80 oz amber jug. Non preserved. Requires suspended solids analyses.

Sample HU-NCBC-R1-01 taken 6/12/85 at 2135. 2, 16 oz jars. Non-preserved. Requires no additional analyses.

APPENDIX N

CALIFORNIA ANALYTICAL LABORATORIES
PROTOCOL FOR ANALYSIS OF DIOXINS AND FURANS

		Page
Exhibit 1	Analytical Methods for 2,3,7,8-TCDD	129
Exhibit 2	QA/QC Requirements for 2,3,7,8-TCDD	155
Exhibit 3	QA/QC Requirements for Dioxin and Furan Total Isomer Analysis	162
Exhibit 4	Sources of Standards and Internal Standards	163

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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Exhibit D - Analytical Methods

2,3,7,8-tetrachlorodibenzo-p-dioxin in Soil and Sediment by High Resolution Gas Chromatography/ Low Resolution Mass Spectrometry

1. SCOPE AND APPLICATION

1.1 This method provides procedures for detection and measurement of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD; CAS Registry Number 1746-01-6; STORET Number 34675) at concentrations of 1 μg/kg to 200 μg/kg in 10-g aliquots of wet soil and sediment. The use of 1-g aliquots permits measurement of concentration up to 2000 μg/kg.

1.2 The minimum measurable concentration is estimated to be 0.3 μg/kg, but is dependent on interfering compounds present in the sample matrix.

1.3 This method is designed for use by analysts who are experienced in the use of a gas chromatograph/mass spectrometer.

1.4 CAUTION: Because 2,3,7,8-TCDD is extremely toxic, safety procedures described in Section 5 of this method should be followed to prevent exposure of laboratory personnel to materials containing this compound.

2. SUMMARY OF METHOD

After 50 ng of ^{13}C-labeled 2,3,7,8-TCDD and 10 ng of ^{37}Cl-labeled 2,3,7,8-TCDD are added to a 10 gram aliquot of soil or sediment sample, the wet soil or sediment is mixed with 20 grams of anhydrous sodium sulfate and is extracted with a mixture of hexane and methanol, while the sample aliquot and solvent are agitated continually in a glass jar. Column chromatographic procedures are used to help eliminate sample components that may interfere with detection and measurement of 2,3,7,8-TCDD. The extract is concentrated to 50 μL, and a 2 μL aliquot is injected into a fused silica capillary column in a gas chromatograph (GC) interfaced to a mass spectrometer (MS) that has at least unit resolution at m/z 334.

Identification of 2,3,7,8-TCDD is based on detection of three characteristic ions, measurement of the appropriate relative abundances of two characteristic ions in the molecular ion cluster, and determination of the retention time of the sample analyte relative to the internal standard, $^{13}C_{12}$-2,3,7,8-TCDD, contained in the sample extract. The 2,3,7,8-TCDD concentration is determined by measuring the MS response to the sample component relative to the MS response to $^{13}C_{12}$-2,3,7,8-TCDD (the internal standard). The labeled internal

standard method presumes that internal standard losses during method procedures are equal to unlabeled TCDD losses. Therefore, the calculated sample 2,3,7,8,-TCDD concentration is corrected for losses during sample preparation.

The $^{37}Cl_4$-2,3,7,8- TCDD is a surrogate compound that is added to each sample and is analyzed exactly the same as unlabeled TCDD. The accuracy of surrogate compound measurement is used to indicate the accuracy of measurement of unlabeled 2,3,7,8-TCDD in the same sample.

3. DEFINITIONS

3.1 Concentration calibration solution — a solution containing known amounts of the analyte (unlabeled 2,3,7,8-TCDD), the surrogate compound ($^{37}Cl_4$-2,3,7,8-TCDD), and the internal standard ($^{13}C_{12}$-2,3,7,8-TCDD); it is used to determine instrument response of the analyte and the surrogate compound relative to the internal standard.

3.2 Field blank — a portion of soil/sediment uncontaminated with 2,3,7,8-TCDD.

3.3 Rinsate — a portion of solvent used to rinse sampling equipment and analyzed to demonstrate that samples are not contaminated during sampling.

3.4 Internal standard — $^{13}C_{12}$-2,3,7,8-TCDD, which is added to every sample and is present at the same concentration in every blank, quality control sample, and concentration calibration solution. It is added to the soil/sediment sample before extraction and is used to measure the concentrations of analyte and surrogate compound.

3.5 Laboratory reagent blank — a blank prepared by the laboratory by performing all analytical procedures except addition of a sample aliquot to the extraction vessel.

3.6 Performance check mixture — a mixture of known amounts of selected standard compounds; it is used to demonstrate continued acceptable performance of the GC/MS/DS system.

3.7 Performance evaluation sample — a soil or sediment sample containing a known amount of unlabeled 2,3,7,8-TCDD. It is distributed by EPA to potential contractor laboratories who must analyze it and obtain acceptable results before being awarded a contract for sample analyses (see IFB Pre-Award Bid Confirmations). It may also be included as an unspecified QC sample in any sample batch submitted to the lab for analysis.

3.8 Response factor -- response of the mass spectrometer to a known amount of an analyte relative to a known amount of an internal standard.

3.9 Signal-to-noise ratio -- The ratio of the area of the analyte signal to the area of the random background signal; it is determined by integrating the signal for a characteristic ion in a region of the selected ion current profile where only random noise is observed and relating that area to the area measured for a positive response for the same ion. The same number of spectra must be integrated for both areas. (The ratio of peak heights may be used instead of peak areas.)

3.10 Surrogate compound -- $^{37}Cl_4$-2,3,7,8-TCDD, which is added to the soil/sediment before analysis. Its concentration is measured in each sample, and the accuracy of that concentration measurement is calculated to indicate the accuracy of the unlabeled 2,3,7,8-TCDD measurement.

4. INTERFERENCES

Any organic compound that is within 10 scans (at the rate of 1 scan/second) of m/z 257, 320, 322, or 328 of the internal standard and produces any of the three ions monitored to detect 2,3,7,8-TCDD, is a potential interference. Most frequently encountered interferences are other sample components that are extracted along with TCDD. Because very low levels of TCDD must be measured, elimination of interference is essential. High purity reagents and solvents must be used and all equipment must be scrupulously cleaned. Laboratory reagent blanks (Exhibit E, Quality Control, Section 4) must be analyzed to demonstrate lack of contamination that would interfere with TCDD measurement. Column chromatographic procedures are used to remove some coextracted sample components; these procedures must be performed carefully to minimize loss of TCDD during attempts to enrich its concentration relative to other sample components.

5. SAFETY

5.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory is responsible for maintaining a file of current OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of material data handling sheets should also be made available to all personnel involved in the chemical analysis. Additional references to laboratory safety are identified.[1-3] 2,3,7,8-TCDD has been identified as a suspected human or mammalian carcinogen.

5.2 Each laboratory must develop a strict safety program for handling 2,3,7,8-TCDD. The following laboratory practices are recommended:

5.2.1 Contamination of the laboratory will be minimized by conducting all manipulations in a hood.

5.2.2 The effluents of sample splitters for the gas chromatograph and roughing pumps on the GC/MS should pass through either a column of activated charcoal or through a trap containing oil or high-boiling alcohols.

5.3 The following precautions for safe handling of 2,3,7,8-TCDD in the laboratory are presented as guidelines only, and are based on safe handling practices included in USEPA Method 613.[4] The precautions for safe handling and use are necessarily general in nature because detailed, specific recommendations can be made only for the particular exposure and circumstances of each individual usage. Assistance in evaluating the health hazards of particular laboratory conditions may be obtained from certain consulting laboratories and from State Departments of Health or of Labor, many of which have an industrial health service. Although 2,3,7,8-TCDD is extremely toxic to laboratory animals, it has been handled for years without injury in analytical and biological laboratories. Techniques used in handling radioactive and infectious materials are applicable to 2,3,7,8-TCDD.

5.3.1 Protective Equipment: Throw-away plastic gloves, apron or lab coat, safety glasses and lab hood adequate for radioactive work.

5.3.2 Training: Workers must be trained in the proper method of removing of contaminated gloves and clothing without contacting the exterior surfaces.

5.3.3 Personal Hygiene: Thorough washing of hands and forearms after each manipulation and before breaks (coffee, lunch, and shift) with any mild soap and plenty of scrubbing action.

5.3.4 Confinement: Isolated work area, posted with signs; segregated glassware and tools; and plastic-backed absorbent paper on benchtops.

5.3.5 Waste: Good technique includes minimizing contaminated waste. Plastic bag liners should be used in waste cans. Janitors should not handle wastes.

5.3.6 Disposal of Wastes: 2,3,7,8-TCDD decomposes above 800°C. Low level waste, such as the absorbent paper and plastic gloves, may be burned in a good incinerator. Water containing gross quantities (milligrams) of 2,3,7,8-TCDD should be packaged securely and disposed through commercial or governmental channels that are capable of handling

high-level or extremely toxic wastes. Liquids should be allowed to evaporate in a good hood and in a disposable container; residues may then be handled as above.

5.3.7 Glassware, Tools, and Surfaces: Satisfactory cleaning may be accomplished by rinsing with 1,1,1-trichloroethane, then washing with any detergent and water. Dishwater may be disposed to the sewer. (Also see Section 6.5.)

5.3.8 Laundry: Clothing known to be contaminated should be disposed with the precautions described under Section 5.3.6. Lab coats or other clothing worn in 2,3,7,8-TCDD work may be laundered. Clothing should be collected in plastic bags. Persons who convey the bags and launder the clothing should be advised of the hazard and trained in proper handling. The clothing may be put into a washer without contact if the launderer knows the problem. The washer should be run through a cycle before being used again for other clothing. Disposable garments may be used to avoid a laundry problem, but they must be properly disposed or incinerated.

5.3.9 Wipe Tests: A useful method to determine cleanliness of work surfaces and tools is to wipe the surface with a piece of filter paper, which is extracted and analyzed by gas chromatography (limit of sensitivity of approximately 0.1 μg per wipe). Less than 0.1 μg 2,3,7,8-TCDD per wipe indicates acceptable cleanliness; anything higher warrants further cleaning. More than 10 μg on a wipe sample indicates an acute hazard that requires prompt cleaning before further use of the equipment or work space and indicates that unacceptable work practices have been employed in the past.

5.3.10 Inhalation: Any procedure that may produce airborne contamination must be performed with good ventilation. Gross losses to a ventilation system must not be allowed. Handling of the dilute solutions normally used in analytical and animal work presents no inhalation hazards except in case of an accident. Finely divided soils contaminated with 2,3,7,8-TCDD are hazardous because of the potential for inhalation. Such samples should be handled in a confined environment, such as a hood or glove box, or laboratory personnel should wear masks fitted with a particulate filter and charcoal sorbent.

5.3.11 Accidents: Remove contaminated clothing immediately, taking precautions not to contaminate skin or other articles. Wash exposed skin vigorously and repeatedly until medical attention is obtained.

6. APPARATUS AND EQUIPMENT

6.1 Gas Chromatograph/Mass Spectrometer/Data System (GC/MS/DS)

6.1.1 The GC must be capable of temperature programming and be equipped with all required accessories, such as syringes, gases, and a capillary column. The GC injection port must be designed for capillary columns. Splitless or on-column injection technique is recommended. With this method, a 2-μL injection volume is used consistently. With some GC injection ports, however, 1 μL may be the maximum volume that produces adequate precision and chromatographic separation. A 1-μL injection volume may be used if adequate sensitivity and precision can be achieved. CAUTION: If 1 μL is used for any injection volume, the injection volume for all extracts, blanks, calibration solutions and the performance check sample must be 1 μL.

6.1.2 Mass spectral data are obtained with electron ionization at a nominal electron energy of 70 eV. To ensure sufficient precision of mass spectral data, the required MS scan rate must allow acquisition of at least five data points for each of six ions while a sample component elutes from the GC.

6.1.3 An interfaced data system (DS) is required to acquire, store, reduce and output mass spectral data. The DS must be equipped with a selected ion monitoring (SIM) program to acquire data for at least six ions that are characteristic of labeled and unlabeled 2,3,7,8-TCDD. (The mass spectrum of unlabeled 2,3,7,8-TCDD is shown in Figure 1 at the end of this Exhibit.) The same integration time must be used for each ion monitored, and the integration time used for sample analyses must be the same as the time used to analyze concentration calibration solutions and the performance check solution. Total data acquisition time per cycle (six ions) must not exceed 1.5 seconds.

6.2 GC Column -- Two fused silica capillary columns are recommended; one is a 60-m SP-2330 and the other is a 50-m CP-SIL 88. Any capillary column that separates 2,3,7,8-TCDD from all other TCDDs may be used, but this separation must be demonstrated. Minimum acceptance criteria must be determined per Section 9.2.3.1. At the beginning of each 8-hour period during which sample or concentration calibration solutions will be analyzed, column operating conditions must be demonstrated to achieve the required separation on the column to be used for samples. Operating conditions known to produce acceptable results with the recommended columns are shown in Table 1 at the end of this Exhibit.

6.3 Miscellaneous Equipment

6.3.1 Nitrogen evaporation apparatus with variable flow rate from approximately 30 mL/min to 150 mL/min.

6.3.2 Mechanical shaker — A magnetic stirrer or a wrist-action or platform-type shaker that produces vigorous agitation. Agitation conditions must be determined and demonstrated.

6.3.3 Analytical balance capable of accurately weighing 0.01g.

6.3.4 Centrifuge capable of operating at 2000 rpm.

6.3.5 Water bath — equipped with concentric ring cover and temperature controlled within ± 2°C.

6.3.6 Stainless steel spatulas or spoons.

6.3.7 Stainless steel (or glass) pan large enough to hold contents of 1-pint sample containers.

6.3.8 Glove box.

6.4 Glassware

6.4.1 Extraction jars — amber glass with Teflon-lined screw cap; minimum capacity of approximately 500 mL; must be compatible with mechanical shaker to be used.

6.4.2 Kuderna-Danish apparatus — 500-mL evaporating flask, 10-mL graduated concentrator tubes with ground-glass stoppers, and 3-ball macro Snyder column.

6.4.3 Culture tubes — 8-mL glass.

6.4.4 Mini-vials — 1-mL amber borosilicate glass with conical-shaped reservoir and screw caps lined with Teflon-faced silicone disks.

6.4.5 Funnels — glass; appropriate size to accommodate filter paper used to filter jar extract (volume of approximately 170 mL).

6.4.6 Chromatography columns — 1 cm ID x 10 cm long and 1 cm ID by 30 cm long.

6.5 NOTE: Reuse of glassware should be minimized to avoid the risk of using contaminated glassware. All glassware that is reused must be scrupulously cleaned as soon as possible after use, applying the following procedure.

Rinse glassware with the last solvent used in it. Wash with hot water containing detergent. Rinse with copious amounts of tap water and several portions of distilled water. Drain dry and heat in a muffle furnace at 400°C for 15 to 30 min. Volumetric glassware should not be heated in a muffle furnace, and some thermally stable materials (such as PCBs) may not be removed by heating in a muffle furnace. In these cases, rinsing with high-purity acetone and hexane may be substituted for muffle furnace heating. After glassware is dry and cool, store inverted or capped with aluminum foil in a clean environment.

7. REAGENTS AND CONSUMABLE MATERIALS

7.1 Column Chromatography Reagents

7.1.1 Alumina, acidic — Soxhlet extract with methylene chloride for 22 hours and activate by heating in a foil covered glass container for 24 hours at 190°C.

7.1.2 Silica gel — high purity grade, type 60, 70-230 mesh; Soxhlet extract with methylene chloride for 22 hours and activate by heating in a foil-covered glass container for 24 hours at 130°C.

7.1.3 Silica gel impregnated with 40% (by weight) sulfuric acid — Add two parts (by weight) concentrated sulfuric acid to three parts (by weight) silica gel (extracted and activated), mix with a glass rod until free of lumps, and store in a screw-capped glass bottle.

7.1.4 Sulfuric acid, concentrated — ACS grade, specific gravity 1.84.

7.1.5 Graphitized carbon black (Carbopack C or equivalent), surface area of approximately 12 m^2/g, 80/100 mesh.

7.1.6 Celite 545®, reagent grade, or equivalent.

7.2 Filter paper — pore size of $\leq$ 20 to 25 μ; rinse with hexane before use.

7.3 Glass wool, silanized — Extract with methylene chloride and hexane before use.

7.4 Sodium sulfate — Granular, anhydrous; before use, extract with methylene chloride and dry for $\geq$ 4 h in a shallow tray placed in an oven operated at 120°C.

7.5 Solvents — High purity, distilled-in-glass; hexane, methanol, methylene chloride, and toluene.

7.6 Concentration Calibration Solutions (reference Table 2) — Five toluene solutions containing unlabeled 2,3,7,8-TCDD at varying concentrations and $^{13}C_{12}$-2,3,7,8-TCDD (the internal standard, CASRN 80494-19-5) at a constant concentration. Three of these solutions also contain $^{37}Cl_4$-2,3,7,8-TCDD (the surrogate compound, CASRN 85508-50-5) at varying concentrations. Concentration calibration solutions are to be obtained from the Quality Assurance Division, USEPA Environmental Monitoring Systems Laboratory (EMSL-LV), Las Vegas, Nevada. However, if not available from EMSL-LV, standards may be obtained from commercial sources, and solutions may be prepared in the contractor laboratory. Traceability of standards must be verified against EPA-supplied standard solutions, by laboratory SOP's as required in IFB Pre-Award Bid Confirmations, part 2.f.(4).

7.6.1 Each of solutions #1-#5 contains $^{13}C_{12}$-2,3,7,8-TCDD at a concentration of 1 ng/μL which is equivalent to a 50-μL extract of a 10-g sample to which that compound (the internal standard) was added at a concentration of 5 μg/kg.

7.6.2 Solutions #1-#5 contain unlabeled 2,3,7,8-TCDD at concentrations of 0.2, 1, 5, 20 and 40 ng/μL respectively; those concentrations are equivalent to 50-μL extracts of 10-g samples containing 1, 5, 25, 100 and 200 ppb, respectively.

7.6.3 Solutions #1-#3 contain $^{37}Cl_4$-2,3,7,8-TCDD at concentration of 0.06, 0.12, and 0.2 ng/μL, respectively; those concenrrations are equivalent to extracts containing 30, 60, and 100 ppb, respectively, of the amount of $^{37}Cl_4$-TCDD (the surrogate compound) added to each sample before extraction.

7.6.4 Store concentration calibration solutions in 1-mL amber mini-vials at room temperature.

7.7 Performance Check Solution — A mixture containing: unlabeled 2,3,7,8-TCDD; 1,2,3,4-TCDD (CASRN 30746-58-8); 1,4,7,8-TCDD (CASRN 40581-94-0); 1,2,3,7-TCDD (CASRN 67028-18-6); 1,2,3,8-TCDD (CASRN 53555-02-5); 1,2,7,8-(CASRN 34816-53-0) and 1,2,6,7-TCDD (CASRN 40581-90-6) must be obtained from the Quality Assurance Division, Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

To this dry mixture add 500 μL of the sample fortification solution (Section 7.8) containing $^{13}C_{12}$-2,3,7,8-TCDD at a concentration of 0.5 ng/μLand $^{37}Cl_4$-2,3,7,8-TCDD at a concentration of 0.1 ng/μL. Store in 1-mL amber mini-vial at room temperature.

7.8 Sample Fortification Solution - a toluene solution containing the internal standard at a concentration of 0.5 ng/μL and the surrogate compound at a concentration of 0.1 ng/μL.

7.9 Field Blank Fortification Solution - a toluene solution containing the internal standard at a concentration of 0.5 ng/μL, the surrogate compound at a concentration of 0.1 ng/μL, and the unlabeled 2,3,7,8-TCDD at a concentration of 0.1 ng/μL.

8. SAMPLE PRESERVATION AND HANDLING

8.1 Chain-of-custody procedures — see Exhibit G.

8.2 Sample Preservation

8.2.1 When received, each sample will be contained in a 1-pint glass jar surrounded by vermiculite in a sealed metal paint can. Until a portion is to be removed for analysis, store the sealed paint cans in a locked limited-access area where ambient temperature is maintained between 0°C and 35°C. After a portion is removed for analysis, return the unused portion of sample to its original containers and store as stated above. Do not freeze samples; they may contain sufficient water to break the sample jar if frozen.

8.2.2 To avoid photodecomposition, protect samples from light.

8.3 Sample Handling

8.3.1 CAUTION: Finely divided soils contaminated with 2,3,7,8-TCDD are hazardous because of the potential for inhalation or ingestion of particles containing 2,3,7,8-TCDD. Such samples should be handled in a confined environment (i.e., a closed hood or a glove box).

8.3.2 Pre-extraction sample treatment

8.3.2.1 Homogenization — Although sampling personnel will attempt to collect homogeneous samples, the contractor shall examine each sample and judge if it needs further mixing. NOTE: Contractor personnel have the responsibility to take a representative sample aliquot; this responsibility entails efforts to make the sample as homogeneous as possible. Stirring is recommended when possible.

8.3.2.2 Centrifugation — If a sample contains an obvious aqueous/liquid phase, centrifuge it to separate liquid and solid phases. Place the entire sample in a suitable centrifuge bottle and centrifuge for 30

minutes at 2000 rpm. Remove bottle from centrifuge. With a disposable pipet, remove liquid phase and discard. CAUTION: This liquid may contain TCDD and should be disposed as a liquid waste. Mix solid layer with stainless steel spatula and remove a portion to be weighed and analyzed. Return the remaining solid portion to original sample bottle and store.

9. CALIBRATION

9.1 Two types of calibration procedures are required. One type, routine calibration, is required at the beginning and end of each 8-hour period during which TCDD analyses are performed. The other type, initial calibration, is required before any samples are analyzed for TCDD, and is required intermittently throughout sample analyses as dictated by results of routine calibration procedures described below. No samples are to be analyzed until acceptable calibration is demonstrated and documented.

9.2 Routine Calibration

9.2.1 Calibrate and tune the MS with standards and procedures prescribed by the manufacturers. CAUTION: Some manufacturers may specify baseline resolution at masses higher than necessary for this method; that procedure could significantly reduce sensitivity for TCDD analysis.

9.2.2 Inject 2 μL (CAUTION: See Sect. 6.1.1) of the performance check solution (Sect. 7.7) and acquire selected-ion-monitoring mass spectral data for m/z 320, 322, 323, 328, 332, and 334 within a total cycle time of $\leq$ 1.5 seconds. Acquire at least five data points for each GC peak and use the same data acquisition time for each of the six ions being monitored. NOTE: The same data acquisition parameters previously used to analyze concentration calibration solutions during initial calibration must be used for the performance check solution.

9.2.3 Determine and document acceptable system performance with the following criteria:

9.2.3.1 GC column performance -- If SP-2330 column is used, the valley between 2,3,7,8-TCDD and the peaks representing all other TCDD isomers must be resolved with a valley $\leq$ 25%. Valley (%) = x/y X 100, when y is peak height of 2,3,7,8-TCDD; x is measured as shown in Figures 2 and 3 at the end of this Exhibit . The peak representing 2,3,7,8-TCDD shall be labeled and identified as such on the chromatograms.

9.2.3.2 Ratio of integrated ion current for m/z 320 to m/z 322 for 2,3,7,8-TCDD must be $\geq$ 0.67 and $\leq$ 0.87.

9.2.3.3 MS resolution — Ratio of integrated ion current for m/z 323 relative to m/z 322 for unlabeled 2,3,7,8-TCDD should be $\geq$ 0.07 and $\leq$ 0.20.

9.2.3.4 Ratio of integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD must be $\geq$ 0.67 and $\leq$ 0.87.

9.2.3.5 Response factor (Sect. 9.3.10) for $^{37}Cl_4$-2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD must be within $\pm$ 10% of the mean value established by triplicate analyses of the concentration calibration solutions (Section 9.3).

9.2.4 Inject 2 μL of the concentration calibration solution #1, which contains 0.2 ng/μL of unlabeled 2,3,7,8-TCDD. Using the same GC/MS/DS conditions as used in Section 9.2.2 except the ions being monitored, acquire data for m/z 257, 320, 322, 328, 332, and 334. Determine and document acceptable performance for:

9.2.4.1 MS sensitivity — signal-to-noise (S/N) ratio (Section 3.8) of $\geq$ 2.5 for m/z 257 and $\geq$ 10 for m/z 322 for unlabeled 2,3,7,8-TCDD. The ratio of integrated ion current for m/z 257 to m/z 322 must be $\geq$ 0.20 and $\leq$ 0.45.

9.2.4.2 Measured response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD is within $\pm$ 10% of the mean values established (Section 9.3) by triplicate analyses of the concentration calibration solutions.

