Study Title

Carbaryl Applicator Exposure Study During Application Of Sevin® 5 Dust To Dogs By The Non-Professional

Data Requirement

US EPA Pesticide Assessment Guidelines: Subdivision U,
Applicator Exposure Monitoring Series 231 and 232
Occupational And Residential Exposure Test Guidelines Group A
Application Exposure Test Guidelines

Report Date

August 22, 1997

Study Director/Author

D. Larry Merricks, Ph.D.

Sponsor

Rhone-Poulenc Ag Company
#2 T.W. Alexander Drive
P.O. Box 12014
Research Triangle Park, NC 27709

Performing Laboratories

Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704

Rhone-Poulenc Ag Company
#2 T.W. Alexander Drive
Research Triangle Park, NC 27709

Morse Laboratories, Inc.
1525 Fulton Avenue
Sacramento, CA 95825

Project Identification

Agrisearch Study No. 1517
Rhone-Poulenc Ag No. 10565

This report contains 212 pages
Including Page 82a

Statement Of No Data Confidentiality Claims

No claims of confidentiality are made for any information contained in this study on the basis of its falling within the scope of FIFRA section 19(d) 1(A), (B), or (C).

Jennifer L Phillips

August 26, 1997
Date

Good Laboratory Practice Compliance Statement

Agrisearch Project No. 1517 "Carbaryl Applicator Exposure Study During Application Of Sevin® 5 Dust To Dogs By The Non-Professional", was conducted according to the Good Laboratory Practice Standards (GLPS), 40 CFR Part 160 as described in the Federal Register, 54:34052-34074, August 17, 1989 except for the deviation noted below. This exception did not compromise the scientific integrity of this study.

1. Field Testing: Applicator body weights were determined using non-calibrated non-GLP compliant scales.

D. Larry Merricks, Ph.D.
Study Director

8-22-97
Date

Dennis R. Klonne, Ph.D.
Sponsor Representative
Rhone-Poulenc Ag Company

8-25-97
Date

Submitter

8-26-97
Date

Quality Assurance Final Report Statement

This project (Agrisearch Project No. 1517) was inspected/audited by Quality Assurance according to the applicable Standard Operating Procedures and EPA's Good Laboratory Practice Standards (40 CFR; 160, Reference 1) and all findings were reported to the study director and management:

Inspected Phase	Inspection Dates	Date Reported
Agrisearch Quality Assurance Inspections		
QC Procedures, Test Substance Administration, Test System Observation, Test System Sampling,	2/24/97	2/26/97
Raw Data Review	3/3/97	3/4/97
Draft Report/Raw Data Audit	5/1,6,7,9,13,20,22, 23,27,28,29/97 6/5,6,9,10/97 8/14,15,18,19/97	8/19/97
Final Report Review	8/21/97	8/21/97
Rhone-Poulenc Quality Assurance Inspections		
Test Substance Characterization-Specimen Analysis and Documentation Review	2/13/97	2/24/97
Test Substance Application and Related Activities	2/24,25/97	3/27/97

Action has been taken in response to all items listed by Quality Assurance. It was concluded that the final report accurately reflects the raw data.

Carolyn Ritchey Mentzer

Carolyn Ritchey Mentzer
Quality Assurance Manager

8/21/97
Date

See Appendix C for the Morse Laboratories QA statement.

Certificate Of Authenticity

This report was prepared for Rhone-Poulenc Ag Company and presents the results of the field and analytical phases for Agrisearch Project No. 1517.

D. Larry Merricks, Ph.D.
Study Director

8-22-97
Date

Study Identification And Report Approval

Sponsor:	Rhone-Poulenc Ag Company #2 T.W. Alexander Drive. Research Triangle Park, NC 27709
Sponsor Representative:	Dennis R. Klonne, Ph.D.
Study Director:	D. Larry Merricks, Ph.D.
Study Initiation Date:	December 12, 1996
Experimental Start Date:	February 17, 1997
Experimental Field Termination Date:	March 17, 1997
Study Completion Date:	August 22, 1997
Performing Laboratories:	
Testing Facility:	Agrisearch Incorporated 5734 Industry Lane Frederick, MD 21704
Analytical:	Morse Laboratories 1525 Fulton Avenue Sacramento, CA 95825
Test Substance Characterization	Rhone Poulenc Ag Company #2 T.W. Alexander Drive Research Triangle Park, NC 27709
Personnel:	
Agrisearch	Donna H. Merricks, Field Scientist Helen R. McNeal, Field Scientist Christin J. Slaughter, Analytical Chemist James D. Loewke, Field Scientist Robert Mawhinney, Field Technician Matthew J. Protos, Field Technician David Hall, Field Technician Victoria L. Schulze, Field Technician
Rhone-Poulenc Test Substance Characterization	Larry Helfant Sandra King Gloria Wheeler
Morse Laboratories	See Appendix C

All original raw data, protocol, and final reports are stored in the permanent archives at Rhone-Poulenc Ag Company.

This report is approved and issued by:

D. Larry Merricks, Ph.D.
Study Director

8-22-97
Date

Table Of Contents

STATEMENT OF NO DATA CONFIDENTIALITY CLAIMS 2

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT 3

QUALITY ASSURANCE FINAL REPORT STATEMENT 4

CERTIFICATE OF AUTHENTICITY 5

STUDY IDENTIFICATION AND REPORT APPROVAL 6

LIST OF TABLES 8

LIST OF FIGURES 9

LIST OF APPENDICES 9

A. ABSTRACT 10
B. INTRODUCTION 11
C. EXPERIMENTAL DESIGN 11
01. STUDY LOCATION 11
02. STUDY PARTICIPANTS 12
03. STANDARD DUSTING ACTIVITIES 12
04. TEST SUBSTANCE 13
05. TEST SYSTEM 13
06. JUSTIFICATION OF TEST SYSTEM 14
07. PREPARATION FOR MONITORING 14
08. INHALATION EXPOSURE MONITORING 14
09. DERMAL EXPOSURE MONITORING 15
10. FIELD FORTIFICATION 17
11. CONTROL SAMPLES 18
12. SAMPLE IDENTIFICATION 19
13. SAMPLE STORAGE 19
14. SAMPLE SHIPMENT 19
15. REMAINING TEST SUBSTANCE/CONTAINERS 19
16. PRELIMINARY ANALYTICAL TRIALS 19
17. ANALYTICAL PROGRAM 20
18. STATISTICAL METHODS 21
19. CALCULATIONS 21

D. RESULTS AND DISCUSSION 22

E. REFERENCES 24

List Of Tables

TABLE 1: SUMMARY OF VOLUNTEER EXPERIENCE AND PERSONAL INFORMATION 25
TABLE 2: APPLICATION TIMES, CHEMICAL USAGE, AND DOG WEIGHTS 26
TABLE 3: CARBARYL APPLIED PER DOG 27
TABLE 4: OBSERVATIONS MADE DURING EACH REPLICATE 28
TABLE 5: FIELD FORTIFICATION RECOVERY RESULTS 32
TABLE 6: CARBARYL FOUND ON INNER DOSIMETER SAMPLES, µg 34
TABLE 7: CARBARYL FOUND ON OUTER DOSIMETER SAMPLES, µg 35
TABLE 8: PERCENT PENETRATION OF CARBARYL THROUGH THE OUTER DOSIMETER 36
TABLE 9: WHOLE BODY DOSIMETER ADJUSTED CARBARYL RESIDUES 37
TABLE 10: CARBARYL FOUND ON THE HANDS 38
TABLE 11: CARBARYL FOUND ON THE FACE AND NECK 39
TABLE 12: CARBARYL FOUND IN OVS TUBES 40
TABLE 13: SUMMARY OF CARBARYL RESIDUES FOUND 41

List Of Figures

FIGURE 1: DOG DUST APPLICATORS 42
FIGURE 2: PREPARATION FOR DUSTING 43
FIGURE 3: DOG DUSTING IN PROGRESS 44
FIGURE 4: SAMPLE COLLECTION 45
FIGURE 5: LOWER ARM RESIDUE LEVELS AND DISTRIBUTION 46
FIGURE 6: UPPER ARM RESIDUE LEVELS AND DISTRIBUTION 47
FIGURE 7: FRONT TORSO RESIDUE LEVELS AND DISTRIBUTION 48
FIGURE 8: REAR TORSO RESIDUE LEVELS AND DISTRIBUTION 49
FIGURE 9: UPPER LEG RESIDUE LEVELS AND DISTRIBUTION 50
FIGURE 10: LOWER LEG RESIDUE LEVELS AND DISTRIBUTION 51
FIGURE 11: INNER AND OUTER DOSIMETR RESIDUE LEVELS AND DISTRIBUTION AVERAGES 52
FIGURE 12: TOTAL DOSIMETRY RESIDUE LEVELS AND DISTRIBUTION 53
FIGURE 13: HANDWASH AND FACE/NECK WIPE RESIDUE LEVELS AND DISTRIBUTION 54

List Of Appendices

APPENDIX A: PROTOCOL, AMENDMENTS, AND DEVIATIONS 55
APPENDIX B: TEST SUBSTANCE INFORMATION 85
APPENDIX C: MORSE LABORATORIES ANALYTICAL REPORT 92
APPENDIX D: INFORMED CONSENT FORM 209

A. ABSTRACT

This study was conducted with non-professional volunteers, to measure homeowner dermal and respiratory exposure to carbaryl while dusting 3 dogs for fleas using Sevin® 5 Dust. For one replicate, a volunteer dusted three (3) dogs from a single 1 lb can of Ortho® brand Sevin® 5 Dust while wearing rubber gloves. The same individual, not wearing gloves, was monitored a second time with fresh sampling media. A total of 20 replicates were performed while wearing gloves and an additional 20 replicates were performed without gloves.

Each of the 40 replicates was suited with long leg and long sleeve 100% cotton underwear (inner dosimeter) as a model for the skin, worn beneath long leg and long sleeve 100% cotton work clothes (outer dosimeter). The inner and outer whole body dosimetry samples were cut into lower and upper arm, lower and upper leg, as well as front and rear torso body parts for dermal exposure measurements. At the end of each exposure period, face/neck wipe and hand wash samples were taken. Inhalation exposure was monitored using a personal sampling pump (2.0 Lpm) drawing air through a sorbent tube containing a glass fiber filter followed by two sections of XAD-2 resin.

The average amount of formulation used to dust three dogs was 65.3 g representing 3.51 g of carbaryl active ingredient. Only seven minutes were required on average to dust three dogs. Three dogs represent the upper number of dogs that would be dusted by the non-professional.

Carbaryl found on the hands was 6999 ± 4802 µg when not wearing gloves and 124 ± 212 µg while wearing gloves (98.2% reduction in hand exposure). On average, 61.5 ± 82.3 µg carbaryl was found on the face/neck, 765 ± 2359 µg on the inner whole body dosimeter and 16,213 ± 30,282 µg on the outer whole body dosimeter. The lower arm section of the inner and outer whole body dosimeter contained the highest residue levels of 463 ± 1995 µg and 6727 ± 13077 µg, respectively. Total exposure (dermal plus respiratory) was reduced 86.1% when wearing gloves. Respiratory exposure accounted for only 14.4% of total exposure when applicators wore gloves, and 2.0% of total exposure when working without gloves.

B. INTRODUCTION

Sevin® 5 Dust is a 5% powder formulation of carbaryl (1-napthyl methylcarbamate). It is registered (EPA Reg. No. 239-1349) for use on dogs and cats for control of fleas and ticks. The results of this study assessed potential carbaryl exposure to pet owners during the application of Sevin® 5 Dust to dogs. These data will assist in defining potential risk to pet owners coming into contact with Sevin® 5 Dust when used according to the product label.

Potential carbaryl inhalation and dermal exposure to pet owners applying flea and tick powder was determined using conventional industrial hygiene sampling equipment and whole-body dosimetry. Each of forty replicate exposure periods consisted of opening the Sevin® 5 Dust shaker can, shaking the dust onto three dogs, and working the powder into the coat. Each volunteer dusted three dogs from one product can. Twenty volunteers wore household type latex gloves during the handling of Sevin® 5 Dust, and twenty volunteers worked without gloves. All aspects of the study were conducted in accordance with EPA regulations.

C. EXPERIMENTAL DESIGN

01. STUDY LOCATION

The study location for this study was:

Fairfax County Animal Shelter
4500 West Ox Road
Fairfax, VA 22030 (703) 830-3680

The entire study was conducted in Fairfax, Virginia, at the county animal shelter. It is not anticipated that geographic location significantly influences exposure to pet owners applying flea and tick powder. No attempt was made to evaluate the influence of this variable on exposure.

Applications were conducted in a heated external garage with a cement floor attached to the shelter facility. Temperature and relative humidity were recorded for each replicate exposure period. Individual rooms within the shelter were used to house sampling stations, volunteer dressing rooms and an area for field fortifications. The use of individual areas for exposure and sampling minimized potential cross contamination.

The cement floor of the application area was rinsed between replicates and dried with towels to minimize the potential for cross contamination between replicate exposure periods.

02. STUDY PARTICIPANTS

The study participants in this study were nonprofessional volunteers. Each volunteer participating in the study was given an overview of the study and general toxicological properties of Sevin® 5 Dust, prior to their signing a copy of the Informed Consent. The signed consent forms were also signed by the study director and retained in the field notebook. (See Appendix D).

All study participants had the opportunity to ask questions prior to and during their participation in the study. A urine pregnancy test was conducted by all female participants, and no pregnant volunteers participated in the study. The test subjects bathed or showered prior to the day of monitoring.

Each volunteer was identified by a unique letter code associated with individual replicates in order to maintain confidentiality in the final report (Figure 1). Information regarding experience in applying pesticide dust to dogs was obtained from the volunteers along with their weight and height. The use of multiple workers helps reduce the influence of individual work practices and provides a more representative estimate of the range and mean exposures for the sample population.

03. STANDARD DUSTING ACTIVITIES

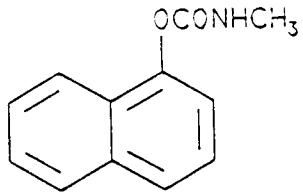
Each volunteer replicate performed the following tasks in order, and was observed and monitored by an Agrisearch employee:

1. Open a can of Sevin® 5 Dust by pushing the seal tab into the can top.
2. Adjust the can top to use the multiple shaker holes for product delivery.
3. Obtain a dog from the handler.
4. Dust the entire coat with Sevin® 5, avoiding the eyes, nose and genitalia.
5. Using your hands, work the Sevin® 5 Dust into the coat including the legs and feet.
6. Return the dog to the handler and obtain additional dogs to repeat steps 3, 4, and 5 to dust a total of three dogs.
7. Return the third dog to the handler.
8. Hand the used can of Sevin® 5 Dust to the Agrisearch researcher and return to the staging area for sample removal.

During the informed consent orientation, each applicator was instructed to follow the above activities for each replicate exposure period. The standardization of dusting activities was used to assure the measurement of all potential points of exposure.

04. TEST SUBSTANCE

Trade Name:	Sevin® Carbaryl Insecticide 5 Dust
Common Name:	Carbaryl
Chemical Name:	1-napthyl methylcarbamate
Formulation:	Powder
CAS Number:	63-25-2
Toxicity Category:	III
Manufacturer:	SOLARIS Group of Monsanto Company
Purity:	5.38%
Structure:	



The test substance was provided by the sponsor in 1 lb shaker top dispenser canisters. The date of test substance receipt and method of shipment, lot number as well as the amount and condition upon receipt were documented. The test substance was stored in an appropriate manner and storage conditions and daily temperatures were recorded and documented in the study file (Appendix B).

The methods of synthesis, fabrication and/or derivatization of the test and reference substances are documented and retained by the Sponsor. Characterization of the test and reference substances, as required by the US EPA FIFRA GLP Standard 40 CFR 160.105, was conducted by Rhone-Poulenc Ag Company using the method outlined in Protocol Amendment No. 3, and these records are retained by the Sponsor. Archived samples of the test and reference substance are being retained by the Sponsor. These records and archived samples are being maintained by the Sponsor at Rhone-Poulenc Ag Company, Research Triangle Park, NC.

05. TEST SYSTEM

The test systems for this study were the volunteers who applied Sevin® 5 Dust to three dogs. The dogs used in the study were randomly picked from those available at the shelter and ranged in size from 4 lbs to 126 lbs, and were of many breeds. Twenty applicators wore chemical resistant gloves and twenty applicators did not wear gloves during application. Each applicator was identified with a unique number that stayed with him through the exposure period and with his exposure samples (Table 1, Figure 1).

06. JUSTIFICATION OF TEST SYSTEM

This study was designed to satisfy EPA exposure monitoring requirements for Applicators applying Sevin® 5 Dust to pets and was conducted according to the EPA approved protocol. Passive dermal dosimetry, and inhalation monitoring using filters and sorbent tubes have been used successfully to monitor worker exposure to pesticides and are discussed in detail in Subdivision U of US EPA's Pesticide Assessment Guidelines on Applicator Exposure Monitoring (Series 231 and 232).

07. PREPARATION FOR MONITORING

All participants were asked to bathe prior to arriving on site for monitoring. New, long-sleeved work shirts and new long pants were worn over a whole-body dosimeter. The whole body dosimeter was long underwear worn by each participant over their personal underwear.

Each volunteer wore lab booties in the application area. The booties were placed over the shoes prior to entry into the application area and removed by Agrisearch personnel after application (Figure 2). Each dog was weighed by Agrisearch personnel.

Inhalation monitoring was performed using a Gilian Model HFS-113A (Gilian Instruments, West Caldwell, NJ) personal air sampling pump calibrated at 2 liters per minute (Lpm). The air sampling pumps were calibrated at the beginning and checked at the end of each replicate exposure period using a rotameter. Pumps were connected to a new OVS tube during the calibration process, and when air flow was checked at the end of the replicate. The pump was clipped onto the applicator's belt and attached to an OVS tube via Tygon® tubing. The OVS tube was attached to one side of the shirt collar for air sampling at the breathing zone.

08. INHALATION EXPOSURE MONITORING

Airborne concentrations of carbaryl in the applicator breathing zone were monitored utilizing an OVS tube containing a glass fiber filter followed by XAD-2 resin (SKC Catalog No. 226-30-16). The OVS tube was connected by Tygon tubing to a uniquely numbered portable sampling pump operated at a flowrate of 2.0 liters per minute (Lpm). The sample collector consisted of an OVS tube (SKC, 863 Valley View Road, Eighty Four, PA 15330) containing a 13 mm glass fiber filter followed in series by two sections (140 mg/270 mg) of XAD-2 separated by glass wool.

The air-sampling pump operated for the entire monitoring period unless replaced due to failure. Replacement personal sampling pumps were maintained in the application area for use as necessary during the exposure period. The pump on/off times and starting and ending flow rates were recorded in the field notebook along with any pertinent comments. At the end of each replicate, the OVS tube was disconnected from the tubing, capped at both ends, appropriately labeled, placed into reclosable bags, and then into freezer storage. The Tygon® tubing and pumps were removed at this time.

09. DERMAL EXPOSURE MONITORING

a. **Handwashes** - Twenty volunteers wore gloves while handling Sevin® 5 Dust, and twenty did not wear gloves. Each volunteer first conducted a replicate wearing gloves. After sampling, clean-up, and redressing, the same volunteer dusted three dogs without the use of gloves as an additional replicate exposure. The gloves were removed prior to going to the sample staging area. Exposure to the hands was determined by detergent handwashes collected at the staging area (Figure 4).

One 400 mL aliquot of an anionic aqueous solution (0.01% v/v) of Aerosol® OT-75 - sodium dioctyl sulfosuccinate (OTS) in distilled water was used for the handwashes. The applicator placed both hands into a stainless steel bowl and scrubbed them together for approximately sixty seconds while an Agrisearch investigator slowly poured the 400 mL aliquot of OTS over them. At the end of sixty seconds, the wash solution was carefully poured into a labeled glass jar which was capped with a Teflon® lined lid, heat sealed in a Kapak® bag, and placed on dry ice and stored in freezer conditions.

b. **Face and Neck Wipes** - Face and neck exposure was monitored using two OTS wetted cloth wipes (25 mL 0.01% Aerosol® solution per wipe). Each wipe consisted of a 100% cotton (~38 x 38 cm) men's handkerchief. Each applicator (wearing surgical latex gloves) thoroughly wiped his face and neck area, placed the wipe into a labeled jar, and then repeated the procedure using a second clean wipe. Both wipes were combined. The labeled sample jar was capped with a Teflon® lined lid, heat sealed in a Kapak® bag, placed on dry ice and stored in freezer conditions. Face and neck wipe sampling was performed after the handwash sample had been taken.

c. **Whole Body Dosimeters** - Dermal exposure was monitored using inner and outer whole-body dosimeters. The inner dosimeter consisted of a 100% cotton, long-sleeved underwear top and a 100% cotton, long-leg underwear bottom. They were worn directly under the outer dosimeter and served as a model for exposure to the worker's skin. The outer dosimeter consisted of a white long-sleeved shirt and white long pants, both constructed of 100% cotton twill. They were worn directly over the inner dosimeters and represent exposure to the applicator's normal clothing.

Each volunteer wore his own shoes and socks. Tyvek lab booties covering only the shoes were worn during the dust application. The booties were placed on the shoes as the volunteer entered the application area and were removed as they exited by an Agrisearch investigator.

At the end of each monitoring replicate, the inner and outer dosimeters were carefully removed by Agrisearch personnel wearing disposable latex gloves (Figure 4). The dosimeters were cut into the following six sections using scissors which were solvent rinsed between replicates:

1. Left/Right Upper arms combined (elbow to shoulder seam),
2. Left/Right Lower arms combined (elbow to cuff),
3. Left/Right Upper legs combined (waist to knee),
4. Left/Right Lower legs combined (knees to cuff),
5. Torso - front,
6. Torso - back.

Sectioning the dosimeters in this manner provided a basis for determining the distribution of exposures over various body regions as well as the percent penetration through a single layer of normal work clothing for each body region. Separate solvent cleaned scissors were used for inner and outer dosimeters.

Agrisearch personnel removed the applicator's outer dosimeter shirt. The removal of the outer dosimeter pants and inner dosimeters took place in a designated clean dressing room that was enclosed for privacy. Care was taken to ensure that the outer dosimeters did not contaminate the inner dosimeters during removal. The applicators were given disposable latex gloves to wear when removing their shoes and socks. These gloves were discarded, and replaced with a new pair for removal of the outer dosimeter pants. The pants were taken for sampling by an Agrisearch employee. The latex gloves were then discarded and the worker put on a new pair prior to removal of the inner dosimeters. NOTE: Before placing the inner dosimeter upper leg samples into sample bags, the waist bands were cut off and discarded, due to potential analytical interferences.

10. FIELD FORTIFICATION

Field-fortified samples were prepared once on each day of monitoring using carbaryl analytical standard in acetonitrile. Sample fortification was conducted in the vicinity of the test site but in a separate room away from possible contamination. The air-sampling media and representative inner and outer dosimeter sections were fortified with carbaryl and exposed to environmental conditions (weathered) for 20 minutes in conditions similar to the applicators'. Twenty minutes was the time expected for one applicator exposure period. Handwash, as well as face and neck wipe samples were stored frozen immediately after fortification.

Forty replicates of each matrix except OVS tubes were prepared and fortified at the following carbaryl levels: 5 µg (5 x LOQ), 50 µg and 500 µg. Either 5 or 10 replicates were performed on each study date (Table 5). Forty replicates of OVS tubes were fortified at 0.5 µg (5 x LOQ), 5 µg, and 50 µg carbaryl (5 or 10 reps per study date [Table 5]).

Seven amber bottles each containing 20 mL of each fortification solution were supplied by Morse Laboratories for use in the field. The fortification solutions were shipped to Agrisearch on dry ice prior to initiation of the field study. The solutions were maintained frozen throughout the field study until needed.

The samples were organized as follows:

a. Face/Neck Wipe - Two cotton wipes wetted with approximately 50 mL OTS,
b. Handwash - 400 mL OTS in a glass jar,
c. Inner Dosimeter Section - Folded in half on an aluminum foil covered board,
d. Outer Dosimeter Section - Folded in half on an aluminum foil covered board,
e. OVS Tube - Each prelabeled tube connected to a pre-calibrated pump source, turned off with the OVS tubes pointed up.

Each matrix sample, except OVS, was fortified with 1000 µL from the appropriate concentration of carbaryl in acetonitrile. Prior to fortifications, the selected bottle of carbaryl solution was allowed to warm to near ambient temperature and shaken well. The 1000 µL aliquots were made with a 1 mL calibrated automatic/disposable tip pipette. The OVS tubes were fortified with 100 µL of the appropriate concentration of carbaryl in acetonitrile. The selected bottles for OVS tube fortification were handled as above except a fresh unused bottle was always chosen rather than using a bottle previously opened and possibly contaminated.

Therefore, an unused bottle of each carbaryl concentration remained for shipment to Morse for verification as necessary. All unused and used bottles of solution were placed in Kapak® bags, heat sealed, and placed back in the freezer.

Immediately after fortification, each set of matrix samples was handled as follows:

a. Glass jars containing face and neck wipe samples were capped (Teflon® liner), placed in Kapak® bags, heat sealed, placed on dry ice, and placed into freezer storage.
b. Handwash solutions in glass jars were capped (Teflon® liner), shaken, placed in Kapak® bags, heat sealed, placed on dry ice, and into freezer storage.
c. Inner dosimeter section samples were folded in half a second time and covered with an outer dosimeter shirt for weathering under one layer of clothing.
d. Outer dosimeter section samples were folded in half and weathered in the open.
e. OVS tubes were held upright for five minutes to allow for solvent evaporation. The tubes were then pointed down, and air was drawn through each tube at 2.0 Lpm using a calibrated pump system for the weathering period.

At the end of the weathering period, each inner and outer dosimeter sample was placed in a Kapak® bag, heat sealed, and placed on dry ice. Each labeled OVS tube was capped on each end, placed into a resealable bag, and placed on dry ice. At the end of the weathering period, the air flow rate of the air-sampling pump was checked. After a short period on dry ice, the samples were placed in frozen storage.

For each fortified sample, the fortification solution concentration, quantity aliquoted, rate, and weathering exposure times were recorded in the data for each fortification event. Aluminum foil was used to line the area where samples were fortified. Care was taken to avoid cross contamination of samples. Fortified samples were placed into coolers separate from those containing field (worker) samples for storage on dry ice.

11. CONTROL SAMPLES

Control samples were prepared once on each day of monitoring using samples of inner and outer dosimeter sections, wetted cotton wipes, air-sampling media, and handwash solution (400 mL). All control samples were left exposed to the environment for a period of time consistent with the collection of field fortification samples. Dosimeter and OVS tubes remained exposed to the environment for

the length of a replicate, handwash solutions and face wipes were capped and stored frozen immediately. Control samples were placed in an area away from possible contamination and stored in a separate cooler from the field samples.

12. SAMPLE IDENTIFICATION

Samples were identified with a label containing the following minimum information:

Rhone-Poulenc Study Number	Sample Code
Agrisearch Study Number	Sample Media
Replicate Number	Sample Type

13. SAMPLE STORAGE

All samples were stored in the field either in ice chests containing dry ice or in freezers set to maintain temperatures at or below freezing.

14. SAMPLE SHIPMENT

All samples were packed using newsprint, cardboard or a similar shock insulator and shipped frozen to the analytical laboratory. All packing and shipping procedures were documented in the field notebook and a completed chain of custody form accompanied the samples during shipment. The chain of custody included an inventory list identifying each sample in the shipment and was signed and dated by the person shipping the samples. All samples were shipped to:

Attn: Susan Clark
Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825
(916) 481-3141

15. REMAINING TEST SUBSTANCE/CONTAINERS

All test substance containers, whether sealed or open and partially used were retained until the final report was signed by the Study Director. Upon signing of the final report, test substance containers will be disposed of in an appropriate manner and documented in the field notebook.