9.2.5 Remedial actions shall be taken by Contractor if criteria are not met. Possible remedies are:

9.2.5.1 Check and adjust GC and/or MS operating conditions.

9.2.5.2 Replace GC column (performance of initial calibration procedures then required).

9.2.5.3 Tune MS for greater or lesser resolution.

9.2.5.4 Calibrate MS mass scale.

9.2.5.5 Prepare and analyze new performance check solution.

9.2.3.6 Prepare new concentration calibration curve(s) (Section 9.3.11).

9.3 Initial Calibration

9.3.1 In addition to routine calibration procedures described in Section 9.2, before any samples are analyzed, determine response factors for $^{37}Cl_4$-2,3,7,8-TCDD and for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD.

9.3.2 Concentration calibration solutions — The five solutions described in Section 7.6 are required.

9.3.3 Calibrate and tune the MS with standards and procedures prescribed by the instrument manufacturer.

9.3.4 If a column other than the recommended (Section 6.2) SP-2330 or CP-SIL 88 fused silica capillary column is used, determine the GC conditions necessary to separate 2,3,7,8-TCDD from other TCDDs known to have similar relative retention times.

9.3.5 Inject a 2-μL aliquot of the performance check solution (CAUTION: See Section 6.1.1) and acquire selected-ion-monitoring (SIM) mass spectral data using the MS operating conditions specified in Section 9.2.2. Determine GC operating conditions necessary to achieve separation described in Section 9.2.3.1.

9.3.6 Using specified MS data acquisition procedures and the GC conditions determined in Section 9.3.5, analyze a 2-μL aliquot of the performance check solution.

9.3.7 Determine and document acceptable calibration using the criteria specified in Section 9.2.3.1 - 9.2.3.5.

9.3.8 Using the same GC conditions that produced acceptable results with the performance check solution, analyze a 2-μL aliquot of each of the five concentration calibration solutions with the following MS operating parameters.

9.3.8.1 Acquire selected-ion-monitoring data for m/z 257, 320, 322, 328, 332 and 334.

9.3.8.2 Total cycle time for data acquisition must be $\leq$ 1.5 seconds.

9.3.8.3 Acquire at least five data points for each ion during elution of the GC peak.

9.3.8.4 Use the same data acquisition time for each of the six ions being monitored.

9.3.9 Repeat Section 9.3.8 two times to produce triplicate data sets for each solution.

9.3.10 Calculate the response factor for $^{37}Cl_4$-2,3,7,8-TCDD and for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD:

$$RF = \frac{A_x \cdot Q_{is}}{A_{is} \cdot Q_x}$$

where A_x = integrated ion abundance (corrected as specified in Section 12.i.1.3) of m/z 328 for $^{37}Cl_4$-2,3,7,8,-TCDD or the sum of integrated ion abundances of m/z 320 and m/z 322 for unlabeled 2,3,7,8-TCDD,

A_{is} = the sum of integrated abundances of m/z 332 and m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD,

Q_{is} = quantity of $^{13}C_{12}$-2,3,7,8-TCDD, and

Q_x = quantity of unlabeled 2,3,7,8-TCDD or $^{37}Cl_4$-2,3,7,8-TCDD injected.

RF is a unitless number; units used to express quantities must be equivalent.

9.3.11 For both $^{37}Cl_4$-2,3,7,8-TCDD and unlabeled 2,3,7,8-TCDD, calculate the mean RF and its relative standard deviation (RSD) from triplicate analyses of each of the five concentration calibration solutions. Variation of the RF calculated for each compound at each concentration level must not exceed 10% RSD. If the five mean RFs for each compound do not differ by more than ± 10%, the RF can be considered to be independent of analyte quantity for the calibration concentration range, and the mean of the five mean RFs shall be used for concentration calculations.

10. QUALITY CONTROL

See Exhibit E for QA/QC Requirements.

11. PROCEDURES

11.1 Sample Extraction

11.1.1 CAUTION: See Section 5 for safety guidelines and recommendations.

11.1.2 Jar extraction. NOTE: Extremely wet samples may require centrifuging to remove water before addition of sodium sulfate see (Section 8.3.2.2).

11.1.2.1 Accurately weigh to three significant figures a 10 gram (± 0.5 gram) portion of the wet soil or sediment sample, and transfer it to the extraction jar.

11.1.2.2 Add 100 µL of the sample fortification solution (Section 7.8) to the soil or sediment in the extraction jar. Add small portions of the solutions at several sites on the surface of the soil or sediment.

11.1.2.3 Add 20 g of purified anhydrous sodium sulfate, and mix thoroughly using a stainless steel spoon or spatula.

11.1.2.4 Allow the mixture of soil and sodium sulfate to set for two hours at ambient temperature; mix again, break all visible lumps, and allow to set for at least four more hours.

11.1.2.5 Mix again and add 20 mL of methanol; mix again and add 150 mL of hexane.

11.1.2.6 Place the extraction jar containing the soil, sodium sulfate and solvents in the shaker and shake for at least 3 hours.

11.1.2.7 Remove the jar from the shaker and allow solids to settle. Decant the solvent through a glass funnel containing hexane-rinsed filter paper. Rinse the jar, solid sample residue, and filter residue with four 5-mL portions of hexane.

11.1.2.8 Concentrate the extract volume to approximately 2 to 3 mL with a Kuderna-Danish apparatus or a rotary evaporator. NOTE: Glassware used for more than one sample must be carefully cleaned between samples to prevent cross contamination (See Section 6.5).

11.1.2.9 Transfer the concentrated extract to an 8-mL glass culture tube. Rinse the evaporator flask with three 5-mL portions of hexane; transfer each rinse to the culture tube. Between additions of hexane rinse, reduce the extract volume in the culture tube enough to allow addition of another 5-mL volume of rinse. To reduce the volume, place the culture tube in a water bath adjusted to operate at 50°C and position the tube so that the surfaces of the extract and the water are at about the same level. Evaporate the solvent with a stream of nitrogen (flow rate of approximately 150 mL/min) with the tip of the nitrogen delivery tube 2 cm above the solution.

11.1.2.10 After the final rinse has been added, reduce the extract volume to approximately 1 mL.

11.2 Column Chromatography

11.2.1 Column Preparation

11.2.1.1 Column 1: Place 1.0 g of silica gel into a 1 cm x 20 cm column and tap the column gently to settle the silica gel. Add 2 g sodium hydroxideimpregnated silica gel, 1 g silica gel, 4.0 g of sulfuric acid-impregnated silica gel, and 2 g silica gel. Tap column gently after each addition.

11.2.1.2 Column 2: Place 6.0 g of alumina into a 1 cm x 30 cm column and tap the column gently to settle the alumina. Add a 1-cm layer of purified sodium sulfate to the top of the alumina.

11.2.1.3 Add hexane to each column until the packing is free of channels and air bubbles. A small positive pressure (5 psi) of clean nitrogen can be used if needed.

11.2.2 Quantitatively transfer the hexane sample extract from the culture tube to the top of the sulfuric acid-impregnated silica gel in Column 1. Rinse the culture tube with two 0.5 mL portions of hexane; transfer rinses to Column 1.

11.2.3 With 90 mL of hexane, elute the extract from Column 1 directly into Column 2 containing alumina and sodium sulfate.

11.2.4 Add 20 mL of hexane to Column 2 and elute until the hexane level is just below the top of the sodium sulfate; discard the eluted hexane.

11.2.5 Add 20 mL of 20% methylene chloride/80% hexane (volume/volume) to Column 2 and collect the eluate.

11.2.6 Reduce the volume of eluate with a gentle stream of filtered dry nitrogen. When the volume is about 1 to 2 mL, transfer aliquots to a 1-mL amber mini-vial with conical reservoir. Concentrate and add additional aliquots with further concentration until entire eluate is transferred. Rinse eluate container with two 0.5-mL portions of hexane; transfer rinses to the mini-vial, with further concentration as necessary. CAUTION: Do not evaporate sample extract to dryness.

11.2.7 With the final sample extract volume at approximately 1 mL, store the extract until time for GC/MS analysis.

11.3 GC/MS Analysis

11.3.1 Remove the sample extract or blank from storage and allow it to warm to ambient laboratory temperature if necessary.

With a stream of dry, filtered nitrogen, reduce the extract/blank volume to near dryness. Immediately before GC/MS analysis, adjust the extract or blank volume to 50 μL with toluene.

11.3.2 Inject a 2-μL aliquot of the extract into the GC, operated under conditions previously used (Sect. 9) to produce acceptable results with the performance check solution.

11.3.3 Acquire mass spectral data for the following selected characteristic ions: m/z 257, 320, and 322 for unlabeled 2,3,7,8-TCDD; m/z 328 for $^{37}Cl_4$-2,3,7,8-TCDD; and m/z 332 and 334 for $^{13}C_{12}$-2,3,7,8-TCDD. Use the same data acquisition time and MS operating conditions previously used (Sect. 9.3.8) to determine response factors.

11.4 Identification Criteria. NOTE: Refer to Exhibit E, Section 7, for application of identification criteria.

11.4.1 Retention time (at maximum peak height) of the sample component must be within 3 seconds of the retention time of the $^{13}C_{12}$-2,3,7,8-TCDD. Retention times are required for all chromatograms, but scan numbers are optional. These parameters should be printed next to the appropriate peak.

11.4.2 The integrated ion currents detected for m/z 257, 320, and 322 must maximize simultaneously. If there are peaks that will affect the maximization or quantitation of peaks of interest, attempts should be made to narrow the scan window to eliminate the interfering peaks. This should be reported on a separate chromatogram.

11.4.3 The integrated ion current for each analyte and surrogate compound ion (m/z 257, 320, 322 and 328) must be at least 2.5 times background noise and must not have saturated the detector; internal standard ions (m/z 332 and 334) must be at least 10 times background and must not have saturated the detector.

11.4.4 Relative abundance of m/z 257 to m/z 322 should be $\geq$ 20% and $\leq$ 45%.

11.4.5 Abundance of integrated ion counts detected for m/z 320 must be $\geq$ 67% and $\leq$ 87% of integrated ion counts detected for m/z 322.

11.5 Column Chromatography Procedure for Difficult Samples -- Use the following procedure for extracts previously subjected to the column chromatography procedures in Section 11.2, but found by GC/MS analysis to contain interfering components.

11.5.1 Mix 3.6 grams of Carbopack C (or equivalent) with 16.4 grams of Celite 545^R (or equivalent) in a 40-mL vial and activate by heating in an oven at 130°C for 6 hours. Store in a desiccator. CAUTION: Check each new batch of mixed Carbopack/Celite^R to ensure TCDD recovery of $\geq$ 50%. Subject the low level concentration calibration solution to this procedure and measure the quantity of labeled and unlabeled 2,3,7,8-TCDD.

11.5.2 Insert a small plug of glass wool into a disposable pipet approximately 15 cm long by 7 mm O.D. Apply suction with a vacuum aspirator attached to the pointed end of the pipet, and add the Carbopack/Celite^R mixture until a 2 cm column is obtained.

11.5.3 Pre-elute the column with:

11.5.3.1 2 mL of toluene

11.5.3.2 1 mL of a mixture of 75% (by volume) methylene chloride, 20% methanol and 5% benzene

11.5.3.3 1 mL of 50% (by volume) cyclohexane and 50% methylene chloride

11.5.3.4 2 mL of hexane

11.5.4 While the column is still wet with hexane, add the sample extract. Elute the column with the following sequence of solvents and discard eluents.

11.5.4.1 2 mL of hexane

11.5.4.2 1 mL of 50% (by volume) cyclohexane and 50% methylene chloride

11.5.4.3 1 mL of 75% (by volume) methylene chloride, 20% methanol and 5% benzene

11.5.5 Elute with 2 mL of toluene and collect the eluent, which contains the TCDD.

11.5.6 Store the sample extract until just before GC/MS analysis.

12. CALCULATIONS

12.1 Concentration

12.1.1 Concentration when a linear response factor was obtained:

12.1.1.1 Calculate the concentration of 2,3,7,8-TCDD using the formula:

$$C_x = \frac{A_x \cdot Q_{is}}{A_{is} \cdot RF \cdot W}$$

where C_x = 2,3,7,8-TCDD concentration in micrograms per kilogram

A_x = the sum of integrated ion abundance detected for m/z 320 and 322

A_{is} = the sum of integrated ion abundances detected for m/z 332 and 334 (characteristic ions of $^{13}C_{12}$-2,3,7,8-TCDD, the internal standard)

Q_{is} = quantity (in nanograms) of $^{13}C_{12}$-2,3,7,8-TCDD added to the sample before extraction

RF = calculated mean response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample.

12.1.1.2 If the calculated concentration of unlabeled 2,3,7,8-TCDD exceeds 200 μg/kg, which is the maximum concentration of the concentration calibration solutions, the linear range may have been exceeded, and a smaller aliquot of that sample must be analyzed. Accurately weigh to three significant figures a 1-g aliquot of the wet soil/sediment. Add 100 μL of the sample fortification solution (Section 7.8), just as for the larger sample aliquot. Extract and analyze.

12.1.1.3 Calculate the concentration of the surrogate compound, $^{37}Cl_4$-2,3,7,8-TCDD, using the formula:

$$C_s = \frac{A_s \cdot Q_{is}}{A_{is} \cdot RF \cdot W}$$

C_s = concentration (in micrograms per kilogram) of the surrogate compound

A_s = total integrated ion abundance of m/z 328 after correction for the contribution by unlabeled 2,3,7,8-TCDD (correction -- subtract 0.9% of the total integrated ion abundance detected for m/z 322 in the same sample extract)

A_{is} = the sum of integrated ion abundances detected for m/z 332 and 334 (characteristic ions of $^{13}C_{12}$-2,3,7,8-TCDD, the internal standard)

Q_{is} = quantity (in nanograms) of $^{13}C_{12}$-2,3,7,8-TCDD added to the sample before extraction

RF = calculated mean response factor for $^{37}Cl_4$-2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample.

12.2 Accuracy -- Calculate the accuracy (A) of the measurement of surrogate, $^{37}Cl_4$-2,3,7,8-TCDD, using the formula:

$$\text{Surrogate Percent Accuracy} = \frac{\text{amount measured (nanograms)}}{10 \text{ ng}} \times 100$$

12.3 Estimated Detection Limit — For samples in which no unlabeled 2,3,7,8-TCDD was detected, calculate the estimated minimum detectable concentration, which is the concentration required to produce a signal with area (or peak height) of 2.5 times the background signal area (or peak height). The background area is determined by integrating ion abundances for either m/z 320 or 322 in the appropriate region of the SICP, multiplying that area by 2.5, and relating the product area to an estimated concentration that would produce that product area.

Use the formula:

$$C_E = \frac{2.5 \cdot A_x \cdot Q_{is}}{A_{is} \cdot RF \cdot W}$$

where C_E = estimated concentration of unlabeled 2,3,7,8-TCDD required to produce A_x

A_x = peak height or integrated ion abundance for either m/z 320 or 322 in the same group of $\geq$ 5 spectra used to measure A_{is}

A_{is} = peak height or integrated ion abundance for the appropriate ion characteristic of the internal standard, m/z 332 when m/z 320 is used to determine A_x, and m/z 334 when m/z 322 is used to determine A_x

Q_{is}, RF, and W retain the definitions previously stated in Section 12.1.1.

The use of the area (or peak height) for m/z 320 to calculate C_E is preferred to m/z 322, but m/z 322 can be used when interference is observed for m/z 320 but not for m/z 322.

NOTE: This calculation is not applicable to all samples in which 2,3,7,8-TCDD was not identified (see Section 12.4).

12.4 Estimated Maximum Possible Concentration — For samples where interference is observed for both m/z 320 and 322 or when an unacceptable ratio prevented identification of unlabeled 2,3,7,8-TCDD as a sample component, the procedure in Section 12.1 can be used to estimate the maximum concentration that could be represented by detected signals.

12.5 The relative percent difference (RPD%) is calculated as follows: (See Section 5.1.1, Exhibit E.)

$$RPD = \frac{|S_1 - S_2|}{\text{Mean Concentration}} = \frac{|S_1 - S_2|}{\frac{S_1 + S_2}{2}}$$

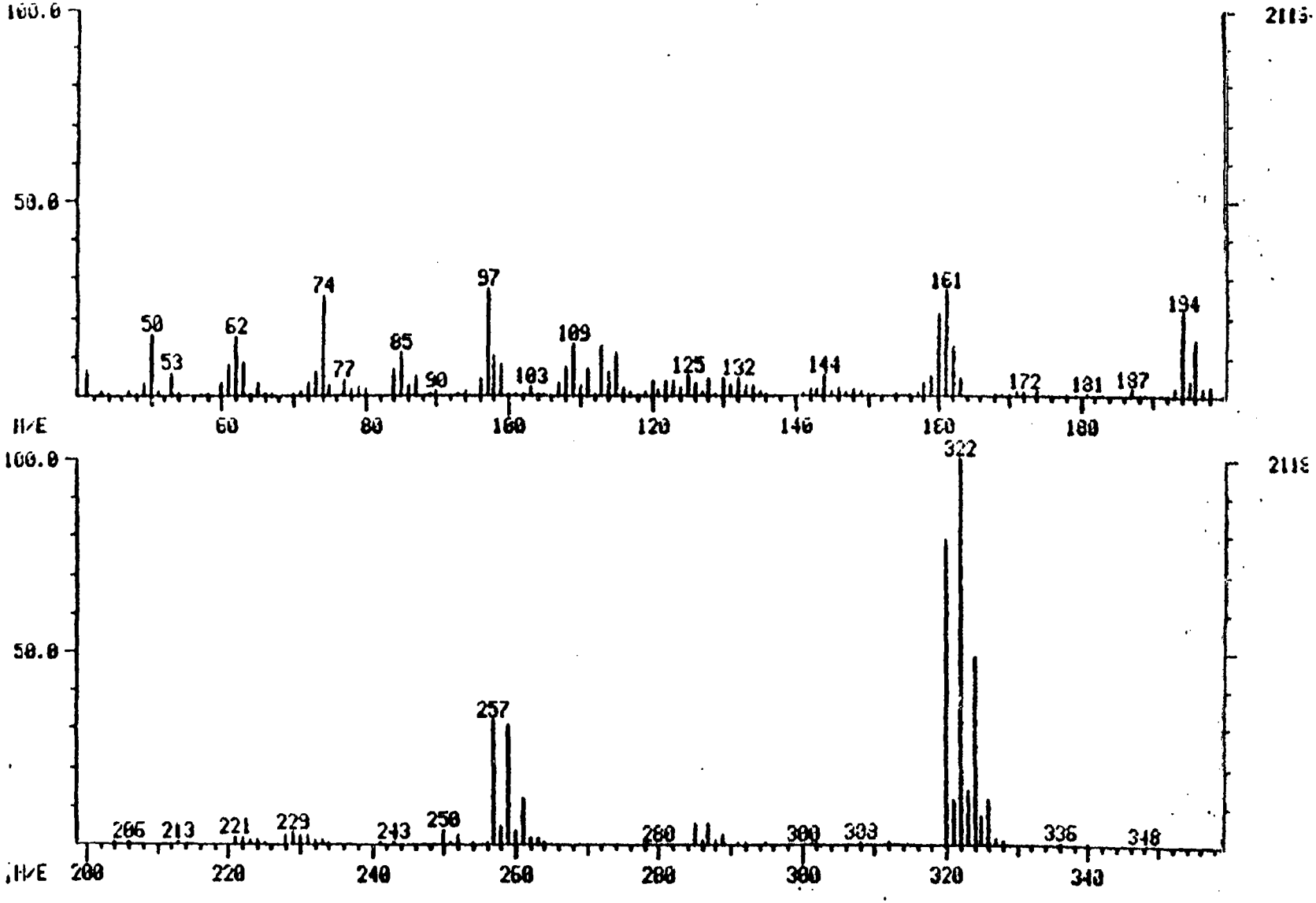

Figure 1. Complete mass spectrum of unlabeled 2,3,7,8-TCDD acquired with recommended GC conditions (Table 1).

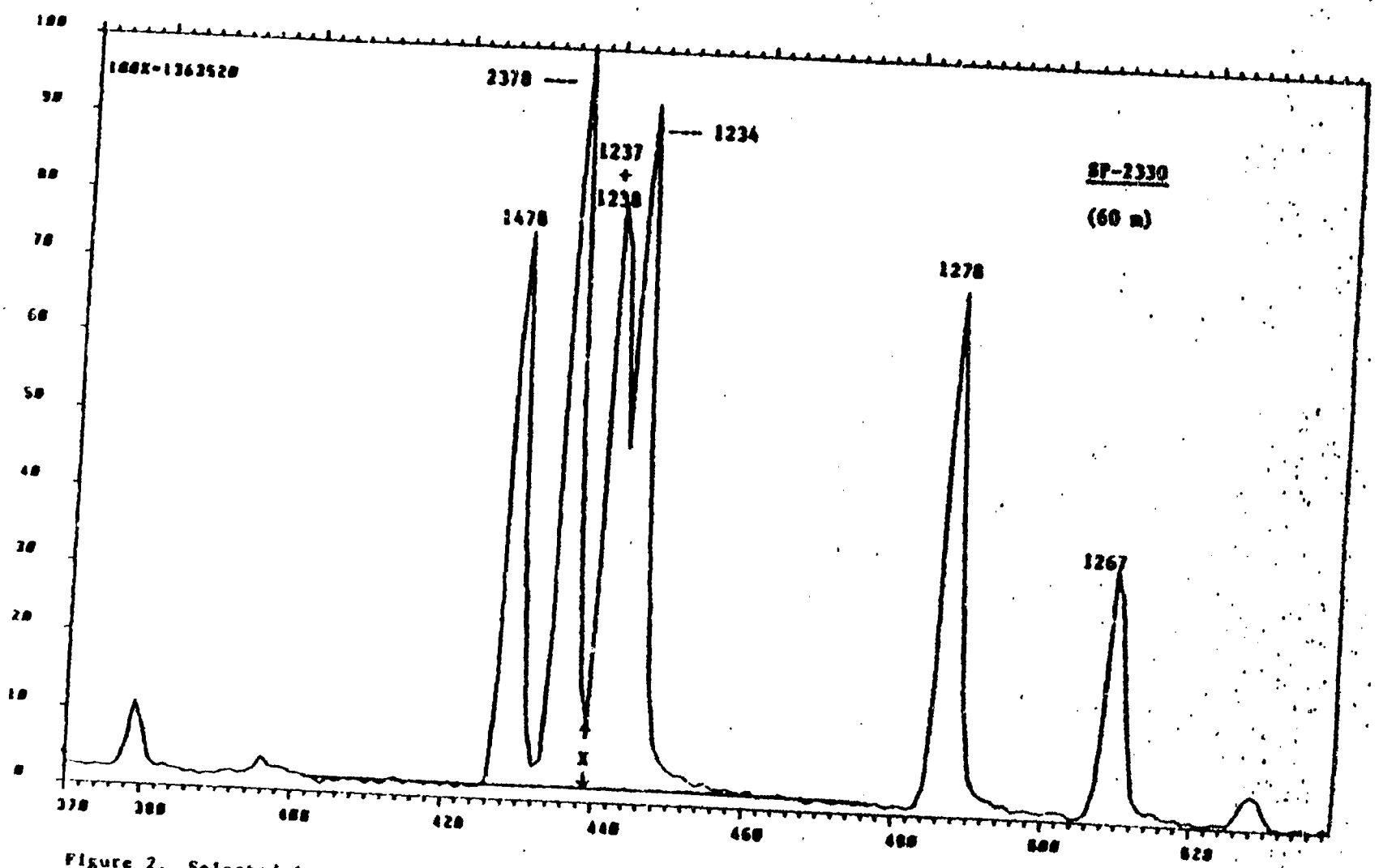

Figure 2. Selected ion current profile for m/z 320 and 322 produced by MS analysis of performance check solution using a 60-m SP-2330 fused silica capillary column and conditions listed in Table 1.