16. PRELIMINARY ANALYTICAL TRIALS

Preliminary method development and method trials for each sample matrix were conducted by Morse Laboratories.

17. ANALYTICAL PROGRAM

The method validation of each analytical method used in this study was conducted at Morse Laboratories. Method SOPs detailing analytical methods used in this study are presented in the analytical report (Appendix C).

The validated analytical methods used in this project were:

a. "Determination of Carbaryl in Dermal Dosimeters" Morse Laboratories, Inc.: SOP# Meth-103, Dated January, 1997.

b. "Determination of Carbaryl in Handwash Solutions" Morse Laboratories, Inc. SOP#Meth-106; Dated January 1997.

c. "Determination of Carbaryl in OVS Air Sampling Tubes" Morse Laboratories, Inc.: SOP#Meth-104; Dated February, 1997.

d. "Determination of Carbaryl in Cotton Facial/Neck Wipes" Morse Laboratories, Inc.: SOP#Meth-105, Dated January, 1997.

The limit of quantitation (LOQ) for each whole sample matrix using the above cited methods was:

MATRIX	LOQ
Inner Dosimeter (Section)	1.0 µg
Outer Dosimeter (Section)	1.0 µg
Handwash Solution	1.0 µg
Face/Neck Wipe	1.0 µg
OVS Tube (Whole)	0.01µg

Sample analyses were scheduled at Morse by instruction from the Study Director. Where possible, all samples of one matrix were analyzed before moving to the next sample matrix. Details of analysis at Morse are presented in the analytical report (Appendix C).

Each set of samples analyzed on a particular day contained a control sample, fresh laboratory fortified recovery samples, and often a fresh fortified solvent blank as the laboratory quality control program. Fresh laboratory recovery samples were conducted at levels near the expected residue levels in field samples. On days when field sample residue levels were higher than the fresh laboratory fortifications, a fresh laboratory fortification was run as soon as possible at a level higher than the measured field samples. Therefore, all field sample residue levels were bracketed with fresh laboratory recoveries at both lower and higher levels. On occasions when residue levels were verified by reanalysis of the retain extract, the original residue level was used for reporting unless otherwise specified in the results.

18. STATISTICAL METHODS

No statistical analysis is required for the conduct of the field portion of this study. Statistical analysis for the analytical and final report include geometric and arithmetic means, and standard deviations.

19. CALCULATIONS

All analytical results were reported from Morse Laboratories as µg per sample for field samples or percent recovery for field fortifications and fresh laboratory recovery samples. Appropriate calculations can be found in the Morse Laboratories Analytical Report in Appendix C.

The following calculations are used throughout this report in text and tables:

Arithmetic mean

$$(Value\ 1 + Value\ 2 + \cdots Value\ n)/n$$

Geometric Mean

$$\sqrt[n]{(Value\ 1)(Value\ 2)\ldots(Value\ n)}$$

Standard Deviation

$$\sqrt{\frac{n\sum x^2-(\sum x)^2}{n(n-1)}}$$

Geometric Standard Deviation

$$e\{STDEV[\ln(x_1), \ln(x_2),\ldots\ln(x_n)]\}$$

Total Respiratory Exposure

$$\frac{\mu g\ found}{2.0\ Lpm} \times 29\ Lpm\ (a) = \mu g/replicate$$

(a) Breathing rate for the average male at light work is 29 Lpm (Reference 2).

D. RESULTS AND DISCUSSION

There were 40 replicate exposure periods in this study. Each volunteer wore inner and outer dosimeters, and had a personal sampling pump connected to an OVS tube (Figure 1). A total of 20 volunteers participated in the study, where each of the 20 volunteers first dusted 3 dogs with Sevin® 5 Dust while wearing rubber gloves, then repeated the dusting on 3 new dogs while working without glove protection. The age, weight, and height of each volunteer is presented in Table I.

The average time spent applying Sevin® 5 Dust to 3 dogs was 7 minutes (Table 2). The longest time spent during application was 13 minutes by applicator 7. The average Sevin® 5 Dust applied was 65.3 g (3.51 g carbaryl a.i.), where the minimum and maximum of Sevin® 5 Dust applied was 12.1 g and 187 g, respectively. The average dog weight in this study was 46 lb where the smallest dog was 4 pounds and the largest dog was 126 pounds (Tables 2 and 3, Figure 2). The amount of carbaryl applied per dog and applied per pound of dog is presented in Table 3. Table 4 presents observations made during the dog dusting procedures for each exposure period. The majority of people tested held each dog against their body while applying the dust, and in some cases caused a cloud of dust to rise into the air as they dusted the dogs.

Field fortification results are given in Table 5 for each sample matrix according to fortification level. All results averaged >90% recovery except the face and neck wipe samples, which averaged 87.6% (Table 5). Generally, when field fortification results are >90%, no adjustment of test samples is required. Therefore, only the results reported for face and neck wipes are adjusted for field fortification results.

Carbaryl found on inner dosimeter samples is reported in Table 6. The residue distribution graphs in Figures 5 and 6 show one or two applicators had much higher residue levels than other replicates. Therefore the geometric mean of residues for all replicates are reported along with arithmetic means (Tables 6 through 12, Figure 12). The lower arm had the highest carbaryl residue level (463 ± 1995 µg, the geometric mean ± SD) and the upper arm had the lowest (21.8 ± 35.4 µg, the geometric mean ± SD, Figure 5 and 6). Since the Sevin® 5 Dust product is worked into the dogs' coat with the hands, the lower arm likely would be in contact with the dog and thus the Sevin® 5 Dust during application. Also, the outer dosimeter sleeve riding up over the inner dosimeter, leaving the cuff of the inner dosimeter slightly exposed, could have contributed to this finding. Body parts away from dog contact contained the lowest carbaryl residues (Table 6, Figures 11 through 13).

Carbaryl found on outer dosimeter samples (Table 7) show a similar trend to those found on the inner dosimeter (Table 6). However, much higher residues were measured on the outer dosimeter samples since residues found on the inner dosimeter had to pass through the outer dosimeter. Assuming the residues found on the inner dosimeter (Table 6) deposited on the outer dosimeter and then passed through it, one can calculate residue penetration through the garment. Table 8 shows the percent of carbaryl residues that penetrated through the outer dosimeter for each body section, and for the total dosimeter. The average penetration for the total dosimeter was 4.46% ± 3.58% (Table 8). However, 6.26% ± 7.04% was the penetration factor for the lower arm section, and 6.45% ± 4.25% and 6.21% ± 3.57% were the penetration factors for the front and rear torso sections respectively. Table 9 shows the carbaryl residue levels on the total inner and outer dosimeter when adjusted for carbaryl applied and again when adjusted for applicator body weight. In general, applicators dusting 3 dogs were exposed to 1511 ± 2981 µg carbaryl per kg body weight to the arms, legs, and torso (Table 9).

Carbaryl found on the hands has been grouped for applicators wearing gloves and for applicators not wearing gloves (Table 10, Figure 13). When wearing gloves, hand exposure from dusting 3 dogs averaged 124 ± 212 µg for 20 replicates. Hand exposure rose to an average 6999 ± 4802 µg for 20 replicates when applicators worked without gloves. This calculates to a 98.2% reduction in exposure to the hands only when wearing rubber gloves.

Carbaryl exposure to the face and neck was generally lower than other dermal exposure, at 61.5 ± 82.3 µg (Table 11, Figure 13). The calculated residue levels on the face and neck in µg per lb ai and the µg per kg body weight per lb carbaryl applied were 9370 ± 11953 µg and 121 ± 148 µg, respectively (Table 11).

Carbaryl found in OVS tubes is presented in Table 12. The respiratory exposure was 160 ± 202 µg when adjusted for the personal sampling pump rate of 2.0 Lpm and a breathing rate of 29 Lpm for an average man at light work.

The total dermal carbaryl exposure for people dusting 3 dogs with Sevin® 5 Dust was 951 µg while wearing gloves and 7826 µg when working without gloves (using only the inner dosimeter residue values, Table 13). This figure rose to 1111 µg and 7986 µg total exposure respectively (including respiratory) for people wearing gloves and for those working without gloves.

In conclusion, carbaryl can be measured on all inner and outer dosimeter samples, the face/neck, and hands when people dust 3 dogs with Sevin® 5 Dust. Respiratory exposure is also measurable during this application. There is an 86.1% reduction in total exposure (dermal plus respiratory) when wearing rubber gloves while dusting dogs.

E. REFERENCES

1. US Environmental Protection Agency, August 17, 1989. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Good Laboratory Practice Standards; Final Rule (40 CFR 160) Federal Register, Vol. 54, No. 158: 34052:34074.

2. "Pesticide Assessment Guidelines, Subdivision U, Applicator Exposure Monitoring," US Environmental Protection Agency, Exposure Assessment Branch, Hazard Evaluation Division, Office of Pesticide Programs, Washington, DC 20460; October 1986.

TABLE 1. SUMMARY OF VOLUNTEER EXPERIENCE AND PERSONAL INFORMATION

Worker ID Code	Applicator No.	Age (Yrs)	Weight (lb)	Weight (kg)	Height
A	1,3	40	134	60.8	5'9"
B	2,4	36	155	70.3	5'8"
C	5,7	45	214	97.1	5'7"
D	9,10	28	140	63.5	5'5"
E	6,8	31	205	93.0	6'1"
F	11,13	34	217.5	98.6	6'0"
G	12,14	33	196.5	89.1	5'6"
H	15,16	30	161.5	73.2	5'7"
I	17,19	28	244	111	5'11"
J	18,20	26	162	73.5	5'3"
K	21,23	42	213.5	96.8	5'6"
L	22,24	31	130.5	59.2	5'4"
M	25,26	31	153	69.4	5'11"
N	27,29	19	132[a]	59.9	5'8"
O	28,30	20	153[a]	69.4	5'10"
P	31,33	21	150[a]	68.0	5'4"
Q	32,34	20	123[a]	55.8	5'3"
R	35,36	44	166	75.3	5'7"
S	37,39	32	196	88.9	5'11"
T	38,40	36	230	104.3	5'11"
Arithmetic Mean		31	174	78.8	5'8"
SD		8	37.2	16.9	3"

[a] Weights approximate due to scale malfunction.

TABLE 2: APPLICATION TIMES, CHEMICAL USAGE AND DOG WEIGHTS

Study Date (1997)	Applicator No.	Total Sampling Pump Time (min)	Application Time (min)	Sevin 5® Dust Applied (g)	Carbaryl[a] Applied (lb)	Dog Weights (lbs) 1	2	3	Avg
2/17	1	16	7	45.0	0.005	45	25	63	44
	2	18	7	129	0.015	56	37	75	56
	3	14	8	28.9	0.003	12	68	18	33
	4	10	7	138	0.016	23	50	18	30
	5	10	5	45.0	0.005	4	35	44	28
	6	14	12	69.1	0.008	68	44	45	52
	7	18	13	66.8	0.008	77	65	47	63
	8	11	7	35.8	0.004	20	20	33	24
	9	10	5	83.4	0.010	52	75	24	50
	10	6	5	69.8	0.008	45	37	41	41
2/24	11	11	7	18.6	0.002	48	30	28	35
	12	9	6	62.0	0.007	47	38	62	49
	13	10	7	21.0	0.002	57	55	18	43
	14	8	6	25.4	0.003	16	52	74	47
	15	13	10	69.8	0.008	28	18	86	44
	16	12	8	57.2	0.007	66	41	72	60
3/3	17	19	7	75.7	0.009	52	61	31	48
	18	14	9	91.4	0.011	60	39	63	54
	19	12	8	57.7	0.007	58	57	77	64
	20	10	10	100	0.012	47	17	19	28
	21	8	7	71.2	0.008	33	92	97	74
	22	16	6	140	0.017	53	41	45	46
	23	7	5	39.7	0.005	106	23	22	50
	24	6	5	187	0.022	41	60	67	56
	25	12	6	35.4	0.004	11	30	19	20
	26	8	7	78.8	0.009	37	87	72	65
3/10	27	8	6	12.7	0.002	23	23	41	29
	28	10	8	68.5	0.008	23	21	73	39
	29	10	5	12.1	0.001	22	40	19	27
	30	15	8	72.0	0.009	21	21	38	27
	31	11	6	46.2	0.005	15	25	29	23
	32	10	7	41.8	0.005	18	17	94	43
	33	8	7	122	0.015	113	126	60	100
	34	12	8	58.2	0.007	103	83	17	68
	35	9	6	58.6	0.007	120	50	7	59
	36	6	5	53.8	0.006	40	29	45	38
3/17	37	7	6	49.2	0.006	26	19	69	38
	38	7	6	92.5	0.011	27	46	100	58
	39	10	7	50.3	0.006	22	29	110	54
	40	11	5	33.8	0.004	47	46	42	45
	Arithmetic Mean	11	7	65.3	0.008	45	44	50	46
	SD	3	2	37.5	0.004	28	24	27	16

[a] Calculated using a purity of 5.38%, per GLP test substance analysis.

TABLE 3: CARBARYL APPLIED PER DOG

Applicator No.	Carbaryl Applied[a] (lb)	Avg Dog Wt[a] (lb)	Carbaryl App per Dog (g)	Carbaryl App per lb of 3 Dogs (g/lb)
1	0.005	44	0.0018	0.00004
2	0.015	56	0.0051	0.00009
3	0.003	33	0.0011	0.00003
4	0.016	30	0.0054	0.00018
5	0.005	28	0.0018	0.00006
6	0.008	52	0.0027	0.00005
7	0.008	63	0.0026	0.00004
8	0.004	24	0.0014	0.00006
9	0.010	50	0.0033	0.00007
10	0.008	41	0.0028	0.00007
11	0.002	35	0.0007	0.00002
12	0.007	49	0.0025	0.00005
13	0.002	43	0.0008	0.00002
14	0.003	47	0.0010	0.00002
15	0.008	44	0.0028	0.00006
16	0.007	60	0.0023	0.00004
17	0.009	48	0.0030	0.00006
18	0.011	54	0.0036	0.00007
19	0.007	64	0.0023	0.00004
20	0.012	28	0.0040	0.00014
21	0.008	74	0.0028	0.00004
22	0.017	46	0.0055	0.00012
23	0.005	50	0.0016	0.00003
24	0.022	56	0.0074	0.00013
25	0.004	20	0.0014	0.00007
26	0.009	65	0.0031	0.00005
27	0.002	29	0.0005	0.00002
28	0.008	39	0.0027	0.00007
29	0.001	27	0.0005	0.00002
30	0.009	27	0.0028	0.00011
31	0.005	23	0.0018	0.00008
32	0.005	43	0.0017	0.00004
33	0.015	100	0.0048	0.00005
34	0.007	68	0.0023	0.00003
35	0.007	59	0.0023	0.00004
36	0.006	38	0.0021	0.00006
37	0.006	38	0.0019	0.00005
38	0.011	58	0.0037	0.00006
39	0.006	54	0.0020	0.00004
40	0.004	45	0.0013	0.00003
Min	0.001	20	0.0005	0.00002
Max	0.022	100	0.0074	0.00018
Arithmetic Mean	0.008	46	0.0026	0.00006
Geometric Mean	0.007	44	0.0022	0.00005
SD	0.004	16	0.0015	0.00004

[a] Taken from Table 2.

TABLE 4: OBSERVATIONS MADE DURING EACH REPLICATE

Applicator No.	Observations
1	knees on floor while dusting dog dog hair fell out of animal rested shins on floor applicator brushed nose with arm
2	straddled the dog braced dog against their leg held dog backside while applying
3	knees on floor while dusting dog applicator rested shins on floor dust plume when applicator patted dog braced dog against leg
4	rested on one knee while dusting dog applicator arm under dog to hold while dusting dog brushed against applicator chest held dog against arms and chest
5	applicator kept body away from dogs while applying dust
6	applicator knee touched dog dog brushed up against applicator legs and groin applicator knee touched floor
7	forearm touched dog held dog with one hand while dusting dog dog #3 attempted to bite applicator; removed this dog and brought in different dog held dog against knee and forearm
8	dog touched applicator knee dog held by applicator forearm while dusting dog touched applicator leg held dog between legs while dusting
9	applicator knee touched floor dog brushed against applicator knee and shin dog held against knee and forearm of applicator
10	positioned with one knee on floor forearm touched dog shirt touched dog dog held against legs and thighs of applicator
11	positioned with one knee on floor forearm touched dog
12	applicator leg touched dog
13	applicator knee on floor forearm touched dog

TABLE 4: OBSERVATIONS MADE DURING EACH REPLICATE
(Continued)

Applicator No.	Observations
14	no contact with dog
15	knee on floor forearm touched dog rubbed nose against right shoulder left arm touched dog small dust plume from dog applicator hunched over dog
16	small dust plume from dog arm touched dog
17	dog hair falling out on floor small dust plume from dog forearm touched dog dog touched applicator shin and knee area
18	both knees touched dog small dust plume from dog forearms touched dog applicator knee on floor dog brushed against applicator chest area small dust plume from dog left knee against dog, right knee on floor during application
19	small dust plume from dog forearm touched dog
20	forearm touched dog knee on floor small dust plume from dog held dog against left side of applicator body both shins and knees on floor both arms touched dog
21	arm touched dog small dust plume from dog chest area brushed against dog
22	left arm touched dog left knee on floor dog touched both legs small dust plume from dog
23	left arm touched dog knees touched dog small dust plume from dog chest area touched dog
24	right leg touched dog small dust plume from dog left knee and arm touched dog

TABLE 4: OBSERVATIONS MADE DURING EACH REPLICATE
(Continued)

Applicator No.	Observations
25	left arm touched dog small dust plume from dog
26	right arm touched dog small dust plume from dog
27	both knees on floor small dust plume from dog
28	small dust plume from dog forearm touched dog
29	knees on floor forearm touched dog
30	knee on floor small dust plume from dog forearm touched dog applicator leg on floor arms touched dog scratched nose with arm
31	arm touched dog
32	arm touched dog forearm touched dog
33	forearms touched dog small dust plume form dog dog hair clumping and falling out; dog hairs remained on applicator forearms arm touched dog
34	forearm touched dog knee touched dog small dust plume from dog arm touched dog dog tail touched applicator arms
35	small dust plume from dog forearm touched dog left leg touched dog left knee touched dog
36	forearm touched dog arm touched dog knee touched dog small dust plume from dog
37	knee on floor forearm touched dog small dust plume from dog

TABLE 4: OBSERVATIONS MADE DURING EACH REPLICATE (Continued)

Applicator No.	Observations
38	knee on floor forearm touched dog arm touched dog small dust plume from dog
39	knee on floor left hand holding dog and right knee on floor arm touched dog
40	both legs touched dog arms touched dog left knee on floor chest area touched dog

TABLE 5: FIELD FORTIFICATION RECOVERY RESULTS (%)

Study Date[a] (1997)	Inner Dosimeter 5µg	Inner Dosimeter 50µg	Inner Dosimeter 500µg	Outer Dosimeter 5µg	Outer Dosimeter 50µg	Outer Dosimeter 500µg
2/17	99.6	94.0	99.2	93.0	89.0	104
	102	97.8	96.6	103	83.8	106
	102	96.4	102	105	90.8	104
	111	94.0	103	97.6	88.2	98.8
	102	96.0	108	102	87.6	101
2/17		94.4			82.6	
		94.2			85.8	
		91.6			89.4	
		95.2			83.4	
		99.2			80.6	
2/24	101	103				
	99.2	103				
	140	102				
	104	105				
	107	108				
2/24	97.8	98.8	101	97.0		99.8
	97.2	100	105	102		97.4
	94.8	102	92.2	94.8		104
	98.8	101	93.8	100		96.8
	96.8	103	99.2	100		106
3/3	104					
	101					
	101					
	106					
	103					
3/17	117		96.4	108		113
	109		98.8	103		102
	109		100	97.6		103
	131		101	101		99.6
	113		100	94.2		110
Arithmetic Mean	106	99.0	99.8	100	86.1	103
SD	10.5	4.4	4.1	4.2	3.4	4.5
Overall Mean[b]		102			96.4	

[a] Selected samples from each fortification event were analyzed.
[b] Overall mean is the arithmetic mean of all field fortification samples, all levels per matrix.

TABLE 5: FIELD FORTIFICATION RECOVERY RESULTS (%)
(Continued)

Study Date[a]	Face/Neck Wipe			Handwash		OVS Tubes	
(1997)	5µg	50µg	500µg	5µg	500µg	0.05µg	5µg
2/17	86.6	82.4	87.2	99.8	104	[b]	95.6
	84.2	75.8	86.8	99.2	115	98.2	95.2
	139	78.4	87.0	98.4	104	95.8	101
	78.0	76.4	88.0	97.2	101	94.6	85.0
	79.6	78.0	87.2	97.4	103	94.6	89.0
2/17	89.8	94.4	83.6				
	83.0	82.0	83.6				
	80.8	82.8	83.4				
	83.6	83.2	81.4				
	81.4	84.4	83.4				
2/24				99.6	107	95.4	98.2
				96.0	102	95.0	100
				98.6	103	94.4	101
				98.2	99.4	95.2	106
				96.4	104	95.2	105
2/24	89.6	85.0	88.6				
	88.2	84.4	88.0				
	84.6	93.4	87.6				
	88.4	85.6	89.4				
	88.8	87.8	87.4				
3/10	91.0	89.2	88.4				
	90.4	85.4	85.6				
	93.2	87.2	81.8				
	90.0	87.0	84.6				
	95.2	86.0	85.2				
3/17	95.6	82.0	102	100	111	101	103
	91.6	81.0	97.0	98.0	105	102	106
	94.4	83.0	97.4	126	74.6	110	110
	90.8	83.0	104	104	104	110	108
	92.2	88.0	96.6	102	119	105	113
Arithmetic Mean	90.0	84.2	88.6	101	104	99.0	101
SD	11.3	4.6	6.0	7.3	9.6	5.6	7.6
Overall Mean[c]		87.6		102		100	

[a] Selected samples from each fortification event were analyzed.
[b] Sample was damaged in transit and was not analyzed.
[c] Overall mean is the arithmetic mean of all field fortification samples, all levels per matrix.

TABLE 6: CARBARYL RESIDUE LEVELS FOUND ON INNER DOSIMETER SAMPLES, µg

Replicate #	Lower Arm	Upper Arm	Front Torso	Rear Torso	Lower Leg	Upper Leg	Total
1	513	14.5	91.0	55.7	28.9	69.5	773
2	597	24.3	94.9	103	109	34.0	962
3	1850	40.7	217	122	38.9	70.7	2339
4	3730	173	445	230	190	130	4898
5	71.8	29.6	61.7	58.7	17.7	15.9	255
6	578	50.6	43.4	59.0	76.6	36.2	844
7	913	21.8	77.7	60.9	33.7	56.4	1164
8	1030	23.3	43.9	50.9	96.9	40.8	1286
9	229	19.1	116	38.9	59.0	29.0	491
10	2540	37.6	216	108	98.7	64.3	3065
11	30.0	5.15	21.7	22.9	1.38	5.40	86.5
12	176	21.8	53.3	48.5	46.5	18.9	365
13	75.5	16.4	25.0	38.3	10.4	9.06	175
14	201	11.7	97.3	99.3	35.9	31.4	477
15	682	29.3	112	154	14.1	12.7	1004
16	1060	41.9	111	89.5	24.4	21.8	1349
17	200	17.9	70.1	180	9.17	12.3	489
18	430	48.2	182	56.6	20.3	80.3	817
19	159	27.2	79.4	215	15.4	31.7	528
20	11100	145	648	224	758	278	13153
21	196	16.6	44.4	34.8	40.7	29.3	362
22	1790	60.0	248	175	232	52.1	2557
23	889	20.0	79.4	78.1	31.8	53.2	1152
24	5860	97.4	454	435	179	232	7257
25	95.9	11.1	36.0	19.0	6.95	18.0	187
26	2480	50.5	85.6	64.5	34.6	42.3	2758
27	37.5	1.38	10.3	8.55	2.56	2.97	63.3
28	454	20.7	252	125	20.0	20.5	892
29	140	5.03	17.2	16.7	2.89	4.92	187
30	327	14.8	159	129	8.04	18.6	656
31	81.9	7.03	17.2	10.1	6.26	8.03	131
32	73.1	9.67	48.4	24.4	9.19	5.90	171
33	1850	61.7	138	138	77.6	40.3	2306
34	2010	15.5	110	53.0	34.1	20.0	2243
35	174	23.1	90.5	58.2	19.3	22.4	388
36	2010	16.3	102	91.8	20.4	61.7	2302
37	64.5	3.53	16.3	43.3	4.20	9.51	141
38	1620	53.6	138	136	78.1	63.6	2089
39	346	5.12	33.2	39.7	6.69	13.8	445
40	1030	47.3	66.1	121	59.8	127	1451
Min	30.0	1.38	10.3	8.55	1.38	2.97	63.3
Max	11100	173	648	435	758	278	13153
Arithmetic Mean	1192	33.5	124	95.4	64.0	47.4	1556
SD	1995	35.4	132	81.2	124	57.0	2359
Geometric Mean	463	21.8	81.0	68.9	26.8	28.6	765
GSD	4.26	2.68	2.57	2.37	3.77	2.79	3.39

TABLE 7: CARBARYL RESIDUE LEVELS FOUND ON OUTER DOSIMETER SAMPLES, µg

Replicate #	Lower Arm	Upper Arm	Front Torso	Rear Torso	Lower Leg	Upper Leg	Total
1	6260	685	1440	962	24200	8040	41587
2	1580	12400	3280	2390	13600	5510	38760
3	8810	943	1890	1210	13100	7820	33773
4	28300	7920	10200	5440	37000	38700	127560
5	1610	247	263	501	1110	996	4727
6	8100	786	1680	1450	12300	6210	30526
7	4240	571	1170	893	1630	2630	11134
8	4110	534	762	1110	13800	3690	24006
9	13800	1390	2660	1360	17500	25600	62310
10	26200	1240	3990	898	24200	20400	76928
11	2850	189	784	528	117	295	4763
12	5920	564	963	1490	2060	2230	13227
13	2470	259	419	476	541	257	4422
14	3150	477	628	837	2570	2000	9662
15	12000	845	1050	2180	718	1690	18483
16	6450	397	852	1120	380	1190	10389
17	2750	490	331	1960	997	673	7201
18	25900	2820	2610	759	6830	13400	52319
19	3400	571	526	2170	345	1320	8332
20	67900	4010	10300	1980	11500	35500	131190
21	18000	915	6100	2310	1760	1630	30715
22	19400	3050	2080	2280	11600	6080	44490
23	12800	972	2780	1960	581	2790	21883
24	44100	1540	3650	2220	8310	9080	68900
25	3460	206	236	401	137	527	4967
26	7680	617	596	1050	577	1400	11920
27	924	108	104	108	110	289	1643
28	7990	997	1640	1380	1840	4540	18387
29	1710	132	197	160	133	1610	3942
30	6320	763	1330	950	1350	3160	13873
31	1900	266	285	483	233	432	3599
32	4200	378	486	557	469	572	6662
33	22000	2000	2200	3500	1960	2110	33770
34	15600	558	3190	797	1060	1700	22905
35	6020	1030	1750	1570	1080	1810	13260
36	13500	979	1820	864	651	1120	18934
37	3140	431	652	392	311	703	5629
38	12600	1780	1850	3390	1630	4720	25970
39	3830	298	492	231	271	807	5929
40	2720	493	755	723	1990	4490	11171
Min	924	108	104	108	110	257	1643
Max	67900	12400	10300	5440	37000	38700	131190
Arithmetic Mean	11092	1371	1950	1376	5514	5693	26996
SD	13077	2260	2306	1059	8398	9010	30282
Geometric Mean	6727	742	1158	10230	1660	2442	16213
GSD	2.72	2.76	2.87	2.29	5.29	3.65	2.83