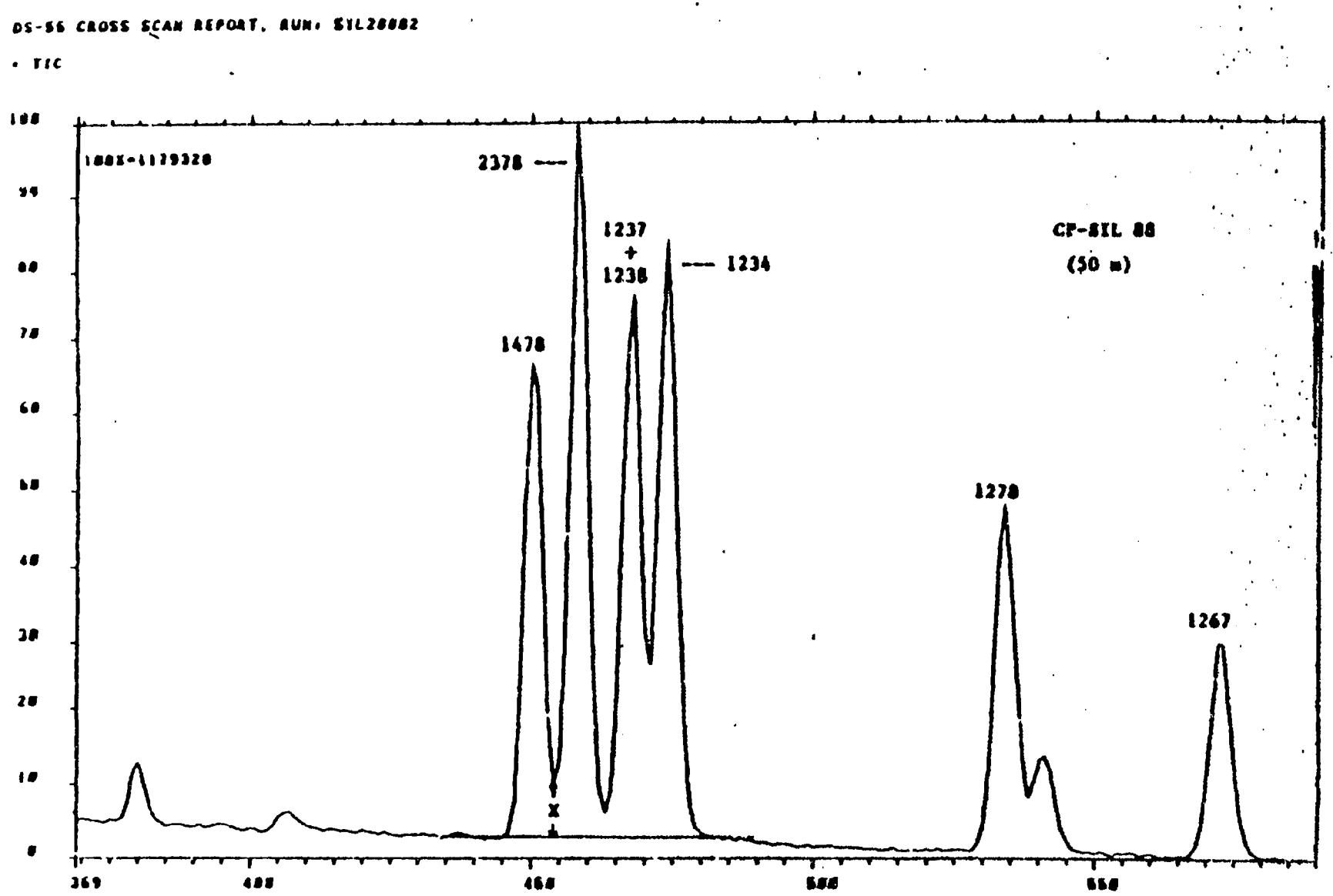

Figure 3. Selected ion current profile for m/z 320 and 322 produced by MS analysis of performance check solution using a 50-m CP-SIL 88 fused silica capillary column and conditions listed in Table 1.

TABLE 1. RECOMMENDED GC OPERATING CONDITIONS

Column coating	SP-2330	CP-SIL 88
Film thickness	0.2 μm	0.22 μm
Column dimensions	60 m x 0.24 mm	50 m x 0.22 mm
Helium* linear velocity	28-29 cm/sec at 260°C	28-29 cm/sec at 240°C
Initial temperature	70°C	45°C
Initial time	4 min	3 min
Temperature program	Rapid increase to 200°C 200°C to 260°C at 4°C/min	Rapid increase to 190°C 190°C to 240°C at 5°C/min
2,3,7,8-TCDD retention time	24 min	26 min

* Hydrogen is an acceptable carrier gas.

TABLE 2. COMPOSITION OF CONCENTRATION CALIBRATION SOLUTIONS

Solution #	Concentration of 2,3,7,8-TCDD		
	Isotopically Labeled		Unlabeled
	$^{13}C_{12}$	$^{37}Cl_4$	
1	1 ng/μL	0.06 ng/μL	0.2 ng/μL
2	1 ng/μL	0.12 ng/μL	1 ng/μL
3	1 ng/μL	0.2 ng/μL	5 ng/μL
4	1 ng/μL	0	20 ng/μL
5	1 ng/μL	0	40 ng/μL

Exhibit E - QA/QC Requirements (for 2378-TCDD and TCDF)

SUMMARY OF QC ANALYSES

1. Initial and periodic calibration and instrument performance checks.

2. Laboratory reagent blank analyses (Sect. 4.1); minimum of one blank shall be analyzed with each sample batch; an additional blank analyzed when new reagents are used.

3. Analysis of a batch of samples with accompanying QC analyses:

   3.1 Sample Batch — $\leq$ 24 samples, including field blank and rinsate sample(s).

   3.2 Additional QC Analyses Per Batch:

Laboratory reagent blank	1
Duplicate sample analysis	1
Confirmatory partial scan analysis	1
TOTAL	3

4. "Blind" QC samples may be submitted to contractor as an ordinary soil or sediment sample included among the batch of samples. Blind samples include:

   4.1 Uncontaminated soil,

   4.2 Split samples,

   4.3 Unlabeled duplicates, and

   4.4 Performance evaluation samples.

QUALITY CONTROL

1. Performance Evaluation Samples -- Included among samples in some batches will be samples containing known amounts of unlabeled 2,3,7,8-TCDD that may or may not be marked as other than ordinary samples.

2. Performance Check Solution

   2.1 At the begining of each 8-hour period during which samples are to be analyzed, an aliquot of the performance check solution and an aliquot of concentration calibration solution #1 shall be analyzed to demonstrate adequate GC and MS resolution and sensitivity, response factor reproducibility, and mass range calibration.

These procedures are described in Section 9 of Exhibit D. If any required criteria are not met, remedial action must be taken before any samples are analyzed.

2.2 To validate sample data, the performance check solution must be analyzed also at the end of each 8-hour period during which samples are analyzed.

2.2.1 If the contractor laboratory operates only during one 8-hour period (shift) each day, the performance check solution must be analyzed twice (at the beginning and end of the 8-hour period) to validate data acquired during the interim period.

2.2.2 If the contractor laboratory operates during consecutive 8-hour periods (shifts), analysis of the erformance check solution at the beginning of each 8-hour period and at the end of the final 8-hour period is sufficient.

2.3 Results of at least two analyses of the performance check solution must be reported with sample data collected during an 8-h period.

2.4 Deviations from criteria specified for the performance check solution (Section 9.2.3, Exhibit D) invalidate all sample data collected between analyses of the performance check solution, and samples shall be rerun (see Exhibit C).

3. The performance check mixture, concentration calibration solutions, and the sample and field blank fortification solutions are to be obtained from EMSL-LV. However, if not available from EMSL-LV, standards can be obtained from other sources, and solutions can be prepared in the contractor laboratory. Concentrations of all solutions containing unlabeled 2,3,7,8-TCDD and not obtained from EMSL-LV must be verified by comparison to the unlabeled 2,3,7,8-TCDD standard solution (concentration of 7.87 $\mu g/mL$) that is available from EMSL-LV.

4. Blanks

4.1 Laboratory reagent blank -- Perform all steps in the analytical procedure (Section 11, Exhibit D) using all reagents, standards, equipment, apparatus, glassware, and solvents that would be used for a sample analysis, but omit an aliquot of soil or sediment.

4.1.1 Except in the case noted in Section 4.1.3, a laboratory reagent blank must contain the same amount of $^{37}Cl_4$-2,3,7,8-TCDD and $^{13}C_{12}$-2,3,7,8-TCDD that is added to samples before extraction.

4.1.2 Analyze a laboratory reagent blank before any samples are extracted and analyzed.

4.1.3 Analyze two laboratory reagent blanks before a new batch of solvents or reagents is used for sample extraction or for column chromatographic procedures. Do not add any $^{37}Cl_4$-2,3,7,8-TCDD or $^{13}C_{12}$-2,3,7,8-TCDD to one blank, to demonstrate that reagents contain no impurities producing an ion current above the level of background noise for m/z 328, 332 and 334.

4.1.4 Analyze a laboratory reagent blank along with each batch of samples.

4.1.5 Acceptable laboratory reagent blanks contain no ion current above the level of background signal-to-noise for any of the selected characteristic ions (m/z 257, 320, 322) for unlabeled 2,3,7,8-TCDD. If the reagent blank which was extracted along with a batch of samples is contaminated, the entire batch of samples must be rerun (see Exhibit C).

4.1.5.1 If the above criterion is not met, check solvents, reagents, apparatus, and glassware to locate and eliminate the source of contamination before any samples are extracted and analyzed.

4.1.5.2 If new batches of reagents or solvents contain interfering contaminants, purify or discard them.

4.2 Field Blanks -- Each batch of samples contains a sample of uncontaminated soil/sediment that is to be fortified with unlabeled 2,3,7,8-TCDD at a concentration of 1 μg/kg before analysis. In addition to that field blank, a batch of samples may include a rinsate, that is a portion of solvent (usually trichloroethylene) that was used to rinse sampling equipment. The rinsate is analyzed to assure that samples have not been contaminated by sampling equipment.

4.2.1 Unfortified field blank -- Analyze with procedures used for environmental samples (Section 11, Exhibit D). This blank may or may not be labeled as such (i.e., it may be a "blind" QC sample).

4.2.2 Fortified (Spiked) Field Blank

4.2.2.1 Weigh a 10-g aliquot of the specified field blank sample and add 100 μL of the solution containing 0.1 ng/μL of unlabeled 2,3,7,8-TCDD, 0.5 ng/μL of $^{13}C_{12}$-2,3,7,8-TCDD, and 0.1 ng/μL of $^{37}Cl_4$-2,3,7,8-TCDD. (Analysis before fortification is not required because this field blank is known not to contain a detectable concentration of unlabeled 2,3,7,8-TCDD.)

4.2.2.2 Extract with the jar procedure (Section 11.1.2, Exhibit D) and analyze a 2-μL aliquot.

4.2.2.3 Calculate concentration (Section 12.1, Exhibit D) of both $^{37}Cl_4$-2,3,7,8-TCDD and unlabeled 2,3,7,8-TCDD, and accuracy (Section 12.2, Exhibit D) of each measured concentration.

4.2.2.3.1 If accuracy of measured concentration of $^{37}Cl_4$-2,3,7,8-TCDD is > $\pm$40%, discard the results and repeat the fortified field blank extraction and analysis with a second aliquot of the specified field blank sample (see Exhibit C).

4.2.3 Rinsate Sample

4.2.3.1 To a 100-mL aliquot of equipment rinse solvent (rinsate sample), add 100 μL of the solution containing 0.5 ng/μL of $^{13}C_{12}$-2,3,7,8-TCDD and 0.1 ng/μL solution of $^{37}Cl_4$-2,3,7,8-TCDD.

4.2.3.2 Using a Kuderna-Danish apparatus or a rotary evaporator, concentrate the volume to approximately 5 mL.

4.2.3.3 Transfer the total 5-mL concentrate in 1-mL portions to a 1 mL-amber mini-vial, reducing volume as necessary with a gentle stream of dry nitrogen.

4.2.3.4 Rinse container with two 0.5 mL portions of hexane and transfer rinses to the 1-mL amber mini-vial.

4.2.3.5 Just before analysis, reduce volume to near dryness; make to final volume of 50 μL with isooctane. (Column chromatography is not required.)

4.2.3.6 Analyze an aliquot with the same procedures used to analyze samples (Section 11, Exhibit D).

5. Duplicate Analyses

5.1 Laboratory duplicates -- In each batch of samples, locate the sample specified for duplicate analyses and analyze a second 10-g sample aliquot.

5.1.1 Results of laboratory duplicates must agree within 50% relative difference (difference expressed as percentage of the mean). If relative difference is > 50%, Contractor shall immediately contact the Sample Management Office for resolution of the problem. Report all results.

5.1.2 Recommended actions to help locate problem:

5.1.2.1 Analyze an aliquot of the performance check sample to verify satisfactory instrument performance (Section 9, Exhibit D.)

5.1.2.2 If possible, determine that no error was made while weighing sample aliquots.

5.1.2.3 Review analytical procedures with performing laboratory personnel.

6. Accuracy of Measured Concentration of $^{37}Cl_4$-2,3,7,8-TCDD -- For each sample and blank, calculate the percent accuracy (Section 12.2, Exhibit D) of the measured concentration of $^{37}Cl_4$-2,3,7,8-TCDD. If percent accuracy is > ±40% for a sample, analyze a second aliquot of that sample and report both results (see Exhibit C). NOTE: Low or high accuracy for a blank does not require discarding sample data but indicates a potential problem with future sample data.

7. Identification Criteria

7.1 If any of the four initial identification criteria (Sections 11.4.1 -11.4.4, Exhibit D) are not met, the sample is reported not to contain unlabeled 2,3,7,8-TCDD at the calculated detection limit (Section 12.3, Exhibit D).

7.2 When the four initial identification criteria are met, but the fifth criteria, the isotopic abundance ratio for m/z 320 and 322 (Section 11.4.5, Exhibit D) is not met, that sample is presumed to contain interfering contaminants. Contractor shall use the second column chromatography procedure (Section 11.5, Exhibit D) to remove interferences from the extract, and shall reanalyze the sample. (See Exhibit C.)

8. Blind QC Samples -- Included among soil and sediment samples may be QC samples that are not specified as such to the performing laboratory. Types that may be included are:

8.1 Uncontaminated soil.

8.1.1 If a false positive is reported for this sample, the Contractor shall be required to rerun the entire associated batch of samples (see Exhibit C).

8.2 Split samples — composited sample aliquots sent to more than one laboratory.

8.3 Unlabeled field duplicates -- two aliquots of a composited sample.

8.4 Performance evaluation sample -- soil/sediment sample containing a known amount of unlabeled 2,3,7,8-TCDD.

8.4.4 If the performance evaluation sample result falls outside the acceptance windows established by EPA, the Contractor shall be required to rerun the entire associated batch of samples (see Exhibit C). NOTE: EPA acceptance windows are based on historical data results.

9. Confirmatory Partial Scan Analysis

9.1 From each sample batch, select the sample extract containing the highest concentration of unlabeled 2,3,7,8-TCDD and analyze an aliquot by GC/MS under the same GC conditions used previously but with the MS tuned and calibrated to acquire data for the mass range m/z 150 to m/z 350. (If no sample in a batch contains unlabeled 2,3,7,8-TCDD, no confirmatory analysis is required for that batch.) Required calibration criteria for decafluorotriphenylphosphine introduced through the GC column shall be:

m/z	Relative Intensity
51	30 - 60 percent of base peak
68	< 2 percent of m/z = 69
70	< 2 percent of m/z = 69
127	40 - 60 percent of base peak
197	< 1 percent of base peak
198	100 percent (base peak)
199	5 - 9 percent of base peak
275	10 - 30 percent of base peak
365	> 1 percent of base peak
441	less than m/z = 443
442	> 40 percent of base peak
443	17 - 23 percent of m/z = 442

9.2 MS data acquisition requirements shall be:

9.2.1 Cycle time $\leq$ 1.5 seconds.

9.2.2 Acquisition of $\geq$ 5 spectra during elution of 2,3,7,8-TCDD from the GC.

9.3 Subtract an appropriate background spectrum, and plot a spectrum of 2,3,7,8-TCDD after background subtraction. (The person responsible for MS data interpretation is responsible for demonstrating that the background spectrum selected for subtraction was an appropriate spectrum.) Provide a hard copy of the background spectrum, the TCDD spectrum before subtraction, and the TCDD spectrum after subtraction. The quality of the plotted spectrum will be affected by other sample components that have approximately the same GC retention time and will be highly variable. Desired spectral features are:

Base peak = m/z 322
Ratio of m/z 320 to 322 = 0.77
Ratio of m/z 320 to 324 = 1.58
Ratio of m/z 257 to 322 = 0.32
Ratio of m/z 257 to 259 = 1.03
Ratio of m/z 194 to 196 = 1.54
m/z 160 and 161 = $\geq$ 10% of m/z 322

Because $^{13}C_{12}$-2,3,7,8-TCDD, the internal standard, is present in every sample and has essentially the same retention time as unlabeled 2,3,7,8-TCDD, the spectrum after background subtraction will represent a mixture. When $^{13}C_{12}$-2,3,7,8-TCDD is present at a higher concentration than unlabeled 2,3,7,8-TCDD, the resultant spectrum (Figure E-1) must be normalized to m/z 322 to demonstrate desired spectral features.

10. Records - At each contractor laboratory, records must be maintained on site for six months after contract completion to document the quality of all data generated during contract performance. Before any records are disposed, written concurrence of the Contracting Officer must be obtained.

11. Magnetic tapes containing all raw GC/MS data (including performance check solution, blanks, and concentration calibration solutions) must be delivered to EMSL-LV when sufficient data to fill or nearly fill a tape have been collected or when all samples are completed, depending on which event occurs first.

12. Unused portions of samples and sample extracts must be preserved for six months after sample receipt; appropriate samples may be selected by EPA personnel for further analyses.

13. Reuse of glassware is to be minimized to avoid the risk of using contaminated glassware.

LABORATORY EVALUATION PROCEDURES

On a quarterly basis, the EPA Project Officer and/or designated representatives shall conduct an evaluation of the laboratory to ascertain that the laboratory is meeting contract requirements. This evaluation will consist of: 1) laboratory analysis of a performance evaluation sample, and 2) laboratory site visit by EPA officials and/or representatives. The evaluation procedures will be similar, but may not be identical to the evaluation performed as part of the pre-award bidder evaluation. (See IFB Pre-Award Bid Confirmations section.)

QA/QC Requirements for Dioxin and Furan Total Isomer Analysis

~~Our~~ The approach to QA/QC for the tetra-hexa furans and dioxins parallels closely that for 2,3,7,8-TCDD. Items 3 through 9 of the outline below point out additional items not specifically mentioned in 2,3,7,8-TCDD methods.

1. Materials Examined for Contamination
   A. Prior to start of project
   B. Along with each set of analyses

2. Traceable Standards
   A. 2,3,7,8-TCDD traceable to EPA reference
   B. Other dioxins and furans traceable to EPA

3. Internal Standards for EACH chlorination level
   A. TCDD internal standards traceable to EPA
   B. Others synthesized at CAL Lab and reference to Rappe's materials

4. Column Performance
   A. 2,3,7,8-TCDD resolution as per EPA requirements
   B. Resolution of 1,2,3,4,7,8 and 1,2,3,6,7,8-HxCDF

5. Documentation of Mass Spectrometer Resolution (Low or High)
   A. Hardcopy of profile data

6. Cleanup column chromatography Performance
   A. 1,3,6,8-TCDD to HxCDD recovery within 30% of Internal Standards

7. Duplicate Analyses
   A. Duplicates within 30% for most congeners.

8. Spikes of Representative Tetra-Hexa Chlorodioxins and Furans
   A. Recovery should be witnin 30%

9. Detection Limit Calculated for each Chlorination Level in each Sample

Please note that duplicates and matrix spikes are regarded as bullable samples.

APPENDIX D: SOURCES OF STANDARDS AND INTERNAL STANDARDS

CAL LABS OWNED DIBENZODIOXINS

Isomer	Source
2,7-DCDD	RFR Corp.
1,2,4-TrCDD	RFR Corp.
1,2,3,4-TCDD	Christoffer Rappe
1,3,6,8-TCDD	Christoffer Rappe
2,3,7,8-TCDD	Radian Corp, USEPA
1,2,3,7,8-PnCDD	KOR Isotopes
1,2,3,4,7,8-HxCDD	KOR Isotopes
1,2,3,4,6,7,8-HpCDD	KOR Isotopes
OCDD	Ultra Scientific

CAL LABS OWNED INTERNAL STANDARDS

Isomer	Source
13C-2,3,7,8-TCDF	Cambridge Isotope Lab (CIL)
13C-1,2,3,7,8-PnCDF	CAL LAB Synthesized, CIL
13C-2,3,4,7,8-PnCDF	CAL LAB Synthesized, CIL
13C-1,2,3,4,7,8-HxCDF	CAL LAB Synthesized
13C-1,2,3,4,6,7,8-HpCDF	CAL LAB Synthesized
13C-1,2,3,4,7,8,9-HpCDF	CAL LAB Synthesized
13C-OCDF	CAL LAB Synthesized
13C-2,3,7,8-TCDD	KOR Istopes, USEPA
13C-1,2,3,7,8-PnCDD	CAL LAB Synthesized, CIL
13C-1,2,3,4,7,8-HxCDD	CAL LAB Synthesized, CIL
13C-1,2,3,4,6,7,8-HpCDD	CAL LAB Synthesized
13C-OCDD	KOR Istopes & CAL LAB Synthesized
Surrogate:	
37Cl-2,3,7,8-TCDD	KOR Isotopes, USEPA

CAL LABS OWNED DIBENZOFURANS

Isomer	Source
2,8-DCDF	RFR Corp.
1,2,3,9-TCDF	Christoffer Rappe
1,2,4,7-TCDF	Christoffer Rappe
1,2,4,8-TCDF	Christoffer Rappe
1,2,6,7-TCDF	Christoffer Rappe
1,2,7,8-TCDF	Christoffer Rappe
1,2,7,9-TCDF	Christoffer Rappe
1,3,4,6-TCDF	Christoffer Rappe
1,3,6,7-TCDF	Christoffer Rappe
1,3,6,8-TCDF	Christoffer Rappe
1,3,7,9-TCDF	Christoffer Rappe
1,4,6,7-TCDF	Christoffer Rappe
1,4,6,9-TCDF	Christoffer Rappe
2,3,4,7-TCDF	Christoffer Rappe
2,3,4,8-TCDF	Christoffer Rappe
2,3,6,7-TCDF	Christoffer Rappe
2,3,6,8-TCDF	Christoffer Rappe
2,3,7,8-TCDF	Christoffer Rappe & Radian Corp.
2,4,6,7-TCDF	Christoffer Rappe
2,4,6,8-TCDF	Christoffer Rappe
1,2,3,4,8-PnCDF	Christoffer Rappe
1,2,3,7,8-PnCDF	Cambridge Isotope Lab
1,2,4,6,8-PnCDF	Christoffer Rappe
1,2,4,7,8-PnCDF	Christoffer Rappe
2,3,4,6,8-PnCDF	Christoffer Rappe
2,3,4,7,8-PnCDF	Christoffer Rappe
1,2,3,4,6,8-HxCDF	Christoffer Rappe
1,2,3,4,7,8-HxCDF	Cambridge Isotope Lab
1,2,3,4,7,9-HxCDF	Christoffer Rappe
1,2,4,6,7,8-HxCDF	Christoffer Rappe
1,2,4,6,8,9-HxCDF	Christoffer Rappe
2,3,4,6,7,8-HxCDF	Christoffer Rappe
1,2,3,4,6,7,8-HpCDF	Christoffer Rappe & Cambridge Isotopes
1,2,3,4,6,8,9-HpCDF	Christoffer Rappe
1,2,3,4,7,8,9-HpCDF	Christoffer Rappe
OCDF	Christoffer Rappe & Ultra Scientific

APPENDIX O

CALIFORNIAL ANALYTICAL LABORATORIES
DATA SHEETS FOR DIOXIN/FURAN ANALYSES,
ORGANIC COMPOUND ANALYSES, AND
INORGANIC ANALYSES

		Page
Exhibit 1	2,3,7,8-TCDD Summary Report	167
Exhibit 2	PCDD/PCDF Sample Data Sheets	168
Exhibit 3	Organic Sample Data Sheets	194
Exhibit 4	Inorganic Sample Data Sheets	251
Exhibit 5	2,4-D and 2,4,5-T Summary Data Report	277
Exhibit 6	Creosote Analysis Report	278
Exhibit 7	Air Filter Sample Summary Report for 2,3,7,8-TCDD and TSP	279

The documents contained in this appendix were published according to their own internal style, which deviates from ESL format. They have, therefore, been published without editing.

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2231

TCDD DATA REPORT
California Analytical Laboratories
2544 Industrial Blvd.
W. Sacramento, CA 95691

Lab: California Analytical Laboratories
Case No. 21349
Batch/Shipment No.