TABLE 8: PERCENT PENETRATION OF CARBARYL RESIDUES THROUGH THE OUTER DOSIMETER[a]

Replicate #	Lower Arm	Upper Arm	Front Torso	Rear Torso	Lower Leg	Upper Leg	Total
1	7.57	2.07	5.94	5.47	0.12	0.86	1.82
2	27.4	0.20	2.81	4.13	0.80	0.61	2.42
3	17.4	4.14	10.3	9.16	0.30	0.90	6.48
4	11.6	2.14	4.18	4.06	0.51	0.33	3.70
5	4.27	10.7	19.0	10.5	1.57	1.57	5.13
6	6.66	6.05	2.52	3.91	0.62	0.58	2.69
7	17.7	3.68	6.23	6.38	2.03	2.10	9.46
8	20.0	4.18	5.45	4.38	0.70	1.09	5.08
9	1.63	1.36	4.18	2.78	0.34	0.11	0.78
10	8.84	2.94	5.14	10.7	0.41	0.31	3.83
11	1.04	2.65	2.69	4.16	1.17	1.80	1.78
12	2.89	3.72	5.24	3.15	2.21	0.84	2.69
13	2.97	5.95	5.63	7.45	1.89	3.41	3.80
14	6.00	2.39	13.4	10.6	1.38	1.55	4.70
15	5.38	3.35	9.64	6.60	1.93	0.75	5.15
16	14.1	9.55	11.5	7.40	6.03	1.80	11.5
17	6.78	3.52	17.5	8.41	0.91	1.79	6.36
18	1.63	1.68	6.52	6.94	0.30	0.60	1.54
19	4.47	4.55	13.1	9.01	4.27	2.35	5.96
20	14.1	3.49	5.92	10.2	6.18	0.78	9.11
21	1.08	1.78	0.72	1.48	2.26	1.77	1.16
22	8.45	1.93	10.7	7.13	1.96	0.85	5.44
23	6.49	2.02	2.78	3.83	5.19	1.87	5.00
24	11.7	5.95	11.1	16.4	2.11	2.49	9.53
25	2.70	5.11	13.2	4.52	4.83	3.30	3.63
26	24.4	7.57	12.6	5.79	5.66	2.93	18.8
27	3.90	1.26	9.01	7.34	2.27	1.02	3.71
28	5.38	2.03	13.3	8.31	1.08	0.45	4.63
29	7.57	3.67	8.03	9.45	2.13	0.30	4.52
30	4.92	1.90	10.7	12.0	0.59	0.59	4.52
31	4.13	2.57	5.69	2.05	2.62	1.82	3.50
32	1.71	2.49	9.06	4.20	1.92	1.02	2.50
33	7.76	2.99	5.90	3.79	3.81	1.87	6.39
34	11.4	2.70	3.33	6.24	3.12	1.16	8.92
35	2.81	2.19	4.92	3.57	1.76	1.22	2.84
36	13.0	1.64	5.31	9.60	3.04	5.22	10.8
37	2.01	0.81	2.44	9.95	1.33	1.33	2.45
38	11.4	2.92	6.94	3.86	4.57	1.33	7.45
39	8.29	1.69	6.32	14.7	2.41	1.68	6.97
40	27.5	8.75	8.05	14.3	2.92	2.75	11.5
Min	1.04	0.20	0.72	1.48	0.12	0.11	0.78
Max	27.5	10.7	19.0	16.4	6.18	5.22	18.8
Arithmetic Mean	8.73	3.51	7.67	7.10	2.23	1.48	5.46
SD	7.04	2.36	4.25	3.57	1.68	1.03	3.58
Geometric Mean	6.26	2.83	6.45	6.21	1.58	1.15	4.46
GSD	2.39	2.05	1.91	1.73	2.57	2.16	1.95

(a) Calculated as follows:

$$\frac{\text{Inner Dosimeter Value}}{\text{Outer Dosimeter + Inner Dosimeter Value}} \times 100\%$$

TABLE 9: WHOLE BODY DOSIMETER ADJUSTED CARBARYL RESIDUES

Applicator	INNER DOSIMETERS, TOTAL			OUTER DOSIMETERS, TOTAL		
	µg Found	µg per lb ai	µg per lb ai per kg Body Wt	µg Found	µg per lb ai	µg per lb ai per kg Body Wt
1	773	144728	2382	41587	7790300	128191
2	962	63121	898	38760	2542669	36172
3	2339	682334	11228	33773	9851014	162101
4	4898	299625	4262	127560	7803230	111007
5	255	47843	493	4727	885487	9124
6	844	102937	1107	30526	3723925	40055
7	1164	146825	1513	11134	1405024	14477
8	1286	302761	3257	24006	5652569	60800
9	491	49628	782	62310	6297974	99193
10	3065	370107	5829	76928	9290480	146325
11	86.5	39216	398	4763	2158623	21884
12	365	49626	557	13227	1798369	20180
13	175	70111	711	4422	1775042	17995
14	477	158172	1775	9662	3206583	35982
15	1004	121264	1656	18483	2232164	30476
16	1349	198745	2714	10389	1531041	20904
17	489	54505	493	7201	801874	7246
18	817	75387	1026	52319	4825278	65677
19	528	77094	697	8332	1217258	11000
20	13153	1107643	15076	131190	11047800	150373
21	362	42835	442	30715	3636467	37557
22	2557	154409	2609	44490	2686496	45393
23	1152	244502	2525	21883	4646495	47988
24	7257	327853	5540	68900	3112553	52591
25	187	44518	642	4967	1182769	17046
26	2758	294984	4251	11920	1275144	18377
27	63.3	41989	701	1643	1090543	18217
28	892	109795	1582	18387	2262713	32610
29	187	130095	2173	3942	2746252	45875
30	656	76855	1108	13873	1624228	23408
31	131	23815	350	3599	656673	9653
32	171	34416	617	6662	1343499	24085
33	2306	158786	2334	33770	2325727	34188
34	2243	324816	5823	22905	3317542	59473
35	388	55742	740	13260	1907458	25337
36	2302	360720	4791	18934	2966670	39407
37	141	24216	272	5629	964440	10850
38	2089	190401	1825	25970	2366679	22689
39	445	74494	838	5929	993625	11178
40	1451	361926	3470	11171	2786022	26709
Min	63.3	23815	272	1643	656673	7246
Max	13153	1107643	15076	131190	11047800	162101
Arithmetic Mean	1556	180971	2487	26996	3243217	44795
SD	2359	204004	2981	30282	2643924	41185
Geometric Mean	765	116595	1511	16213	2471552	32029
GSD	3.39	2.53	2.68	2.83	2.08	2.25

TABLE 10: CARBARYL FOUND ON THE HANDS

Replicate #	With Gloves			Replicate #	Without Gloves		
	µg Found	µg per lb ai	µg per lb ai per kg Body Wt		µg Found	µg per lb ai	µg per lb ai per kg Body Wt
1	86.9	16279	268	3	5770	1683012	27694
2	917	60155	856	4	12500	764663	10878
5	317	59382	612	7	3890	490888	5058
6	156	19031	205	8	5380	1266801	13626
9	297	30019	473	10	8140	983056	15483
11	5.00	2266	23.0	13	4940	1982973	20103
12	221	30048	337	14	4490	1490122	16721
15	237	28622	391	16	10500	1547399	21127
17	454	50556	457	19	11600	1694694	15315
18	164	15125	206	20	11900	1002125	13640
21	73.0	8643	89.3	23	7300	1550035	16009
22	442	26690	451	24	24600	1111303	18777
25	123	29289	422	26	4350	465342	6706
27	19.5	12943	216	29	3870	2696092	45037
28	257	31627	456	30	5980	700129	10090
31	78.9	14396	212	33	5140	353990	5204
32	58.5	11797	211	34	4570	661915	11866
35	33.4	4805	63.8	36	6830	1070157	14215
37	50.5	8652	97.3	39	9080	1521693	17119
38	217	19775	190	40	7650	1907892	18291
Min	5.00	2266	23.0		3870	353990	5058
Max	917	60155	856		24600	2696092	45037
Arithmetic Mean	210	24005	312		7924	1247214	16148
SD	212	16715	205		4802	599095	8746
Geometric Mean	124	18368	238		6999	1100014	14255
GSD	3.37	2.28	2.36		1.62	1.72	1.68

TABLE 11: CARBARYL FOUND ON THE FACE AND NECK

Replicate #	µg Found	µg Found Adjusted[a]	µg per lb ai	µg per lb ai per kg Body Wt
1	105	120	22453	369
2	130	148	9735	138
3	98.1	112	32665	538
4	215	245	15014	214
5	28.2	32.2	6030	62.1
6	35.1	40.1	4888	52.6
7	43.5	49.7	6266	64.6
8	26.8	30.6	7204	77.5
9	110	126	12692	200
10	180	205	24815	391
11	12.0	13.7	6208	62.9
12	31.9	36.4	4951	55.6
13	23.3	26.6	10677	108
14	61.6	70.3	23337	262
15	51.8	59.1	7141	97.5
16	43.4	49.5	7301	99.7
17	61.1	69.7	7767	70.2
18	226	258	23794	324
19	65.4	74.7	10907	98.6
20	263	300	25283	344
21	129	147	17435	180
22	116	132	7996	135
23	280	320	67869	701
24	73.5	83.9	3790	64.0
25	11.4	13.0	3099	44.7
26	31.0	35.4	3786	54.6
27	8.90	10.2	6744	113
28	150	171	21072	304
29	11.9	13.6	9464	158
30	74.0	84.5	9890	143
31	7.79	8.89	1623	23.9
32	19.4	22.1	4466	80.1
33	41.0	46.8	3223	47.4
34	33.1	37.8	5473	98.1
35	158	180	25946	345
36	104	119	18602	247
37	24.2	27.6	4733	53.2
38	103	118	10715	103
39	20.3	23.2	3884	43.7
40	41.8	47.7	11900	114
Min	7.79	8.89	1623	23.9
Max	280	320	67869	701
Arithmetic Mean	81.2	92.7	12771	167
SD	72.1	82.3	11953	148
Geometric Mean	53.8	61.5	9370	121
GSD	2.64	2.64	2.18	2.21

[a] Results adjusted from Table 5 Field Fortification Recovery of 0.876.

TABLE 12: CARBARYL FOUND IN OVS TUBES

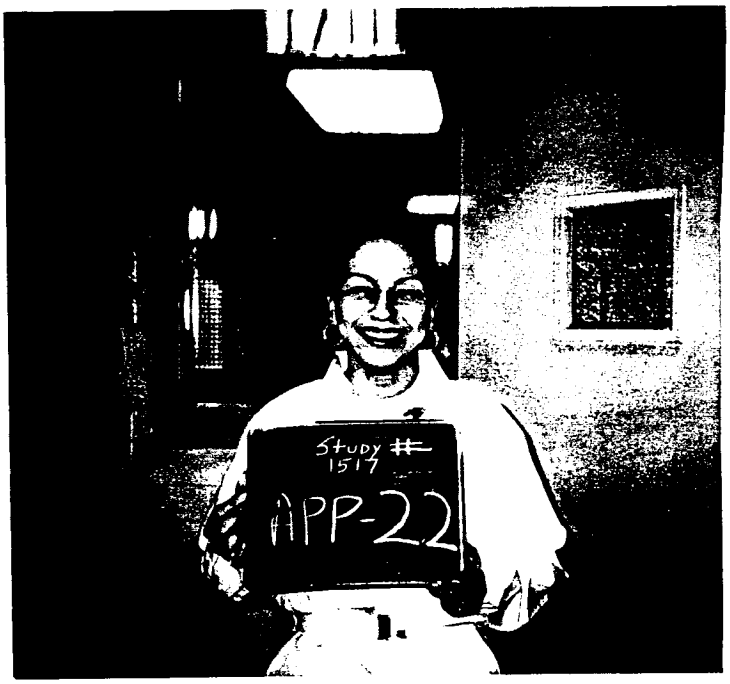
Replicate #	µg Found at 2.0 Lpm Pump Rate	µg Extrapolated to 29 Lpm Breathing Rate	µg at 29 Lpm per lb ai	µg at 29 Lpm per lb ai per kg Body Wt
1	4.29	62.2	11653	192
2	36.8	534	35004	498
3	26.4	383	111656	1837
4	16.0	232	14192	202
5	1.87	27.1	5079	52.3
6	12.0	174	21227	228
7	17.4	252	31838	328
8	16.8	244	57359	617
9	14.4	209	21104	332
10	10.3	149	18037	284
11	3.45	50.0	22672	230
12	16.4	238	32332	363
13	2.58	37.4	15017	152
14	4.57	66.3	21992	247
15	7.43	108	13011	178
16	11.7	170	25002	341
17	11.3	164	18246	165
18	26.5	384	35439	482
19	10.9	158	23090	209
20	36.2	525	44203	602
21	27.0	392	46351	479
22	33.5	486	29332	496
23	16.8	244	51724	534
24	33.5	486	21944	371
25	5.70	82.7	19681	284
26	11.9	173	18459	266
27	2.91	42.2	28007	468
28	70.8	1027	126334	1821
29	5.69	82.5	57478	960
30	14.9	216	25295	365
31	8.60	125	22753	334
32	5.22	75.7	15264	274
33	35.1	509	35051	515
34	14.4	209	30242	542
35	5.19	75.3	10825	144
36	4.65	67.4	10564	140
37	3.22	46.7	8000	90.0
38	32.2	467	42549	408
39	2.56	37.1	6221	70.0
40	11.7	170	42310	406
Min	1.87	27.1	5079	52.3
Max	70.8	1027	126334	1837
Arithmetic Mean	15.8	229	30663	413
SD	14.0	202	24556	375
Geometric Mean	11.0	160	24319	315
GSD	2.45	2.45	1.98	2.08

TABLE 13: SUMMARY OF CARBARYL RESIDUES FOUND[a]

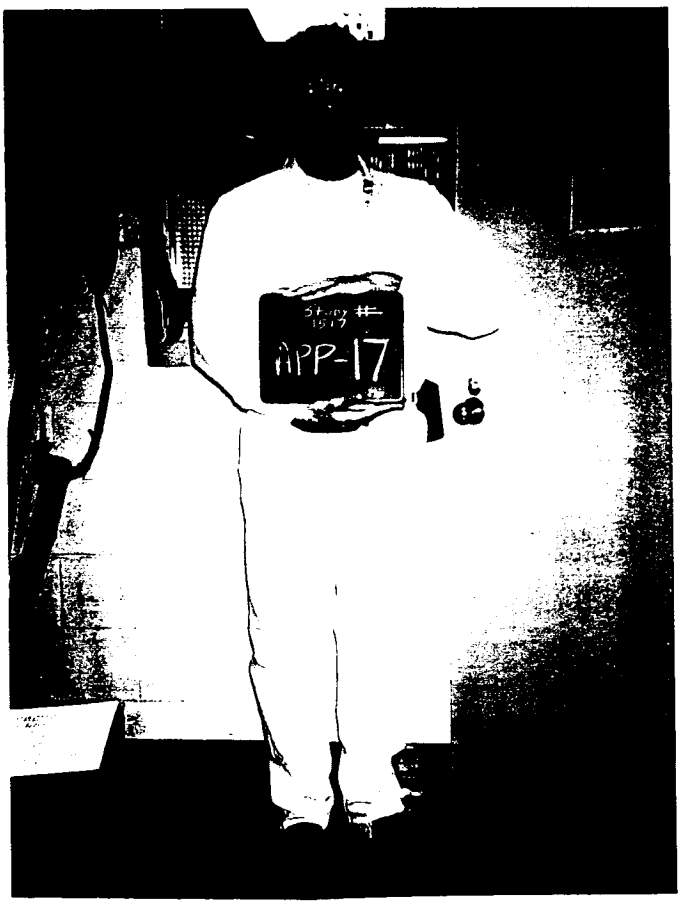
Sample Matrix	Average µg Found	Average µg per lb ai	Average µg per lb ai per kg Body Wt
Inner Dosimeter	765	116596	1511
Outer Dosimeter	16213	2471552	32029
Face/Neck	61.5	9370	121
Handwash			
with gloves	124	18368	238
without gloves	6999	1100014	14255
Total Dermal Exposure[b]			
with gloves	951	144334	1870
without gloves	7826	1225980	15887
Respiratory	160	24319	315
Total Exposure[c]			
with gloves	1111	168653	2185
without gloves	7986	1250299	16202

[a] Using geometric mean from Tables.
[b] Does not include outer dosimeter.
[c] Combined dermal and inhalation values.

FIGURE 1: DOG DUST APPLICATORS



Applicator 22 prior to dusting dogs.



Applicator 17 prior to dusting dogs.

FIGURE 2: PREPARATION FOR DUSTING

Dog weight being taken by Agrisearch personnel.

Lab booties worn by each volunteer were put on and removed by Agrisearch personnel

FIGURE 3: DOG DUSTING IN PROGRESS

Applicator (wearing gloves) dusting a large dog.

Applicator (not wearing gloves) dusting a small dog.