Report Date: 10-22-85
Column: SP-2331

Cal Labs ID	Sample Number	C U	Aliquot Wet Wt. (grams)	PPB TCDD Meas	PPB TCDD Det. Lmt	Inst ID	Date	Time	320/ 322	332/ 334	Surrg Meas	Surrg % Acc'c	PPB 320	322	257	328*	332	334	Comments
21349MBRX	METHOD BLANK	Y	10.00	ND	0.011	8	10/07/85	21:59:00	·	0.77	1.03	103	·	·	·	977832	1046270	1362800	
21349-1	1TNCBC-R1-01	Y	0.51	260	·	8	10/07/85	22:31:00	0.79	0.77	20.37	104	6233680	5354840	2650840	727090	774825	1004100	
21349-2RX	1TNCBC-R2-01	Y	0.60	272	·	8	10/07/85	22:53:00	0.79	0.79	16.29	98	6083820	7713790	3679450	799955	917779	1163060	
21349-3	1TNCBC-R1-03	Y	50.00 ml	43.3	·	8	10/17/85	15:16:00	0.81	0.71	0.17	84	53560600	65722400	25488400	440258	582468	823854	
21349-4RX	1TNCBC-R3-01	Y	0.61	236	·	8	10/07/85	23:15:00	0.79	0.78	16.39	100	3592830	4522380	2320080	546235	609775	778939	
21349-5RX	1TNCBC-R4-01	Y	0.52	266	·	8	10/07/85	23:40:00	0.79	0.75	19.23	100	3709570	4698130	2311360	588306	640448	855600	
21349-6RX	1TNCBC-R5-01	Y	0.58	233	·	8	10/07/85	23:58:00	0.78	0.77	17.74	103	4821660	6160990	2910550	809058	866648	1132170	
21349-7RX	1TNCBC-R1-02	Y	10.19	ND	0.076	8	10/08/85	23:50:00	·	0.73	1.10	112	·	·	·	167708	163716	223665	
21349-8	1TNCBC-R1-09			ND	0.043	· Result from Tetra through Octa analysis.													
21349-9	1TNCBC-R1-09A			ND	0.038	· Result from Tetra through Octa analysis.													
21413-1	1TNCBC-R1-04	Y	50.00 ml	0.36	·	8	10/17/85	15:35:00	0.79	0.77	0.17	86	794464	1004730	390389	813564	1095490	1419010	
21413-2	MUNCBC R1 02			ND	0.079	· Result from Tetra through Octa analysis.													
21413-3	MUNCBC R1 09			ND	0.037	· Result from Tetra through Octa analysis.													
21413-5RX	1TNCBC R2-02	Y	10.07	ND	0.340	8	10/08/85	11:27:00	·	0.76	1.08	109	·	·	·	56944	58080	76604	
21413-6RI	1TNCBC R2-03	Y	50.00 ml	148	·	8	10/18/85	11:23:00	0.78	0.82	0.15	74	27890300	35784000	14926200	64994	99936	121314	
21413-7	1TNCBC-R2-09	Y	10.01	ND	0.140	8	10/17/85	16:55:00	·	0.80	0.94	94	·	·	·	438407	556721	692407	
21413-8	1TNCBC-R2-09A			ND	0.013	· Result from Tetra through Octa analysis.													
21413-11R	1TNCBC-R3-02	Y	10.08	ND	0.082	8	10/08/85	12:00:00	·	0.80	0.94	94	·	·	·	127582	155404	193962	
21413-11N	1TN-R3-02NS	Y	10.14	0.97	·	8	10/08/85	12:20:00	0.84	0.80	0.96	98	82455	97716	41608	173799	203946	255307	97% Recovery
21484-01R	1TNC-R1-5-06	Y	0.53	515	·	8	10/08/85	12:36:00	0.78	0.82	18.67	99	9101720	11679500	5278470	732871	861074	1051050	
21484-2	1TNC-R1-5-10			ND	0.0088	8	00/00/00	00:00:00	·	1.00	1.00	100	·	·	·	·	·	·	
21484-3RI	1TNCBC-R3-03	Y	50.00	250	·	8	10/18/85	11:46:00	0.78	0.87	0.18	91	60332100	77398900	31778500	102590	131960	152101	
21484-6RX	1TNCBC-R4-02	Y	10.07	ND	0.060	8	10/08/85	13:19:00	·	0.80	0.90	91	·	·	·	290802	366952	460250	
21484-9RX	1TNCBC-R5-02	Y	10.13	0.51	·	8	10/08/85	13:37:00	0.74	0.70	0.92	94	45672	61312	31316	187165	213156	303039	
21484-10	1TNCBC-R5-09			ND	0.014	· Result from Tetra through Octa analysis.													
21484-11	1TNCBC-R5-09A			ND	0.015	· Result from Tetra through Octa analysis.													
21484-13R	1TNCBC-R3-04	Y	50.00 ml	227	·	8	10/18/85	10:46:00	0.78	0.88	0.20	102	39956600	51048500	21022100	83684	96904	109510	
21591-1RX	MUNCBC-R1 01	Y	0.51	193	·	8	10/08/85	13:55:00	0.80	0.79	18.75	96	3497650	4369880	1988910	741366	883610	1118150	
21591-2RX	MUNCBC-R2 01	Y	0.54	111	·	8	10/08/85	14:20:00	0.79	0.81	18.74	101	1421090	1806100	804151	531377	605151	750541	
21591-3	MUNCBC R2-02			ND	0.038	· Result from Tetra through Octa analysis.													
21591-4RX	MUNCBC-R2-03	Y	10.00	ND	0.78	8	10/22/85	12:17:00	1.01	0.72	1.01	101	171056	169312	135680	444955	468202	650304	Ratio Unacceptable
21591-5	MUNCBC-R2 09A	(19:00)		ND	0.013	· Result from Tetra through Octa analysis													
21591-6	MUNCBC-R2-09A	(19:40)		ND	0.018	· Result from Tetra through Octa analysis.													

MB = Method Blank
P = Partial Scan/Confirmatory Analysis
NS = Native TCDD Spike
D = Duplicate/Fortified Field Blank
RI = Re-injection
FB = Field Blank
ND = Not Detected
DL = Detection Limit
RX = Re-extraction

*Corrected for contribution by native TCDD; 0.9% of m/z 322 subtracted

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R1-01 Date Analyzed: 9/3/85 Column: DB-5

CAL ID: 21349-1 Weight: 10.09 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	8.0	-
(2378*)	2.4	-
penta	8.1	-
(12378)	ND	0.059
(23478)	0.043	-
hexa	0.33	-
(123478)	ND	0.046
DIOXINS		
tetra (total)	262 A	-
(2378+1234)	260	-
penta	0.87	-
(12378)	0.27	-
hexa	0.62	-
(123478)	ND	0.047

% Accuracy 37Cl-TCDD = 113%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,[illegible]4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R2-01 Date Analyzed: 9/3/85 Column: DB-5

CAL ID: 21349-2 Weight: 10.03 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	12.2	-
(2378*)	3.4	-
penta	10.7	-
(12378)	ND	0.10
(23478)	ND	0.062
hexa	0.82	-
(123478)	0.045	-
DIOXINS		
tetra (total)	274 A	-
(2378+1234)	272	-
penta	1.1	-
(12378)	0.33	-
hexa	0.68	-
(123478)	ND	0.060

% Accuracy 37Cl-TCDD = 110%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R3-01 Date Analyzed: 9/03/85 Column: DB-5

CAL ID: 21349-4 Weight: 10.32 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	10.2	-
(2378*)	2.8	-
penta	10.0	-
(12378)	ND	0.066
(23478)	ND	0.037
hexa	0.73	-
(123478)	ND	0.040

DIOXINS		
tetra (total)	239 A	-
(2378+1234)	236	-
penta	1.3	-
(12378)	0.29	-
hexa	0.53	-
(123478)	ND	0.094

% Accuracy 37Cl-TCDD = 140%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R4-01 Date Analyzed: 9/03/85 Column: DB-5

CAL ID: 21349-5 Weight: 10.1 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
tetra (total)	12.7	-
(2378*)	3.7	-
penta	11.9	-
(12378)	ND	0.074
(23478)	0.077	-
hexa	0.76	-
(123478)	ND	0.037
DIOXINS		
tetra (total)	268 A	-
(2378+1234)	266	-
penta	1.5	-
(12378)	0.35	-
hexa	1.1	-
(123478)	ND	0.060

% Accuracy 37Cl-TCDD = 95%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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3130

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R5-01 Data Analyzed: 9/03/85 Column: DB-5

CAL ID: 21349-6 Weight: 10.03 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	10.8	-
(2378*)	3.0	-
penta	10.8	-
(12378)	ND	0.069
(23478)	ND	0.034
hexa	0.37	-
(123478)	ND	0.039
DIOXINS		
tetra (total)	235 A	-
(2378+1234)	233	-
penta	1.4	-
(12378)	0.29	-
hexa	0.47	-
(123478)	ND	0.019

% Accuracy 37Cl-TCDD = 110%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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321

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R1-02 Date Analyzed: 9/03/85 Column: DB-5

CAL ID: 21349-7 Weight: 10.46 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	ND	0.045
(2378*)	ND	0.045
penta	ND	0.029
(12378)	ND	0.029
(23478)	ND	0.029
hexa	ND	0.050
(123478)	ND	0.050
DIOXINS		
tetra (total)	ND	0.076
(2378+1234)	ND	0.076
penta	ND	0.20
(12378)	ND	0.20
hexa	ND	0.089
(123478)	ND	0.089

% Accuracy 37Cl-TCDD = 103%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

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California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21413

CLIENT ID: IT-NCBC-R2-02 DATE ANALYZED: 8/30/85 COLUMN: DB-5

CAL ID: 21413-5 WEIGHT: 10.08 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.11
2,3,7,8-TCDF	ND	0.11
Total PCDF	0.14	-
1,2,3,7,8-PCDF	ND	0.059
2,3,4,7,8-PCDF	ND	0.059
Total HCDF	ND	0.12
1,2,3,4,7,8-HCDF	ND	0.12
DIOXINS		
Total TCDD	0.23	-
2,3,7,8-TCDD	0.23	-
Total PCDD	ND	0.39
1,2,3,7,8-PCDD	ND	0.39
Total HCDD	ND	0.44
1,2,3,4,7,8-HCDD	ND	0.44

% Accuracy 37Cl-TCDD = 95%

ND = Not Detected

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APPROVED BY: _____ DATE: 9/10/85

3.04

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21413

CLIENT ID: IT-NCBC-R3-02 DATE ANALYZED: 8/30/85 COLUMN: DB-5

CAL ID: 21413-11 WEIGHT: 10.09 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.096
2,3,7,8-TCDF	ND	0.096
Total PCDF	ND	0.076
1,2,3,7,8-PCDF	ND	0.076
2,3,4,7,8-PCDF	ND	0.076
Total HCDF	ND	0.070
1,2,3,4,7,8-HCDF	ND	0.070
DIOXINS		
Total TCDD	0.11	-
2,3,7,8-TCDD	0.11	-
Total PCDD	ND	0.40
1,2,3,7,8-PCDD	ND	0.40
Total HCDD	ND	0.46
1,2,3,4,7,8-HCDD	ND	0.46

% Accuracy 37Cl-TCDD = 75%

ND = Not Detected

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APPROVED BY: _____ DATE: 9/10/85

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21484

CLIENT ID: IT-NCSC-R4-02 Data Analyzed: 9/03/85 Column: DB-5

CAL ID: 21484-6 Weight: 10.45 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	0.13	-
(2378*)	0.13	-
penta	0.54	-
(12378)	ND	0.038
(23478)	ND	0.038
hexa	ND	0.063
(123478)	ND	0.063

DIOXINS

tetra (total)	0.61	-
(2378+1234)	0.61	-
penta	ND	0.25
(12378)	ND	0.25
hexa	ND	0.51
(123478)	ND	0.51

0.06 all summary data sheets

% Accuracy 37Cl-TCDD = 107%

ND = Not Detected

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DATE: 1/21/86

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21484

CLIENT ID: IT-NCBC-R5-02 Date Analyzed: 9/03/85 Column: DB-5

CAL ID: 21484-09 Weight: 10.33 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	0.95	-
(2378*)	0.077	-
penta	1.0	-
(12378)	ND	0.025
(23478)	ND	0.025
hexa	ND	0.018
(123478)	ND	0.018
DIOXINS		
tetra (total)	0.75 A	-
* (2378+1234)	0.51	-
penta	ND	0.17
(12378)	ND	0.17
hexa	ND	0.037
(123478)	ND	0.037

% Accuracy 37Cl-TCDD = 99%

ND = Not Detected

A = Data taken from 2,3,7,8-TCDD specific analysis

PREPARED BY: _____

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2734

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCSC-R1-03 Date Analyzed: 9/26/85 Column: DB-5

CAL ID: 21349-3 Volume: 50 ml

FURANS	AMOUNT FOUND (ng/ml)	DETECTION LIMIT (ng/ml)
tetra (total)	31.0	-
(2378*)	7.4	-
penta	3.7	-
(12378)	0.37	-
(23478)	0.30	-
hexa	1.7	-
(123478)	ND	0.060
DIOXINS		
tetra (total)	46.1 A	-
(2378+1234)	43.3	-
penta	15.7	-
(12378)	4.3	-
hexa	0.84	-
(123478)	0.094	-

% Accuracy 37Cl-TCDD = 97%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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APPROVED BY: _____ DATE: 11/21/86

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21413

CLIENT ID: IT-NCBC-R2-03 Date Analyzed: 9/26/85 Column: DB-5

CAL ID: 21413-6 Volume: 50 ml

FURANS	AMOUNT FOUND (ng/ml)	DETECTION LIMIT (ng/ml)
tetra (total)	94.1	-
(2378*)	23.6	-
penta	69.9	-
(12378)	1.1	-
(23478)	0.71	-
hexa	4.7	-
(123478)	0.13	-
DIOXINS		
tetra (total)	150 A	-
(2378+1234)	148	-
penta	59.2	-
(12378)	13.5	-
hexa	2.9	-
(123478)	0.33	-

% Accuracy 37Cl-TCDD = 130%

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

A = Data taken from 2,3,7,8-TCDD specific analysis

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3121

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21484

CLIENT ID: IT-NCBC-R3-03 Date Analyzed: 9/26/85 Column: DB-5

CAL ID: 21484-03 Volume: 50 ml

FURANS	AMOUNT FOUND (ng/ml)	DETECTION LIMIT (ng/ml)
tetra (total)	155	-
(2378*)	42.0	-
penta	114	-
(12378)	2.2	-
(23478)	1.6	
hexa	9.7	-
(123478)	ND	0.24
DIOXINS		
tetra (total)	261 A	-
* (2378+1234)	250	-
penta	101	-
(12378)	21.0	-
hexa	4.7	-
(123478)	0.54	-

* Accuracy 37Cl-TCDD = Unable to calculate due to contribution from native 2,3,7,8-TCDD.

ND = Not Detected

A = Data taken from 2,3,7,8-TCDD specific analysis

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California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21413

CLIENT ID: IT-NCBC-R1-04 DATE ANALYZED: 9/26/85

CAL ID: 21413-1 VOLUME: 50 ml

	AMOUNT FOUND (ng/ml)	DETECTION LIMIT (ng/ml)
FURANS		
Total TCDF	3.8	-
2,3,7,8-TCDF	0.25	-
Total PCDF	1.1	-
1,2,3,7,8-PCDF	ND	0.0055
2,3,4,7,8-PCDF	ND	0.0055
Total HCDF	ND	0.0031
1,2,3,4,7,8-HCDF	ND	0.0031
DIOXINS		
Total TCDD	0.92	-
2,3,7,8-TCDD	0.60	-
Total PCDD	2.3	-
1,2,3,7,8-PCDD	0.96	-
Total HCDD	0.037	-
1,2,3,4,7,8-HCDD	ND	0.0090

% Accuracy 37Cl-TCDD = 97%

ND = Not Detected
RX = Re-extraction

RI = Reinjection

PREPARED BY: _____

APPROVED BY: _____ DATE: 10/22/85

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21484

CLIENT ID: IT-NCBC-R3-04 Date Analyzed: 9/26/85 Column: DB-5

CAL ID: 21484-13 Volume: 50 ml

FURANS	AMOUNT FOUND • (ng/ml)	DETECTION LIMIT (ng/ml)
tetra (total)	141	-
(2378*)	28.5	-
penta	74.0	-
(12378)	1.5	-
(23479)	0.96	
hexa	6.8	-
(123478)	ND	0.14
DIOXINS		
tetra (total)	243 A	-
* (2378+1234)	227	-
penta	94.7	-
(12378)	20.5	-
hexa	4.0	-
(123478)	0.41	-

* Accuracy 37Cl-TCDD = Unable to calculate due to contribution from native 2,3,7,8-TCDD.

ND = Not Detected

A = Data taken from 2,3,7,8-TCDD specific analysis

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2955

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21484

CLIENT ID: IT-NCBC-R1-5-06 Date Analyzed: 9/03/85 Column: DB-5

CAL ID: 21484-1 Weight: 10.15 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	316	-
(2378*)	87.6	-
penta	207	-
(12378)	5.3	-
(23478)	4.2	-
hexa	38.8	-
(123478)	0.61	-
DIOXINS		
tetra (total)	543 A	-
(2378+1234)	515	-
penta	229	-
(12378)	58.4	-
hexa	57.9	-
(123478)	8.0	-

* Accuracy 37Cl-TCDD = Unable to calculate due to large 2,3,7,8-TCDD peak.

A = Data taken from 2,3,7,8-TCDD specific analysis

ND = Not Detected

PREPARED BY: _____

APPROVED BY: _____ DATE: 9/3/85

2791

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R1-09 Date Analyzed: 9/17/85 Column: DB-5

CAL ID: 21349-8 Weight: 10.09 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	ND	0.015
(2378*)	ND	0.015
penta	ND	0.051
(12378)	ND	0.051
(23478)	ND	0.051
hexa	ND	0.049
(123478)	ND	0.049
DIOXINS		
tetra (total)	ND	0.043
(2378+1234)	ND	0.043
penta	ND	0.36
(12378)	ND	0.36
hexa	ND	0.053
(123478)	ND	0.053

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21413

CLIENT ID: IT-NCBC-R2-09 Date Analyzed: 9/26/85 Column: DB-5

CAL ID: 21413-7 Weight: 10.01 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	0.035	-
(2378*)	ND	0.027a
penta	0.27	-
(12378)	ND	0.028
(23478)	ND	0.028
hexa	ND	0.069
(123478)	ND	0.069
DIOXINS		
tetra (total)	0.13	-
* (2378+1234)	0.13	-
penta	ND	0.49
(12378)	ND	0.49
hexa	ND	0.30
(123478)	ND	0.30

a = Peak present with correct retention time; but an unacceptable ratio

* maybe 1 or more different isomers of 2,3,7,8-TCDD

ND = Not Detected

PREPARED BY: _____

APPROVED BY: _____ DATE: 10/1/85

3014

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21484

CLIENT ID: IT-NCBC-R5-09 DATE ANALYZED: 9/17/85

CAL ID: 21484-10 WEIGHT: 10.30 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.0079
2,3,7,8-TCDF	ND	0.0079
Total PCDF	ND	0.021
1,2,3,7,8-PCDF	ND	0.021
2,3,4,7,8-PCDF	ND	0.021
Total HCDF	ND	0.040
1,2,3,4,7,8-HCDF	ND	0.040
DIOXINS		
Total TCDD	ND	0.014
2,3,7,8-TCDD	ND	0.014
Total PCDD	ND	0.27
1,2,3,7,8-PCDD	ND	0.27
Total HCDD	ND	0.080
1,2,3,4,7,8-HCDD	ND	0.080

ND = Not Detected RI = Reinjection
RX = Re-extraction

PREPARED BY: _____

APPROVED BY: 10/22/85 DATE: 10/22/85
PM

2314

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POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21349

CLIENT ID: IT-NCBC-R1-09A Date Analyzed: 9/17/85 Column: DB-5

CAL ID: 21349-9 Weight: 10.18 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	ND	0.0079
(2378*)	ND	0.0079
penta	ND	0.047
(12378)	ND	0.047
(23478)	ND	0.047
hexa	ND	0.025
(123478)	ND	0.025
DIOXINS		
tetra (total)	ND	0.038
(2378+1234)	ND	0.038
penta	ND	0.21
(12378)	ND	0.21
hexa	ND	0.049
(123478)	ND	0.049

ND = Not Detected
* Includes 1,2,4,9; 1,2,7,9; 2,3,4,6; 2,3,4,7; 2,3,4,8

PREPARED BY: _____

APPROVED BY: _____ DATE: 11/21/85

3280

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21413

CLIENT ID: IT-NCBC-R2-09A DATE ANALYZED: 9/17/85

CAL ID: 21413-8 WEIGHT: 10.02 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.0046
2,3,7,8-TCDF	ND	0.0046
Total PCDF	ND	0.033
1,2,3,7,8-PCDF	ND	0.033
2,3,4,7,8-PCDF	ND	0.033
Total HCDF	ND	0.020
1,2,3,4,7,8-HCDF	ND	0.020
DIOXINS		
Total TCDD	ND	0.013
2,3,7,8-TCDD	ND	0.013
Total PCDD	ND	0.19
1,2,3,7,8-PCDD	ND	0.19
Total HCDD	ND	0.045
1,2,3,4,7,8-HCDD	ND	0.045

ND = Not Detected
RX = Re-extraction

RI = Reinjection

PREPARED BY: _____

APPROVED BY: _____ DATE: 10/22/85

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21484

CLIENT ID: IT-NCBC-R5-09A DATE ANALYZED: 9/17/85

CAL ID: 21484-11 WEIGHT: 10.14 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.0074
2,3,7,8-TCDF	ND	0.0074
Total PCDF	ND	0.025
1,2,3,7,8-PCDF	ND	0.025
2,3,4,7,8-PCDF	ND	0.025
Total HCDF	ND	0.027
1,2,3,4,7,8-HCDF	ND	0.027
DIOXINS		
Total TCDD	ND	0.015
2,3,7,8-TCDD	ND	0.015
Total PCDD	ND	0.23
1,2,3,7,8-PCDD	ND	0.23
Total HCDD	ND	0.078
1,2,3,4,7,8-HCDD	ND	0.078

ND = Not Detected
RX = Re-extraction

RI = Reinjection

PREPARED BY: _____

APPROVED BY: _____ DATE: _____

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21484

CLIENT ID: IT-NCBC-R1-5-10 DATE ANALYZED: 9/17/85

CAL ID: 21484-2 WEIGHT: 10.16 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.0028
2,3,7,8-TCDF	ND	0.0028
Total PCDF	ND	0.011
1,2,3,7,8-PCDF	ND	0.011
2,3,4,7,8-PCDF	ND	0.011
Total HCDF	ND	0.017
1,2,3,4,7,8-HCDF	ND	0.017
DIOXINS		
Total TCDD	ND	0.0088
2,3,7,8-TCDD	ND	0.0088
Total PCDD	ND	0.15
1,2,3,7,8-PCDD	ND	0.15
Total HCDD	ND	0.027
1,2,3,4,7,8-HCDD	ND	0.027

ND = Not Detected
RX = Re-extraction

RI = Reinjection

PREPARED BY: _____

APPROVED BY: _____ DATE: 10/22/85

2733

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21591

CLIENT ID: METHOD BLANK DATE ANALYZED: 8/30/85 COLUMN: DB-5

CAL ID: 21591MB WEIGHT: 10 g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.0050
2,3,7,8-TCDF	ND	0.0050
Total PCDF	ND	0.011
1,2,3,7,8-PCDF	ND	0.011
2,3,4,7,8-PCDF	ND	0.011
Total HCDF	ND	0.021
1,2,3,4,7,8-HCDF	ND	0.021
DIOXINS		
Total TCDD	ND	0.0046
2,3,7,8-TCDD	ND	0.0046
Total PCDD	ND	0.097
1,2,3,7,8-PCDD	ND	0.097
Total HCDD	ND	0.053
1,2,3,4,7,8-HCDD	ND	0.053

% Accuracy 37Cl-TCDD = 102%

ND = Not Detected

PREPARED BY: _____

APPROVED BY: _____ DATE: _____

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO. 21413

CLIENT ID: METHOD BLANK Date Analyzed: 10/16/85 Column: DB-5

CAL ID: 21413-2MBR$ Weight: 10.00 g

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	ND	0.14
(2378*)	ND	0.14
penta	ND	0.086
hexa	ND	0.10
DIOXINS		
tetra (total)	ND	0.12
(2378+1234)	ND	0.12
penta	ND	0.31
hexa	ND	0.14

$ Accuracy 37Cl-TCDD = 118$

ND = Not Detected

PREPARED BY: _____

APPROVED BY: _____ DATE: 10/18/85

2901

California Analytical Laboratories, Inc.

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

TICKET NO: 21413

CLIENT ID: METHOD BLANK DATE ANALYZED: 10/16/85

CAL ID: 21413-2MBRXRX WEIGHT: 10.0g

	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
FURANS		
Total TCDF	ND	0.19
2,3,7,8-TCDF	ND	0.19
Total PCDF	ND	0.12
1,2,3,7,8-PCDF	ND	0.12
2,3,4,7,8-PCDF	ND	0.12
Total HCDF	ND	0.45
1,2,3,4,7,8-HCDF	ND	0.45
DIOXINS		
Total TCDD	ND	0.19
2,3,7,8-TCDD	ND	0.19
Total PCDD	ND	0.55
1,2,3,7,8-PCDD	ND	0.55
Total HCDD	ND	0.17
1,2,3,4,7,8-HCDD	ND	0.17

% Accuracy 37Cl-TCDD = 102%

ND = Not Detected
RX = Re-extraction

RI = Reinjection

PREPARED BY: _____

APPROVED BY: _____ DATE: 11/22/85

2321

Sample Number
IT-NCBC-R1-01

Organics Analysis Data Sheet
(Page 1)

Appendix D, Exhibit 3

ratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-1 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: PAT Date Sample Received: 9/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/13/85

Date Analyzed: 9/13/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
[illegible]-09-2	Methylene Chloride	500 U
[illegible]-1	Acetone	500 U
[illegible]-0	Carbon Disulfide	200 U
[illegible]-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed.