FIGURE 4: SAMPLE COLLECTION

Handwash

Removing Outer Dosimeter Shirt

Face/Neck Wipe

FIGURE 5: LOWER ARM RESIDUE LEVELS AND DISTRIBUTION

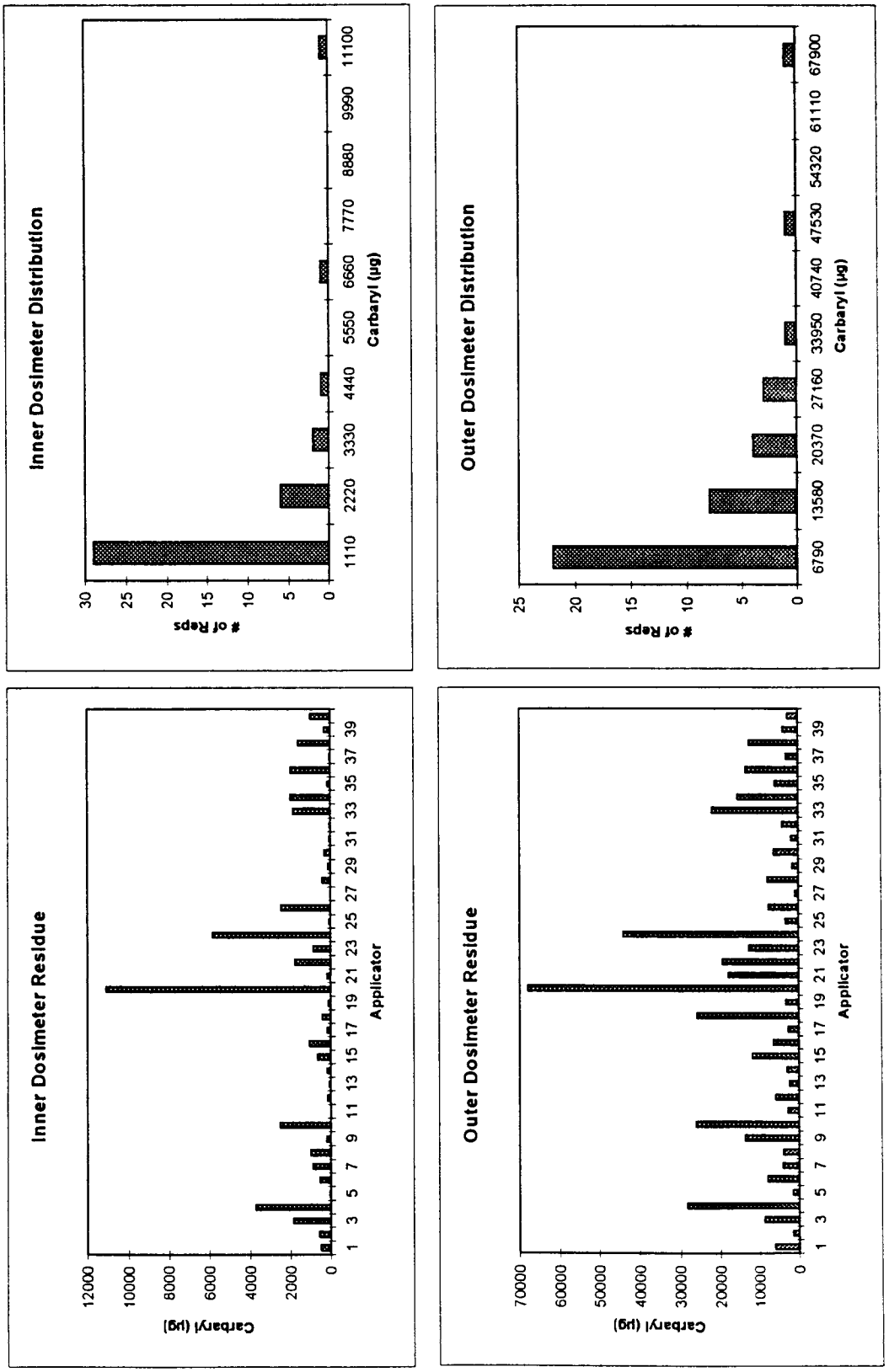


FIGURE 6: UPPER ARM RESIDUE LEVELS AND DISTRIBUTION

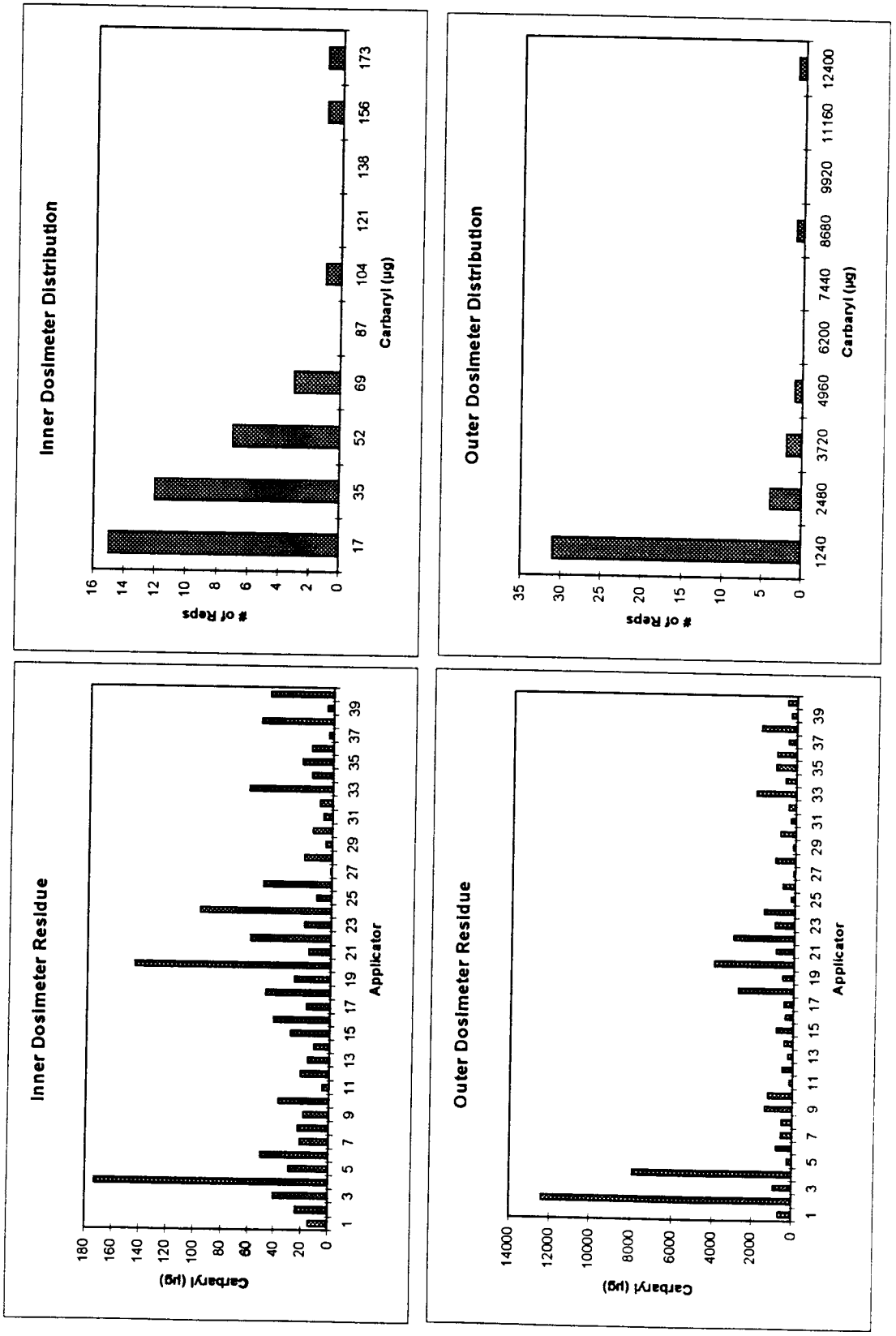


FIGURE 7: FRONT TORSO RESIDUE LEVELS AND DISTRIBUTION

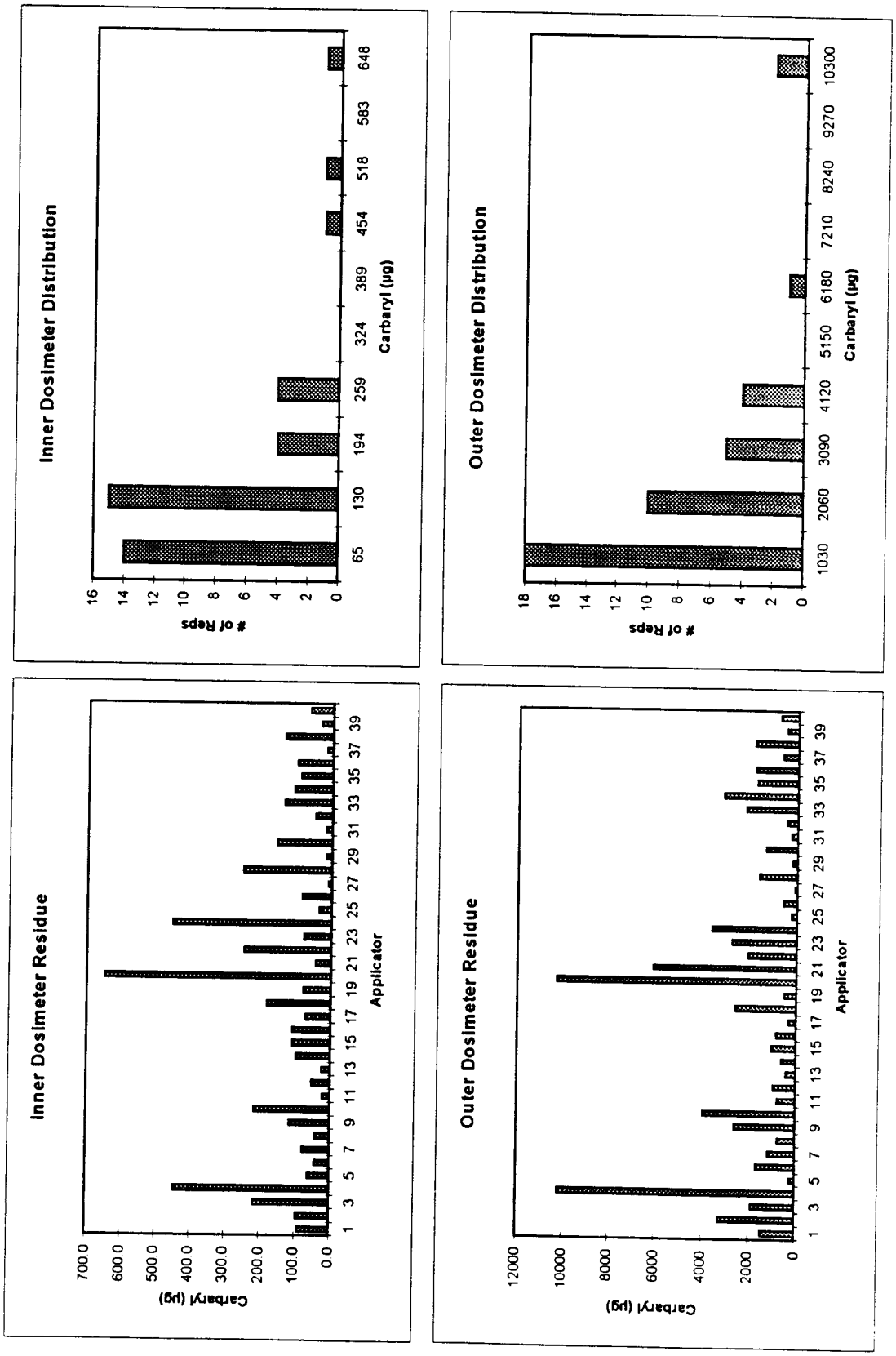


FIGURE 8: REAR TORSO RESIDUE LEVELS AND DISTRIBUTION

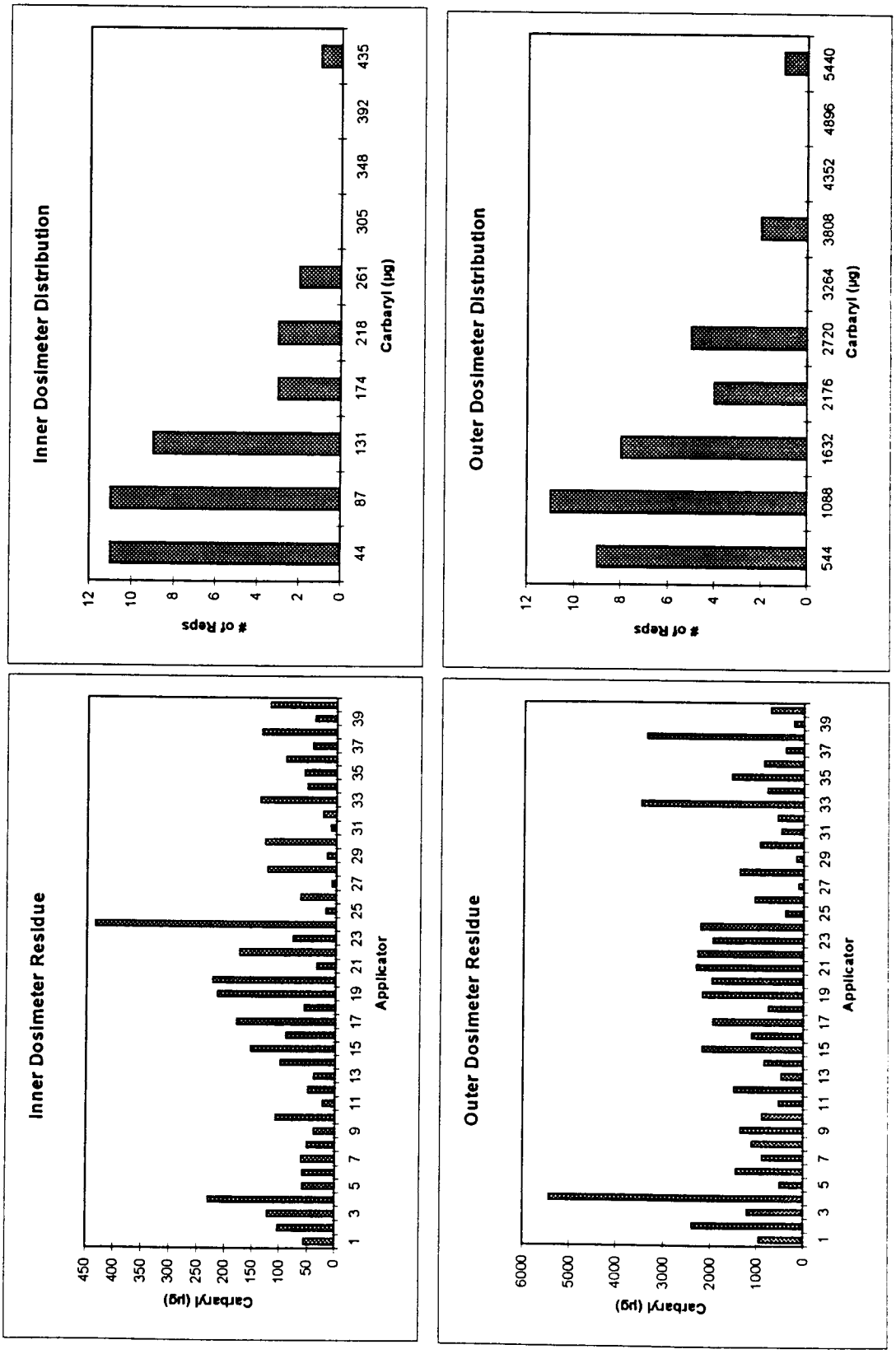


FIGURE 9: UPPER LEG RESIDUE LEVELS AND DISTRIBUTION

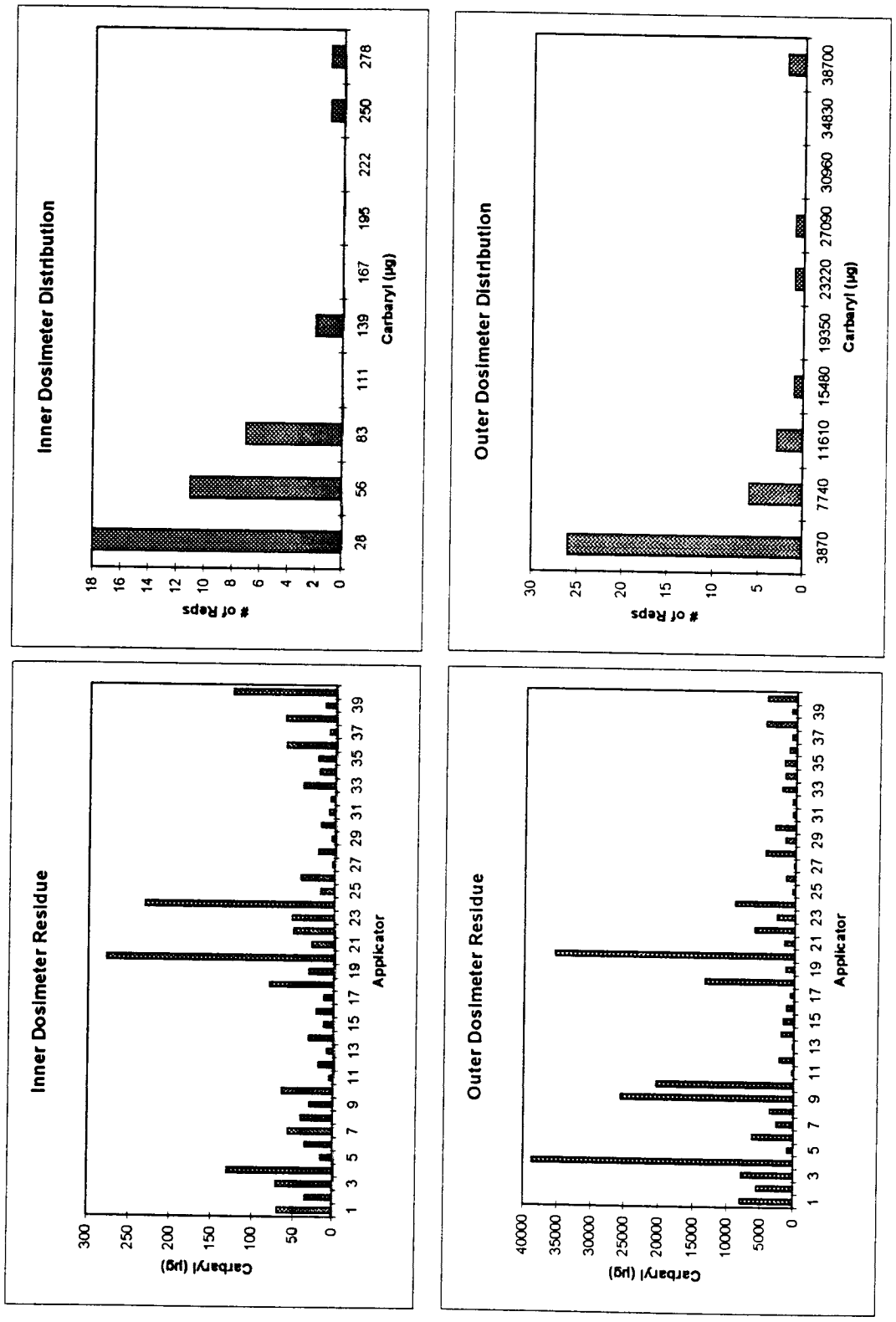


FIGURE 10: LOWER LEG RESIDUE LEVELS AND DISTRIBUTION

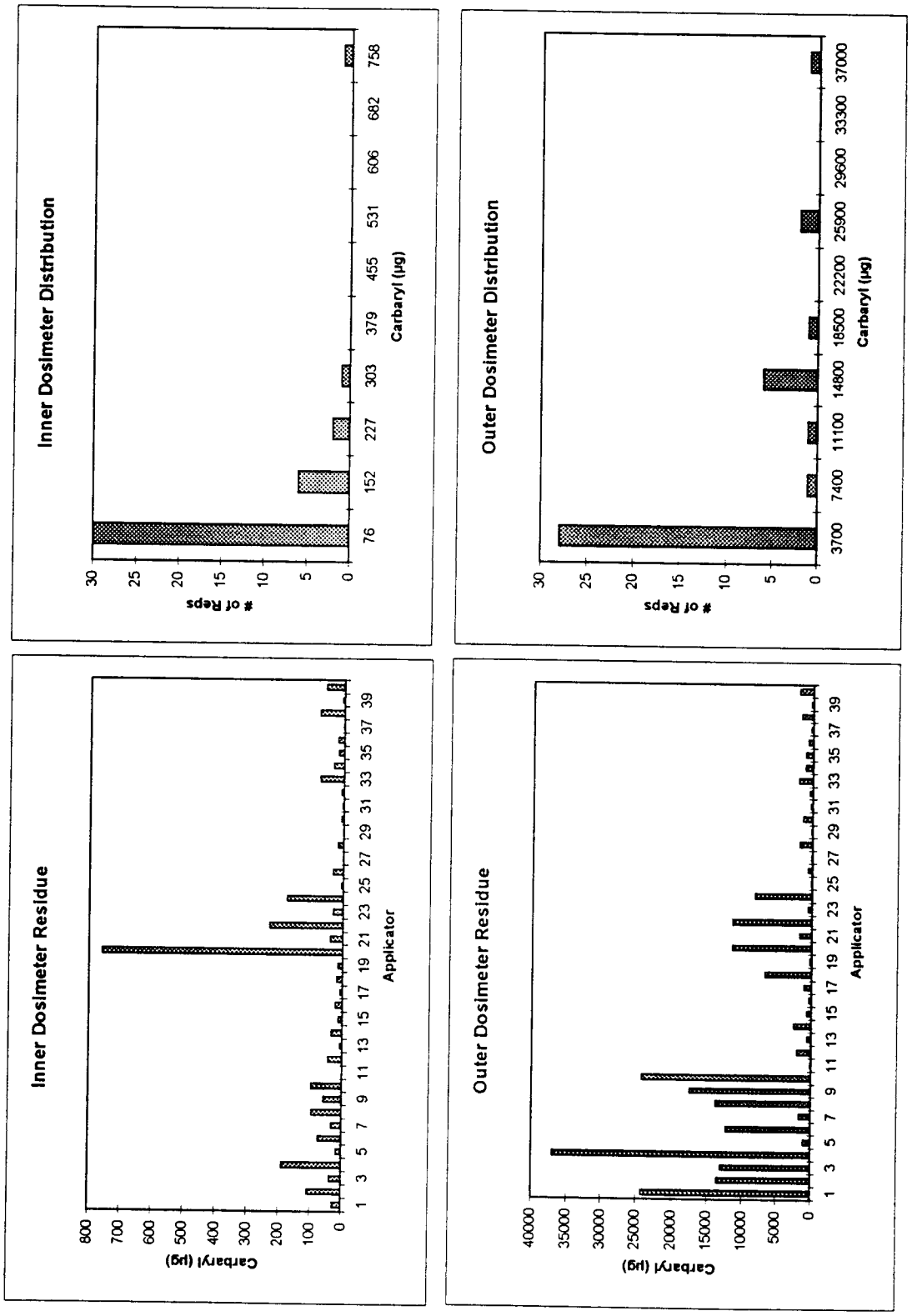


FIGURE 11: INNER AND OUTER DOSIMETER RESIDUE LEVELS AND DISTRIBUTION AVERAGES

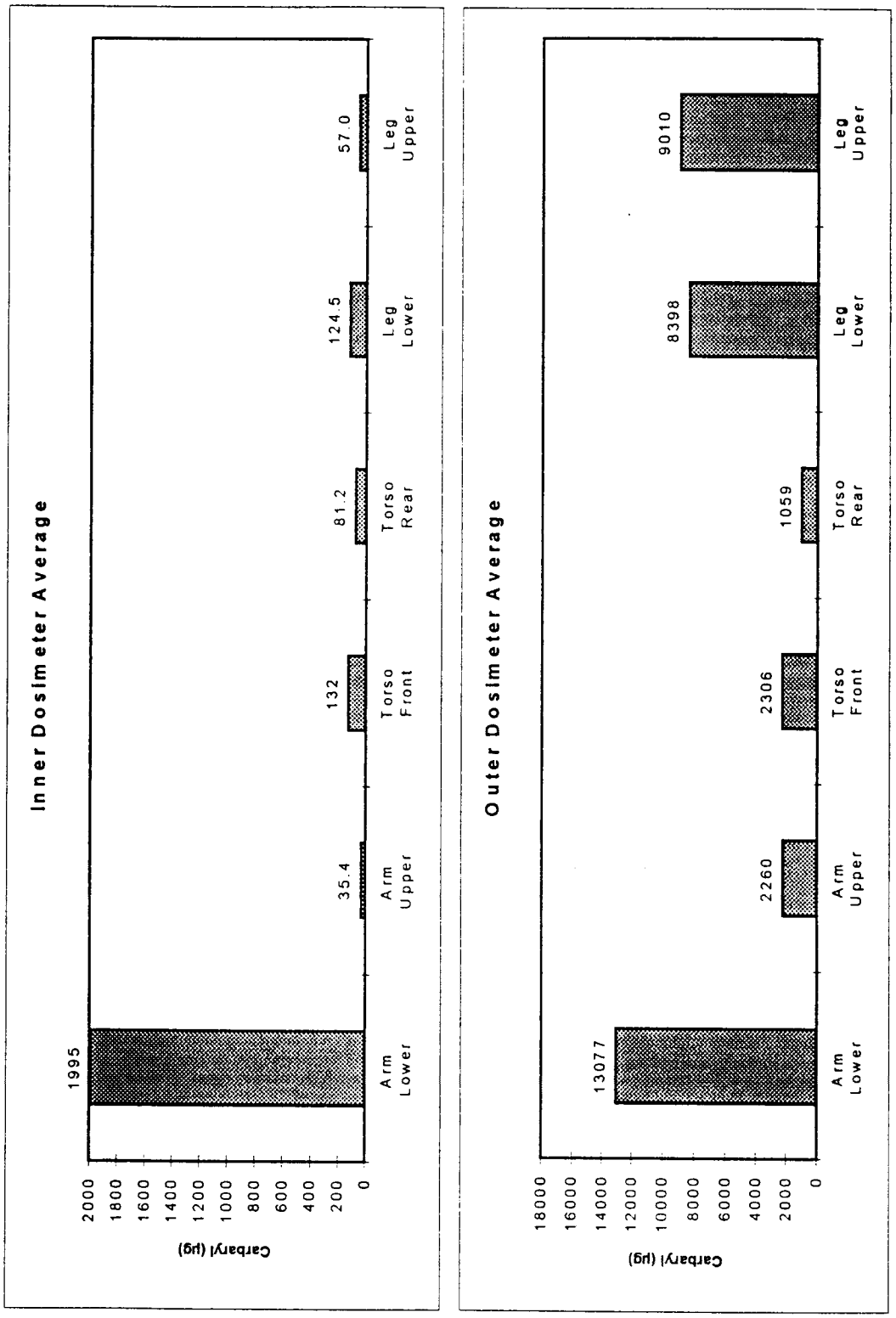


FIGURE 12: TOTAL DOSIMETRY RESIDUE LEVELS AND DISTRIBUTION

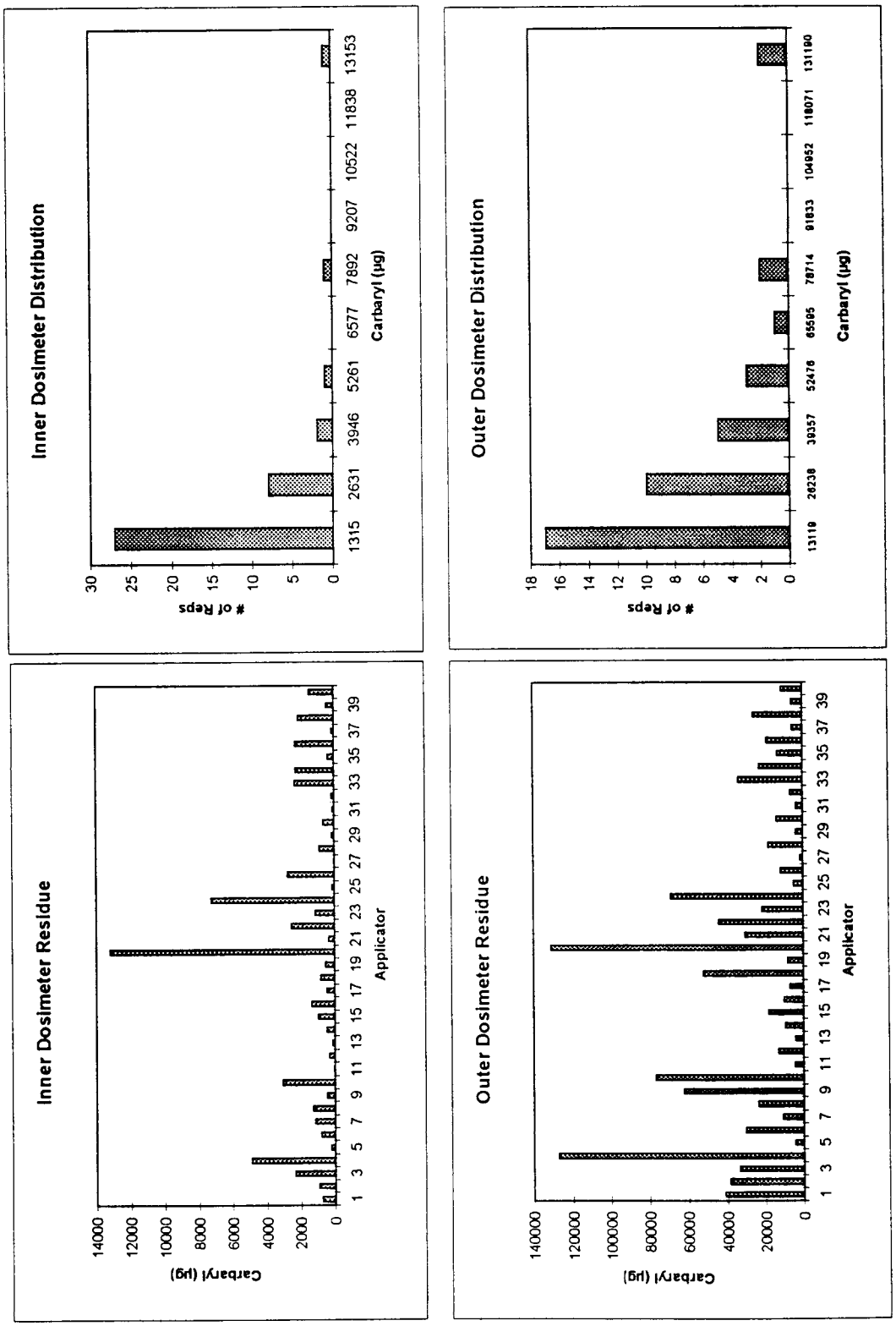
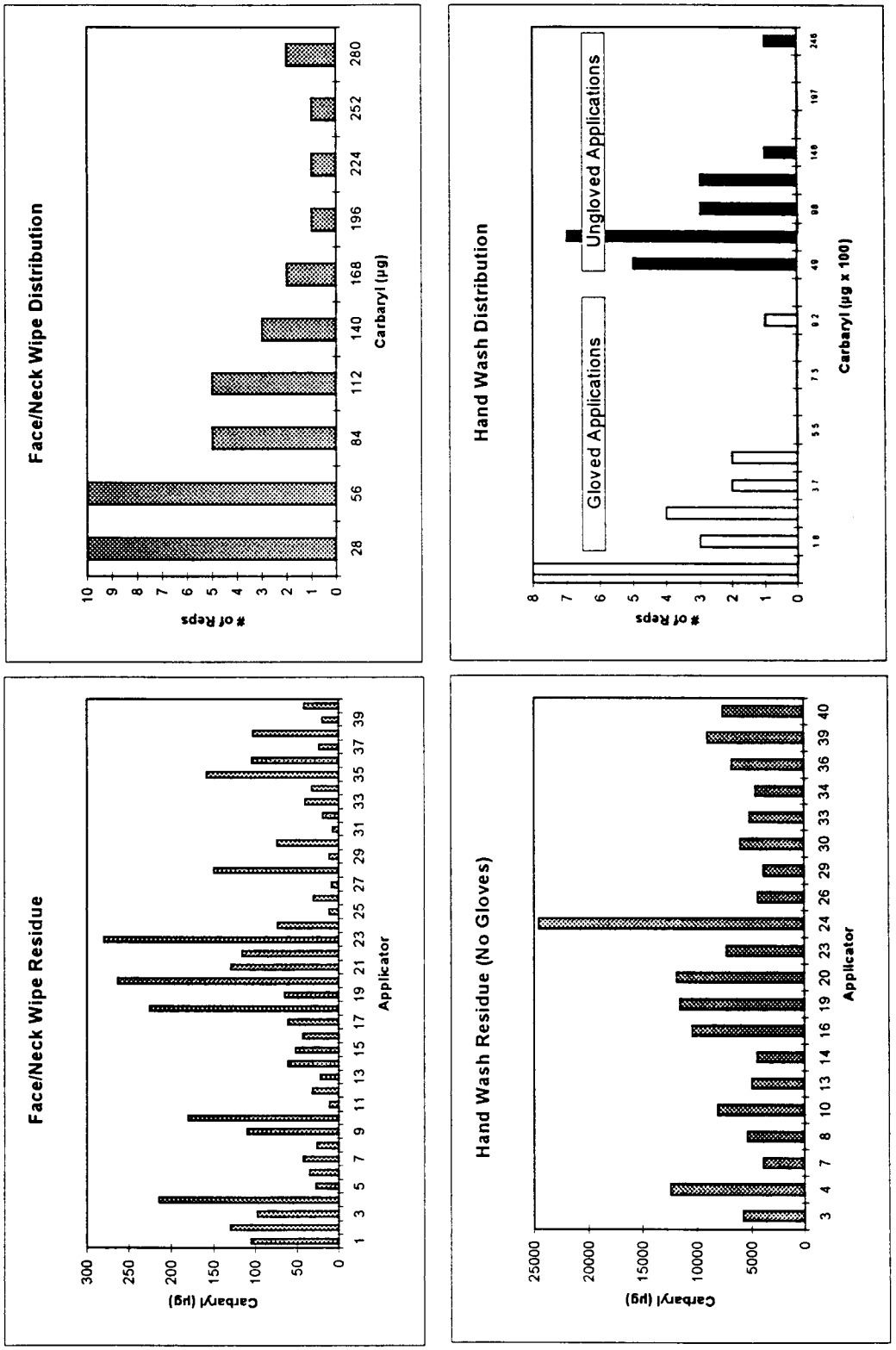


FIGURE 13: HANDWASH AND FACE/NECK WIPE RESIDUE LEVELS AND DISTRIBUTION



APPENDIX A

Protocol, Amendments, And Deviations

PROTOCOL

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE POULENC AG CO. NO.:	10565
DATA REQUIREMENT:	EPA Subdivision U, Applicator Exposure Monitoring
TEST SUBSTANCE:	Sevin 10 Dust
PROPOSED EXPERIMENTAL START DATE:	December 1, 1996
PROPOSED EXPERIMENTAL TERMINATION DATE:	January 31, 1997

PROTOCOL ACCEPTANCE:

Sponsor:

Dennis R Klonne — 12-16-96

Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

Testing Facility:

12/12/96

D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

*** AGRISEARCH PROTOCOL ***

Carbaryl Applicator Exposure Study
during Application of Sevin 10 Dust
to Dogs by the Non-Professional

OBJECTIVE

The objective of this study is to determine potential carbaryl exposure to the non-professional as he applies Sevin 10 Dust to dogs as part of a pet hygiene program.

SUMMARY

Applicators will be used to monitor potential human dermal and respiratory exposure to carbaryl as they dust three dogs (of various size) with Sevin 10 Dust. A total of approximately forty applicators of Sevin 10 Dust will be assessed to satisfy EPA exposure testing requirements (Reference 1). Each applicator will be suited with a long underwear inner whole body dosimeter to monitor for dermal exposure under long-sleeved and long-legged work clothing. Additionally, the long-sleeved, long-legged whole body outer dosimeter work clothes will be analyzed to monitor for dermal exposure without clothing protection. Twenty of the applicators will also wear commonly available household latex or rubber gloves, and twenty will not wear gloves. A handwash sample will be obtained immediately after the applicator leaves the exposure area. Samples will be taken from applicators wearing gloves immediately after they remove their own gloves. Each applicator will also be fitted with a personal sampling pump attached to the belt drawing air through a OVS tube containing a glass fiber filter followed by XAD2 sorbent (SKC Catalog No. 226-30-16). The OVS tube is attached to the work shirt collar to monitor respiratory exposure to carbaryl in the breathing zone. Label required personal protective equipment (PPE) will be followed in this study.

MATERIALS AND METHODS

Test Location

The study may be conducted at one site since there is no expected site-to-site variability for this short application interval. Location of each site will be documented in the raw data. Temperature and relative humidity will be taken for each replicate exposure period.

Test and Reference Substances

Reference Substance:	Carbaryl[a]
Test Substance:	Sevin 10 Dust
Toxicity Category:	II
CAS No.:	63-25-2
Safety Precautions:	See MSDS and product label.

The formulation will be provided by the Sponsor as one lot or batch where possible, in cans suitable for use by the non-professional. Where more than one lot is used, an attempt will be made to avoid mixing lots for any one applicator replicate. The date of test substance shipment receipt and method of shipment, lot number, as well as the amount, and condition upon receipt, will be documented.