See cover letter.

NR Not Required.

S Spiked Compound.

(23

CLP 11/14/85 Form I Prepared by DG 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: EG&G

Sample Number
IT-NCSC-R1-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW

Date Extracted/Prepared: 8/23/86

Date Analyzed: 9/1/86

Conc/Dil. Factor: 30G/5ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	900 U
111-44-4	bis(-2-Chloroethyl)Ether	900 U
95-57-8	2-Chlorophenol	900 U
541-73-1	1,3-Dichlorobenzene	900 U
106-46-7	1,4-Dichlorobenzene	900 U
100-51-6	Benzyl Alcohol	900 U
95-50-1	1,2-Dichlorobenzene	900 U
95-48-7	2-Methylphenol	900 U
39638-32-9	bis(2-chloroisopropyl)Ether	1000 U
106-44-5	4-Methylphenol	900 U
621-64-7	N-Nitroso-Di-n-Propylamine	900 U
67-72-1	Hexachloroethane	900 U
98-95-3	Nitrobenzene	900 U
78-59-1	Isophorone	900 U
88-75-5	2-Nitrophenol	1000 U
105-67-9	2,4-Dimethylphenol	900 U
65-85-0	Benzoic Acid	2900 U
111-91-1	bis(-2-Chloroethoxy)Methane	1000 U
120-83-2	2,4-Dichlorophenol	370 J
120-82-1	1,2,4-Trichlorobenzene	900 U
91-20-3	Naphthalene	8400
106-47-8	4-Chloroaniline	900 U
87-68-3	Hexachlorobutadiene	900 U
59-50-7	4-Chloro-3-Methylphenol	900 U
91-57-6	2-Methylnaphthalene	900 U
77-47-4	Hexachlorocyclopentadiene	900 U
88-06-2	2,4,6-Trichlorophenol	13000 #
95-95-4	2,4,5-Trichlorophenol	#
91-58-7	2-Chloronaphthalene	900 U
88-74-4	2-Nitroaniline	2900 U
131-11-3	Dimethyl Phthalate	900 U
208-96-8	Acenaphthylene	900 U
99-09-2	3-Nitroaniline	2900 U
83-32-9	Acenaphthene	900 U
51-28-5	2,4-Dinitrophenol	2900 U
100-02-7	4-Nitrophenol	2900 U
132-64-9	Dibenzofuran	900 U
121-14-2	2,4-Dinitrotoluene	1800 U
606-20-2	2,6-Dinitrotoluene	1800 U
84-66-2	Diethylphthalate	900 U
7005-72-3	4-Chlorophenyl-phenylether	900 U
86-73-7	Fluorene	900 U
2000-01-6	4-Nitroaniline	2900 U
534-52-1	4,6-Dinitro-2-Methylphenol	1000 U
86-30-6	N-Nitrosodiphenylamine(1)	900 U
101-55-3	4-Bromophenyl-phenylether	900 U
118-74-1	Hexachlorobenzene	900 U
87-86-5	Pentachlorophenol	2900 U
85-01-8	Phenanthrene	900 U
120-12-7	Anthracene	900 U
84-74-2	Di-n-Butylphthalate	900 U
206-44-0	Fluoranthene	430 J
129-00-0	Pyrene	300 J
85-68-7	Butylbenzylphthalate	900 U
91-94-1	3,3'-Dichlorobenzidine	1000 U
56-55-3	Benzo(a)Anthracene	900 U
117-81-7	bis(2-Ethylhexyl)Phthalate	900 U
218-01-9	Chrysene	330 J
117-84-0	Di-n-Octyl Phthalate	900 U
205-99-2	Benzo(b)Fluoranthene	1000 U
207-08-9	Benzo(k)Fluoranthene	1000 U
50-32-8	Benzo(a)Pyrene	1000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	1000 U
53-70-3	Dibenz(a,h)Anthracene	1000 U
191-24-2	Benzo(g,h,i)Perylene	1000 U

(1) - Cannot be separated from diphenylamine

CLP 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21349

Sample Number
IT-NCBC-R1-01

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

Date Extracted/Prepared: 8/23/85

Date Analyzed: 9/18/85

Conc/Dil Factor: 1.5G/50ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	30 U
319-85-7	Beta-BHC	30 U
319-86-8	Delta-BHC	30 U
58-89-9	Gamma-BHC (Lindane)	30 U
76-44-8	Heptachlor	30 U
309-00-2	Aldrin	30 U
1024-57-3	Heptachlor Epoxide	30 U
959-98-8	Endosulfan I	70 U
60-57-1	Dieldrin	70 U
72-55-9	4,4'-DDE	70 U
72-20-8	Endrin	70 U
33213-65-9	Endosulfan II	70 U
72-54-8	4,4'-DDD	130 U
1031-07-8	Endosulfan Sulfate	130 U
50-29-3	4,4'-DDT	130 U
72-43-5	Methoxychlor	670 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	670 U
8001-35-2	Toxaphene	6700 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	670 U
12672-29-6	Aroclor-1248	670 U
11097-69-1	Aroclor-1254	670 U
11096-82-5	Aroclor-1260	670 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

28

V_s = NR or W_s = 1.5 V_t = 50000 V_i = 5

Sample Number
IT-NCBC-RZ-01

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21349
Lab Sample ID No: 21349-2
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PQS
Date Sample Received: 9/15/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/13/85
Date Analyzed: 9/13/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	800 U
67-64-1	Acetone	800 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged, however, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The laboratory should read: U - Compound was analyzed for but not detected. The number is the minimum acceptable detection limit for the sample.

J Indicates an estimated value. This flag is used either when calculating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides should all be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed.
See cover letter
NR Not Required
S Spiked Compound.

Precared by: [signature]

CLP: 11/14/85 Form I 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21349

Sample Number
IT-NCBC-R2-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/23/85

Date Analyzed: 9/10/85

Conc/DIL Factor: 30g/2ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	220 J
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	810
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	19000 E
95-95-4	2,4,5-Trichlorophenol	8
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	430 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	610
129-00-0	Pyrene	830
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	190 J
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	170 J
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	160 J
207-08-9	Benzo(k)Fluoranthene	180 J
50-32-8	Benzo(a)Pyrene	68 J
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLF 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21349

Sample Number
IT-NCBC-R2-01

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 9/23/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 1.5G/50ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	30 U
319-85-7	Beta-BHC	30 U
319-86-8	Delta-BHC	30 U
58-89-9	Gamma-BHC (Lindane)	40
76-44-8	Heptachlor	30 U
309-00-2	Aldrin	30 U
1024-57-3	Heptachlor Epoxide	30 U
959-98-8	Endosulfan I	70 U
60-57-1	Dieldrin	70 U
72-55-9	4,4'-DDE	70 U
72-20-8	Endrin	70 U
33213-65-9	Endosulfan II	70 U
72-54-8	4,4'-DDD	130 U
1031-07-8	Endosulfan Sulfate	130 U
50-29-3	4,4'-DDT	130 U
72-43-5	Methoxychlor	670 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	670 U
8001-35-2	Toxaphene	6700 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	670 U
12672-29-6	Aroclor-1248	670 U
11097-69-1	Aroclor-1254	670 U
11096-82-5	Aroclor-1260	670 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

SG

V_s = NR or W_s = 1.5 V_t = 50000 V_i = 5

Sample Number
IT-NCBC-R3-01

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-4 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: [signature] Date Sample Received: 5/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/13/85

Date Analyzed: 9/13/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J
C	This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ml in the final extract should be confirmed by GC/MS
B	This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
Other	Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.
NA	Not Analyzed.
#	See cover letter.
NR	Not Required.
S	Spiked Compound.

CLP 11/14/85 Form I Prepared by: [signature] 10/85

151

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21349

Sample Number
IT-NCBC-R3-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/23/85

Date Analyzed: 9/10/85

Conc/DIL Factor: 30g/10ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	1000 U
111-44-4	bis(2-Chloroethyl)Ether	1000 U
95-57-8	2-Chlorophenol	1000 U
541-73-1	1,3-Dichlorobenzene	1000 U
106-46-7	1,4-Dichlorobenzene	1000 U
100-51-6	Benzyl Alcohol	1000 U
95-50-1	1,2-Dichlorobenzene	1000 U
95-48-7	2-Methylphenol	1000 U
39638-32-9	bis(2-chloroisopropyl)Ether	2000 U
106-44-5	4-Methylphenol	1000 U
621-64-7	N-Nitroso-Di-n-Propylamine	1000 U
67-72-1	Hexachloroethane	1000 U
98-95-3	Nitrobenzene	1000 U
78-59-1	Isophorone	1000 U
88-75-5	2-Nitrophenol	2000 U
105-67-9	2,4-Dimethylphenol	1000 U
65-85-0	Benzoic Acid	5000 U
111-91-1	bis(2-Chloroethoxy)Methane	2000 U
120-83-2	2,4-Dichlorophenol	580 J
120-82-1	1,2,4-Trichlorobenzene	1000 U
91-20-3	Naphthalene	1000 U
106-47-8	4-Chloroaniline	1000 U
87-68-3	Hexachlorobutadiene	1000 U
59-50-7	4-Chloro-3-Methylphenol	1000 U
91-57-6	2-Methylnaphthalene	1000 U
77-47-4	Hexachlorocyclopentadiene	1000 U
88-06-2	2,4,6-Trichlorophenol	37000 J
95-95-4	2,4,5-Trichlorophenol	J
91-58-7	2-Chloronaphthalene	1000 U
88-74-4	2-Nitroaniline	5000 U
131-11-3	Dimethyl Phthalate	1000 U
208-96-8	Acenaphthylene	1000 U
99-09-2	3-Nitroaniline	5000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	1000 U
51-28-5	2,4-Dinitrophenol	5000 U
100-02-7	4-Nitrophenol	5000 U
132-64-9	Dibenzofuran	1000 U
121-14-2	2,4-Dinitrotoluene	2000 U
606-20-2	2,6-Dinitrotoluene	2000 U
84-66-2	Diethylphthalate	1000 U
7005-72-3	4-Chlorophenyl-phenylether	1000 U
86-73-7	Fluorene	1000 U
100-01-6	4-Nitroaniline	5000 U
534-52-1	4,6-Dinitro-2-Methylphenol	2000 U
86-30-6	N-Nitrosodiphenylamine(1)	1000 U
101-55-3	4-Bromophenyl-phenylether	1000 U
118-74-1	Hexachlorobenzene	1000 U
87-86-5	Pentachlorophenol	1000 U
85-01-8	Phenanthrene	1000 U
120-12-7	Anthracene	1000 U
84-74-2	Di-n-Butylphthalate	1000 U
206-44-0	Fluoranthene	430 J
129-00-0	Pyrene	630 J
85-68-7	Butylbenzylphthalate	1000 U
91-94-1	3,3'-Dichlorobenzidine	2000 U
56-55-3	Benzo(a)Anthracene	1000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1000 U
218-01-9	Chrysene	2000 U
117-84-0	Di-n-Octyl Phthalate	1000 U
205-99-2	Benzo(b)Fluoranthene	2000 U
207-08-9	Benzo(k)Fluoranthene	2000 U
50-32-8	Benzo(a)Pyrene	2000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	2000 U
53-70-3	Dibenz(a,h)Anthracene	2000 U
191-24-2	Benzo(g,h,i)Perylene	2000 U

(1) - Cannot be separated from diphenylamine

152

CLP 10/11/85 Form I Prepared by: 785

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21349

Sample Number
IT-NCBC-R3-01

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 9/23/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 1.5G/50ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	30 U
319-85-7	Beta-BHC	30 U
319-86-8	Delta-BHC	30 U
58-89-9	Gamma-BHC (Lindane)	20 J
76-44-8	Heptachlor	30 U
309-00-2	Aldrin	30 U
1024-57-3	Heptachlor Epoxide	33 U
959-98-8	Endosulfan I	70 U
60-57-1	Dieldrin	70 U
72-55-9	4,4'-DDE	70 U
72-20-8	Endrin	70 U
33213-65-9	Endosulfan II	70 U
72-54-8	4,4'-DDD	130 U
1031-07-8	Endosulfan Sulfate	130 U
50-29-3	4,4'-DDT	130 U
72-43-5	Methoxychlor	670 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	670 U
8001-35-2	Toxaphene	6700 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	670 U
12672-29-6	Aroclor-1248	670 U
11097-69-1	Aroclor-1254	670 U
11096-82-5	Aroclor-1260	670 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

153

V_s = NR or W_s = 1.5 V_t = 50000 V_i = 5

CLP 11/14/85 Form I Prepared by: [signature] 785

Sample Number
IT-NCBC-R4-01

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-5 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: PMJ Date Sample Received: 9/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/13/85

Date Analyzed: 9/13/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged, however, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/ dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides are reported in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed.
E See cover letter
NR Not Required.
S Spiked Compound.

201

Prepared by: _____

CLP 11/14/85 Form I 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21349

Sample Number
IT-NCBC-R4-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: MEDIUM

Date Extracted/Prepared: 9/23/85, 9/3/85

Date Analyzed: 9/10/85

Conc/Dil. Factor: 0.55g/ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	4000 U
111-44-4	bis(-2-Chloroethyl)Ether	4000 U
95-57-8	2-Chlorophenol	4000 U
541-73-1	1,3-Dichlorobenzene	4000 U
106-46-7	1,4-Dichlorobenzene	4000 U
100-51-6	Benzyl Alcohol	4000 U
95-50-1	1,2-Dichlorobenzene	4000 U
95-48-7	2-Methylphenol	4000 U
39638-32-9	bis(2-chloroisopropyl)Ether	8000 U
106-44-5	4-Methylphenol	4000 U
621-64-7	N-Nitroso-Di-n-Propylamine	4000 U
67-72-1	Hexachloroethane	4000 U
98-95-3	Nitrobenzene	4000 U
78-59-1	Isophorone	4000 U
88-75-5	2-Nitrophenol	8000 U
105-67-9	2,4-Dimethylphenol	4000 U
65-85-0	Benzoic Acid	20000
111-91-1	bis(-2-Chloroethoxy)Methane	8000 U
120-83-2	2,4-Dichlorophenol	17000
120-82-1	1,2,4-Trichlorobenzene	4000 U
91-20-3	Naphthalene	4000 U
106-47-8	4-Chloroaniline	4000 U
87-68-3	Hexachlorobutadiene	4000 U
59-50-7	4-Chloro-3-Methylphenol	4000 U
91-57-6	2-Methylnaphthalene	4000 U
77-47-4	Hexachlorocyclopentadiene	4000 U
88-06-2	2,4,6-Trichlorophenol	200000 e
95-95-4	2,4,5-Trichlorophenol	e
91-58-7	2-Chloronaphthalene	4000 U
88-74-4	2-Nitroaniline	20000 U
131-11-3	Dimethyl Phthalate	4000 U
208-96-8	Acenaphthylene	4000 U
99-09-2	3-Nitroaniline	20000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	4000 U
51-28-5	2,4-Dinitrophenol	20000 U
100-02-7	4-Nitrophenol	20000 U
132-64-9	Dibenzofuran	4000 U
121-14-2	2,4-Dinitrotoluene	8000 U
606-20-2	2,6-Dinitrotoluene	8000 U
84-66-2	Diethylphthalate	4000 U
7005-72-3	4-Chlorophenyl-phenylether	4000 U
86-73-7	Fluorene	4000 U
100-01-6	4-Nitroaniline	20000 U
534-52-1	4,6-Dinitro-2-Methylphenol	8000 U
86-30-6	N-Nitrosodiphenylamine(1)	4000 U
101-55-3	4-Bromophenyl-phenylether	4000 U
118-74-1	Hexachlorobenzene	4000 U
87-86-5	Pentachlorophenol	4000 U
85-01-8	Phenanthrene	4000 U
120-12-7	Anthracene	4000 U
84-74-2	Di-n-Butylphthalate	4000 U
206-44-0	Fluoranthene	4000 U
129-00-0	Pyrene	4000 U
85-68-7	Butylbenzylphthalate	4000 U
91-94-1	3,3'-Dichlorobenzidine	8000 U
56-55-3	Benzo(a)Anthracene	4000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	4000 U
218-01-9	Chrysene	8000 U
117-84-0	Di-n-Octyl Phthalate	4000 U
205-99-2	Benzo(b)Fluoranthene	8000 U
207-08-9	Benzo(k)Fluoranthene	8000 U
50-32-8	Benzo(a)Pyrene	8000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	8000 U
53-70-3	Dibenz(a,h)Anthracene	8000 U
191-24-2	Benzo(g,h,i)Perylene	8000 U

(1) - Cannot be separated from diphenylamine

202

CLP 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21340

Sample Number
IT-NCBC-P4-01

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

GPC Cleanup: NO

Date Extracted/Prepared: 9/22/85

Separatory Funnel Extraction: YES

Date Analyzed: 9/19/85

Continuous Liquid - Liquid Extraction: NO

Conc/Dil Factor: 0.1G/50ML

		ug/Kg
	Alpha-BHC	30 U
[illegible]	Beta-BHC	30 U
[illegible]	Delta-BHC	30 U
[illegible]	Gamma-BHC (Lindane)	30 U
[illegible]	Heptachlor	30 U
[illegible]	Aldrin	30 U
[illegible]	Heptachlor Epoxide	30 U
[illegible]	Endosulfan	70 U
[illegible]	Dieldrin	70 U
[illegible]	4,4'-DDE	70 U
[illegible]	Endrin	70 U
[illegible]	Endosulfan	70 U
[illegible]	4,4'-DDD	130 U
[illegible]	Endosulfan Sulfate	130 U
[illegible]	4,4'-DDT	130 U
[illegible]	Methoxychlor	570 U
[illegible]	Endrin Ketone	NA
[illegible]	[illegible]	570 U
[illegible]	[illegible]	5700 U
[illegible]	[illegible]	NA
[illegible]	[illegible]	NA
[illegible]	[illegible]	NA
[illegible]	[illegible]	570 U
[illegible]	[illegible]	570 U
[illegible]	[illegible]	570 U
[illegible]	[illegible]	570 U

V_s = NP V_i = 5000 V_f = 5

Sample Number
IT-NCBC-RS-01

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-5 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: [signature] Date Sample Received: 8/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/16/85

Date Analyzed: 9/16/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	900 U
67-64-1	Acetone	900 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	900 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	900 U
591-78-6	2-Hexanone	900 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	900 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be clear.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration or dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides analyzed in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA: Not Analyzed.
I: See cover letter.
NR: Not Required.
S: Spiked Compound.

231

OLF 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC
Case No:21348

Sample Number
IT-NCSC-R5-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/22/85

Date Analyzed: 9/10/85

Conc/Dil. Factor: 30/2/1001

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	1000 U
111-44-4	bis(2-Chloroethyl)ether	1000 U
95-57-8	2-Chlorophenol	1000 U
541-73-1	1,3-Dichlorobenzene	1000 U
106-46-7	1,4-Dichlorobenzene	1000 U
100-51-6	Benzyl Alcohol	1000 U
95-50-1	1,2-Dichlorobenzene	1000 U
95-48-7	2-Methylphenol	1000 U
39638-32-9	bis(2-Chloroisopropyl)Ether	2000 U
106-44-5	4-Methylphenol	1000 U
621-64-7	N-Nitroso-Di-n-Propylamine	1000 U
67-72-1	Hexachloroethane	1000 U
98-95-3	Nitrobenzene	1000 U
78-59-1	Isophorone	1000 U
88-75-5	2-Nitrophenol	1000 U
105-67-9	2,4-Dimethylphenol	1000 U
65-85-0	Benzoic Acid	5000 U
111-91-1	bis(2-Chloroethoxy)Methane	2000 U
120-83-2	2,4-Dichlorophenol	1000
120-82-1	1,2,4-Trichlorobenzene	1000 U
91-20-3	Naphthalene	1000 U
106-47-8	4-Chloroaniline	1000 U
87-68-3	Hexachlorobutadiene	1000 U
59-50-7	4-Chloro-3-Methylphenol	1000 U
91-57-6	2-Methylnaphthalene	1000 U
77-47-4	Hexachlorocyclopentadiene	1000 U
88-06-2	2,4,6-Trichlorophenol	1000 U
95-95-4	2,4,5-Trichlorophenol	5000 U
91-58-7	2-Chloronaphthalene	1000 U
88-74-4	2-Nitroaniline	5000 U
131-11-3	Dimethyl Phthalate	1000 U
208-96-8	Acenaphthylene	1000 U
99-09-2	3-Nitroaniline	5000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	1000 U
51-28-5	2,4-Dinitrophenol	5000 U
100-02-7	4-Nitrophenol	5000 U
132-64-9	Dibenzofuran	1000 U
121-14-2	2,4-Dinitrotoluene	2000 U
606-20-2	2,6-Dinitrotoluene	2000 U
84-66-2	Diethylphthalate	1000 U
7005-72-3	4-Chlorophenyl-phenylether	1000 U
86-73-7	Fluorene	1000 U
100-01-6	4-Nitroaniline	5000 U
534-52-1	4,6-Dinitro-2-Methylphenol	2000 U
86-30-6	N-Nitrosodiphenylamine(1)	1000 U
101-55-3	4-Bromophenyl-phenylether	1000 U
118-74-1	Hexachlorobenzene	1000 U
87-86-5	Pentachlorophenol	1000 U
85-01-8	Phenanthrene	1000 U
120-12-7	Anthracene	1000 U
84-74-2	Di-n-Butylphthalate	1000 U
206-44-0	Fluoranthene	550 J
129-00-0	Pyrene	920 J
85-68-7	Butylbenzylphthalate	1000 U
91-94-1	3,3'-Dichlorobenzidine	2000 U
56-55-3	Benzo(a)Anthracene	1000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1000 U
218-01-9	Chrysene	2000 U
117-84-0	Di-n-Octyl Phthalate	1000 U
205-99-2	Benzo(b)Fluoranthene	2000 U
207-08-9	Benzo(k)Fluoranthene	2000 U
50-32-8	Benzo(a)Pyrene	2000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	2000 U
53-70-3	Dibenz(a,h)Anthracene	2000 U
191-24-2	Benzo(g,h,i)Perylene	2000 U

(1) Cannot be separated from Diphenylamine

232

CLP 10/11/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21349

Sample Number
IT-NCBC-R5-01

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

Date Extracted/Prepared: 8/23/85

Date Analyzed: 9/19/85

Conc/Dil Factor: 1.5G/500ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	300 U
319-85-7	Beta-BHC	300 U
319-86-8	Delta-BHC	300 U
58-89-9	Gamma-BHC (Lindane)	300 U
76-44-8	Heptachlor	300 U
309-00-2	Aldrin	300 U
1024-57-3	Heptachlor Epoxide	300 U
959-98-8	Endosulfan I	700 U
60-57-1	Dieldrin	700 U
72-55-9	4,4'-DDE	700 U
72-20-8	Endrin	700 U
33213-65-9	Endosulfan II	700 U
72-54-8	4,4'-DDD	1300 U
1031-07-8	Endosulfan Sulfate	1300 U
50-29-3	4,4'-DDT	1300 U
72-43-5	Methoxychlor	6700 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	6700 U
8001-35-2	Toxaphene	67000 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	6700 U
12672-29-6	Aroclor-1248	6700 U
11097-69-1	Aroclor-1254	6700 U
11096-82-5	Aroclor-1260	6700 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

233

V_s = NR or W_s = 1.5 V_t = 500000 V_i = 5

Sample Number
IT-NCBC-R1-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-7 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: PJS Date Sample Received: 5/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 11/13/85

Date Analyzed: 11/13/85

Conc/Dil Factor: 200 GPC:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	400 U
74-83-9	Bromomethane	400 U
75-01-4	Vinyl Chloride	400 U
75-00-3	Chloroethane	400 U
75-	Methylene Chloride	1000 U
67	Acetone	1000 U
75-	Carbon Disulfide	400 U
75-35-4	1,1-Dichloroethene	400 U
75-34-3	1,1-Dichloroethane	400 U
156-60-5	Trans-1,2-Dichloroethene	400 U
67-66-3	Chloroform	400 U
107-06-2	1,2-Dichloroethane	400 U
78-93-3	2-Butanone	1000 U
71-55-6	1,1,1-Trichloroethane	400 U
56-23-5	Carbon Tetrachloride	400 U
108-05-4	Vinyl Acetate	2000 U
75-27-4	Bromodichloromethane	400 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	400 U
10061-02-6	Trans-1,3-Dichloropropene	400 U
79-01-6	Trichloroethene	400 U
124-48-1	Dibromochloromethane	400 U
79-00-5	1,1,2-Trichloroethane	400 U
71-43-2	Benzene	400 U
10061-01-5	cis-1,3-Dichloropropene	400 U
110-75-8	2-Chloroethylvinylether	2000 U
75-25-2	Bromoform	400 U
108-10-1	4-Methyl-2-Pentanone	1000 U
591-78-6	2-Hexanone	1000 U
127-18-4	Tetrachloroethene	400 U
79-34-5	1,1,2,2-Tetrachloroethane	400 U
108-88-3	Toluene	400 U
108-90-7	Chlorobenzene	400 U
100-41-4	Ethylbenzene	1000 U
100-42-5	Styrene	400 U
	Total Xylenes	400 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. Information on the definition of each flag must be stated.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read "U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample."