The material will be stored in accordance with the product label directions. Daily temperature storage conditions will be recorded. An off-the-shelf formulated sample will be obtained for purity and characterization of the test lot. The Sponsor will verify purity of the test and reference substance and be responsible for data pertaining to the stability and characterization of the test and reference substance including archiving of retention samples. All used containers will be shipped to Rhone-Poulenc Ag Company upon completion of the study.

Test Systems

The test systems for this study are the individual applicators who will apply Sevin 10 Dust to dogs. Each applicator will dust three dogs as part of a replicate.

---

[a] 1-Naphthyl methylcarbamate

Justification of Test System

This study has been designed to satisfy EPA applicator exposure requirements using Sevin 10 Dust on dogs by non-professionals. Sevin 10 Dust will be applied according to product label directions and with appropriate PPE (except gloves will be worn by twenty replicates). Each applicator will be identified with a unique number that stays with him throughout the exposure replicate. The use of forty replicate applicators will adequately control bias.

Cultural Practices

Each applicator will restrain three dogs using collars or choke chains on an open cleanable surface. The dogs will not be pretreated with insecticide or wear flea collars, and will not be exposed to carbaryl for at least 48 hours prior to the Sevin 10 Dust application. The Sevin 10 Dust in a dispenser can will be opened and the contents shaken on the dog as needed. Care will be taken to avoid dusting the dog's eyes, nose, mouth, or genital areas. The Sevin 10 Dust will be worked into the dog's hair according to label instructions to obtain coverage of the animal. The product container will be weighed before and after use by an Agrisearch researcher to determine the actual quantity of Sevin 10 Dust usage. The applicator will release each of the three dogs from restraint to complete the exposure period. The dogs will be removed from the test area by an Agrisearch researcher as the applicator proceeds to the sampling area. Sevin 10 Dust will not be used on dogs known to be pregnant.

Applicators

There will be approximately forty (40) replicates of the dust application procedure. If possible, forty individual workers and sets of three dogs will be used. If personnel or dogs are used more than once, they will be cleaned and/or showered before reuse. The use of forty replicates will adequately control bias. Each applicator will be suited with an inner dosimeter of 100% cotton (long-sleeved underwear top and a long-legged underwear bottom) to be worn beneath work clothes. A white 100% cotton long-sleeved shirt and white 100% cotton long-legged pants will be worn over the inner dosimeter, as outer dosimeters. Commonly available household latex or rubber gloves will be worn by twenty of the replicates. The other twenty replicates will not wear gloves. A personal air sampling pump will be attached via Tygon® tubing to the shirt collar to sample air at the breathing zone.

Each applicator will be informed of the reasons and needs for exposure monitoring and general safety information concerning carbaryl and its toxicological properties. After this discussion, each applicator will be asked to sign a general "informed consent" statement on Sponsor letterhead.

Sample Collection

Respiratory Exposure - Inhalation monitoring will be performed using a personal air sampling pump calibrated at 2 liters per minute. The pump will be attached to an OVS tube containing a glass fiber filter followed by XAD2 resin in back to back sections (SKC Catalog No. 226-30-16). The sorbent will be in-line between the glass fiber filter and the sampling pump. The OVS tube will be attached to one side of the shirt collar to sample air at the breathing zone. At the end of the monitoring period, the OVS tube will be collected by Agrisearch personnel (wearing surgical gloves). The tube will be capped at both ends, labeled, placed in a sealable bag, and placed onto dry ice. The personal air sampling pump and tubing will be removed at this time by Agrisearch personnel.

Dermal Exposure, Hands - Hand exposure will be measured through the use of detergent handwashes at the end of each replicate.

For applicators not wearing gloves, a 400 mL aliquot of a detergent solution (Aerosol® OT Solution 0.01% v:v) will be poured over the applicator's hands into a metal container. The applicator will be asked to wash his hands thoroughly in detergent solution for approximately sixty (60) seconds. The handwash (detergent) solution sample will be poured into a labeled glass jar which will be capped, placed into a Kapak® bag, sealed, placed on dry ice, and stored in freezer conditions. For applicators wearing gloves, the applicator will remove the latex gloves, and a handwash will be performed on the applicator's bare hands as described above.

The 0.01% detergent solution will be prepared by adding 20 mL of a 2% w:v Aerosol® OT solution (Fisher Catalog #A345-500) to 3785 mL of distilled water. Fresh detergent solution will be prepared for each test day to assure proper chemical processing.

Dermal Exposure, Face and Neck - Face and neck exposure will be measured by the use of detergent wetted cotton wipe (25 mL 0.01% Aerosol solution per wipe). Each applicator will thoroughly wipe his face and neck area, and then repeat the procedure using a second clean wipe. Both wipes will be combined in a labeled sample jar, placed on dry ice and stored in freezer conditions. This will be performed after the handwash sample has been taken.

Dermal Exposure, Body - Dermal exposure will be monitored using inner and outer whole-body dosimeters. The inner dosimeters will consist of a 100% cotton, long-sleeved underwear top and a 100% cotton long-legged underwear bottom worn beneath work clothing. The outer dosimeters consist of white 100% cotton long-sleeved shirts and 100% cotton long-legged pants worn over the inner dosimeters. At the end of an applicator replicate, the outer dosimeter top and bottom will be collected and cut into the following six sections using scissors cleaned with isopropanol (IPA):

(1) right & left lower arm, combined,
(2) right & left upper arm, combined,
(3) right & left lower leg, combined,
(4) right & left upper leg (to waist),
(5) torso front,
(6) torso back.

Each sample will be wrapped in aluminum foil as needed, placed into labeled, individual sample bags, sealed, placed on dry ice, and stored in freezer conditions. The inner dosimeter will then be collected and sectioned into the same sample array as was the outer dosimeter. However, before sealing the upper leg samples, the waist bands will be cut off and discarded, since they have potential to cause analytical interferences.

Sample Identification

All samples will be identified with the study number and a unique identification number that describes the type of sample. The number will be formatted as an alphanumeric string, separated by hyphens (-) between each code pair: XX-NN-YY-ZZ. Where XX is the sample type, NN is the replicate or fortification series number, YY is the matrix, and ZZ is the sample code or sequential number.

Sample Type:	FS - Field/Worker Sample FF - Field Fortification Sample
Replicate:	Two Digit Sequential Study Replicate or Fortification Event Numbers e.g.; 01, 02, 03
Matrix:	ID - Inner Dosimeter OD - Outer Dosimeter OV - OVS Tubes HW - Handwashes FW - Face/Neck Wipe

Sample Code: Unique Two Character Codes For All Samples

Fortifications (FF Samples Only)	Dosimeters (FS ID & OD Samples Only)	Air/Wash/Wipe Samples (FS OV HW & FW Samples Only)
TS - travel spike	LA - lower arms	sequential number
Lx* - low spike	UA - upper arms	e.g.; 01,02,03...
Mx* - mid spike	FT - front torso	
Hx* - high spike	RT - rear torso	
Cx* - control sample	UL - upper legs	
	LL - lower legs	

* A sequential number will be noted for each control and fortified sample to note replicate samples.

Sample Storage and Shipment

All samples will be placed on dry ice as soon as possible after collection and stored frozen. The frozen samples will be shipped to Morse Laboratories packed on dry ice or by freezer truck to the following address:

Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825

ATTN: Susan Clark

Sample inventory and appropriate chain of custody documents will accompany each shipment.

Quality Control Samples

Carbaryl will be added to a suitable solvent (Hi-Purity grade solvent) to yield carbaryl fortification solutions. The fortification solutions will be prepared by Morse Laboratories and placed into sealed bottles. The bottles will be sent on dry ice to Agrisearch field personnel who will store them frozen until needed.

Quality control samples of each matrix will be prepared on each day field work is conducted. Samples of each matrix will be prepared at the study staging area to serve as negative controls. Outer and inner dosimeter samples will be approximately 15 cm x 15 cm swatches of fabric placed in glass jars. An OVS tube will be attached to a pre-calibrated vacuum pump system. There will be, at a minimum, one field fortified sample of each matrix per each fortification level per applicator replicate monitoring period.

Fortifications will be performed each day using a calibrated micropipette. Handwash, face/neck wipe (wetted cotton wipe), OVS tube, cotton inner and cotton outer dosimeter swatches will be fortified at approximately 3 to 5X, 30 to 50X, and 300 to 500X the limit of quantitation (LOQ). Sorbent tubes will be attached via tygon tubing to the pump system.

The control and fortified handwash solutions and face/neck wipes will be placed immediately on dry ice. The OVS tube/pump system will be turned on and operated at 2 liters per minute. The inner dosimeter samples will be shaded with a single layer of outer dosimeter cloth to mimic being under work clothes and outer dosimeter samples will not be covered. After weathering approximately one replicate exposure period, the negative control samples and fortified samples will be collected. These weathered samples act as a measure of carbaryl losses due to environmental degradation or volatilization. OVS tubes will be capped at both ends and placed in sealable bags. All other samples will be stored in labeled glass jars containing Teflon® lined lids. Jars will be sealed in Kapak® bags, placed on dry ice, and stored in freezer conditions.

Analytical

Specific methods and procedures will be provided in an analytical amendment to this protocol.

Statistics

Data reduction performed by Agrisearch will be limited to mathematical methods of means, standard deviations, and sums.

REPORT

A full report will be issued in draft form after completion of the study. The report will meet the agency data and format requirements and will include the experimental design, methods of calculation, summary of data collection, results and discussion, the location of raw data, a list of key scientific personnel, a GLPS compliance statement, and a statement by the Agrisearch Quality Assurance Unit.

Subsequently, copies of the final report will be made available to the Sponsor after completion of Sponsor review of the draft report.

Records to be Maintained

All original raw data, the original approved protocol, and final report will be maintained in the archives of Rhone-Poulenc Ag Company. Certified copies of the Agrisearch study-specific raw data will be retained by Agrisearch for storage in their archives. Archived samples of test substance and analytical reference standard will be maintained by the Sponsor.

All information regarding the conduct and results of this study is to be kept confidential by Agrisearch Incorporated. This includes, but is not limited to the test substance, study participants, samples, and data. Any release of information will be allowed only after written authorization by the Sponsor.

AGRISEARCH QUALITY ASSURANCE

Agrisearch Incorporated has established a Quality Assurance Unit (QAU) as a commitment to performing studies in compliance with current Good Laboratory Practice Standards (GLPS) as established by the Environmental Protection Agency (Reference 2). The independent QAU monitors each study in progress to assure conformance with applicable regulations.

All final reports issued by Agrisearch Incorporated are signed by the Quality Assurance Officer. This signature on the final report documents study examination by the QAU. Additionally, each study is subject to one or more unannounced in-progress inspections. In-progress inspections ensure that the study methods conform to GLPS and the protocol.

It is agreed that this is the official protocol for the conduct of this study. Any amendment will contain the reason for the amendment and be signed and dated by the Study Director and Sponsor Representative and maintained with the protocol.

REFERENCES

(1) "Pesticide Assessment Guidelines, Subdivision U, Applicator Exposure Monitoring:, US Environmental Protection Agency, Exposure Assessment Branch, Hazard Evaluation Division, Office of Pesticide Programs, EPA, Washington, D.C., 20460.

(2) US Environmental Protection Agency, August 17, 1989. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Good Laboratory Practice Standards: Final Rule (40 CFR 160). Federal Register, Vol. 54, No. 158: 34052-34074.

PROTOCOL AMENDMENT NO. 1
ANALYTICAL PHASE

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE POULENC AG CO. NO.:	10565
AMENDED:	Add all items in this amendment to the protocol.
REASON FOR AMENDMENT:	To define analytical phase for the analysis of field samples.
PROPOSED ANALYTICAL START DATE:	January 10, 1997
PROPOSED ANALYTICAL TERMINATION DATE:	July 30, 1997

PROTOCOL AMENDMENT ACCEPTANCE:

Dennis R Klonne — 1-9-97
Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

1-8-97
D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

2-7-97
Susan E. Clark, Principal Investigator — Date
Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825
(916) 481-3141 Voice
(916) 481-2959 FAX

PROTOCOL AMENDMENT NO. 1

ANALYTICAL METHOD

Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional

Performing Laboratory/Principal Investigator

Susan E. Clark
Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825

Reference Substance

The reference substance, analytical grade carbaryl, 1-naphthyl methylcarbamate, will be provided by the Sponsor. Information including lot number, stated purity, receipt and storage conditions will be documented in the raw data.

Preliminary Analytical Trials

The extraction efficiency of carbaryl and control matrix backgrounds for all sample containers, inner and outer dosimeters, handwashes, face/neck wipes and OVS tubes will be assessed using the analytical procedures for this study. The breakthrough of carbaryl from OVS tubes in operating personal air sampling pumps calibrated at 2 liters per minute will be determined prior to the field study. If there are unacceptable losses from OVS tubes during the breakthrough trials, alternative air sampling systems will be assessed.

Method Validation

Each method will be validated prior to its use in the study. The OVS tube analytical method must be capable of analyzing the glass fiber filter and xad2 resin sorbent separately as well as combined. Seven replicates of each matrix per fortification level (3 to 5X, 30 to 50X, and 300 to 500X method LOQs) and two controls will be analyzed using the analytical method to determine efficiency. These analyses can be broken into multiple sets for each fortification level for ease of analysis. Fortification solutions will be prepared using analytical grade carbaryl. Results will be reported in percent recovery.

Sample Analysis

Samples will be analyzed using validated methods in analytical sets. Laboratory quality control samples will be extracted and analyzed with the field samples and will demonstrate method performance. The calibration standard curve for each analytical set will contain four or five standard levels which bracket extract levels. Analytical standards will be interspersed throughout the sample set so that at least one confirming standard is run for each four to five test samples-use all four or five standard curve concentration levels.

All data shall be measured against a standard curve (four or five point) that brackets the levels of all samples in the set. A solvent blank shall be injected prior to test samples but after the standard solutions for each run.

At least two laboratory recoveries will be run with each analytical set. For large sets one recovery per ten field samples is required. The lowest spike concentration must be three to five times the LOQ and the highest spike will be agreed upon with the Study Director. High residue levels in each analytical set must be bracketed with a high level fresh laboratory recovery as soon as possible. For example if a test sample residue is measured at 6420 µg, follow it with a fresh laboratory recovery at 7000 µg. The samples and extracts will be stored at freezer temperatures.

The inner surface of the foil wrapping, if used, for inner and outer dosimeters will be rinsed with at least 50 mL of extraction solvent, which will be added to the total extract volume. The final volume of solvent used must be documented.

Unless otherwise specified use Morse SOPs for all laboratory GLP and analytical procedures.

Storage Stability

Stability in Matrix - Storage stability will be initiated in the laboratory using each sample matrix. Nine sets of samples of each matrix will be fortified in triplicate with analytical carbaryl at the same levels as method validation. The samples will be stored in the freezer until analysis. The storage stability samples will be analyzed as follows:

Set 1	at fortification,		
Set 2	1 week,	Set 6	16 weeks,
Set 3	2 weeks,	Set 7	32 weeks,
Set 4	4 weeks,	Set 8	future use,
Set 5	8 weeks,	Set 9	future use.

Fresh laboratory recovery samples plus a control will be run with sets 2 through 9.

Stability in Solvent - A storage stability study will be initiated in the laboratory using final extract solvent stock solutions of carbaryl for each analytical method (only if each has a different solvent). Validation samples will be stored under freezer conditions to validate sample retains. Three replicates each of three fortification levels will be tested for stability. An aliquot from each sample will be analyzed for carbaryl approximately on days 1, 5, 7, 28, and 56. Each remaining solution will be stored for the duration of the study.

Sample Description

Control matrix for the study (i.e. worker exposure samples) will be supplied by Agrisearch. The Agrisearch sample list is included in this amendment. The laboratory may assign their own numbers as long as each Agrisearch number is cross referenced and documented. All samples and retain extracts will be stored frozen.

Bias and Acceptable Recovery Range

Bias is controlled in this study by the use of replicate samples. Acceptable recoveries for laboratory and field QC samples, method validation, and storage stability samples will be in the range of 70% to 120%. Any recoveries outside this range will be communicated to the Study Director immediately.

Statistical Methods

HPLC chromatographic quantitation will use a standard curve obtained from injections of four or five concentrations of standards. The standard curve will be a linear regression according to Morse SOPs.

Records to be Maintained

All study-specific original documents and data generated in the course of this study, including but not limited to the following, shall be maintained and turned over to Agrisearch at the completion of the study:

(1) analytical methods,
(2) laboratory notebooks or bench sheets used to record details of the analyses,
(3) chromatograms and/or machine-generated analysis reports and data,
(4) spreadsheets and other calculated data,
(5) chain-of-custody records.

Agrisearch will send all original study specific raw data to the Sponsor for final archival.

In addition to the above study-specific raw data, the following records must also be kept, and original or true copies submitted with the raw data:

(1) storage conditions for reference substances and samples,
(2) reference substance use log,
(3) balance and instrument log book pages,
(4) communications logs or records.

REPORT

At the completion of the analytical phase, Morse Laboratories will prepare an analytical summary report. The report should contain the following:

(1) A GLPS compliance statement (40 CFR 160) signed by the Principal Investigator,
(2) A Morse QAU statement giving dates of inspections and dates that findings were reported to the Study Director and Management,
(3) A detailed description of the methods,
(4) Example calculations,
(5) A summary of recovery data presented as percent recovery,
(6) Representative chromatograms of control, treated, field and laboratory fortified samples and calibration standards,
(7) A typical standard curve.

Specific details can be worked out by the Study Director in the draft report.

Amendments and Deviations

Amendments - Additional amendments to the protocol must be approved by the Study Director and be acknowledged by the Sponsor. All amendments will be retained with the protocol.

Deviations - Any deviations to the protocol, SOPs or GLPS, or situations that may affect the integrity of the study must be communicated to the Study Director in a timely manner. Protocol deviations are to be documented with the dated signature from the Study Director. SOP deviations are to be documented and authorized by the Study Director.

GLPS deviations are to be documented on the "Statement of GLPS Compliance" in the report. The Study Director must be notified of any GLPS deviations as they occur.

QUALITY ASSURANCE

The performing laboratory quality assurance unit will inspect the study at appropriate intervals and will review the analytical phase report for consistency with the protocol, internal SOPs, and raw data. All findings obtained during QAU inspections and the corrective actions taken must be reported promptly to the performing laboratory's management, to the Study Director, and to the Study Director's management.

Sample List: Face/Neck Wipe, Handwash, OVS Tube

FS-01-FW-01	FS-01-HW-01	FS-01-OV-01
FS-02-FW-01	FS-02-HW-01	FS-02-OV-01
FS-03-FW-01	FS-03-HW-01	FS-03-OV-01
FS-04-FW-01	FS-04-HW-01	FS-04-OV-01
FS-05-FW-01	FS-05-HW-01	FS-05-OV-01
FS-06-FW-01	FS-06-HW-01	FS-06-OV-01
FS-07-FW-01	FS-07-HW-01	FS-07-OV-01
FS-08-FW-01	FS-08-HW-01	FS-08-OV-01
FS-09-FW-01	FS-09-HW-01	FS-09-OV-01
FS-10-FW-01	FS-10-HW-01	FS-10-OV-01
FS-11-FW-01	FS-11-HW-01	FS-11-OV-01
FS-12-FW-01	FS-12-HW-01	FS-12-OV-01
FS-13-FW-01	FS-13-HW-01	FS-13-OV-01
FS-14-FW-01	FS-14-HW-01	FS-14-OV-01
FS-15-FW-01	FS-15-HW-01	FS-15-OV-01
FS-16-FW-01	FS-16-HW-01	FS-16-OV-01
FS-17-FW-01	FS-17-HW-01	FS-17-OV-01
FS-18-FW-01	FS-18-HW-01	FS-18-OV-01
FS-19-FW-01	FS-19-HW-01	FS-19-OV-01
FS-20-FW-01	FS-20-HW-01	FS-20-OV-01
FS-21-FW-01	FS-21-HW-01	FS-21-OV-01
FS-22-FW-01	FS-22-HW-01	FS-22-OV-01
FS-23-FW-01	FS-23-HW-01	FS-23-OV-01
FS-24-FW-01	FS-24-HW-01	FS-24-OV-01
FS-25-FW-01	FS-25-HW-01	FS-25-OV-01
FS-26-FW-01	FS-26-HW-01	FS-26-OV-01
FS-27-FW-01	FS-27-HW-01	FS-27-OV-01
FS-28-FW-01	FS-28-HW-01	FS-28-OV-01
FS-29-FW-01	FS-29-HW-01	FS-29-OV-01
FS-30-FW-01	FS-30-HW-01	FS-30-OV-01
FS-31-FW-01	FS-31-HW-01	FS-31-OV-01
FS-32-FW-01	FS-32-HW-01	FS-32-OV-01
FS-33-FW-01	FS-33-HW-01	FS-33-OV-01
FS-34-FW-01	FS-34-HW-01	FS-34-OV-01
FS-35-FW-01	FS-35-HW-01	FS-35-OV-01
FS-36-FW-01	FS-36-HW-01	FS-36-OV-01
FS-37-FW-01	FS-37-HW-01	FS-37-OV-01
FS-38-FW-01	FS-38-HW-01	FS-38-OV-01
FS-39-FW-01	FS-39-HW-01	FS-39-OV-01
FS-40-FW-01	FS-40-HW-01	FS-40-OV-01

Sample List: Inner and Outer Dosimeters

FS-01-OD-LA	FS-02-OD-LA	FS-03-OD-LA	FS-04-OD-LA	FS-05-OD-LA
FS-01-OD-UA	FS-02-OD-UA	FS-03-OD-UA	FS-04-OD-UA	FS-05-OD-UA
FS-01-OD-FT	FS-02-OD-FT	FS-03-OD-FT	FS-04-OD-FT	FS-05-OD-FT
FS-01-OD-RT	FS-02-OD-RT	FS-03-OD-RT	FS-04-OD-RT	FS-05-OD-RT
FS-01-OD-LL	FS-02-OD-LL	FS-03-OD-LL	FS-04-OD-LL	FS-05-OD-LL
FS-01-OD-UL	FS-02-OD-UL	FS-03-OD-UL	FS-04-OD-UL	FS-05-OD-UL
FS-01-ID-LA	FS-02-ID-LA	FS-03-ID-LA	FS-04-ID-LA	FS-05-ID-LA
FS-01-ID-UA	FS-02-ID-UA	FS-03-ID-UA	FS-04-ID-UA	FS-05-ID-UA
FS-01-ID-FT	FS-02-ID-FT	FS-03-ID-FT	FS-04-ID-FT	FS-05-ID-FT
FS-01-ID-RT	FS-02-ID-RT	FS-03-ID-RT	FS-04-ID-RT	FS-05-ID-RT
FS-01-ID-LL	FS-02-ID-LL	FS-03-ID-LL	FS-04-ID-LL	FS-05-ID-LL
FS-01-ID-UL	FS-02-ID-UL	FS-03-ID-UL	FS-04-ID-UL	FS-05-ID-UL
FS-06-OD-LA	FS-07-OD-LA	FS-08-OD-LA	FS-09-OD-LA	FS-10-OD-LA
FS-06-OD-UA	FS-07-OD-UA	FS-08-OD-UA	FS-09-OD-UA	FS-10-OD-UA
FS-06-OD-FT	FS-07-OD-FT	FS-08-OD-FT	FS-09-OD-FT	FS-10-OD-FT
FS-06-OD-RT	FS-07-OD-RT	FS-08-OD-RT	FS-09-OD-RT	FS-10-OD-RT
FS-06-OD-LL	FS-07-OD-LL	FS-08-OD-LL	FS-09-OD-LL	FS-10-OD-LL
FS-06-OD-UL	FS-07-OD-UL	FS-08-OD-UL	FS-09-OD-UL	FS-10-OD-UL
FS-06-ID-LA	FS-07-ID-LA	FS-08-ID-LA	FS-09-ID-LA	FS-10-ID-LA
FS-06-ID-UA	FS-07-ID-UA	FS-08-ID-UA	FS-09-ID-UA	FS-10-ID-UA
FS-06-ID-FT	FS-07-ID-FT	FS-08-ID-FT	FS-09-ID-FT	FS-10-ID-FT
FS-06-ID-RT	FS-07-ID-RT	FS-08-ID-RT	FS-09-ID-RT	FS-10-ID-RT
FS-06-ID-LL	FS-07-ID-LL	FS-08-ID-LL	FS-09-ID-LL	FS-10-ID-LL
FS-06-ID-UL	FS-07-ID-UL	FS-08-ID-UL	FS-09-ID-UL	FS-10-ID-UL
FS-11-OD-LA	FS-12-OD-LA	FS-13-OD-LA	FS-14-OD-LA	FS-15-OD-LA
FS-11-OD-UA	FS-12-OD-UA	FS-13-OD-UA	FS-14-OD-UA	FS-15-OD-UA
FS-11-OD-FT	FS-12-OD-FT	FS-13-OD-FT	FS-14-OD-FT	FS-15-OD-FT
FS-11-OD-RT	FS-12-OD-RT	FS-13-OD-RT	FS-14-OD-RT	FS-15-OD-RT
FS-11-OD-LL	FS-12-OD-LL	FS-13-OD-LL	FS-14-OD-LL	FS-15-OD-LL
FS-11-OD-UL	FS-12-OD-UL	FS-13-OD-UL	FS-14-OD-UL	FS-15-OD-UL
FS-11-ID-LA	FS-12-ID-LA	FS-13-ID-LA	FS-14-ID-LA	FS-15-ID-LA
FS-11-ID-UA	FS-12-ID-UA	FS-13-ID-UA	FS-14-ID-UA	FS-15-ID-UA
FS-11-ID-FT	FS-12-ID-FT	FS-13-ID-FT	FS-14-ID-FT	FS-15-ID-FT
FS-11-ID-RT	FS-12-ID-RT	FS-13-ID-RT	FS-14-ID-RT	FS-15-ID-RT
FS-11-ID-LL	FS-12-ID-LL	FS-13-ID-LL	FS-14-ID-LL	FS-15-ID-LL
FS-11-ID-UL	FS-12-ID-UL	FS-13-ID-UL	FS-14-ID-UL	FS-15-ID-UL
FS-16-OD-LA	FS-17-OD-LA	FS-18-OD-LA	FS-19-OD-LA	FS-20-OD-LA
FS-16-OD-UA	FS-17-OD-UA	FS-18-OD-UA	FS-19-OD-UA	FS-20-OD-UA
FS-16-OD-FT	FS-17-OD-FT	FS-18-OD-FT	FS-19-OD-FT	FS-20-OD-FT
FS-16-OD-RT	FS-17-OD-RT	FS-18-OD-RT	FS-19-OD-RT	FS-20-OD-RT
FS-16-OD-LL	FS-17-OD-LL	FS-18-OD-LL	FS-19-OD-LL	FS-20-OD-LL
FS-16-OD-UL	FS-17-OD-UL	FS-18-OD-UL	FS-19-OD-UL	FS-20-OD-UL
FS-16-ID-LA	FS-17-ID-LA	FS-18-ID-LA	FS-19-ID-LA	FS-20-ID-LA
FS-16-ID-UA	FS-17-ID-UA	FS-18-ID-UA	FS-19-ID-UA	FS-20-ID-UA
FS-16-ID-FT	FS-17-ID-FT	FS-18-ID-FT	FS-19-ID-FT	FS-20-ID-FT
FS-16-ID-RT	FS-17-ID-RT	FS-18-ID-RT	FS-19-ID-RT	FS-20-ID-RT
FS-16-ID-LL	FS-17-ID-LL	FS-18-ID-LL	FS-19-ID-LL	FS-20-ID-LL
FS-16-ID-UL	FS-17-ID-UL	FS-18-ID-UL	FS-19-ID-UL	FS-20-ID-UL