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

J This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides (i.e., Dieldrin in this extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

E [illegible] dilutions may be required to properly quantify the results. Flag must be fully described and such description attached to the data summary report.

NA Not Analyzed

C Confirmed [illegible]

NR Not Reported

S Spiked Compound

251

UF: 11/14/85 [illegible] 12/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21346

Sample Number
IT-NCBC-R1-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/23/85

Date Analyzed: 9/10/85

Conc/Dil. Factor: 28g/ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	180 J
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U#
95-95-4	2,4,5-Trichlorophenol	9
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

282

CLP: 10/11/85

Form I

Prepared by:

7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC
Case No: 21349

Sample Number
IT-NCBC-R1-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 9/23/85
Date Analyzed: 9/19/85
Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

283

Sample Number
IT-NCBC-R2-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21413
Lab Sample ID No: 21413-5
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PAS
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/16/85
Date Analyzed: 9/16/85
Conc/Dil Factor: 100 pH: NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	870
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	450 B
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value The result is a value greater than or equal to the detection limit. Report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentratory dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 7J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides exceeding in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed.
E See cover letter
NR Not Reported.
S Spiked Compound.

613

CLP 11/1.4.85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-R2-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 8/27/85

Date Analyzed: 9/10/85

Conc/Dil. Factor: 29G/ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	430
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	79 J
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	110 J#
95-95-4	2,4,5-Trichlorophenol	#
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLP 10/11/85 Form I Prepared by _____ 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-R2-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 9/27/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 1.53G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.8 U
319-85-7	Beta-BHC	3.8 U
319-86-8	Delta-BHC	3.8 U
58-89-9	Gamma-BHC (Lindane)	3.8 U
76-44-8	Heptachlor	3.8 U
309-00-2	Aldrin	3.8 U
1024-57-3	Heptachlor Epoxide	3.8 U
959-98-8	Endosulfan I	7.8 U
60-57-1	Dieldrin	7.8 U
72-55-9	4,4'-DDE	7.8 U
72-20-8	Endrin	7.8 U
33213-65-9	Endosulfan II	7.8 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.53 V_t = 5000 V_i = 5

615

CLP 11/14/85 Form I Prepared by: [signature] 785

Sample Number
IT-NCBC-R3-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21413

Lab Sample ID No: 21413-11
QC Report No: NR

Sample Matrix: SOIL
Contract No: NR

Data Release Authorized By: PAS
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/17/85

Date Analyzed: 9/17/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	280
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	290
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides should in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA: Not Analyzed
#: See cover letter
NR: Not Required.
S: Spiked Compound.

770

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-R3-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW

Date Extracted/Prepared: 9/27/85

Date Analyzed: 9/11/85

Conc/Dil. Factor: 29G/ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	77
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl) Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 UJ
95-95-4	2,4,5-Trichlorophenol	0
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLP: 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-R3-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 8/27/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 1.53G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.53 V_t = 5000 V_i = 5

772

CLP. 11/14/85 Form I Prepared by 7/85

Sample Number
IT-NCBC-R4-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21484
Lab Sample ID No: 21484-5
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PRJ
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/17/85
Date Analyzed: 9/17/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explained.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the case summary report.

NA: Not Analyzed.
#: See cover letter.
NR: Not Required.
S: Spiked Compound.

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21464

Sample Number
IT-NCBC-R4-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/27/85

Date Analyzed: 9/11/85

Conc/Dil. Factor: 29G/1ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U
95-95-4	2,4,5-Trichlorophenol	1000 U
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-8 7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

519

CLP: 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R4-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
GPC Cleanup: NO
Date Extracted/Prepared: 9/21/85
Separatory Funnel Extraction: YES
Date Analyzed: 9/18/85
Continuous Liquid - Liquid Extraction: NO
Conc/Dil Factor: 1.5G/5ML

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5 950

OLC 01.1485 Form I Prepared by: 7/85

Sample Number
IT-NCBC-R3-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21484
Lab Sample ID No: 21484-9
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PM
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/17/85
Date Analyzed: 9/17/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	300 U
67-64-1	Acetone	300 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	300 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	300 U
591-78-6	2-Hexanone	300 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	230
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	300 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged, however, the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum sample/sample detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J if limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.)

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides will not be confirmed in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA: Not Analyzed
#: See cover letter
NR: Not Required
S: Spiked Compound.

CLP 11/14/85 Form I Prepared by: 0195

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R5-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/27/85

Date Analyzed: 9/11/85

Conc/Dil. Factor: 30G/2ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl) Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U
95-95-4	2,4,5-Trichlorophenol	200 U
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLP: 10/11/85 Form I Prepared by: 735

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R5-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

Date Extracted/Prepared: 8/27/85

Date Analyzed: 9/18/85

Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	67.0 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

354

CLF 11/14/85 Form I Prepared by: [signature] 7/85

Sample Number
IT-NCBC-R1-5-06

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21484
Lab Sample ID No: 21484-1
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: TDJ
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/17/85
Date Analyzed: 9/17/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	800 U
67-64-1	Acetone	800 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	1400
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	1800
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	460 JB
100-42-5	Styrene	550 B
	Total Xylenes	1400

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged, however, the definition of each flag must be stated.

Value — The result is a value greater than or equal to the detection limit. Report the value.

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution factors. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectra data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides exceeding the final extract should be confirmed by GC/MS.

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA — Not Analyzed.
E — See cover letter.
NR — Not Required.
S — Spiked Compound.

796

OLF 11/14/85 — Form I — Prepared by: _____ — 10/85

Sample Number
IT-NCBC-R1-09

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21349

Lab Sample ID No: 21349-8 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: PRS Date Sample Received: 9/15/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 11/13/85

Date Analyzed: 11/13/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	1300
75-09-2	Methylene Chloride	300 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	1900
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	7300
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	3800
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	660
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration or dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides are reported in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed.
See other letter.
NR Not Required.
$ Spiked Compound.

350

CLF: 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21349

Sample Number
IT-NCBC-R1-09

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: MEDIUM

Date Extracted/Prepared: 8/23/85, 9/3/85

Date Analyzed: 9/10/85

Conc/Dil. Factor: 0.55g/ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	45000
111-44-4	bis(-2-Chloroethyl)Ether	4000 U
95-57-8	2-Chlorophenol	1900 J
541-73-1	1,3-Dichlorobenzene	4000 U
106-46-7	1,4-Dichlorobenzene	4000 U
100-51-6	Benzyl Alcohol	4000 U
95-50-1	1,2-Dichlorobenzene	4000 U
95-48-7	2-Methylphenol	4000 U
39638-32-9	bis(2-chloroisopropyl)Ether	8000 U
106-44-5	4-Methylphenol	4000 U
621-64-7	N-Nitroso-Di-n-Propylamine	4000 U
67-72-1	Hexachloroethane	4000 U
98-95-3	Nitrobenzene	4000 U
78-59-1	Isophorone	4000 U
88-75-5	2-Nitrophenol	8000 U
105-67-9	2,4-Dimethylphenol	4000 U
65-85-0	Benzoic Acid	17000 J
111-91-1	bis(-2-Chloroethoxy)Methane	8000 U
120-83-2	2,4-Dichlorophenol	3100 J
120-82-1	1,2,4-Trichlorobenzene	4000 U
91-20-3	Naphthalene	4000 U
106-47-8	4-Chloroaniline	4000 U
87-68-3	Hexachlorobutadiene	4000 U
59-50-7	4-Chloro-3-Methylphenol	4000 U
91-57-6	2-Methylnaphthalene	4000 U
77-47-4	Hexachlorocyclopentadiene	4000 U
88-06-2	2,4,6-Trichlorophenol	4800 e
95-95-4	2,4,5-Trichlorophenol	e
91-58-7	2-Chloronaphthalene	4000 U
88-74-4	2-Nitroaniline	20000 U
131-11-3	Dimethyl Phthalate	4000 U
208-96-8	Acenaphthylene	4000 U
99-09-2	3-Nitroaniline	20000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	4000 U
51-28-5	2,4-Dinitrophenol	20000 U
100-02-7	4-Nitrophenol	20000 U
132-64-9	Dibenzofuran	4000 U
121-14-2	2,4-Dinitrotoluene	8000 U
606-20-2	2,6-Dinitrotoluene	8000 U
84-66-2	Diethylphthalate	4000 U
7005-72-3	4-Chlorophenyl-phenylether	4000 U
86-73-7	Fluorene	4000 U
100-01-6	4-Nitroaniline	20000 U
534-52-1	4,6-Dinitro-2-Methylphenol	8000 U
86-30-6	N-Nitrosodiphenylamine(1)	4000 U
101-55-3	4-Bromophenyl-phenylether	4000 U
118-74-1	Hexachlorobenzene	4000 U
87-86-5	Pentachlorophenol	4000 U
85-01-8	Phenanthrene	4000 U
120-12-7	Anthracene	4000 U
84-74-2	Di-n-Butylphthalate	4000 U
206-44-0	Fluoranthene	4000 U
129-00-0	Pyrene	4000 U
85-68-7	Butylbenzylphthalate	4000 U
91-94-1	3,3'-Dichlorobenzidine	8000 U
56-55-3	Benzo(a)Anthracene	4000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	4000 U
218-01-9	Chrysene	8000 U
117-84-0	Di-n-Octyl Phthalate	4000 U
205-99-2	Benzo(b)Fluoranthene	8000 U
207-08-9	Benzo(k)Fluoranthene	8000 U
50-32-8	Benzo(a)Pyrene	8000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	8000 U
53-70-3	Dibenz(a,h)Anthracene	8000 U
191-24-2	Benzo(g,h,i)Perylene	8000 U

(1) - Cannot be separated from diphenylamine

351

OLF 10/11/85 Form I Prepared by: 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21348

Sample Number
IT-NCBC-R1-09

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: MEDIUM
Date Extracted/Prepared: 8/23/85, 9/3/85
Date Analyzed: 9/9/85
Conc/Dil Factor: 0.1G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	50 U
319-85-7	Beta-BHC	50 U
319-86-8	Delta-BHC	50 U
58-89-9	Gamma-BHC (Lindane)	50 U
76-44-8	Heptachlor	50 U
309-00-2	Aldrin	50 U
1024-57-3	Heptachlor Epoxide	50 U
959-98-8	Endosulfan I	100 U
60-57-1	Dieldrin	100 U
72-55-9	4,4'-DDE	100 U
72-20-8	Endrin	100 U
33213-65-9	Endosulfan II	100 U
72-54-8	4,4'-DDD	200 U
1031-07-8	Endosulfan Sulfate	200 U
50-29-3	4,4'-DDT	200 U
72-43-5	Methoxychlor	1000 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	1000 U
8001-35-2	Toxaphene	10000 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	1000 U
12672-29-6	Aroclor-1248	1000 U
11097-69-1	Aroclor-1254	1000 U
11096-82-5	Aroclor-1260	1000 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

353

V_s = NR or W_s = 0.11 V_t = 5000 V_i = 5

Sample Number
IT-NCBC-R2-09

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21413

Lab Sample ID No: 21413-7 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: PAS Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/17/85

Date Analyzed: 9/17/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	660
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	2800
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	6900
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	700
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	130 JB
100-42-5	Styrene	200 U
	Total Xylenes	230

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The qualifier should read: U - Compound was analyzed for but not detected. The number is the minimum acceptable detection limit for the sample.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.
C	This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥ 10ng/ml in the final extract should be confirmed by GC/MS.
B	This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
Other	Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.
NA	Not Analyzed.
#	See cover letter.
NR	Not Required.
S	Spiked Compound.

CLP 11/14/85 Form I Prepared by: 10/85

65

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:EG & G

Sample Number
IT-NCBC-R2-09

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: MEDIUM

Date Extracted/Prepared: 9/27/85

Date Analyzed: 4/11/86

Conc/Dil. Factor: 0.54g/0.5ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

shows wrong DLVi

CAS Number		ug/Kg
108-95-2	Phenol	28000
111-44-4	bis(-2-Chloroethyl)Ether	1000 U
95-57-8	2-Chlorophenol	1000 U
541-73-1	1,3-Dichlorobenzene	1000 U
106-46-7	1,4-Dichlorobenzene	1000 U
100-51-6	Benzyl Alcohol	1000 U
95-50-1	1,2-Dichlorobenzene	1000 U
95-48-7	2-Methylphenol	1000 U
39638-32-9	bis(2-chloroisopropyl)Ether	2000 U
106-44-5	4-Methylphenol	1000 U
621-64-7	N-Nitroso-Di-n-Propylamine	1000 U
67-72-1	Hexachloroethane	1000 U
98-95-3	Nitrobenzene	1000 U
78-59-1	Isophorone	1000 U
88-75-5	2-Nitrophenol	2000 U
105-67-9	2,4-Dimethylphenol	1000 U
65-85-0	Benzoic Acid	5000 U
111-91-1	bis(-2-Chloroethoxy)Methane	2000 U
120-83-2	2,4-Dichlorophenol	1000 U
120-82-1	1,2,4-Trichlorobenzene	1000 U
91-20-3	Naphthalene	1000 U
106-47-8	4-Chloroaniline	1000 U
87-68-3	Hexachlorobutadiene	1000 U
59-50-7	4-Chloro-3-Methylphenol	1000 U
91-57-6	2-Methylnaphthalene	1000 U
77-47-4	Hexachlorocyclopentadiene	1000 U
88-06-2	2,4,6-Trichlorophenol	1000 U
95-95-4	2,4,5-Trichlorophenol	5000 U
91-58-7	2-Chloronaphthalene	1000 U
88-74-4	2-Nitroaniline	5000 U
131-11-3	Dimethyl Phthalate	1000 U
208-96-8	Acenaphthylene	1000 U
99-09-2	3-Nitroaniline	5000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	1000 U
51-28-5	2,4-Dinitrophenol	5000 U
100-02-7	4-Nitrophenol	5000 U
132-64-9	Dibenzofuran	1000 U
121-14-2	2,4-Dinitrotoluene	2000 U
606-20-2	2,6-Dinitrotoluene	2000 U
84-66-2	Diethylphthalate	1000 U
7005-72-3	4-Chlorophenyl-phenylether	1000 U
86-73-7	Fluorene	1000 U
100-01-6	4-Nitroaniline	5000 U
534-52-1	4,6-Dinitro-2-Methylphenol	2000 U
86-30-6	N-Nitrosodiphenylamine(1)	1000 U
101-55-3	4-Bromophenyl-phenylether	1000 U
118-74-1	Hexachlorobenzene	1000 U
87-86-5	Pentachlorophenol	1000 U
85-01-8	Phenanthrene	1000 U
120-12-7	Anthracene	1000 U
84-74-2	Di-n-Butylphthalate	2900
206-44-0	Fluoranthene	1000 U
129-00-0	Pyrene	1000 U
85-68-7	Butylbenzylphthalate	1000 U
91-94-1	3,3'-Dichlorobenzidine	2000 U
56-55-3	Benzo(a)Anthracene	1000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	540 J
218-01-9	Chrysene	1000 U
117-84-0	Di-n-Octyl Phthalate	1000 U
205-99-2	Benzo(b)Fluoranthene	1000 U
207-08-9	Benzo(k)Fluoranthene	1000 U
50-32-8	Benzo(a)Pyrene	1000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	1000 U
53-70-3	Dibenz(a,h)Anthracene	1000 U
191-24-2	Benzo(g,h,i)Perylene	1000 U

(1) - Cannot be separated from diphenylamine

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-R2-09

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: MEDIUM
Date Extracted/Prepared: 9/27/85, 9/3/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 0.10G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	50 U
319-85-7	Beta-BHC	50 U
319-86-8	Delta-BHC	50 U
58-89-9	Gamma-BHC (Lindane)	50 U
76-44-8	Heptachlor	50 U
309-00-2	Aldrin	50 U
1024-57-3	Heptachlor Epoxide	50 U
959-98-8	Endosulfan I	100 U
60-57-1	Dieldrin	100 U
72-55-9	4,4'-DDE	100 U
72-20-8	Endrin	100 U
33213-65-9	Endosulfan II	100 U
72-54-8	4,4'-DDD	200 U
1031-07-8	Endosulfan Sulfate	200 U
50-29-3	4,4'-DDT	200 U
72-43-5	Methoxychlor	1000 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	1000 U
8001-35-2	Toxaphene	10000 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	1000 U
12672-29-6	Aroclor-1248	1000 U
11097-69-1	Aroclor-1254	1000 U
11096-82-5	Aroclor-1260	1000 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 0.10 V_t = 5000 V_i = 5

572

Sample Number
IT-NCSC-RS-09

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc. Case No: 21484

Lab Sample ID No: 21484-10 QC Report No: NR

Sample Matrix: SOIL Contract No: NR

Data Release Authorized By: [signature] Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/17/85

Date Analyzed: 9/17/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	8800
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	2400
75-09-2	Methylene Chloride	1300 B
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	1300
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	490
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/ dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides are confirmed in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed
See cover letter
NR Not Required
S Spiked Compound.

CLP: 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21464

Sample Number
IT-NCBC-R5-09

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: MEDIUM

Date Extracted/Prepared: 8/27/85, 9/3/85

Date Analyzed: 9/11/85

Conc/Dil Factor: 0.53G/1ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	15000
111-44-4	bis(-2-Chloroethyl)Ether	4000 U
95-57-8	2-Chlorophenol	4000 U
541-73-1	1,3-Dichlorobenzene	4000 U
106-46-7	1,4-Dichlorobenzene	4000 U
100-51-6	Benzyl Alcohol	4000 U
95-50-1	1,2-Dichlorobenzene	4000 U
95-48-7	2-Methylphenol	4000 U
39638-32-9	bis(2-chloroisopropyl)Ether	8000 U
106-44-5	4-Methylphenol	4000 U
621-64-7	N-Nitroso-Di-n-Propylamine	4000 U
67-72-1	Hexachloroethane	4000 U
98-95-3	Nitrobenzene	4000 U
78-59-1	Isophorone	4000 U
88-75-5	2-Nitrophenol	8000 U
105-67-9	2,4-Dimethylphenol	4000 U
65-85-0	Benzoic Acid	20000 U
111-91-1	bis(-2-Chloroethoxy)Methane	8000 U
120-83-2	2,4-Dichlorophenol	4000 U
120-82-1	1,2,4-Trichlorobenzene	4000 U
91-20-3	Naphthalene	4000 U
106-47-8	4-Chloroaniline	4000 U
87-68-3	Hexachlorobutadiene	4000 U
59-50-7	4-Chloro-3-Methylphenol	4000 U
91-57-6	2-Methylnaphthalene	4000 U
77-47-4	Hexachlorocyclopentadiene	4000 U
88-06-2	2,4,6-Trichlorophenol	4000 U
95-95-4	2,4,5-Trichlorophenol	20000 U
91-58-7	2-Chloronaphthalene	4000 U
88-74-4	2-Nitroaniline	20000 U
131-11-3	Dimethyl Phthalate	4000 U
208-96-8	Acenaphthylene	4000 U
99-09-2	3-Nitroaniline	20000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	4000 U
51-28-5	2,4-Dinitrophenol	20000 U
100-02-7	4-Nitrophenol	20000 U
132-64-9	Dibenzofuran	4000 U
121-14-2	2,4-Dinitrotoluene	8000 U
606-20-2	2,6-Dinitrotoluene	8000 U
84-66-2	Diethylphthalate	4000 U
7005-72-3	4-Chlorophenyl-phenylether	4000 U
86-73-7	Fluorene	4000 U
100-01-6	4-Nitroaniline	20000 U
534-52-1	4,6-Dinitro-2-Methylphenol	8000 U
86-30-6	N-Nitrosodiphenylamine(1)	4000 U
101-55-3	4-Bromophenyl-phenylether	4000 U
118-74-1	Hexachlorobenzene	4000 U
87-86-5	Pentachlorophenol	4000 U
85-01-8	Phenanthrene	4000 U
120-12-7	Anthracene	4000 U
84-74-2	Di-n-Butylphthalate	4000 U
206-44-0	Fluoranthene	4000 U
129-00-0	Pyrene	4000 U
85-68-7	Butylbenzylphthalate	4000 U
91-94-1	3,3'-Dichlorobenzidine	8000 U
56-55-3	Benzo(a)Anthracene	4000 U
117-81-7	bis(2-Ethylhexyl)Phthalate	4000 U
218-01-9	Chrysene	8000 U
117-84-0	Di-n-Octyl Phthalate	4000 U
205-99-2	Benzo(b)Fluoranthene	8000 U
207-08-9	Benzo(k)Fluoranthene	8000 U
50-32-8	Benzo(a)Pyrene	8000 U
193-39-5	Indeno(1,2,3-cd)Pyrene	8000 U
53-70-3	Dibenz(a,h)Anthracene	8000 U
191-24-2	Benzo(g,h,i)Perylene	8000 U

(1) - Cannot be separated from Diphenylamine

911

OLM 10.1 11/85

Form I

Prepared by

7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R5-09

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: MEDIUM

Date Extracted/Prepared: 8/27/85, 9/3/85

Date Analyzed: 9/18/85

Conc/Dil Factor: 0.1G/5ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	50 U
319-85-7	Beta-BHC	50 U
319-86-8	Delta-BHC	50 U
58-89-9	Gamma-BHC (Lindane)	50 U
76-44-8	Heptachlor	50 U
309-00-2	Aldrin	50 U
1024-57-3	Heptachlor Epoxide	50 U
959-98-8	Endosulfan I	100 U
60-57-1	Dieldrin	100 U
72-55-9	4,4'-DDE	100 U
72-20-8	Endrin	100 U
33213-65-9	Endosulfan II	100 U
72-54-8	4,4'-DDD	200 U
1031-07-8	Endosulfan Sulfate	200 U
50-29-3	4,4'-DDT	200 U
72-43-5	Methoxychlor	1000 U
53494-100-6	Endrin Ketone	NA
57-74-9	Chlordane	1000 U
8001-35-2	Toxaphene	10000 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	1000 U
12672-29-6	Aroclor-1248	1000 U
11097-69-1	Aroclor-1254	1000 U
11096-82-5	Aroclor-1250	1000 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 0.1 V_t = 5000 V_i = 5

312

CLF 11/14/85 Form I Prepared by DB 7/85

Sample Number
IT-NCBC-R1-09A

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21349
Lab Sample ID No: 21349-9
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PAJ
Date Sample Received: 6/15/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/17/85
Date Analyzed: 9/17/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	200 U
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
[illegible]-64-1	Acetone	500 U
[illegible]-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-6	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS.

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA — Not Analyzed
— See cover letter
NR — Not Required
S — Spiked Compound

461

CLF 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:21349

Sample Number
IT-NCBC-R1-09A

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 8/23/85

Date Analyzed: 9/10/85

Conc/DiL Factor: 29g/ml

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U#
95-95-4	2,4,5-Trichlorophenol	#
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLF 10/11/85

Form I

Prepared by _____

7/85

Laboratory Name: [illegible] LABORATORIES, INC.
Case No: 21349

Sample Number
IT-NCBC-R1-09A

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 8/23/85
Date Analyzed: 9/19/85
Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/l Q
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

Sample Number
IT-NCBC-R2-09A

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21413
Lab Sample ID No: 21413-8
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: PAJ
Date Sample Received: 6/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/17/85
Date Analyzed: 9/17/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	9900
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	130 J
75-00-3	Chloroethane	470
75-09-2	Methylene Chloride	500 U
[illegible]-64-1	Acetone	500 U
[illegible]5-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	170 J
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed
See cover letter
NR Not Required
S Spiked Compound

CLF 11/14/85 Form I Prepared by [illegible] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No. 21413

Sample Number
IT-NCBC-R2-03A

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 8/27/85

Date Analyzed: 9/11/85

Conc/DiL Factor: 29G/ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U#
95-95-4	2,4,5-Trichlorophenol	#
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21413

Sample Number
IT-NCBC-B2-09A

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

Date Extracted/Prepared: 8/27/85

Date Analyzed: 9/18/85

Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

Sample Number
IT-NCBC-R5-09A

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21484
Lab Sample ID No: 21484-11
CC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By: [signature]
Date Sample Received: 9/21/85

Volatile Compounds

Concentration: Medium
Date Extracted/Prepared: 9/18/85
Date Analyzed: 9/18/85
Conc/Dil Factor: 100 pH:NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	50000
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be stated.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration or dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J.