Sample List: Inner and Outer Dosimeters

FS-21-OD-LA	FS-22-OD-LA	FS-23-OD-LA	FS-24-OD-LA	FS-25-OD-LA
FS-21-OD-UA	FS-22-OD-UA	FS-23-OD-UA	FS-24-OD-UA	FS-25-OD-UA
FS-21-OD-FT	FS-22-OD-FT	FS-23-OD-FT	FS-24-OD-FT	FS-25-OD-FT
FS-21-OD-RT	FS-22-OD-RT	FS-23-OD-RT	FS-24-OD-RT	FS-25-OD-RT
FS-21-OD-LL	FS-22-OD-LL	FS-23-OD-LL	FS-24-OD-LL	FS-25-OD-LL
FS-21-OD-UL	FS-22-OD-UL	FS-23-OD-UL	FS-24-OD-UL	FS-25-OD-UL
FS-21-ID-LA	FS-22-ID-LA	FS-23-ID-LA	FS-24-ID-LA	FS-25-ID-LA
FS-21-ID-UA	FS-22-ID-UA	FS-23-ID-UA	FS-24-ID-UA	FS-25-ID-UA
FS-21-ID-FT	FS-22-ID-FT	FS-23-ID-FT	FS-24-ID-FT	FS-25-ID-FT
FS-21-ID-RT	FS-22-ID-RT	FS-23-ID-RT	FS-24-ID-RT	FS-25-ID-RT
FS-21-ID-LL	FS-22-ID-LL	FS-23-ID-LL	FS-24-ID-LL	FS-25-ID-LL
FS-21-ID-UL	FS-22-ID-UL	FS-23-ID-UL	FS-24-ID-UL	FS-25-ID-UL
FS-26-OD-LA	FS-27-OD-LA	FS-28-OD-LA	FS-29-OD-LA	FS-30-OD-LA
FS-26-OD-UA	FS-27-OD-UA	FS-28-OD-UA	FS-29-OD-UA	FS-30-OD-UA
FS-26-OD-FT	FS-27-OD-FT	FS-28-OD-FT	FS-29-OD-FT	FS-30-OD-FT
FS-26-OD-RT	FS-27-OD-RT	FS-28-OD-RT	FS-29-OD-RT	FS-30-OD-RT
FS-26-OD-LL	FS-27-OD-LL	FS-28-OD-LL	FS-29-OD-LL	FS-30-OD-LL
FS-26-OD-UL	FS-27-OD-UL	FS-28-OD-UL	FS-29-OD-UL	FS-30-OD-UL
FS-26-ID-LA	FS-27-ID-LA	FS-28-ID-LA	FS-29-ID-LA	FS-30-ID-LA
FS-26-ID-UA	FS-27-ID-UA	FS-28-ID-UA	FS-29-ID-UA	FS-30-ID-UA
FS-26-ID-FT	FS-27-ID-FT	FS-28-ID-FT	FS-29-ID-FT	FS-30-ID-FT
FS-26-ID-RT	FS-27-ID-RT	FS-28-ID-RT	FS-29-ID-RT	FS-30-ID-RT
FS-26-ID-LL	FS-27-ID-LL	FS-28-ID-LL	FS-29-ID-LL	FS-30-ID-LL
FS-26-ID-UL	FS-27-ID-UL	FS-28-ID-UL	FS-29-ID-UL	FS-30-ID-UL
FS-31-OD-LA	FS-32-OD-LA	FS-33-OD-LA	FS-34-OD-LA	FS-35-OD-LA
FS-31-OD-UA	FS-32-OD-UA	FS-33-OD-UA	FS-34-OD-UA	FS-35-OD-UA
FS-31-OD-FT	FS-32-OD-FT	FS-33-OD-FT	FS-34-OD-FT	FS-35-OD-FT
FS-31-OD-RT	FS-32-OD-RT	FS-33-OD-RT	FS-34-OD-RT	FS-35-OD-RT
FS-31-OD-LL	FS-32-OD-LL	FS-33-OD-LL	FS-34-OD-LL	FS-35-OD-LL
FS-31-OD-UL	FS-32-OD-UL	FS-33-OD-UL	FS-34-OD-UL	FS-35-OD-UL
FS-31-ID-LA	FS-32-ID-LA	FS-33-ID-LA	FS-34-ID-LA	FS-35-ID-LA
FS-31-ID-UA	FS-32-ID-UA	FS-33-ID-UA	FS-34-ID-UA	FS-35-ID-UA
FS-31-ID-FT	FS-32-ID-FT	FS-33-ID-FT	FS-34-ID-FT	FS-35-ID-FT
FS-31-ID-RT	FS-32-ID-RT	FS-33-ID-RT	FS-34-ID-RT	FS-35-ID-RT
FS-31-ID-LL	FS-32-ID-LL	FS-33-ID-LL	FS-34-ID-LL	FS-35-ID-LL
FS-31-ID-UL	FS-32-ID-UL	FS-33-ID-UL	FS-34-ID-UL	FS-35-ID-UL
FS-36-OD-LA	FS-37-OD-LA	FS-38-OD-LA	FS-39-OD-LA	FS-40-OD-LA
FS-36-OD-UA	FS-37-OD-UA	FS-38-OD-UA	FS-39-OD-UA	FS-40-OD-UA
FS-36-OD-FT	FS-37-OD-FT	FS-38-OD-FT	FS-39-OD-FT	FS-40-OD-FT
FS-36-OD-RT	FS-37-OD-RT	FS-38-OD-RT	FS-39-OD-RT	FS-40-OD-RT
FS-36-OD-LL	FS-37-OD-LL	FS-38-OD-LL	FS-39-OD-LL	FS-40-OD-LL
FS-36-OD-UL	FS-37-OD-UL	FS-38-OD-UL	FS-39-OD-UL	FS-40-OD-UL
FS-36-ID-LA	FS-37-ID-LA	FS-38-ID-LA	FS-39-ID-LA	FS-40-ID-LA
FS-36-ID-UA	FS-37-ID-UA	FS-38-ID-UA	FS-39-ID-UA	FS-40-ID-UA
FS-36-ID-FT	FS-37-ID-FT	FS-38-ID-FT	FS-39-ID-FT	FS-40-ID-FT
FS-36-ID-RT	FS-37-ID-RT	FS-38-ID-RT	FS-39-ID-RT	FS-40-ID-RT
FS-36-ID-LL	FS-37-ID-LL	FS-38-ID-LL	FS-39-ID-LL	FS-40-ID-LL
FS-36-ID-UL	FS-37-ID-UL	FS-38-ID-UL	FS-39-ID-UL	FS-40-ID-UL

Sample List: Field Fortifications

FF-01-OD-H1	FF-01-ID-H1	FF-01-HW-H1	FF-01-FW-H1	FF-01-OV-H1
FF-01-OD-H2	FF-01-ID-H2	FF-01-HW-H2	FF-01-FW-H2	FF-01-OV-H2
FF-01-OD-H3	FF-01-ID-H3	FF-01-HW-H3	FF-01-FW-H3	FF-01-OV-H3
FF-01-OD-H4	FF-01-ID-H4	FF-01-HW-H4	FF-01-FW-H4	FF-01-OV-H4
FF-01-OD-H5	FF-01-ID-H5	FF-01-HW-H5	FF-01-FW-H5	FF-01-OV-H5
FF-01-OD-M1	FF-01-ID-M1	FF-01-HW-M1	FF-01-FW-M1	FF-01-OV-M1
FF-01-OD-M2	FF-01-ID-M2	FF-01-HW-M2	FF-01-FW-M2	FF-01-OV-M2
FF-01-OD-M3	FF-01-ID-M3	FF-01-HW-M3	FF-01-FW-M3	FF-01-OV-M3
FF-01-OD-M4	FF-01-ID-M4	FF-01-HW-M4	FF-01-FW-M4	FF-01-OV-M4
FF-01-OD-M5	FF-01-ID-M5	FF-01-HW-M5	FF-01-FW-M5	FF-01-OV-M5
FF-01-OD-L1	FF-01-ID-L1	FF-01-HW-L1	FF-01-FW-L1	FF-01-OV-L1
FF-01-OD-L2	FF-01-ID-L2	FF-01-HW-L2	FF-01-FW-L2	FF-01-OV-L2
FF-01-OD-L3	FF-01-ID-L3	FF-01-HW-L3	FF-01-FW-L3	FF-01-OV-L3
FF-01-OD-L4	FF-01-ID-L4	FF-01-HW-L4	FF-01-FW-L4	FF-01-OV-L4
FF-01-OD-L5	FF-01-ID-L5	FF-01-HW-L5	FF-01-FW-L5	FF-01-OV-L5
FF-01-OD-C1	FF-01-ID-C1	FF-01-HW-C1	FF-01-FW-C1	FF-01-OV-C1
FF-01-OD-C2	FF-01-ID-C2	FF-01-HW-C2	FF-01-FW-C2	FF-01-OV-C2
FF-02-OD-H1	FF-02-ID-H1	FF-02-HW-H1	FF-02-FW-H1	FF-02-OV-H1
FF-02-OD-H2	FF-02-ID-H2	FF-02-HW-H2	FF-02-FW-H2	FF-02-OV-H2
FF-02-OD-H3	FF-02-ID-H3	FF-02-HW-H3	FF-02-FW-H3	FF-02-OV-H3
FF-02-OD-H4	FF-02-ID-H4	FF-02-HW-H4	FF-02-FW-H4	FF-02-OV-H4
FF-02-OD-H5	FF-02-ID-H5	FF-02-HW-H5	FF-02-FW-H5	FF-02-OV-H5
FF-02-OD-M1	FF-02-ID-M1	FF-02-HW-M1	FF-02-FW-M1	FF-02-OV-M1
FF-02-OD-M2	FF-02-ID-M2	FF-02-HW-M2	FF-02-FW-M2	FF-02-OV-M2
FF-02-OD-M3	FF-02-ID-M3	FF-02-HW-M3	FF-02-FW-M3	FF-02-OV-M3
FF-02-OD-M4	FF-02-ID-M4	FF-02-HW-M4	FF-02-FW-M4	FF-02-OV-M4
FF-02-OD-M5	FF-02-ID-M5	FF-02-HW-M5	FF-02-FW-M5	FF-02-OV-M5
FF-02-OD-L1	FF-02-ID-L1	FF-02-HW-L1	FF-02-FW-L1	FF-02-OV-L1
FF-02-OD-L2	FF-02-ID-L2	FF-02-HW-L2	FF-02-FW-L2	FF-02-OV-L2
FF-02-OD-L3	FF-02-ID-L3	FF-02-HW-L3	FF-02-FW-L3	FF-02-OV-L3
FF-02-OD-L4	FF-02-ID-L4	FF-02-HW-L4	FF-02-FW-L4	FF-02-OV-L4
FF-02-OD-L5	FF-02-ID-L5	FF-02-HW-L5	FF-02-FW-L5	FF-02-OV-L5
FF-02-OD-C1	FF-02-ID-C1	FF-02-HW-C1	FF-02-FW-C1	FF-02-OV-C1
FF-02-OD-C2	FF-02-ID-C2	FF-02-HW-C2	FF-02-FW-C2	FF-02-OV-C2
FF-03-OD-H1	FF-03-ID-H1	FF-03-HW-H1	FF-03-FW-H1	FF-03-OV-H1
FF-03-OD-H2	FF-03-ID-H2	FF-03-HW-H2	FF-03-FW-H2	FF-03-OV-H2
FF-03-OD-H3	FF-03-ID-H3	FF-03-HW-H3	FF-03-FW-H3	FF-03-OV-H3
FF-03-OD-H4	FF-03-ID-H4	FF-03-HW-H4	FF-03-FW-H4	FF-03-OV-H4
FF-03-OD-H5	FF-03-ID-H5	FF-03-HW-H5	FF-03-FW-H5	FF-03-OV-H5
FF-03-OD-M1	FF-03-ID-M1	FF-03-HW-M1	FF-03-FW-M1	FF-03-OV-M1
FF-03-OD-M2	FF-03-ID-M2	FF-03-HW-M2	FF-03-FW-M2	FF-03-OV-M2
FF-03-OD-M3	FF-03-ID-M3	FF-03-HW-M3	FF-03-FW-M3	FF-03-OV-M3
FF-03-OD-M4	FF-03-ID-M4	FF-03-HW-M4	FF-03-FW-M4	FF-03-OV-M4
FF-03-OD-M5	FF-03-ID-M5	FF-03-HW-M5	FF-03-FW-M5	FF-03-OV-M5
FF-03-OD-L1	FF-03-ID-L1	FF-03-HW-L1	FF-03-FW-L1	FF-03-OV-L1
FF-03-OD-L2	FF-03-ID-L2	FF-03-HW-L2	FF-03-FW-L2	FF-03-OV-L2
FF-03-OD-L3	FF-03-ID-L3	FF-03-HW-L3	FF-03-FW-L3	FF-03-OV-L3
FF-03-OD-L4	FF-03-ID-L4	FF-03-HW-L4	FF-03-FW-L4	FF-03-OV-L4
FF-03-OD-L5	FF-03-ID-L5	FF-03-HW-L5	FF-03-FW-L5	FF-03-OV-L5
FF-03-OD-C1	FF-03-ID-C1	FF-03-HW-C1	FF-03-FW-C1	FF-03-OV-C1
FF-03-OD-C2	FF-03-ID-C2	FF-03-HW-C2	FF-03-FW-C2	FF-03-OV-C2

Sample List: Field Fortifications

FF-04-OD-H1	FF-04-ID-H1	FF-04-HW-H1	FF-04-FW-H1	FF-04-OV-H1
FF-04-OD-H2	FF-04-ID-H2	FF-04-HW-H2	FF-04-FW-H2	FF-04-OV-H2
FF-04-OD-H3	FF-04-ID-H3	FF-04-HW-H3	FF-04-FW-H3	FF-04-OV-H3
FF-04-OD-H4	FF-04-ID-H4	FF-04-HW-H4	FF-04-FW-H4	FF-04-OV-H4
FF-04-OD-H5	FF-04-ID-H5	FF-04-HW-H5	FF-04-FW-H5	FF-04-OV-H5
FF-04-OD-M1	FF-04-ID-M1	FF-04-HW-M1	FF-04-FW-M1	FF-04-OV-M1
FF-04-OD-M2	FF-04-ID-M2	FF-04-HW-M2	FF-04-FW-M2	FF-04-OV-M2
FF-04-OD-M3	FF-04-ID-M3	FF-04-HW-M3	FF-04-FW-M3	FF-04-OV-M3
FF-04-OD-M4	FF-04-ID-M4	FF-04-HW-M4	FF-04-FW-M4	FF-04-OV-M4
FF-04-OD-M5	FF-04-ID-M5	FF-04-HW-M5	FF-04-FW-M5	FF-04-OV-M5
FF-04-OD-L1	FF-04-ID-L1	FF-04-HW-L1	FF-04-FW-L1	FF-04-OV-L1
FF-04-OD-L2	FF-04-ID-L2	FF-04-HW-L2	FF-04-FW-L2	FF-04-OV-L2
FF-04-OD-L3	FF-04-ID-L3	FF-04-HW-L3	FF-04-FW-L3	FF-04-OV-L3
FF-04-OD-L4	FF-04-ID-L4	FF-04-HW-L4	FF-04-FW-L4	FF-04-OV-L4
FF-04-OD-L5	FF-04-ID-L5	FF-04-HW-L5	FF-04-FW-L5	FF-04-OV-L5
FF-04-OD-C1	FF-04-ID-C1	FF-04-HW-C1	FF-04-FW-C1	FF-04-OV-C1
FF-04-OD-C2	FF-04-ID-C2	FF-04-HW-C2	FF-04-FW-C2	FF-04-OV-C2
FF-05-OD-H1	FF-05-ID-H1	FF-05-HW-H1	FF-05-FW-H1	FF-05-OV-H1
FF-05-OD-H2	FF-05-ID-H2	FF-05-HW-H2	FF-05-FW-H2	FF-05-OV-H2
FF-05-OD-H3	FF-05-ID-H3	FF-05-HW-H3	FF-05-FW-H3	FF-05-OV-H3
FF-05-OD-H4	FF-05-ID-H4	FF-05-HW-H4	FF-05-FW-H4	FF-05-OV-H4
FF-05-OD-H5	FF-05-ID-H5	FF-05-HW-H5	FF-05-FW-H5	FF-05-OV-H5
FF-05-OD-M1	FF-05-ID-M1	FF-05-HW-M1	FF-05-FW-M1	FF-05-OV-M1
FF-05-OD-M2	FF-05-ID-M2	FF-05-HW-M2	FF-05-FW-M2	FF-05-OV-M2
FF-05-OD-M3	FF-05-ID-M3	FF-05-HW-M3	FF-05-FW-M3	FF-05-OV-M3
FF-05-OD-M4	FF-05-ID-M4	FF-05-HW-M4	FF-05-FW-M4	FF-05-OV-M4
FF-05-OD-M5	FF-05-ID-M5	FF-05-HW-M5	FF-05-FW-M5	FF-05-OV-M5
FF-05-OD-L1	FF-05-ID-L1	FF-05-HW-L1	FF-05-FW-L1	FF-05-OV-L1
FF-05-OD-L2	FF-05-ID-L2	FF-05-HW-L2	FF-05-FW-L2	FF-05-OV-L2
FF-05-OD-L3	FF-05-ID-L3	FF-05-HW-L3	FF-05-FW-L3	FF-05-OV-L3
FF-05-OD-L4	FF-05-ID-L4	FF-05-HW-L4	FF-05-FW-L4	FF-05-OV-L4
FF-05-OD-L5	FF-05-ID-L5	FF-05-HW-L5	FF-05-FW-L5	FF-05-OV-L5
FF-05-OD-C1	FF-05-ID-C1	FF-05-HW-C1	FF-05-FW-C1	FF-05-OV-C1
FF-05-OD-C2	FF-05-ID-C2	FF-05-HW-C2	FF-05-FW-C2	FF-05-OV-C2
FF-06-OD-H1	FF-06-ID-H1	FF-06-HW-H1	FF-06-FW-H1	FF-06-OV-H1
FF-06-OD-H2	FF-06-ID-H2	FF-06-HW-H2	FF-06-FW-H2	FF-06-OV-H2
FF-06-OD-H3	FF-06-ID-H3	FF-06-HW-H3	FF-06-FW-H3	FF-06-OV-H3
FF-06-OD-H4	FF-06-ID-H4	FF-06-HW-H4	FF-06-FW-H4	FF-06-OV-H4
FF-06-OD-H5	FF-06-ID-H5	FF-06-HW-H5	FF-06-FW-H5	FF-06-OV-H5
FF-06-OD-M1	FF-06-ID-M1	FF-06-HW-M1	FF-06-FW-M1	FF-06-OV-M1
FF-06-OD-M2	FF-06-ID-M2	FF-06-HW-M2	FF-06-FW-M2	FF-06-OV-M2
FF-06-OD-M3	FF-06-ID-M3	FF-06-HW-M3	FF-06-FW-M3	FF-06-OV-M3
FF-06-OD-M4	FF-06-ID-M4	FF-06-HW-M4	FF-06-FW-M4	FF-06-OV-M4
FF-06-OD-M5	FF-06-ID-M5	FF-06-HW-M5	FF-06-FW-M5	FF-06-OV-M5
FF-06-OD-L1	FF-06-ID-L1	FF-06-HW-L1	FF-06-FW-L1	FF-06-OV-L1
FF-06-OD-L2	FF-06-ID-L2	FF-06-HW-L2	FF-06-FW-L2	FF-06-OV-L2
FF-06-OD-L3	FF-06-ID-L3	FF-06-HW-L3	FF-06-FW-L3	FF-06-OV-L3
FF-06-OD-L4	FF-06-ID-L4	FF-06-HW-L4	FF-06-FW-L4	FF-06-OV-L4
FF-06-OD-L5	FF-06-ID-L5	FF-06-HW-L5	FF-06-FW-L5	FF-06-OV-L5
FF-06-OD-C1	FF-06-ID-C1	FF-06-HW-C1	FF-06-FW-C1	FF-06-OV-C1
FF-06-OD-C2	FF-06-ID-C2	FF-06-HW-C2	FF-06-FW-C2	FF-06-OV-C2

Sample List: Field Fortifications

FF-07-OD-H1	FF-07-ID-H1	FF-07-HW-H1	FF-07-FW-H1	FF-07-OV-H1
FF-07-OD-H2	FF-07-ID-H2	FF-07-HW-H2	FF-07-FW-H2	FF-07-OV-H2
FF-07-OD-H3	FF-07-ID-H3	FF-07-HW-H3	FF-07-FW-H3	FF-07-OV-H3
FF-07-OD-H4	FF-07-ID-H4	FF-07-HW-H4	FF-07-FW-H4	FF-07-OV-H4
FF-07-OD-H5	FF-07-ID-H5	FF-07-HW-H5	FF-07-FW-H5	FF-07-OV-H5
FF-07-OD-M1	FF-07-ID-M1	FF-07-HW-M1	FF-07-FW-M1	FF-07-OV-M1
FF-07-OD-M2	FF-07-ID-M2	FF-07-HW-M2	FF-07-FW-M2	FF-07-OV-M2
FF-07-OD-M3	FF-07-ID-M3	FF-07-HW-M3	FF-07-FW-M3	FF-07-OV-M3
FF-07-OD-M4	FF-07-ID-M4	FF-07-HW-M4	FF-07-FW-M4	FF-07-OV-M4
FF-07-OD-M5	FF-07-ID-M5	FF-07-HW-M5	FF-07-FW-M5	FF-07-OV-M5
FF-07-OD-L1	FF-07-ID-L1	FF-07-HW-L1	FF-07-FW-L1	FF-07-OV-L1
FF-07-OD-L2	FF-07-ID-L2	FF-07-HW-L2	FF-07-FW-L2	FF-07-OV-L2
FF-07-OD-L3	FF-07-ID-L3	FF-07-HW-L3	FF-07-FW-L3	FF-07-OV-L3
FF-07-OD-L4	FF-07-ID-L4	FF-07-HW-L4	FF-07-FW-L4	FF-07-OV-L4
FF-07-OD-L5	FF-07-ID-L5	FF-07-HW-L5	FF-07-FW-L5	FF-07-OV-L5
FF-07-OD-C1	FF-07-ID-C1	FF-07-HW-C1	FF-07-FW-C1	FF-07-OV-C1
FF-07-OD-C2	FF-07-ID-C2	FF-07-HW-C2	FF-07-FW-C2	FF-07-OV-C2

FF-08-OD-H1	FF-08-ID-H1	FF-08-HW-H1	FF-08-FW-H1	FF-08-OV-H1
FF-08-OD-H2	FF-08-ID-H2	FF-08-HW-H2	FF-08-FW-H2	FF-08-OV-H2
FF-08-OD-H3	FF-08-ID-H3	FF-08-HW-H3	FF-08-FW-H3	FF-08-OV-H3
FF-08-OD-H4	FF-08-ID-H4	FF-08-HW-H4	FF-08-FW-H4	FF-08-OV-H4
FF-08-OD-H5	FF-08-ID-H5	FF-08-HW-H5	FF-08-FW-H5	FF-08-OV-H5
FF-08-OD-M1	FF-08-ID-M1	FF-08-HW-M1	FF-08-FW-M1	FF-08-OV-M1
FF-08-OD-M2	FF-08-ID-M2	FF-08-HW-M2	FF-08-FW-M2	FF-08-OV-M2
FF-08-OD-M3	FF-08-ID-M3	FF-08-HW-M3	FF-08-FW-M3	FF-08-OV-M3
FF-08-OD-M4	FF-08-ID-M4	FF-08-HW-M4	FF-08-FW-M4	FF-08-OV-M4
FF-08-OD-M5	FF-08-ID-M5	FF-08-HW-M5	FF-08-FW-M5	FF-08-OV-M5
FF-08-OD-L1	FF-08-ID-L1	FF-08-HW-L1	FF-08-FW-L1	FF-08-OV-L1
FF-08-OD-L2	FF-08-ID-L2	FF-08-HW-L2	FF-08-FW-L2	FF-08-OV-L2
FF-08-OD-L3	FF-08-ID-L3	FF-08-HW-L3	FF-08-FW-L3	FF-08-OV-L3
FF-08-OD-L4	FF-08-ID-L4	FF-08-HW-L4	FF-08-FW-L4	FF-08-OV-L4
FF-08-OD-L5	FF-08-ID-L5	FF-08-HW-L5	FF-08-FW-L5	FF-08-OV-L5
FF-08-OD-C1	FF-08-ID-C1	FF-08-HW-C1	FF-08-FW-C1	FF-08-OV-C1
FF-08-OD-C2	FF-08-ID-C2	FF-08-HW-C2	FF-08-FW-C2	FF-08-OV-C2

PROTOCOL AMENDMENT NO. 2

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 5 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE POULENC AG CO. NO.:	10565
AMENDED:	The test substance for this study is Sevin Dust with 5% AI. Change all reference in the protocol from Sevin 10 Dust to Sevin 5 Dust, including the title.
REASON:	Sevin 10 Dust is available only with other active ingredients in formulation besides carbaryl. Sevin dust for use on dogs is formulated with 5% active ingredient.
EFFECTIVE DATE:	February 7, 1997

PROTOCOL AMENDMENT ACCEPTANCE:

Dennis R Klonne — 2-12-97

Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

2-11-97

D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

PROTOCOL AMENDMENT NO. 3

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 5 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE-POULENC AG CO. NO.:	10565
AMENDED:	Add all items in this amendment to the protocol.
REASON FOR AMENDMENT:	To define a procedure for the identification, analytical verification, and shipment of test sample formulations.

PROTOCOL AMENDMENT ACCEPTANCE:

Dennis R. Klonne 2-12-97

Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

2-11-97

D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

This signature for the Protocol Amendment No. 3 appears on the following page.

Larry Helfant, Principal Investigator — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2603 Voice
(919) 549-3905 FAX

PROTOCOL AMENDMENT NO. 3

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 5 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE-POULENC AG CO. NO.:	10565
AMENDED:	Add all items in this amendment to the protocol.
REASON FOR AMENDMENT:	To define a procedure for the identification, analytical verification, and shipment of test sample formulations.

PROTOCOL AMENDMENT ACCEPTANCE:

This signature for the Protocol Amendment No. 3 appears on the previous page.

Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

2-11-97
D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

2-12-97
Larry Helfant, Principal Investigator — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2603 Voice
(919) 549-3905 FAX

Performing Laboratory:

Rhone-Poulenc, Research Triangle Park, NC

Principal Investigator: Mr. Larry Helfant

Background: Several different formulations (e.g., liquid, dust, ready-to-use) of carbaryl will be used in the dog, garden, and fruit tree applicator exposure studies. These materials are being purchased from various formulators in commercially available packages. Since Rhone-Poulenc supplies only the technical material to the formulator, the formulation ingredients and methodology are not known to Rhone-Poulenc. Therefore, procedures are being outlined to ensure that the formulations used in these studies are analytically verified before use in the study.

Storage: Samples will be stored at room temperature.

Analytical Procedures: All sample handling, documentation, and facilities will be in accordance with 40 CFR 160, as outlined in the Sponsor's standard operating procedures.

The identity of the technical carbaryl used to formulate test substance is clearly marked on all packages that were received. Since all of the end products were sourced from one lot of technical material and each test substance consisted of one lot per test substance, the following procedures will be followed:

Two representative boxes of test substance will be opened. One package from each box will be tested for characterization and specification. The method shall be HPLC/UV.