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >10ng/ml in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA: Not Analyzed.
E: See cover letter.
NR: Not Required.
S: Soluble Compound.

973

CLP 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-SD-09A

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 8/27/85

Date Analyzed: 9/11/85

Conc/DiL Factor: 29G/ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U
95-95-4	2,4,5-Trichlorophenol	1000 U
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

CLP: 10/11/85

Form I

Prepared by:

'85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21434

Sample Number
IT-NCBC-RS-09A

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW

Date Extracted/Prepared: 9/27/85

Date Analyzed: 9/18/85

Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	3.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

975

CLF 11/14/85 Form I Prepared by: _____ 785

Sample Number
IT-NCBC-R1-5-10

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.

Case No: 21484

Lab Sample ID No: 21484-2

QC Report No: NR

Sample Matrix: SOIL

Contract No: NR

Data Release Authorized By: [signature]

Date Sample Received: 6/21/85

Volatile Compounds

Concentration: Medium

Date Extracted/Prepared: 9/17/85

Date Analyzed: 9/17/85

Conc/Dil Factor: 100 pH:NR

Percent Moisture: NR

Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	32000
74-83-9	Bromomethane	200 U
75-01-4	Vinyl Chloride	200 U
75-00-3	Chloroethane	200 U
75-09-2	Methylene Chloride	500 U
67-64-1	Acetone	500 U
75-15-0	Carbon Disulfide	200 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
156-60-5	Trans-1,2-Dichloroethene	200 U
67-66-3	Chloroform	200 U
107-06-2	1,2-Dichloroethane	200 U
78-93-3	2-Butanone	500 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	200 U
108-05-4	Vinyl Acetate	1000 U
75-27-4	Bromodichloromethane	200 U

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	200 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	Benzene	200 U
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	1000 U
75-25-2	Bromoform	200 U
108-10-1	4-Methyl-2-Pentanone	500 U
591-78-6	2-Hexanone	500 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	200 U
108-88-3	Toluene	200 U
108-90-7	Chlorobenzene	200 U
100-41-4	Ethylbenzene	500 U
100-42-5	Styrene	200 U
	Total Xylenes	200 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA Not Analyzed

See cover letter.

NR Not Required.

S Spiked Compound.

CLF 11/14/85 Form I Prepared by: [signature] 10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R1-5-10

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low

Date Extracted/Prepared: 9/27/85

Date Analyzed: 9/11/85

Conc/Dil. Factor: 29G/ML

GPC Cleanup: NO

Separatory Funnel Extraction: YES

Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	200 U
111-44-4	bis(-2-Chloroethyl)Ether	200 U
95-57-8	2-Chlorophenol	200 U
541-73-1	1,3-Dichlorobenzene	200 U
106-46-7	1,4-Dichlorobenzene	200 U
100-51-6	Benzyl Alcohol	200 U
95-50-1	1,2-Dichlorobenzene	200 U
95-48-7	2-Methylphenol	200 U
39638-32-9	bis(2-chloroisopropyl)Ether	400 U
106-44-5	4-Methylphenol	200 U
621-64-7	N-Nitroso-Di-n-Propylamine	200 U
67-72-1	Hexachloroethane	200 U
98-95-3	Nitrobenzene	200 U
78-59-1	Isophorone	200 U
88-75-5	2-Nitrophenol	400 U
105-67-9	2,4-Dimethylphenol	200 U
65-85-0	Benzoic Acid	1000 U
111-91-1	bis(-2-Chloroethoxy)Methane	400 U
120-83-2	2,4-Dichlorophenol	200 U
120-82-1	1,2,4-Trichlorobenzene	200 U
91-20-3	Naphthalene	200 U
106-47-8	4-Chloroaniline	200 U
87-68-3	Hexachlorobutadiene	200 U
59-50-7	4-Chloro-3-Methylphenol	200 U
91-57-6	2-Methylnaphthalene	200 U
77-47-4	Hexachlorocyclopentadiene	200 U
88-06-2	2,4,6-Trichlorophenol	200 U
95-95-4	2,4,5-Trichlorophenol	1000 U
91-58-7	2-Chloronaphthalene	200 U
88-74-4	2-Nitroaniline	1000 U
131-11-3	Dimethyl Phthalate	200 U
208-96-8	Acenaphthylene	200 U
99-09-2	3-Nitroaniline	1000 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	200 U
51-28-5	2,4-Dinitrophenol	1000 U
100-02-7	4-Nitrophenol	1000 U
132-64-9	Dibenzofuran	200 U
121-14-2	2,4-Dinitrotoluene	400 U
606-20-2	2,6-Dinitrotoluene	400 U
84-66-2	Diethylphthalate	200 U
7005-72-3	4-Chlorophenyl-phenylether	200 U
86-73-7	Fluorene	200 U
100-01-6	4-Nitroaniline	1000 U
534-52-1	4,6-Dinitro-2-Methylphenol	400 U
86-30-6	N-Nitrosodiphenylamine(1)	200 U
101-55-3	4-Bromophenyl-phenylether	200 U
118-74-1	Hexachlorobenzene	200 U
87-86-5	Pentachlorophenol	200 U
85-01-8	Phenanthrene	200 U
120-12-7	Anthracene	200 U
84-74-2	Di-n-Butylphthalate	200 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
85-68-7	Butylbenzylphthalate	200 U
91-94-1	3,3'-Dichlorobenzidine	400 U
56-55-3	Benzo(a)Anthracene	200 U
117-81-7	bis(2-Ethylhexyl)Phthalate	200 U
218-01-9	Chrysene	400 U
117-84-0	Di-n-Octyl Phthalate	200 U
205-99-2	Benzo(b)Fluoranthene	400 U
207-08-9	Benzo(k)Fluoranthene	400 U
50-32-8	Benzo(a)Pyrene	400 U
193-39-5	Indeno(1,2,3-cd)Pyrene	400 U
53-70-3	Dibenz(a,h)Anthracene	400 U
191-24-2	Benzo(g,h,i)Perylene	400 U

(1) - Cannot be separated from diphenylamine

923

CLP 10/11/85 Form I Prepared by _____ 7/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: 21484

Sample Number
IT-NCBC-R1-5-10

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 9/27/85
Date Analyzed: 9/19/85
Conc/Dil Factor: 1.5G/5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
319-84-6	Alpha-BHC	1.0 U
319-85-7	Beta-BHC	1.0 U
319-86-8	Delta-BHC	1.0 U
58-89-9	Gamma-BHC (Lindane)	1.0 U
76-44-8	Heptachlor	1.0 U
309-00-2	Aldrin	1.0 U
1024-57-3	Heptachlor Epoxide	1.0 U
959-98-8	Endosulfan I	7.0 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33213-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	67 U
53494-70-5	Endrin Ketone	NA
57-74-9	Chlordane	67 U
8001-35-2	Toxaphene	670 U
12674-11-2	Aroclor-1016	NA
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	67 U
12672-29-6	Aroclor-1248	67 U
11097-69-1	Aroclor-1254	67 U
11096-82-5	Aroclor-1260	67 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = NR or W_s = 1.5 V_t = 5000 V_i = 5

324

CLP 11/14/85 Form I Prepared by [signature] 7-85

Sample Number
METHOD BLANK

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.
Case No: 21591
Lab Sample ID No: 21591MB
QC Report No: NR
Sample Matrix: SOIL
Contract No: NR
Data Release Authorized By:
Date Sample Received: 8/29/85

Volatile Compounds

Concentration: LOW
Date Extracted/Prepared: NR
Date Analyzed: NR
Conc/Dil Factor: NR pH: NR
Percent Moisture: NR
Percent Moisture (Decanted): NR

CAS Number		ug/Kg
74-87-3	Chloromethane	NR
74-83-9	Bromomethane	NR
75-01-4	Vinyl Chloride	NR
[illegible]-00-3	Chloroethane	NR
[illegible]-2	Methylene Chloride	NR
67-1	Acetone	NR
75-15-0	Carbon Disulfide	NR
75-35-4	1,1-Dichloroethene	NR
75-34-3	1,1-Dichloroethane	NR
156-60-5	Trans-1,2-Dichloroethene	NR
67-66-3	Chloroform	NR
107-06-2	1,2-Dichloroethane	NR
78-93-3	2-Butanone	NR
71-55-6	1,1,1-Trichloroethane	NR
56-23-5	Carbon Tetrachloride	NR
108-05-4	Vinyl Acetate	NR
75-27-4	Bromodichloromethane	NR

CAS Number		ug/Kg
78-87-5	1,2-Dichloropropane	NR
10061-02-6	Trans-1,3-Dichloropropene	NR
79-01-6	Trichloroethene	NR
124-48-1	Dibromochloromethane	NR
79-00-5	1,1,2-Trichloroethane	NR
71-43-2	Benzene	NR
10061-01-5	cis-1,3-Dichloropropene	NR
110-75-8	2-Chloroethylvinylether	NR
75-25-2	Bromoform	NR
108-10-1	4-Methyl-2-Pentanone	NR
591-78-6	2-Hexanone	NR
127-18-4	Tetrachloroethene	NR
79-34-5	1,1,2,2-Tetrachloroethane	NR
108-88-3	Toluene	NR
108-90-7	Chlorobenzene	NR
100-41-4	Ethylbenzene	NR
100-42-5	Styrene	NR
	Total Xylenes	NR

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/ dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum achievable detection limit for the sample

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g. 10J). If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA — Not Analyzed.
E — See cover letter.
NR — Not Required.
S — Spiked Compound.

Prepared by:
10/85

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No: EG4G

Sample Number
METHOD BLANK

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW
Date Extracted/Prepared: 5/27/85
Date Analyzed: 6/1/85
Conc/Dil. Factor: 29G/0.5ML

GPC Cleanup: NO
Separatory Funnel Extraction: YES
Continuous Liquid - Liquid Extraction: NO

CAS Number		ug/Kg
108-95-2	Phenol	100 U
111-44-4	bis(2-Chloroethyl)Ether	100 U
95-57-8	2-Chlorophenol	100 U
541-73-1	1,3-Dichlorobenzene	100 U
106-46-7	1,4-Dichlorobenzene	100 U
100-51-6	Benzyl Alcohol	100 U
95-50-1	1,2-Dichlorobenzene	100 U
95-48-7	2-Methylphenol	100 U
39638-32-9	bis(2-chloroisopropyl)Ether	200 U
106-44-5	4-Methylphenol	100 U
621-64-7	N-Nitroso-Di-n-Propylamine	100 U
67-72-1	Hexachloroethane	100 U
98-95-3	Nitrobenzene	100 U
78-59-1	Isophorone	100 U
88-75-5	2-Nitrophenol	200 U
105-67-9	2,4-Dimethylphenol	100 U
65-85-0	Benzoic Acid	500 U
111-91-1	bis(2-Chloroethoxy)Methane	200 U
120-83-2	2,4-Dichlorophenol	100 U
120-82-1	1,2,4-Trichlorobenzene	100 U
91-20-3	Naphthalene	100 U
106-47-8	4-Chloroaniline	100 U
87-68-3	Hexachlorobutadiene	100 U
59-50-7	4-Chloro-3-Methylphenol	100 U
91-57-6	2-Methylnaphthalene	100 U
77-47-4	Hexachlorocyclopentadiene	100 U
88-06-2	2,4,6-Trichlorophenol	100 U#
95-95-4	2,4,5-Trichlorophenol	#
91-58-7	2-Chloronaphthalene	100 U
88-74-4	2-Nitroaniline	500 U
131-11-3	Dimethyl Phthalate	100 U
208-96-8	Acenaphthylene	100 U
99-09-2	3-Nitroaniline	500 U

CAS Number		ug/Kg
83-32-9	Acenaphthene	100 U
51-28-5	2,4-Dinitrophenol	500 U
2000-02-7	4-Nitrophenol	500 U
132-64-9	Dibenzofuran	100 U
121-14-2	2,4-Dinitrotoluene	200 U
606-20-2	2,6-Dinitrotoluene	200 U
84-66-2	Diethylphthalate	100 U
7005-72-3	4-Chlorophenyl-phenylether	100 U
86-73-7	Fluorene	100 U
2000-01-4	4-Nitroaniline	500 U
534-52-1	4,6-Dinitro-2-Methylphenol	200 U
86-30-6	N-Nitrosodiphenylamine(1)	100 U
101-55-3	4-Bromophenyl-phenylether	100 U
118-74-1	Hexachlorobenzene	100 U
87-86-5	Pentachlorophenol	500 U
85-01-8	Phenanthrene	100 U
120-12-7	Anthracene	100 U
84-74-2	Di-n-Butylphthalate	100 U
206-44-0	Fluoranthene	100 U
129-00-0	Pyrene	100 U
85-68-7	Butylbenzylphthalate	100 U
91-94-1	3,3'-Dichlorobenzidine	200 U
56-55-3	Benzo(a)Anthracene	100 U
117-81-7	bis(2-Ethylhexyl)Phthalate	100 U
218-01-9	Chrysene	200 U
117-84-0	Di-n-Octyl Phthalate	100 U
205-99-2	Benzo(b)Fluoranthene	200 U
207-08-9	Benzo(k)Fluoranthene	200 U
50-32-8	Benzo(a)Pyrene	200 U
193-39-5	Indeno(1,2,3-cd)Pyrene	200 U
53-70-3	Dibenz(a,h)Anthracene	200 U
191-24-2	Benzo(g,h,i)Perylene	200 U

(1) - Cannot be separated from diphenylamine

CLF: 10/11/85 Form I Prepared by: 7/85

LABORATORY INSTRUMENT DETECTION LIMITS

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: California Analytical Laboratories, Inc.

Case No: EB46

Sample ID No:

QC Report No:

Sample Matrix:

Contract No: 68-01-6958, 68-01-6965, 68-01-7140, 68-01-7147

Data Release Authorized By:

Date Sample Received:

Volatile Compounds

Concentration:

Date Extracted/Prepared:

Date Analyzed:

Conc/Dil Factor:

Percent Moisture:

Percent Moisture (Decanted):

CAS Number		ug/L
74-87-3	Chloromethane	48
74-83-9	Bromomethane	22
75-01-4	Vinyl Chloride	33
75-00-3	Chloroethane	19
75-09-2	Methylene Chloride	5.8
67-64-1	Acetone	5.5
[illegible]-8	Carbon Disulfide	7.6
[illegible]	1,1-Dichloroethene	7.9
[illegible]-3	1,1-Dichloroethane	8.7
156-60-5	Trans-1,2-Dichloroethene	7.5
67-66-3	Chloroform	7.7
107-06-2	1,2-Dichloroethane	16
78-93-3	2-Butanone	4.6
71-55-6	1,1,1-Trichloroethane	5.0
56-23-5	Carbon Tetrachloride	4.1
108-05-4	Vinyl Acetate	4.1
75-27-4	Bromodichloromethane	2.3

CAS Number		ug/L
78-87-5	1,2-Dichloropropane	5.1
10061-02-6	Trans-1,3-Dichloropropene	5.3
79-01-6	Trichloroethene	4.4
124-48-1	Dibromochloromethane	2.1
79-00-5	1,1,2-Trichloroethane	4.4
71-43-2	Benzene	5.8
10061-01-5	cis-1,3-Dichloropropene	5.2
110-75-8	2-Chloroethylvinylether	3.1
75-25-2	Bromoform	2.4
108-10-1	4-Methyl-2-Pentanone	5.7
591-78-6	2-Hexanone	19
127-18-4	Tetrachloroethene	4.9
79-34-5	1,1,2,2-Tetrachloroethane	5.9
108-88-3	Toluene	4.9
108-90-7	Chlorobenzene	3.7
100-41-4	Ethylbenzene	2.1
100-42-5	Styrene	3.3
	Total Xylenes	2.9

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be supplied.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U: Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U - Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J: Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J). If limit of detection is 10ug/l and a concentration of 5ug/l is calculated, report as 5J.

C: This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10ng/ul in the final extract should be confirmed by GC/MS.

B: This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other: Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

NA: Not Analyzed.
#: See cover letter.
NR: Not Required.
S: Spiked Compound.

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case No:

Sample Number

"LABORATORY INSTRUMENT DETECTION LIMITS"
Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: _____
Date Extracted/Prepared: _____
Date Analyzed: _____
Conc/Dil. Factor: _____

GPC Cleanup: _____
Separatory Funnel Extraction: _____
Continuous Liquid - Liquid Extraction: _____

CAS Number		MB
108-95-2	Phenol	5.1
111-44-4	bis(2-Chloroethyl)Ether	1.7
95-57-8	2-Chlorophenol	4.6
541-73-1	1,3-Dichlorobenzene	0.89
106-46-7	1,4-Dichlorobenzene	1.9
100-51-6	Benzyl Alcohol	7.8
	1,2-Dichlorobenzene	1.8
6-7	2-Methylphenol	2.3
39638-32-9	bis(2-chloroisopropyl)Ether	3.8
106-44-5	4-Methylphenol	4.3
621-64-7	N-Nitroso-Di-n-Propylamine	5.8
67-72-1	Hexachloroethane	2.9
98-95-3	Nitrobenzene	3.8
78-59-1	Isophorone	2.1
88-75-5	2-Nitrophenol	5.2
105-67-9	2,4-Dimethylphenol	5.6
65-85-0	Benzoic Acid	78
111-91-1	bis(2-Chloroethoxy)Methane	2.6
120-83-2	2,4-Dichlorophenol	3.3
120-82-1	1,2,4-Trichlorobenzene	2.3
91-20-3	Naphthalene	4.4
106-47-8	4-Chloroaniline	5.3
87-68-3	Hexachlorobutadiene	2.9
59-50-7	4-Chloro-3-Methylphenol	3.8
91-57-6	2-Methylnaphthalene	2.7
77-47-4	Hexachlorocyclopentadiene	7.2
88-06-2	2,4,6-Trichlorophenol	10
95-95-4	2,4,5-Trichlorophenol	3.7
6-7	2-Chloronaphthalene	1.8
-4	2-Nitroaniline	5.8
-11-3	Dimethyl Phthalate	2.2
208-96-8	Acenaphthylene	0.57
99-09-2	3-Nitroaniline	15

CAS Number		MB
83-32-9	Acenaphthene	2.3
51-28-5	2,4-Dinitrophenol	6.7
100-02-7	4-Nitrophenol	7.5
132-64-9	Dibenzofuran	2.3
121-14-2	2,4-Dinitrotoluene	3.2
606-20-2	2,6-Dinitrotoluene	2.8
84-66-2	Diethylphthalate	2.9
7005-72-3	4-Chlorophenyl-phenylether	2.6
86-73-7	Fluorene	2.1
100-01-6	4-Nitroaniline	4.3
534-52-1	4,6-Dinitro-2-Methylphenol	6.2
86-30-6	N-Nitrosodiphenylamine(1)	4.1
101-55-3	4-Bromophenyl-phenylether	2.6
118-74-1	Hexachlorobenzene	2.4
87-86-5	Pentachlorophenol	6.8
85-01-8	Phenanthrene	2.8
120-12-7	Anthracene	2.9
84-74-2	Di-n-Butylphthalate	0.78
206-44-0	Fluoranthene	1.4
129-00-0	Pyrene	3.3
85-68-7	Butylbenzylphthalate	6.9
91-94-1	3,3'-Dichlorobenzidine	9.8
56-55-3	Benzo(a)Anthracene	7.3
117-81-7	bis(2-Ethylhexyl)Phthalate	3.1
218-01-9	Chrysene	8.5
117-84-0	Di-n-Octyl Phthalate	6.3
205-99-2	Benzo(b)Fluoranthene	8.4
207-08-9	Benzo(k)Fluoranthene	8.4
50-32-8	Benzo(a)Pyrene	4.8
193-39-5	Indeno(1,2,3-cd)Pyrene	4.7
53-70-3	Dibenz(a,h)Anthracene	8.2
191-24-2	Benzo(g,h,i)Perylene	6.7

(1) - Cannot be separated from diphenylamine

Laboratory Name: CALIFORNIA ANALYTICAL LABORATORIES, INC.
Case #:

Sample Number

LABORATORY INSTRUMENT DETECTION LIMITS

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: _____ GPC Cleanup: _____

Date Extracted/Prepared: _____ Separatory Funnel Extraction: _____

Date Analyzed: _____ Continuous Liquid - Liquid Extraction: _____

Conc/Dil Factor: _____

CAS Number		ug/l
319-84-6	Alpha-BHC	1
319-85-7	Beta-BHC	1
319-86-8	Delta-BHC	1
58-89-9	Gamma-BHC (Lindane)	1
76-44-8	Heptachlor	1
309-00-2	Aldrin	1
1024-57-3	Heptachlor Epoxide	1
959-98-8	Endosulfan I	2
60-57-1	Dieldrin	2
72-55-9	4,4'-DDE	2
72-20-8	Endrin	2
33213-65-9	Endosulfan II	2
72-54-8	4,4'-DDD	4
1031-07-8	Endosulfan Sulfate	4
50-29-3	4,4'-DDT	4
72-43-5	Methoxychlor	20
53494-70-5	Endrin Ketone	4
57-74-9	Chlordane	20
8001-35-2	Toxaphene	200
12674-11-2	Aroclor-1016	20
11104-28-2	Aroclor-1221	20
11141-16-5	Aroclor-1232	20
53469-21-9	Aroclor-1242	20
12672-29-6	Aroclor-1248	20
11097-69-1	Aroclor-1254	20
11096-82-5	Aroclor-1260	20

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s = or W_s = NR V_t = V_i =

EG&G ID NO.

IT-NCBC-R1-01

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-1 DATE: 3-10-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOIL UNITS: MG/KG DRY WEIGET

ELEMENTS..METHOD		
2. ANTIMONY....P	<3U R	
3. ARSENIC.....P	6.0	*
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	7.0	*
10.COPPER......P	3.4	
12.LEAD........P	24	
15.MERCURY....CV	<0.1U	
16.NICKEL......P	21	
18.SELENIUM....P	<0.3U	
19.SILVER......P	<0.5U R	
21.THALLIUM....F	<0.5U R	
24.ZINC........P	124	
25.CYANIDE.....C	<0.5U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interferance. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1969

FORM V

SPIKE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID: IT-NCBC-R1-01

DATE: 3-19-86

MATRIX: SOIL

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT % R	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKED ADDED (SA)	% R
ELEMENTS..METHOD					
2. ANTIMONY....P	75 TO 125	57.4	<20	200	29 R
3. ARSENIC.....P	75 TO 125	410	114	300	114
5. BERYLLIUM...P	75 TO 125	07.7	<20	100	54
6. CADMIUM.....P	75 TO 125	53.7	<20	100	53
8. CHROMIUM....P	75 TO 125	483	140	400	85
10. COPPER.....P	75 TO 125	281	47	250	93
12. LEAD.....P	75 TO 125	1420	480	1000	94
15. MERCURY....CV	75 TO 125	NR	NR	—	—
16. NICKEL.....P	75 TO 125	235	41	250	76
18. SELENIUM....P	75 TO 125	50	<20	50	100
19. SILVER.....P	75 TO 125	52.2	<20	100	52 R
21. THALLIUM....F	75 TO 125	31.7	<20	50	63 R
24. ZINC.....P	75 TO 125	7200	2280	5000	94
25. CYANIDE.....C	75 TO 125	NR	NR	—	—

COMMENTS:

1974

FM VI

DUPLICATE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID NO.:

IT-NCBC-RI-01

DATE: 3-19-86
MATRIX: SOIL

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT	SAMPLE(S)	DUPLICATES(D)	RPD
ELEMENTS..METHOD				
2. ANTIMONY....P		<20	<20	0
3. ARSENIC.....P		114	141	30 *
5. BERYLLIUM...P		<20	<20	0
6. CADMIUM.....P		<20	<20	0
8. CHROMIUM....P		140	165	33 *
10.COPPER......P		48	51.3	1.6
12.LEAD........P		480	378	19
15.MERCURY....CV		NIR	NIR	—
16.NICKEL......P		41	38.9	5.5
18.SELENIUM....P		<20	<20	0
19.SILVER......P		<20	<20	0
21.THALLIUM....F		<20	<20	0
24.ZINC........P		2240	2500	3.2
25.CYANIDE.....C		NIR	NIR	—

COMMENTS:

1975

EG&G ID NO.

IT-NCBC-R2-01

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-2 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	44	*
5. BERYLLIUM...P	<1.5U	
6. CADMIUM.....P	<0.5U	
8. CHROMIUM....P	11	*
10.COPPER.....P	3.2	
12.LEAD.....P	28	
15.MERCURY....CV	<0.1U	
16.NICKEL.....P	3.5	
18.SELENIUM....P	<0.3U	
19.SILVER.....P	<0.2U	R
21.THALLIUM....F	<0.5U	R
24.ZINC.....P	115	
25.CYANIDE.....C	<0.5U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1970

EG&G ID NO.

IT-NCBC-R3-01

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-4 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3U R	
3. ARSENIC.....P	11	*
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.5U	
8. CHROMIUM....P	10	*
10.COPPER......P	9.9	
12.LEAD........P	26	
15.MERCURY....CV	0.1	
16.NICKEL......P	3	
18.SELENIUM....P	<0.3U	
19.SILVER......P	<0.5U R	
21.THALLIUM....F	<0.5U R	
24.ZINC........P	11	
25.CYANIDE.....C	<1.2U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1971

EG&G ID NO.

IT-NCBC-R4-01

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21340-5 DATE: 3-19-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3U	R
3. ARSENIC.....P	4.3	*
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	10	*
10.COPPER......P	3	
12.LEAD........P	27	
15.MERCURY....CV	<0.1U	
16.NICKEL......P	2.3	
18.SELENIUM....P	<0.3U	
19.SILVER......P	<0.5U	R
21.THALLIUM....F	<0.5U	R
24.ZINC........P	12.1	
25.CYANIDE.....C	<1.5U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1972

EG&G ID NO.

IT-NCBC-R5-01

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-6 DATE: 2-19-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOIL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	5.6	*
5. BERYLLIUM...P	<0.30	
6. CADMIUM.....P	<0.30	
8. CHROMIUM....P	41	*
10.COPPER.....P	27	
12.LEAD.....P	24	
15.MERCURY....CV	<0.10	
16.NICKEL.....P	32	
18.SELENIUM....P	<0.30	
19.SILVER.....P	<0.30	R
21.THALLIUM....F	<0.30	R
24.ZINC.....P	131	
25.CYANIDE.....C	<0.50	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1973

EG&G ID NO.

IT-NCBC-R1-02

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-1 DATE: 2-10-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOIL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	4.9	
5. BERYLLIUM...P	<1.30	
6. CADMIUM.....P	<1.30	
8. CHROMIUM....P	4.6	
10.COPPER......P	2.9	
12.LEAD........P	29	
15.MERCURY....CV	<0.10	
16.NICKEL......P	4.1	R
18.SELENIUM....P	<1.30	R
19.SILVER......P	<1.30	
21.THALLIUM....F	<0.50	R
24.ZINC........P	113	
25.CYANIDE.....C	<1.50	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1976

FORM V

SPIKE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID

IT-NCBC-R1-02 [illegible]

DATE: 3-19-86

MATRIX: SOIL

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT % R	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKED ADDED (SA)	% R
ELEMENTS..METHOD					
2. ANTIMONY....P	75 TO 125	46.8	<20	200	23 R
3. ARSENIC.....P	75 TO 125	527	197	300	110
5. BERYLLIUM...P	75 TO 125	54.4	<20	100	54
6. CADMIUM.....P	75 TO 125	60.4	<20	100	61
8. CHROMIUM....P	75 TO 125	501	142	400	77
10.COPPER......P	75 TO 125	377	57.9	250	92
12.LEAD.....P	75 TO 125	1430	577	1000	85
15.MERCURY....CV	75 TO 125	NIR	NIR	—	—
16.NICKEL.....P	75 TO 125	334	92.6	250	96 R
18.SELENIUM....P	75 TO 125	14.3	<20	50	57 R
19.SILVER.....P	75 TO 125	74.6	<20	100	74
21.THALLIUM....F	75 TO 125	24.3	<20	50	56 R
24.ZINC.....P	75 TO 125	1370	2267	5000	62
25.CYANIDE.....C	75 TO 125	NIR	NIR	—	—

COMMENTS:

1980

FM VI

DUPLICATE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID NO.: IT-NCBC-R1-02 21349-7

DATE: 3-19-86
MATRIX: SOIL

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT	SAMPLE(S)	DUPLICATES(D)	RPD
ELEMENTS..METHOD				
2. ANTIMONY....P		<20	<20	0
3. ARSENIC.....P		14X	1X0	4.5
5. BERYLLIUM...P		<20	<20	0
6. CADMIUM.....P		<20	<20	0
8. CHROMIUM....P		142	1[illegible]9	13
10.COPPER.....P		57.9	1[illegible]9.X	14
12.LEAD.....P		577	4X4	17
15.MERCURY....CV		NIR	NIR	—
16.NICKEL.....P		X2.1[illegible]	74.1	11
18.SELENIUM....P		<20	<20	0
19.SILVER.....P		<20	<20	0
21.THALLIUM....F		<20	<20	0
24.ZINC.....P		2[illegible]1[illegible]7	2270	0.[illegible]3
25.CYANIDE.....C		NIR	NIR	—

COMMENTS:

1981

EG&G ID NO.

IT-NCBC-R2-02

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21413
SOW NO.: 784 QC RPT.# 21413
LAB SAMPLE NO.: 21413-5 DATE: 3-10-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3 U	R
3. ARSENIC.....P	4.9	
5. BERYLLIUM...P	<0.30 U	
6. CADMIUM.....P	<0.30 U	
8. CHROMIUM....P	4.1	
10.COPPER......P	3.1	
12.LEAD........P	2	
15.MERCURY....CV	<0.10 U	
16.NICKEL......P	3.1	R
18.SELENIUM....P	<0.30 U	R
19.SILVER......P	<0.30 U	R
21.THALLIUM....F	<0.50 U	R
24.ZINC........P	129	
25.CYANIDE.....C	<0.50 U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1991

EG&G ID NO.

IT-NCBC-R3-02

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21413
SOW NO.: 784 QC RPT.# 21413
LAB SAMPLE NO.: 21413-11 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOIL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	1.2	
5. BERYLLIUM...P	<0.30	
6. CADMIUM.....P	<0.30	
8. CHROMIUM....P	6.3	
10.COPPER......P	3.2	
12.LEAD........P	20	
15.MERCURY....CV	<0.10	
16.NICKEL......P	3.4	R
18.SELENIUM....P	<0.30	R
19.SILVER......P	<0.50	R
21.THALLIUM....F	<0.50	R
24.ZINC........P	11	
25.CYANIDE.....C	<.50	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1992

EG&G ID NO.

IT-NCBC-R4-02

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21-14
LAB SAMPLE NO.: 21484-1 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3 U	R
3. ARSENIC.....P	6.4	
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	1.2	
10.COPPER......P	1.9	
12.LEAD........P	22	
15.MERCURY....CV	<0.1U	
16.NICKEL......P	3.6	R
18.SELENIUM....P	<0.3U	R
19.SILVER......P	<0.3U	
21.THALLIUM....F	<1.5U	R
24.ZINC........P	125	
25.CYANIDE.....C	<0.2U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1979

EG&G ID NO.

IT-NCBC-25-02

MODIFIED PRIORITY POLLUTANT LIST
(EC & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21474
LAB SAMPLE NO.: 21484-9 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Soil UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD	
2. ANTIMONY....P	<3U R
3. ARSENIC.....P	10.7
5. BERYLLIUM...P	<0.30
6. CADMIUM.....P	<0.50
8. CHROMIUM....P	74
10.COPPER......P	3.1
12.LEAD........P	23
15.MERCURY....CV	<0.10
16.NICKEL......P	8.4 R
18.SELENIUM....P	<0.20 R
19.SILVER......P	<0.5U
21.THALLIUM....F	<0.5U R
24.ZINC........P	107
25.CYANIDE.....C	<0.5U

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1979

EG&G ID NO.

IT-NCBC-RI-04

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21413
SOW NO.: 784 QC RPT.# 21413
LAB SAMPLE NO.: 21413-1 DATE: 2-21-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOLVENT UNITS: UG/L

ELEMENTS..METHOD	
2. ANTIMONY....P	<100
3. ARSENIC.....P	<20
5. BERYLLIUM...P	<20
6. CADMIUM.....P	<20
8. CHROMIUM....P	<200
10.COPPER......P	604
12.LEAD........P	<200
15.MERCURY....CV	<0.0002
16.NICKEL......P	1140
18.SELENIUM....P	<20
19.SILVER......P	<40
21.THALLIUM....F	<20
24.ZINC........P	245
25.CYANIDE.....C	<500

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1990

EG&G ID NO.

IT-NCBC-R3-04

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21484
LAB SAMPLE NO.: 21484-13 DATE: 3-21-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOLVENT UNITS: UG/L

ELEMENTS..METHOD	
2. ANTIMONY....P	<100
3. ARSENIC.....P	<20
5. BERYLLIUM...P	<20
6. CADMIUM.....P	<20
8. CHROMIUM....P	21.4
10.COPPER......P	<125
12.LEAD........P	<238
15.MERCURY....CV	<0.0002
16.NICKEL......P	<200
18.SELENIUM....P	<20
19.SILVER......P	<40
21.THALLIUM....F	<20
24.ZINC........P	174
25.CYANIDE.....C	<500

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1987

EG&G ID NO.

IT-NCBC-R1-5-06

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 3.1252
LAB SAMPLE NO.: 21484-1 DATE: 3-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: SOIL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	26.4	
5. BERYLLIUM...P	<0.20	
6. CADMIUM.....P	<0.30	
8. CHROMIUM....P	16	
10. COPPER.....P	44	
12. LEAD.....P	50	
15. MERCURY....CV	0.1	
16. NICKEL.....P	31	R
18. SELENIUM....P	<0.30	R
19. SILVER.....P	<0.50	
21. THALLIUM....F	<0.50	R
24. ZINC.....P	409	
25. CYANIDE.....C	<0.50	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1977

EG&G ID NO.

IT-NCBC-R1-09

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21349
SOW NO.: 784 QC RPT.# 21349
LAB SAMPLE NO.: 21349-8 DATE: 3-19-91

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<30	R
3. ARSENIC.....P	<0.5U	
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	5.9	
10. COPPER.....P	1.3	
12. LEAD.....P	2.1	
15. MERCURY....CV	<0.1U	
16. NICKEL.....P	3.3	
18. SELENIUM....P	<0.5U	R
19. SILVER.....P	<0.5U	R
21. THALLIUM....F	<0.5U	R
24. ZINC.....P	12	R
25. CYANIDE.....C	<0.5U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1992

FORM V

SPIKE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID

IT-NCBC-RI-09

DATE: 3-19-86
MATRIX: CHARCOAL

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT % R	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKED ADDED (SA)	% R
ELEMENTS..METHOD					
2. ANTIMONY....P	75 TO 125	25.1	<20	200	13 R
3. ARSENIC.....P	75 TO 125	216	<20	300	86
5. BERYLLIUM...P	75 TO 125	48.2	<20	100	48
6. CADMIUM.....P	75 TO 125	41.1	<20	100	41
8. CHROMIUM....P	75 TO 125	491	117	400	93
10. COPPER.....P	75 TO 125	222	26.4	200	98
12. LEAD.....P	75 TO 125	234	132	300	90
15. MERCURY....CV	75 TO 125	NIR	NIR	—	—
16. NICKEL.....P	75 TO 125	307	125.8	200	91
18. SELENIUM....P	75 TO 125	24.7	<20	50	49 R
19. SILVER.....P	75 TO 125	52.3	<20	100	52 R
21. THALLIUM....F	75 TO 125	12.4	<20	20	62 R
24. ZINC.....P	75 TO 125	422	304	200	126 R
25. CYANIDE.....C	75 TO 125	NIR	NIR	—	—

COMMENTS:

1984

FM VI

DUPLICATE SAMPLE RECOVERY

LAB NAME: CALIF. ANAL. LABS.

EG & G ID NO.: IT-NCBC-R1-09

DATE: 3-19-86

MATRIX: CHROMATOGRAPH

UNITS: ppb

COMPOUNDS METALS:	CONTROL LIMIT	SAMPLE(S)	DUPLICATES(D)	RPD
ELEMENTS..METHOD				
2. ANTIMONY....P		<20	21	4.1 O
3. ARSENIC.....P		<20	<20	0
5. BERYLLIUM...P		<20	<20	0
6. CADMIUM.....P		<20	<20	0
8. CHROMIUM....P		11.7	13.3	13
10. COPPER.....P		26.9	27.8	3.3
12. LEAD.....P		182	173	5.1
15. MERCURY....CV		NIR	NIR	—
16. NICKEL.....P		105.9	61.7	52.4
18. SELENIUM....P		<20	<20	0
19. SILVER.....P		<20	<20	0
21. THALLIUM....F		<20	<20	0
24. ZINC.....P		304	342	12
25. CYANIDE.....C		NIR	NIR	—

COMMENTS:

1995

EG&G ID NO.

IT-NCBC-R2-09

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21413
SOW NO.: 784 QC RPT.# 21413
LAB SAMPLE NO.: 21413-7 DATE: 2-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3U R	
3. ARSENIC.....P	11	
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	6.4	
10.COPPER.....P	42	
12.LEAD.....P	24	
15.MERCURY....CV	0.45	
16.NICKEL.....P	3.7	
18.SELENIUM....P	<0.3U S	
19.SILVER.....P	<0.5U R	
21.THALLIUM....F	<1.3U R	
24.ZINC.....P	13 *	
25.CYANIDE.....C	<0.3U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1996

EG&G ID NO.

IT-NCBC-R5-09

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21484
LAB SAMPLE NO.: 21484-10 DATE: 3-10-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: Effluent UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD	
2. ANTIMONY....P	<3U R
3. ARSENIC.....P	1.8
5. BERYLLIUM...P	<0.3U
6. CADMIUM.....P	<0.3U
8. CHROMIUM....P	10.7
10.COPPER......P	3
12.LEAD........P	10
15.MERCURY....CV	0.1
16.NICKEL......P	3.4
18.SELENIUM....P	<0.3U R
19.SILVER......P	<0.5U R
21.THALLIUM....F	<0.5U R
24.ZINC........P	110
25.CYANIDE.....C	<0.5U

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
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E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

2011

EG&G ID NO.

IT-NCBC-R1-09A

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21340
SOW NO.: 784 QC RPT.# 21340
LAB SAMPLE NO.: 21340-9 DATE: 3-10-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD		
2. ANTIMONY....P	<3U	R
3. ARSENIC.....P	14	
5. BERYLLIUM...P	<0.3U	
6. CADMIUM.....P	<0.3U	
8. CHROMIUM....P	7.5	
10.COPPER......P	2.1	
12.LEAD........P	11	
15.MERCURY....CV	<0.1U	
16.NICKEL......P	3.1	
18.SELENIUM....P	<0.3U	R
19.SILVER......P	<0.3U	R
21.THALLIUM....F	<0.5U	R
24.ZINC........P	21	R
25.CYANIDE.....C	<0.5U	

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
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E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1983

EG&G ID NO.

IT-NCBC-R2-04A

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 2143
SOW NO.: 784 QC RPT.# 2-14-2
LAB SAMPLE NO.: 2143-8 DATE: 2-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD	
2. ANTIMONY....P	<30 R
3. ARSENIC.....P	1.2
5. BERYLLIUM...P	<0.2U
6. CADMIUM.....P	<0.3U
8. CHROMIUM....P	4.8
10.COPPER.....P	3
12.LEAD.....P	11
15.MERCURY....CV	<0.1U
16.NICKEL.....P	2.9
18.SELENIUM....P	<0.3U R
19.SILVER.....P	<0.3U R
21.THALLIUM....F	<0.3U R
24.ZINC.....P	11 *
25.CYANIDE.....C	<0.5U

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

1997

EG&G ID NO.

IT-NCBC-R5-09A

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21484
LAB SAMPLE NO.: 21484-11 DATE: 2-14-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD	
2. ANTIMONY....P	<3U R
3. ARSENIC.....P	1.5
5. BERYLLIUM...P	<0.3U
6. CADMIUM.....P	<0.3U
8. CHROMIUM....P	6.3
10.COPPER.....P	1.4
12.LEAD.....P	10
15.MERCURY....CV	<0.1U
16.NICKEL.....P	5.5
18.SELENIUM....P	<0.3U R
19.SILVER.....P	<0.3U R
21.THALLIUM....F	<0.5U R
24.ZINC.....P	15
25.CYANIDE.....C	<0.3U

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

2012

EG&G ID NO.

IT-NCBC-R1-5-10

MODIFIED PRIORITY POLLUTANT LIST
(EG & G Subcontract No. C85-130761-KAM-177-85)
INORGANIC ANALYSIS SHEET

LAB NAME: CALIF.ANAL.LAB. CASE NO: 21484
SOW NO.: 784 QC RPT.# 21474
LAB SAMPLE NO.: 21484-2 DATE: 5-19-86

ELEMENTS IDENTIFIED AND MEASURED

MATRIX: CHARCOAL UNITS: MG/KG DRY WEIGHT

ELEMENTS..METHOD	
2. ANTIMONY....P	<3U R
3. ARSENIC.....P	1.1
5. BERYLLIUM...P	<0.3U
6. CADMIUM.....P	<0.3U
8. CHROMIUM....P	6
10. COPPER.....P	1.3
12. LEAD.....P	6.3
15. MERCURY....CV	<0.1U
16. NICKEL.....P	3.4
18. SELENIUM....P	<0.3U R
19. SILVER.....P	<0.3U R
21. THALLIUM....F	<0.5U R
24. ZINC.....P	14
25. CYANIDE.....C	<0.5U

COMMENTS:

ICP Interelement and background corrections applied? Yes.

AA corrections consist of Zeeman effect background correction on Perkin-Elmer 3030 instruments and correction of background absorption by D2 lamp on Varian 875 instruments. Corrections are applied before generation of raw data.

FOOTNOTES:
NR - not required by contract at this time
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (ie.[10]). Indicate the analytical method used with P (for ICP/Flame AA), F (for furnace), or CV (for cold vapor).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., <10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

2010

2,4-D and 2,4,5-T by EPA Method 8150

CAL I.D.		mg/Kg (ppm) 2,4-D	mg/Kg (ppm) 2,4,5-T
21349-MB		<0.01	<0.01
-1	IT R1-01	890	1400
-2	IT R2-01	920	1300
-4	IT R3-01	1100	1600
-5	IT R4-01	990	1200
-6	IT R5-01	1200	2400
-7	IT R1-02	0.18	0.50
-7MS (0.05)		0.25 (160%)	0.73 (460%)
-7MSD (0.05)		0.27 (180%)	0.70 (400%)
-8	IT R1-09	<0.01	0.014
-9	IT R1-09A	<0.01	0.01
21591-1MB		<0.01	<0.01
-1	-	360	770
-2	-	280	610
-3	-	<0.01	<0.01
-4	-	<0.01	<0.01
-5	-	<0.01	0.011
-6	-	<0.01	<0.01
21484-2MB		<0.01	0.06
-2	IT R1-5-10	<0.01	<0.01
-9	IT R5-02	0.17	0.54
-10	IT R5-09	<0.01	<0.01
-11	IT R5-09A	<0.01	<0.01
-13	IT R3-04	<20	<2.0
21413-1MB		<0.01	<0.01
-1	IT R1-04	<1.0	<0.2
-2	-	<0.01	<0.01
-3	-	<0.01	<0.01
-5	IT R2-02	0.05	0.17
-7	IT R2-09	<0.01	<0.01
-8	IT R2-09A	<0.01	<0.01
-11	IT R3-02	0.02	0.06

Phenoxy Acids Reanalyses

21349-MB	<0.005	<0.005
-MBS or MS 50 ppb 7RX	0.051	0.067
	0.039	0.220
-7MS (50 ppb)	0.077 (76%)	0.260 (80%)
-7MSD (50 ppb)	0.0102 (130%)	0.420 (400%)

1736

CREOSOTE

Creosote (the 'coal tar' variety) is a mixture of polynuclear aromatic hydrocarbons used as biocide/biostat in the preservation of wood. Most of the principal components of the mixture are priority pollutants. We have examined both commercial creosote and the chromatogram in the reference cited in K. McKay's letter of December 23, 1985 and compared these data to the raw mass chromatograms raw Quan Lists for the samples IT-NCBC-R1-01 and IT-NCBC-R2-01. There are a variety of polynuclear aromatic hydrocarbons present in the samples. Nevertheless, it is our conclusion that it is impossible to say that the creosote profile is present in the data. We base this conclusion on the low amounts of 2-methyl naphthalene and fluorene in one or both of the samples. Further, our own creosote data shows that phenanthrene dominates anthracene by a factor of greater than 6 to 1 in creosote. This does not occur in the cited samples. The data does not rule out the presence of creosote, but it is clear that the bulk of polynuclear aromatic hydrocarbons came from other hydrocarbon sources and further that the analysis for only "creosote" is not possible.

TCDD DATA REPORT

California Analytical Laboratories
2544 Industrial Blvd.
W. Sacramento, CA 95691

Lab: California Analytical Laboratories
Case No. 21932
Batch/Shipment No.

Report Date: 9-25-85
Column: SP-2331

Cal Labs ID	Sample Number	C U	Aliquot (sample)	ng/sample TCDD Meas	ng/sample Det. Lmt	Inst ID	Date	Time	320/322	332/334	ng/sample Surrg Meas	Surrg % Acc'c	320	322	257	328*	332	334	Comments
21932MB	METHOD BLANK	Y	1.00	ND	0.14	B	09/25/85	16:59:00	-	0.72	9.42	94	-	-	-	938741	1096630	1526890	
21932MBMS	METH.BLNK MS	Y	1.00	13.6	-	B	09/25/85	17:20:00	0.72	0.75	9.81	98	1117640	1556910	555546	2036677	2336860	3127860	136% Recovery
21932-1	1131	Y	1.00	ND	0.59	B	09/25/85	17:38:00	-	0.71	9.09	91	-	-	-	203381	245439	343673	
21932-2	1132	Y	1.00	ND	0.27	B	09/25/85	17:58:00	1.27	0.77	9.69	97	21096	16597	12632	2315250	2730770	3559650	Ratio Unacceptable
21932-3	1133	Y	1.00	1.5	-	B	09/25/85	18:15:00	0.85	0.75	9.82	98	133020	157416	62752	1952223	2219600	2994490	
21932-4	1134	Y	1.00	ND	0.17	B	09/25/85	18:59:00	-	0.75	9.58	96	-	-	-	850411	999907	1336710	
21937-1	1135	Y	1.00	ND	0.14	B	09/25/85	19:28:00	1.16	0.75	9.76	98	5477	4724	5756	1997447	2302480	3080840	Ratio Unacceptable
21937-2	1136	Y	1.00	ND	0.28	B	09/25/85	20:03:00	0.65	0.73	9.52	95	11472	17556	-	1603652	1873420	2559090	Ratio Unacceptable
21937-3	1137	Y	1.00	ND	0.22	B	09/25/85	20:21:00	-	0.75	9.70	97	-	-	-	1444240	1684630	2235380	
21937-4	1138	Y	1.00	0.14	-	B	09/25/85	20:46:00	0.74	0.74	9.75	97	6080	8208	-	1022516	1173730	1586130	
21937-5	1139	Y	1.00	ND	0.13	B	09/25/85	21:13:00	-	0.78	9.54	95	-	-	-	1863680	2247320	2896000	
21937-6	1140	Y	1.00	0.15	-	B	09/25/85	21:36:00	0.75	0.77	9.50	95	8960	11936	4581	1891322	2279920	2959730	
21937-7	1141	Y	1.00	1.1	-	B	09/25/85	22:12:00	0.82	0.77	10.04	100	116104	141300	53963	2419758	2749520	3591470	
21937-8	1143	Y	1.00	ND	0.12	B	09/25/85	22:55:00	-	0.77	9.72	97	-	-	-	1231550	1448880	1886030	

MB = Method Blank
P = Partial Scan/Confirmatory Analysis
MS = Native TCDD Spike
D = Duplicate/Fortified Field Blank
RI = Re-injection
FB = Field Blank
ND = Not Detected
DL = Detection Limit
RE = Re-extraction

*Corrected for contribution by native TCDD; 0.9% of m/z 322 subtracted

Comments:

Ratio Unacceptable - The sample shows ion current for m/e 320 and m/e 322, but their ratio is unacceptable (outside the 0.67 - 0.87 window) for positive 2,3,7,8-TCDD identification.

2321

Summary of TCDD & TSP in Filter Samples

how many g in sample

CAL Lab I.D.	Sample Number	C U	Aliquot (sample)	ng/sample TCDD Meas	ng/sample Detection Limit	TSP (ug/m^3)	Vol (m^3)
21932-MB	Method Blank	Y	1.00	ND	0.14	--	--
-MBNS	Method Blank NS	Y	1.00	13.6	--	--	--
-1	1131	Y	1.00	ND	0.59	18.6	4845.99
-2	1132	Y	1.00	ND	0.27	44.9	4635.54
-3	1133	Y	1.00	1.5	--	36.4	4845.99
-4	1134	Y	1.00	ND	0.17	17.4	2877.06
21937 -1	1135	Y	1.00	ND	0.14	26.9	4547.10
-2	1136	Y	1.00	ND	0.28	31.8	4637.07
-3	1137	Y	1.00	ND	0.22	25.2	4547.10
-4	1138	Y	1.00	0.14	--	24.4	4721.23
-5	1139	Y	1.00	ND	0.13	41.9	1761.05
-6	1140	Y	1.00	0.11	--	38.5	1596.16
-7	1141	Y	1.00	1.1	--	55.7	1761.05
-8	1143	Y	1.00	ND	0.12	35.8	1828.50

280