Sample preparation for analysis of carbaryl will be as outlined in CM 1, February 11, 1993.

HPLC Instrument parameters will be as outlined in Midwest Research Institute (MRI) Report 3521-F, December 21, 1993. Instrument conditions will be modified to approximate the retention times outlined in the method validation report since an equivalent column and operating system will be used by the Sponsor. Details of those changes will be defined in the raw data and approved by management before use. The MRI report includes two methods; one for quantitation of carbaryl and a second for quantitation of impurities. The difference between methods is primarily wavelength. For testing purposes for the test substance in this study, the characterization wavelength (255nm) will be

used for both the characterization and quantitation of the test substance. HPLC/MS will be used to confirm active ingredient identity and confirmation of related impurities. The test substance identity, including the technical carbaryl lot and formulation identification including the lot will be recorded in the raw data. The Sponsor will archive the GLP-required retention samples of the test substance. The results will be provided as a certificate of analysis from the Sponsor.

Shipment: The samples will be shipped from Rhone-Poulenc to Agrisearch Incorporated (or other designated agent) for use on the studies. While test substances may be shipped to Agrisearch at any time for storage, no test substance will be used in the applicator study until the formulation has been analytically verified by Rhone-Poulenc. In addition, one container/package of each formulation type will be shipped to Morse Labs for use in determining if other components of the formulation interfere with the analysis of carbaryl.

When the test substances are shipped from Rhone-Poulenc, information pertaining to the formulator's lot number (or batch identifier, etc.) will also be recorded and maintained so that specific test substances used in the studies may be traced back to the formulator.

Method References: Carbaryl Products, Dusts, Powders, Aqueous-Based and Oil-Based Formulations and Technical Material by High Performance Liquid Chromatography (HPLC); CM-1 February 11, 1993.

Method Validation for Analysis of Carbaryl; Linda Siemann, Midwest Research Institute, Project ID 3521-F, December 21, 1993.

PROTOCOL AMENDMENT NO. 4

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin® 5 Dust to Dogs by the Non- Professional
AGRISEARCH PROJECT NO.:	1517
RHONE-POULENC AG CO. NO.:	10565
AMENDED:	The storage stability study detailed in Protocol Amendment No. 1 will be reported in the final report for Agrisearch Project No. 1518. The storage stability raw data will be archived with Project No. 1518.
REASON FOR AMENDMENT:	The storage stability study was ongoing at the completion of the final report for Agrisearch Project No. 1517.

PROTOCOL AMENDMENT ACCEPTANCE:

Dennis R. Klonne

8-25-97
Date

Dennis R. Klonne, Ph.D., Sponsor Representative
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

8-22-97
Date

D. Larry Merricks, Ph.D., Study Director
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

PROTOCOL DEVIATIONS

1. The lowest spike level for each of the following analytical sets was not three to five times the LOQ.

Set No.	Matrix	Low Spike Level (µg/sample)
14	Face/Neck Wipes	50
22	Face/Neck Wipes	50
55	Handwash	50
58	Handwash	250
60	Handwash	100
61	Handwash	250

   Reason: Higher spike levels were conducted to bracket both expected sample residues and sample residues which greatly exceeded three to five times the LOQ.

2. On set no. 62 one sample response was not bracketed by the standard curve. The peak height response for sample FS-15-OD-LA is 4573 (equivalent to 59.814 ng/mL), while the peak height response for the 60 ng/mL calibration standard is 4572.

   Reason: Residue in the sample was slightly higher than that expected based on a screen of the sample prior to final HPLC analysis. At this magnitude a peak height difference of one unit is considered insignificant.

3. Authentic copies of temperature logs for analytical standard/standard dilutions and samples will not be supplied with the raw data.

   Reason: Original temperature logs are maintained at Morse Laboratories, Inc. Should the need arise, specific temperature logs will be copied and supplied to the Sponsor.

4. The protocol contains a sample list for field fortifications which catalogues the proposed field fortifications. This list contains FF-02, FF-04, FF-06 and FF-08; C1 and C2 for all matrices. These controls were not sampled.

   Reason: Controls FF-01, FF-03, FF-05 and FF-07; C1 and C2 were found to be sufficient number of control samples. At least one field control was sampled on each sampling day, so study integrity was not compromised.

5. In the Quality Control Samples section, protocol states that the outer and inner dosimeter samples are to be 15 x 15 cm swatches placed in glass jars. In practice, these dosimeters are left intact as sections and placed in heat sealed Kapak® bags.

   Reason: This change made the dosimeter field fortification samples the same size and in the same containers as the dosimeter field samples.

6. The face wipe samples for field fortifications were 2 wipes wetted with 25 mL OTS.

   Reason: This change made the face wipe field fortification samples the same as the field samples.

7. The dogs used for dusting on week one were not cleaned prior to their reuse. Beginning on week 2, each dog dusted was cleaned by the animal shelter on the same day they were dusted.

   Reason: Inadvertent omission.

None of these deviations had a negative impact on this study.

D. Larry Merricks, Ph.D.
Study Director

8/21/97
Date

APPENDIX B

Test Substance Information

AGRISEARCH INCORPORATED
CHEMICAL RECEIPT LOG

Agrisearch No. 97-007 Date Received 2-12-97

Sponsor Rhone Poulenc Date Logged 2-12-97

Supplier Rhone Poulenc

CHEMICAL

Name/ID No. Sevin Garden Dust

Lot/Batch No. 208166B0

Amount Received
Per Supplier 48 1-lb cans

Description % active 4.5% to 5.5% Sevin

Shipped Via Fed Ex 283-4729-913

Storage: Room Temp. Refrigerate Freezer

Test Substance Metabolite/Degradate Analytical Standard

Initials HL

Unless otherwise noted above: all material(s) were received intact and per shipping documentation.

ABOVE RECEIVED IN GOOD CONDITION, UNDAMAGED

HL 8-20-97

AGI-L001-6/4/96

Rhone-Poulenc Ag Co. No. 10565
Agrisearch Project No. 1517

RHÔNE-POULENC

RHÔNE-POULENC AG COMPANY

CERTIFICATE OF ANALYSIS #coa97002

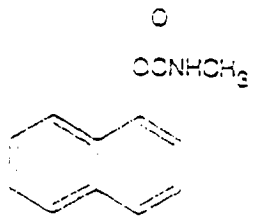
Sevin®Brand Carbaryl Insecticide Garden Dust

Sample Identity:

Batch / Lot No.: 20187A

Chemical Identity:

Code number(s): RPA007744
CAS Registry Number: 63-25-2
Common name: carbaryl
Chemical name (IUPAC): 1-naphthyl methylcarbamate
Molecular formula: $C_{12}H_{11}NO_2$
Molecular weight: 201.22
Structure:



Analysis:

Location of preparation: Solans Group/Aerofil Technology, Inc. St. Louis, MO
Physical state, appearance: cream color powder
% Purity (wt/wt): 5.38%
Date of analysis: 14 February 1997
Analysis reference(s): Data file: 97003LJH
Expiration Date: 14 February 1999
Storage Conditions: Ambient
Remarks:

I certify that this material was analyzed in a laboratory following Good Laboratory Practice Standards. Derivation and characterization data, and a reserve sample for this material are located at Rhône-Poulenc Ag Company, Research Triangle Park, NC.

Authorization — Feb. 14, 1997 date

Special Hazards: Normal handling precautions should be taken to prevent the material entering the eyes, being inhaled or coming into contact with the skin, food, drink or smoking materials.

PO BOX 12014, 2 T.W. ALEXANDER DRIVE
RESEARCH TRIANGLE PARK, N.C. 27709-2014
(919) 549-2000
INTERNATIONAL TELEX NUMBER 4999378-ANSWERBACK APC RTP
INTERNATIONAL DISTRIBUTION SERVICES TELEX NUMBER 4999377-ANSWERBACK APC IDS

Excellence in Performance
Pride in Achievement

Rhone-Poulenc Ag Co. No. 10565
Agrisearch Project No. 1517

ORTHO®

OUTDOOR USE ONLY

Sevin® Brand Carbaryl Insecticide 5 Dust

Kills Garden Pests: Armyworms, Cutworms, Squash Bugs, Tomato Hornworms, Certain Other Beetles And Other Garden Pests, As Listed

KILLS FLEAS & TICKS ON DOGS AND CATS: *Fleas and Ticks on Animals and Other Outdoor Living Areas.*

Active Ingredient
Carbaryl (1-naphthyl N-methylcarbamate) 5%
Inert Ingredients 95%

KEEP OUT OF REACH OF CHILDREN

CAUTION See additional precautionary statements on back of bag.

FOR HOME USE ONLY

NET WT 4 LBS / 1.81 kg

TO CLOSE—FOLD TOP OF BAG, SECURE WITH A CLIP

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH LABEL PRECAUTIONARY STATEMENTS AND DIRECTIONS.

Apply dust at the first signs of insects. Repeat as necessary. For best results, dust in early morning or late evening when temperature is low and air is still. Apply dust so that all parts of plants are contacted, especially upper and lower leaf surfaces. May be applied up to harvest unless otherwise noted.

BEANS: Mexican Bean Beetle – 1/4 lb per 1,000 sq ft. Leafhoppers, Bean Leaf Beetle, Cucumber Beetles, Western Bean Cutworm, Velvetbean Caterpillar, Flea Beetles, Japanese Beetle – 1/2 lb. per 1,000 sq ft. Corn Earworm, Armyworms, Tarnished Plant Bug, Stink Bugs – 3/4 lb per 1,000 sq ft. May be applied up to harvest.

CABBAGE, BROCCOLI, BRUSSELS SPROUTS, CAULIFLOWER AND KOHLRABI: Flea Beetles, Harlequin Bug – 1/2 lb per 1,000 sq ft. Armyworms, Imported Cabbageworm, Young Cabbage Loopers, Salt Marsh Caterpillars, Corn Earworm – 1 lb per 1,000 sq ft. Do not apply within 3 days of harvest.

CORN: Corn Earworm (Application of this product to the tassel region of corn during the pollen shed period will seriously reduce bee populations). Corn Rootworm Adults, European Corn Borer, Fall Armyworm, Sap Beetles, Japanese Beetle, Leafhoppers, Flea Beetles – 1 lb per 1,000 sq ft. For insects attacking silks and ears apply at 2 to 3 day intervals starting when first silks appear and continuing until silks began to dry. Three or more applications may be required depending on severity of infestation. May be applied up to harvest.

CUCUMBER, MELONS, PUMPKIN, SQUASH: Pickleworm, Melonworm – 1/2 lbs per 1,000 sq ft. Cucumber Beetles, Flea Beetles, Leafhoppers, Squash Bugs – 1/2 lb per 1,000 sq ft. Avoid excessive applications. Some leaf injury may occur if treatments are made when tender foliage is wet or in the presence of prolonged high humidity. Do not use this product on watermelons in Florida. May be used up to harvest.

LETTUCE, CARROTS: Flea Beetles, Harlequin Bug, Leafhoppers – 1/2 lb per 1,000 sq ft. Sixspotted Leafhopper – 3/4 lb in a 5 to 7 day schedule. Armyworms, Cabbage Caterpillars, Corn Earworm, Spittlebugs, Tarnished Plant Bugs, Lygus Bugs, Stink Bugs – 1 lb per 1,000 sq ft. For best results in the control of Corn Earworm after lettuce heads begin to form use 1 lb in a 5 to 7 day schedule. May be used up to harvest on carrots. Do not use on head lettuce within 3 days of harvest and to leaf lettuce within 14 days.

EGGPLANT, PEPPERS: Colorado Potato Beetles, Flea Beetles, Leafhoppers – 1/2 lb per 1,000 sq ft. Tomato Fruitworm, Tomato Hornworm, European Corn Borer, Lace Bugs – 1 lb per 1,000 sq ft.

STRAWBERRIES: Meadow Spittlebug, Strawberry Leafroller, Strawberry Weevil – 1 lb per 1,000 sq ft. Do not apply within 1 day of harvest.

TOMATO: Flea Beetles, Leafhoppers, Tomato Fruitworm, Fall Armyworm, Tomato Hornworm, European Corn Borer – 1½ lb per 1,000 sq ft.

NON-COMMERCIAL POULTRY (Chickens, Partridges, Pheasants, Pigeons): Northern Fowl Mite, Lice and as a supplement to premise treatments for Chicken Mite, Fleas – 1 lb per 100 birds. Apply thoroughly by means of a shaker can or hand duster. Repeat in 4 weeks if necessary. Do not use on Poultry or game birds within 7 days of slaughter.

IN OR AROUND POULTRY HOUSES: Chicken Mite, Fleas, Bed Bugs – 1 lb per 40 sq ft of litter or floor space and to roosts and adjacent areas by means of a shaker can, hand duster or power duster. Force dust into cracks and crevices. Repeat as necessary. Do not treat nest litter. Avoid direct contamination of eggs. Do not use in premise treatment within 7 days of slaughter.

DOGS, CATS: Ticks, Fleas – Dust lightly over the animal and rub thoroughly into the skin. Apply also to the feet between the toes and on the legs. Apply at weekly intervals if needed. Avoid treatment of kittens and puppies under 4 weeks of age. **DO NOT USE ON PREGNANT DOGS. NOTE:** Do not allow treated pets back on carpets or rugs in the house as this product may stain or discolor rugs and wall-to-wall carpets. Dust lightly in and around kennels and dog houses by means of a shaker can, hand or power duster. Force dust into cracks and crevices. Repeat as necessary, but not more often than once weekly.

DO NOT USE IN THE HOME: DO NOT APPLY TO RUGS AND CARPETS AS STAINING MAY OCCUR.

STORAGE AND DISPOSAL

STORAGE: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Avoid contamination of feed and foodstuffs. Store in a cool, dry place, preferably in a locked storage area.

DISPOSAL: PRODUCT – Partially filled bag may be disposed of by securely wrapping original container in several layers of newspaper and discard in trash.

CONTAINER – Do not reuse bag. Discard bag in trash.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. Causes eye irritation. Avoid contact with eyes, skin or clothing. Avoid breathing dust. Wash thoroughly after handling. Avoid contamination of food, feed, feeding troughs and water receptacles.

FIRST AID: If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take person and product container to the nearest medical emergency treatment center or hospital. In case of eye contact wash eyes immediately with fresh water for at least 15 minutes. Get medical attention if irritation persists. For skin, wash with plenty of soap and water. If inhaled, remove person from exposure area. **Note to Physicians:** Emergency information call 1-800-454-2333. Carbaryl is a moderate, reversible cholinesterase inhibitor. Atropine is antidotal.

ENVIRONMENTAL HAZARDS: This product is extremely toxic to aquatic and estuarine invertebrates. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Medical Information call 1-800-454-2333
Product Information call 1-800-225-2883

SOLARIS™

ORTHO® SOLARIS™ Registered trademarks of Monsanto Company
SEVIN® is the registered trademark of Rhone-Poulenc for carbaryl insecticide
©Monsanto Company 1994

Manufactured for The SOLARIS Group of Monsanto Company
P.O. Box 5008 San Ramon CA 94583-0808
Form S835-A / Product 2845
EPA Reg. No. 239-1349
EPA Est. 58996-MO-1[illegible], 769-GA-1[illegible]
Superscript is first letter of lot number
Made in USA

SAMPLE LABEL

AGRISEARCH INCORPORATED

DATA MEMO

Date 2·14·97 Subject On Site Test Material Monitoring

Project No. 1517 Signature [illegible]

Data Logger ID: Stow Away Serial Number: 69886

Data Logger Action/Placement	Time	Time Zone	Date	Initial
launched: interval 30min. delay: 2 days, 15 Hrs. (2·17·97 GY.)	1:56p.		2·14·97	GY
Placed with test material prior to transport	6:00a		2·17·97	HRm
Data uploaded as TestSite.DTF	3:45 p		2·28·97	GY
Datalogger re-launched interval 30 min	3:50 p		2·28·97	GY
Data uploaded as Testsit2.DTF	4:43 p		3·18·97	GY

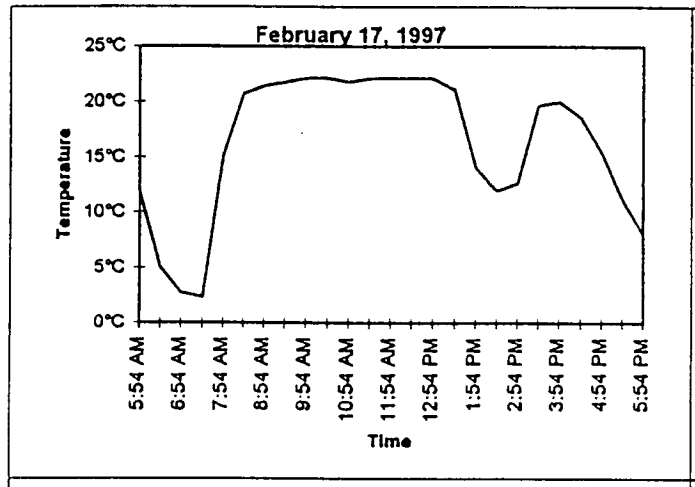
Notes:

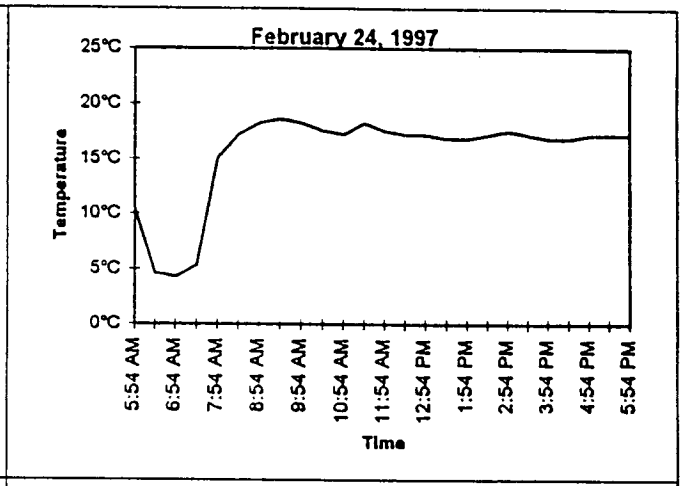
AGI-L007a-9/17/91

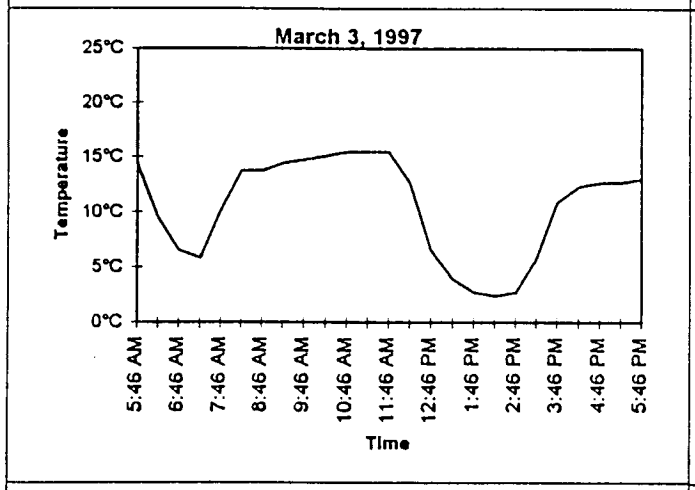
AGRISEARCH INCORPORATED

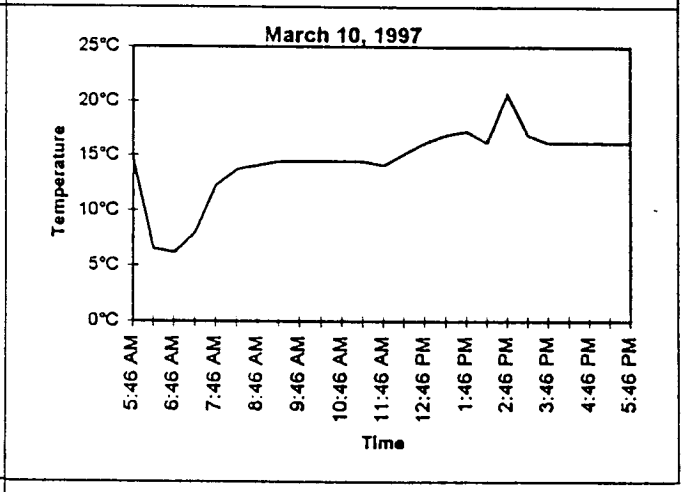
Study No. 1517: Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional

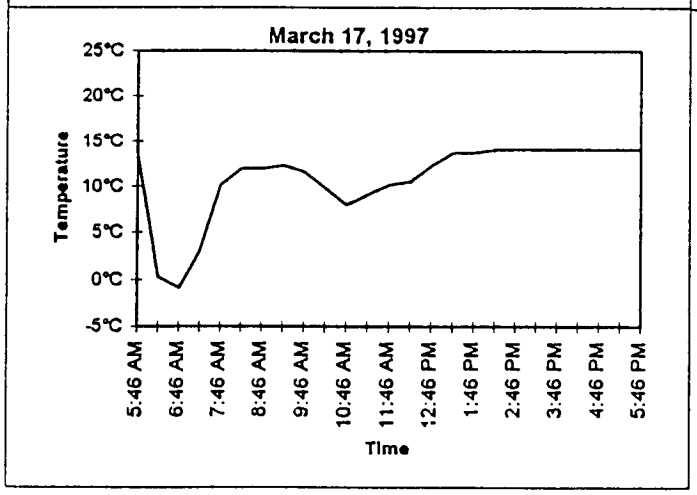
Fairfax VA Site: On-Site Chemical Temperature Monitoring











Datalogger ID: StowAway #69886

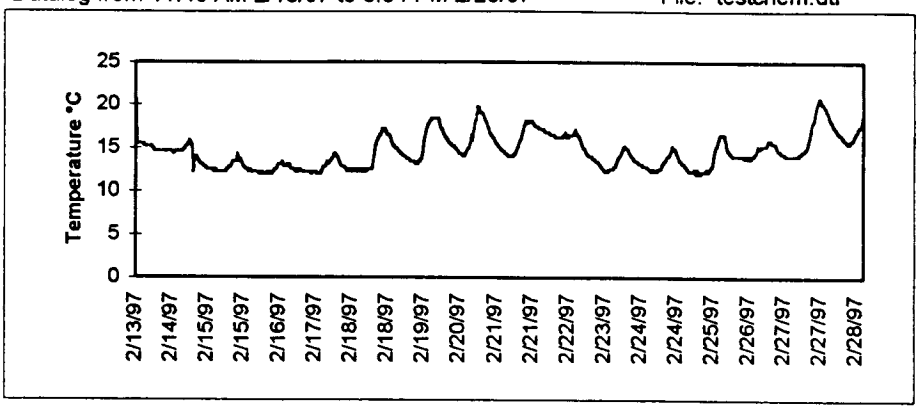
3-31-97
GP

1517: Test Material Storage: Temperature Datalogs

Rhone-Poulenc Ag Co. No. 10565

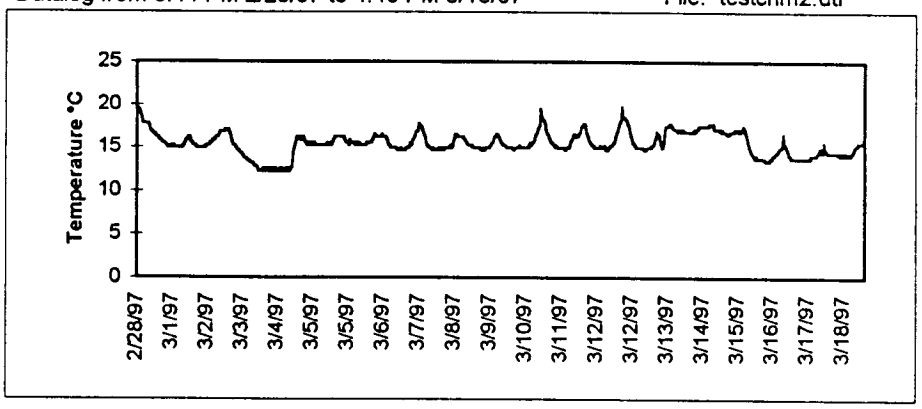
Data Logger ID: HOBO 67868 Record Interval: 30 minutes Agrisearch Project No. 1517

Datalog from 11:40 AM 2/13/97 to 3:34 PM 2/28/97 File: testchem.dtf



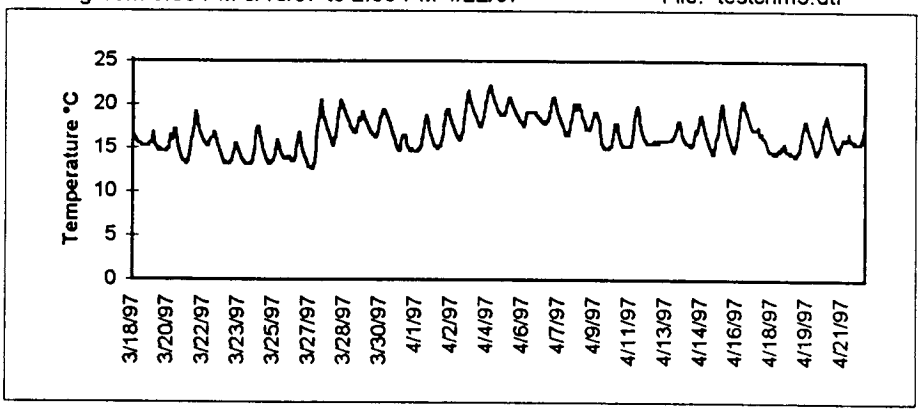
average: 14.6°C
min: 12.0°C
max: 22.2°C
range: 10.3°C

Datalog from 3:44 PM 2/28/97 to 4:40 PM 3/18/97 File: testchm2.dtf



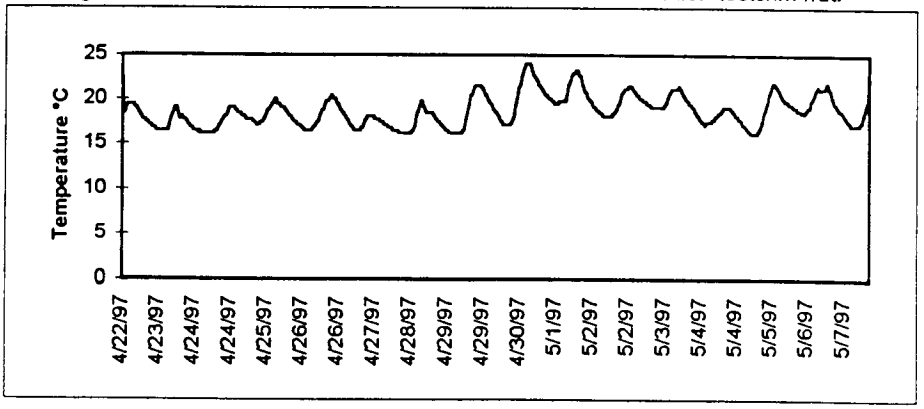
average: 15.4°C
min: 12.2°C
max: 19.8°C
range: 7.5°C

Datalog from 5:38 PM 3/18/97 to 2:09 PM 4/22/97 File: testchm3.dtf



average: 16.6°C
min: 12.5°C
max: 25.2°C
range: 12.7°C

Datalog from 2:09 PM 4/22/97 to 4:05 PM 5/7/97 File: testchm4.dtf



average: 18.7°C
min: 16.2°C
max: 24.1°C
range: 7.9°C

APPENDIX C

Morse Laboratories Analytical Report

MORSE LABORATORIES INCORPORATED

1525 Fulton Avenue
Sacramento, California 95825

TEL: 916-481-3141
FAX: 916-481-2959

May 19, 1997

CARBARYL APPLICATOR EXPOSURE STUDY DURING APPLICATION OF SEVIN 10 DUST TO DOGS BY THE NON-PROFESSIONAL
Analytical Phase

Morse Laboratories, Inc. Project No. ML96-0662-RHP

Agrisearch Protocol #1517, Amendment No. 1

Submitted to:

Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704

ATTN: D. Larry Merricks, Ph.D., Study Director

Submitted by:

Morse Laboratories, Inc.
1525 Fulton Avenue
Sacramento, California 95825

(916) 481-3141

PRINCIPAL INVESTIGATOR:

Susan Clark
(Analytical Project Coordinator)

TABLE OF CONTENTS

	Page Number
Title Page	1
Table of Contents	2-5
Statement of Compliance	6
QA Statement	7
Summary	8
Introduction	8
Objective	9
Analytical Project Initiation Date	9
Analytical Project Completion Date	9
Protocol/Amendment/Deviations	9
SOP Deviation	9
Sample Receipt	10
Test Matrices	10-11
Reagents	11-12
Sample Preparation	12
Analytical Standards	13
Analytical Methods/Deviations/Modifications	13-14
Method Validation	15

Page Number

HPLC Conditions 15-17

Calibration Standards 18

Calculations and Reporting 18-28

Retain Analysis Discussion 29-30

Study Discussion 30-31

Storage of Raw Data 31

Study Personnel 32

APPENDIX I Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Inner Dosimeter Samples 33-35

Copies of Spreadsheets for Carbaryl in Inner Dosimeters 36-46

APPENDIX II Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Outer Dosimeter Samples 47-49

Copies of Spreadsheets for Carbaryl in Outer Dosimeters 50-58

APPENDIX III Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Handwash Samples 59-61

Copies of Spreadsheets for Carbaryl in Handwash Samples 62-64

Page Number

APPENDIX IV Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Face/Neck Wipe Samples 65-67

Copies of Spreadsheets for Carbaryl in Face/Neck Wipes 68-72

APPENDIX V Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in OVS Air Sampling Tubes 73-75

Copies of Spreadsheets for Carbaryl in OVS Air Sampling Tubes 76-78

APPENDIX VI Example Inner Dosimeter Chromatograms, Representative Standard Injections and Standard Curve Graph 79-83

Example Outer Dosimeter Chromatograms, Representative Standard Injections and Standard Curve Graph 84-87

Example Handwash Chromatograms, Representative Standard Injections and Standard Curve Graph 88-91

Example Face/Neck Wipe Chromatograms, Representative Standard Injections and Standard Curve Graph 92-95

Example OVS Air Sampling Tube Chromatograms, Representative Injections and Standard Curve Graph 96-99

Page Number

APPENDIX VII Agrisearch Protocol Amendment No. 1, Analytical Phase to Agrisearch Protocol 1517 100-112

Morse Laboratories, Inc. Protocol Deviation, dated May 3, 1997 113

Morse Laboratories, Inc. Protocol Deviation, dated May 7, 1997 114

Morse Laboratories, Inc. Protocol Deviation, dated May 10, 1997 115

STATEMENT OF COMPLIANCE

Morse Laboratories, Inc. Project Number: ML96-0662-RHP

Protocol Number: 1517, Amendment No. 1

All aspects of this study carried out by **MORSE LABORATORIES, INC.** were conducted in accordance with the FIFRA Good Laboratory Practice Standards (40 CFR 160), as applicable.

Changes to the conduct of the study can be found on pages 9 and 14 of this report.

Date Analytical Phase of Study was Initiated (date analytical testing began in laboratory): January 10, 1997

Date Analytical Protocol was signed by the Study Director: January 8, 1997

Date Final Analytical Report was submitted to Study Director: May 19, 1997

Susan Clark
MORSE LABORATORIES, INC.
Analytical Project Coordinator

May 19, 1997

QUALITY ASSURANCE STATEMENT

Morse Laboratories, Inc. Project Number: ML96-0662-RHP

Protocol Number: 1517, Amendment No. 1

Quality Assurance inspections were carried out during the execution of the Study by Quality Assurance personnel according to §40 CFR 160.35 of the EPA Good Laboratory Practice Standards to ensure the integrity of the data. The final laboratory report (raw data package), as submitted to the Sponsor, has been determined to be accurate.

Conduct of Study (in-house) Inspection Date(s):

01/21/97, 02/11/97, 03/24/97, 03/25/97, 03/26/97, 04/17/97, 04/18/97, 04/24/97, 04/29/97, 04/30/97, 05/09/97

Raw Data and Analytical Summary Report Inspection Date(s):

02/24/97, 02/25/97, 02/26/97, 02/28/97, 03/11/97, 03/12/97, 03/14/97, 03/19/97, 03/20/97, 03/21/97, 03/24/97, 03/25/97, 04/09/97, 04/16/97, 04/17/97, 04/21/97, 04/22/97, 04/28/97, 04/29/97, 05/02/97, 05/05/97, 05/06/97, 05/07/97, 05/08/97, 05/09/97, 05/15/97, 05/16/97, 05/18/97, 05/19/97

Date(s) findings reported to Analytical Project Coordinator and Laboratory Management:

03/31/97, 04/29/97, 05/13/97, 05/19/97

Date(s) findings reported to Study Director/Management:

04/01/97, 04/30/97, 05/15/97, 05/19/97

Sherita Dormington — May 19, 1997
Quality Assurance Unit

Shawn Valpeli — May 19, 1997
Quality Assurance Unit

CARBARYL APPLICATOR EXPOSURE STUDY DURING APPLICATION OF SEVIN 10 DUST TO DOGS BY THE NON-PROFESSIONAL
Analytical Phase

Summary

The following report is a summary of the analytical testing conducted by Morse Laboratories, Inc. for Agrisearch Project No. 1517, Amendment No. 1. The report includes sample source and handling, analytical standard information, analytical methods summaries, example calculations, example chromatograms and spreadsheets.

Introduction

The field phase of Agrisearch Project No. 1517 (Carbaryl Applicator Exposure Study During Application of Sevin 10 Dust to Dogs by the Non-Professional) was conducted near Frederick, Maryland. The samples collected in the field were transported to Morse Laboratories, Inc. for analysis. This report describes how the samples were handled and analyzed in the laboratory. The resulting data are presented in Appendix I through V of this report. Representative chromatograms are presented in Appendix VI and the analytical protocol amendment and deviations are presented in Appendix VII.

The analyte was carbaryl. The sample matrices included:

Outer dosimeters divided into lower arm, upper arm, front torso, rear torso, lower leg and upper leg.

Inner dosimeters divided into lower arm, upper arm, front torso, rear torso, lower leg and upper leg.

Face/neck wipes

Handwashes

Air sampling tubes

The analytical methods for each matrix were validated at Morse Laboratories, Inc. for this study.

Objective

The objective of the analytical phase of this study was to analyze the field samples for Carbaryl and report the results.

Analytical Project Initiation Date

The project was initiated on January 10, 1997 with the Kapak bag adhesion trial. Outer dosimeter method validation was initiated on February 6, 1997.

Analytical Project Completion Date

Residue values for the last set of data were calculated on May 7, 1997.

Protocol/Amendment/Deviations

The analytical portion of the study was conducted according to Agrisearch Protocol No. 1517, Protocol Amendment No. 1.

There were three protocol deviations generated by Morse Laboratories, Inc. that are included in Appendix VII.

1. Protocol Deviation, dated May 3, 1997

2. Protocol Deviation, dated May 7, 1997

3. Protocol Deviation, dated May 10, 1997

Memoranda/letters were also written by the Study Director during the course of the study stating guidelines to be followed during various aspects of sample analysis. All memoranda/letters from the Study Director will be archived at Morse Laboratories, Inc.

SOP Deviation

There was one SOP deviation generated by Morse Laboratories, Inc. and sent to the Study Director for approval:

1. SOP Deviation, dated April 8, 1997, from Morse Laboratories, Inc. SOP# HPLC-12, Revision #5

Sample Receipt

All field samples were received frozen and logged in according to Morse Laboratories, Inc. SOP's. All controls were received at ambient temperature. Control OVS tubes and control face/neck wipe samples were received from the Sponsor. Control OVS tubes were also purchased by Morse Laboratories, Inc. from the Sponsor's supplier. Additional control face/neck wipe samples were purchased at a local department store by Morse Laboratories, Inc. Control 0.01% Aerosol® OT-75 and 0.1% Aerosol® OT-75 solution was prepared at Morse Laboratories, Inc. Control samples were then placed into frozen storage and remained frozen until analysis, with the exception of the Aerosol® OT-75 solution control samples which were stored in MC-10-90, a limited-access room temperature storage cabinet. Inner and outer dosimeters, handwashes, face/neck wipes and OVS tubes were stored in FR-16-97, a limited-access freezer with a temperature range of -20 ± 5 °C.

Authentic copies of Morse Laboratories, Inc. tickets and chain of custody documents were submitted with the raw data.

Test Matrices

The following five matrices were analyzed for this study:

1. *Inner dosimeters:* consisting of one white, 100% cotton, long-sleeved shirt and one white, 100% cotton, thermal pants with the waistband removed.

2. *Outer dosimeters:* consisting of one white, 100% cotton, long-sleeved shirt and one pair of white, 100% cotton pants.

   Inner and outer dosimeters were divided into six sections representing specific body regions: lower arm (LA), upper arm (UA), front torso (FT), rear torso (RT), lower leg (LL) and upper leg (UL) with each section representing one analytical sample.

3. *Face/neck wipes:* consisting of two 16" × 16" cotton handkerchiefs each wet with 25 mL of 0.01% Aerosol OT-75. Both handkerchiefs were combined into one analytical sample. To simplify nomenclature, each handkerchief is referred to as a "wipe".

4. *Handwash:* consisting of 400 mL of 0.01% (v/v) Aerosol® OT-75 solution.

5. *Air sampling tube (OVS tube):* each sampling tube is divided into a front section which consists of a Teflon® retainer ring, a glass fiber filter, 270 mg of XAD-2 sorbent and a foam separator plug while the rear section consists of 140 mg XAD-2 sorbent and a foam retention plug; the front and rear sections combined represent one analytical sample.

Reagents

The following reagents were used for the carbaryl analyses. This is a compilation of the reagents from all four of the analytical methods.

Acetone:	Pesticide grade
Acetonitrile:	HPLC grade
Aerosol® OT-75:	Aerosol® OT Solution, 75% w/w, aqueous, #A345-500 (Fisher Scientific, Fair Lawn, NJ)
1-decanol:	"Baker" (J.T. Baker Chemical Co., Phillipsburg, NJ)
Dichloromethane:	Pesticide grade
Florisil Bond Elut LRC:	10 cc/500 mg (Varian Analytical Instruments, Sunnyvale, CA)
Hexane:	Pesticide grade
Methanol:	HPLC grade
N,N-Dimethyl-2-mercaptoethylamine-hydrochloride (Thiofluor):	Chromatographic grade (Pickering Laboratories, Inc., Mountain View, CA)
O-Phthalaldehyde:	Chromatographic grade (Pickering Laboratories, Inc., Mountain View, CA)
O-Phthalaldehyde diluent:	0.05M sodium borate, pH 9.1 (Pickering Laboratories, Inc., Mountain View, CA)
Sodium hydroxide:	Baker Analyzed® Reagent, pellets (J.T. Baker Chemical Co., Phillipsburg, NJ)

Sodium sulfate:	Analytical Reagent grade, anhydrous granular, #8024 (Mallinckrodt, St. Louis, MO)
Deionized water:	Morse Laboratories, Inc. Polymetrics Deionized Water System
Water:	HPLC grade
Filter paper:	Whatman #4, 18.5 cm diameter
Filters	
Samples for HPLC:	HV Durapore (PVDF), 0.45 μm (Millipore Corp., So. San Francisco, CA)
Hydrolysis Reagent:	0.45 μm nylon 66 membrane filters, 47 mm (Alltech Associates, Deerfield, IL)

Sample Preparation

The majority of quality control (QC) dosimeter samples were cut into the appropriate sections at Morse Laboratories, Inc. prior to the date of analysis. Inner and outer dosimeter field samples required no preparation prior to analysis.

QC 0.01% Aerosol® OT-75 handwash samples for method validation sets were measured on the day of analysis; the 0.01% Aerosol® OT-75 solution was prepared prior to the day of method validation analysis. QC 0.01% Aerosol® OT-75 handwash samples for field sample sets were prepared on the day of analysis by dilution of a previously prepared 1% stock Aerosol® OT-75 solution. Handwash field samples were thawed prior to analysis.

QC face/neck wipe samples were prewet (each wipe with 25 mL) with 50 mL of 0.01% Aerosol® OT-75 solution prior to fortification and subsequent analysis. Face/neck wipe field samples required slight thawing prior to analysis.

The end caps were removed from all OVS tubes prior to analysis. No other preparation was necessary.

Analytical Standards

The analytical standards used for the analytical portion of the study were:

1. Carbaryl
   Rhône-Poulenc Ag Company
   Lot #: 85068
   Date Received: 11-14-95
   Expiration Date: 11-30-2001
   Purity: 99.8%
   Storage: 1-8 °C (Ref-B70-88)

2. Carbaryl
   Rhône-Poulenc Ag Company
   Lot #: 208112126
   Date Received: 2-11-97
   Expiration Date: 11-30-2001
   Purity: 99.8%
   Storage: 1-8 °C (Ref-B70-88)

The quantity of carbaryl analytical standard received on 11-14-95 was completely used during the course of the study. Additional analytical standard was requested and received on 2-11-97.

Authentic copies of analytical standard receipt data, use logs, certificates of analysis and standard preparation documentation were submitted with the raw data.

Analytical Methods/Deviations/Modifications

Inner and Outer Dosimeters

The analytical method used for the analysis of inner and outer dosimeter samples was Morse Laboratories, Inc. SOP# Meth-103, "Determination of Carbaryl in Dermal Dosimeters", dated 01/97. Carbaryl was extracted from dermal cotton dosimeter sections with acetone. An aliquot of the extract was subjected to Florisil Bond Elut cleanup, then submitted to high pressure liquid chromatographic analysis using post column derivatization/fluorescence detection. The method, incorporating florisil cleanup, was applicable to samples containing residue levels ranging from 1.0 μg/section to 500 μg/section. A provision was made, however, to extend the range of applicability by deleting the florisil cleanup. The limit of quantitation (LOQ) was 1.0 μg/section.

There were three method deviations to SOP# Meth-103 generated by Morse Laboratories, Inc., dated April 15, 1997, May 5, 1997 and May 12, 1997.

A method modification, dated 5/2/97, was generated for the analysis of lower level outer dosimeters which incorporates steps to dissolve and transfer solid materials to the Florisil Bond Elut column. The method modification date is referenced on the extraction worksheets as appropriate.

Handwashes

The analytical method used for the analysis of handwash samples was Morse Laboratories, Inc. SOP# Meth-106, "Determination of Carbaryl in Handwash Solutions", dated 01/97. Carbaryl was extracted from handwash solutions with dichloromethane. An aliquot of the extract was evaporated to dryness, reconstituted in acetonitrile:water (50:50 v/v), then submitted to high pressure liquid chromatographic analysis using post column derivatization/fluorescence detection. The limit of quantitation (LOQ) was 1.0 μg/sample.

Face/Neck Wipes

The analytical method used for the analysis of face/neck wipe samples was Morse Laboratories, Inc. SOP# Meth-105, "Determination of Carbaryl in Cotton Facial/Neck Wipes", dated 01/97. Carbaryl was extracted from cotton face/neck wipes with acetone. An aliquot of the extract was subjected to Florisil Bond Elut cleanup, then submitted to high pressure liquid chromatographic analysis using post column derivatization/fluorescence detection. The limit of quantitation (LOQ) was 1.0 μg/sample.

There was one method deviation to SOP# Meth-105 generated by Morse Laboratories, Inc. dated April 15, 1997.

OVS Air Sampling Tubes

The analytical method used for the analysis of OVS air sampling tubes was Morse Laboratories, Inc. SOP# Meth-104, "Determination of Carbaryl in OVS Air Sampling Tubes", dated 02/97. Carbaryl was extracted from each whole sorbent tube with acetonitrile. An aliquot of the extract was evaporated to dryness, reconstituted in acetonitrile:water (50:50 v/v), then submitted to high pressure liquid chromatographic analysis using post column derivatization/fluorescence detection. The limit of quantitation (LOQ) was 0.01 μg/tube.

Method Validation

Method validation was conducted for inner and outer dosimeters by extracting two control samples, seven laboratory-fortified spikes at 3.0 μg/section, seven laboratory-fortified spikes at 50 μg/section and seven laboratory-fortified spikes at 500 μg/section for each matrix. Inner dosimeter recoveries ranged from 94% to 105%. Outer dosimeter recoveries ranged from 82% to 104%.

Method validation was conducted for handwash and face/neck wipe samples by extracting two control samples, seven laboratory-fortified spikes at 3.0 μg/sample, seven laboratory-fortified spikes at 50 μg/sample and seven laboratory-fortified spikes at 500 μg/sample. Handwash recoveries ranged from 85% to 106%. Face/neck wipe recoveries ranged from 72% to 90%.

Method validation was conducted for OVS tubes by extracting two control samples, seven laboratory-fortified spikes at 0.03 μg/tube, seven laboratory-fortified spikes at 0.5 μg/tube and seven laboratory-fortified spikes at 3.0 μg/tube. OVS tube recoveries ranged from 73% to 95%.

HPLC Conditions

Instruments:

1. Linear Fluor LC-304 Fluorescence Detector (DT-21-91) with SP8800-1 Ternary HPLC pump (PS-09-90), equipped with Pickering PCX 5000 Post Column Reaction Module (RM-01-90)

2. FL2000 Fluorescence Detector (DT-29-93) with P4000 Quaternary Gradient pump (PS-11-93), equipped with Pickering PCX 5100 Post Column Reaction Module (RM-02-93)

The following auxiliary equipment identified by Morse Laboratories, Inc. equipment ID numbers were also used: I-03-90, I-02-89, AS-02-90, AS-09-93, IV-08-90, IV-14-93, LN-02-90, CP-25-97, CT-25-97, CM-27-97, CK-26-97 and CMO-21-97

Note: The above instrument systems are considered equivalent.

The following conditions (with minor variations) were used for the analysis of inner and outer dosimeters, handwashes, face/neck wipes and OVS air sampling tubes:

Column #1: DuPont Zorbax® Rx-C8, 25 cm × 4.6 mm × ¼" o.d., 5 μm

Gradient #1:

Time (min.)	% Acetonitrile	% Water	Flow (mL/min.)
0	30	70	1.5
6.5	45	55	1.5
8.5	45	55	1.5
9.5	80	20	1.5
13.5	80	20	1.5
14.0	30	70	1.5
19.5	30	70	1.5

Gradient #2:

Time (min.)	% Acetonitrile	% Water	Flow (mL/min.)
0	20	80	1.5
14	45	55	1.5
15	45	55	1.5
19	80	20	1.5
19.5	80	20	1.5
25	20	80	1.5

Column #2: DuPont Zorbax® SB-C8, 15 cm × 4.6 mm × ¼" o.d., 5 μm

Gradient :

Time (min.)	% Acetonitrile	% Water	Flow (mL/min.)
0	30	70	1.5
6.5	45	55	1.5
7.4	45	55	1.5
7.5	80	20	2.0
10.0	80	20	2.0
10.1	30	70	1.5
14.0	30	70	1.5

Post Column Conditions:	Reaction Temperature:	100 °C
	Hydrolysis Reagent:	0.2N NaOH
	Derivatization Reagent:	500 mg OPA + approximately 2.5 g n,n-dimethyl-2-mercapto-ethylamine-hydrochloride in 1 quart 0.05M sodium borate, pH 9.1
	Reagent Flow:	0.14 mL/min. each (approximately)
Detector Settings:	EX Wavelength:	330 nm
	EM Wavelength:	466 nm
Injection Volume:	50 μL	

Notes: 1. The DuPont Zorbax® Rx-C8 25 cm column was used in conjunction with the HPLC gradient #2 for those analytical sets when apparent carbaryl contamination was observed in the control sample. These alternate conditions were developed to maximize the efficiency of the separation and in the majority of cases confirmed that the suspect response was not carbaryl.

2. As of 4-18-97 a DuPont Zorbax® Rx-C8 15 cm × 4.6 mm i.d., 5 μm analytical column was substituted for the DuPont Zorbax® Rx-C8 25 cm × 4.6 mm i.d., 5 μm column. In those cases when used, the gradient was adjusted to compensate for the shorter column length (as described above).

3. The DuPont Zorbax® Rx-C8 and DuPont Zorbax® SB-C8 HPLC column packing materials are identical. The Rx-C8 and SB-C8 designations were used interchangeably as descriptions for these analytical columns.

The column and conditions stated above were satisfactory for the matrix being analyzed. The specific column packing, mobile phase, column temperature and flow rate listed were typical conditions for this analysis. Specific conditions used in this study are noted on each chromatographic run and are not otherwise documented.

Calibration Standards

The calibration standard curve for each analytical set consisted of the following standard levels which bracketed sample responses: 2.5 ng/mL, 5.0 ng/mL, 12.5 ng/mL, 40 ng/mL and 60 ng/mL. Analytical standards were injected every four to five samples such that each calibration standard concentration was injected at least once (excluding the standard curve) for each chromatographic run.

Calculations and Reporting

Spectra Physics SP 4400 Integrator Software

Calculations for instrumental analysis of all method validation analytical sets were conducted using a validated software application to create a standard curve based on linear regression. These regression functions were used to calculate a best fit line (from a set of standard concentrations in ng/mL versus peak height response) and to determine concentrations of the analyte found during sample analysis from the calculated best fit line. The equation used for least squares fit was:

$$y = mx + b$$

where,

y = response by height

x = ng/mL of analyte

m = slope of the line

b = y-intercept

The raw data values from the laboratory worksheets and chromatograms were then entered into a Lotus 1-2-3, version 4.01 spreadsheet. This validated spreadsheet program was used to calculate the final residue values and percent recovery values. For this study, a total of 5 spreadsheets were submitted for both calculation and reporting of data. All computer spreadsheet formulas used for the calculations were validated prior to calculation of study samples. Validation data will be maintained at Morse Laboratories, Inc.

Thermo Separation Products PC1000 Software

Instrumental analysis of field samples of inner and outer dosimeter sections, face/neck wipes, handwashes and OVS air sampling tubes were conducted using the Thermo Separation Products PC1000 validated software application.

The Thermo Separation Products PC1000 software application, as validated by Morse Laboratories, Inc., was used to generate a standard curve based on linear regression. The regression functions were used to calculate a best fit line (from a set of standard concentrations in ng/mL versus the corresponding peak height responses) and to determine concentrations of the analyte found during sample analysis from the calculated best fit line.

The five standard curve standards injected with the analysis set and their corresponding peak heights were used by the Thermo Separation Products software application to generate the following equation for a line:

$$y = mx + b$$

where,

y = response by height

m = slope of the line

x = ng/mL of analyte

b = y-intercept

It also provides the correlation coefficient.

As an example of how the software actually prints the equation of a line, the following information was taken from the standard curve contained in analytical set #45, inner dosimeters:

HEIGHT = B * CONC + C
CORR COEFF = 0.9998

where,

y = peak height response (HEIGHT)

m = 4.6208e + 001 = 46.208

x = ng/mL (CONC)

b = 7.4038e + 000 = 7.4038

For the purpose of analyses conducted by Morse Laboratories, Inc. for this project:

1. Peak height response was used for the y-value

2. The x-value (or conc) was defined as ng/mL

The raw data values from the laboratory worksheets and chromatograms were then entered into a Lotus 1-2-3, version 4.01 spreadsheet. This validated spreadsheet program was used to calculate the final residue values and percent recovery values. For this study, a total of 5 spreadsheets were submitted for both calculation and reporting of data. All computer spreadsheet formulas used for the calculations were validated prior to calculation of study samples. Validation data will be maintained at Morse Laboratories, Inc.

Inner and Outer Dosimeters

The calculations for μg/section found and percent recovery for laboratory-fortified and field-fortified samples were:

$$\mu g/section = ng/mL\ found \times (mL\ solv./mL\ aliq.) \times [Final\ Vol.\ (mL)/Amt.\ Samp.\ (sect.)] \times HPLC\ Dil.\ Fact. \times 1\ \mu g/1000\ ng$$

where,

ng/mL found	=	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
mL solv.	=	Volume solvent used for the extraction
mL aliq.	=	Volume of aliquot taken through procedure
Final Vol. (mL)	=	Final volume of sample extract submitted to HPLC
Amt. Samp. (sect.)	=	Amount of sample taken through the extraction
HPLC Dil. Fact.	=	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
1 μg/1000 ng	=	Conversion factor

$$\%\ Rec = [reported\ \mu g/section/Fort.\ Level\ (\mu g/sect)] \times 100$$

$$Field\ Fort.\ Rec\ (\%) = [reported\ \mu g/section/Field\ fort.\ level\ (\mu g/sect.)] \times 100$$

The following examples are calculations from analytical set #45, inner dosimeters:

1. ML ticket #73603, set 45, carbaryl, inner dosimeter, ID FT check 45, 0.005 section/mL:

$$\mu g/section\ carbaryl = 0\ ng/mL \times (2500\ mL/25.0\ mL) \times (2.0\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 0\ \mu g/section$$

$$reported\ \mu g/section = <1.0\ \mu g/section$$

2. ML ticket #73603, set 45, carbaryl, inner dosimeter, ID FT spike 184 at 5.0 μg/section, 0.005 section/mL:

$$\mu g/section\ carbaryl = 26.935\ ng/mL \times (2500\ mL/25.0\ mL) \times (2.0\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 5.387\ \mu g/section$$

$$reported\ \mu g/section = 5.39\ \mu g/section$$

$$\%\ Rec = \frac{5.39\ \mu g/section}{5.0\ \mu g/section} \times 100$$

$$= 108\%$$

3. ML ticket #73562, set 45, carbaryl, inner dosimeters, FS-36-ID-FT, 0.005 section/mL (Dil 1 → 20):

$$\mu g/section\ carbaryl = 25.506\ ng/mL \times (2500\ mL/25.0\ mL) \times (2.0\ mL/1) \times 20 \times 1\ \mu g/1000\ ng$$

$$= 102.024\ \mu g/section$$

$$reported\ \mu g/section = 102\ \mu g/section$$

Identification and explanations of the spreadsheet columns and the spreadsheet calculation equations for the inner dosimeter and outer dosimeter spreadsheets can be found in Appendix I and II, respectively.

Handwash Samples

The calculations for μg/sample found and percent recovery for laboratory-fortified and field-fortified samples were:

$$\mu g/sample = ng/mL\ found \times (mL\ solv./mL\ aliq.) \times (Final\ Vol.\ (mL)/Amt.\ Samp.) \times HPLC\ Dil.\ Fact. \times 1\ \mu g/1000\ ng$$

where,

ng/mL found	=	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
mL solv.	=	Volume solvent used for the extraction
mL aliq.	=	Volume of sample taken through procedure
Final Vol. (mL)	=	Final volume of sample extract submitted to HPLC
Amt. Samp.	=	Amount of sample taken through the extraction
HPLC Dil. Fact.	=	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
1 μg/1000 ng	=	Conversion factor

$$\%\ Rec = [reported\ \mu g/sample/Fort.\ level\ (\mu g/sample)] \times 100$$

$$Field\ Fort.\ Rec\ (\%) = [reported\ \mu g/sample/Field\ fort.\ level\ (\mu g/sample)] \times 100$$

The following examples are calculations from analytical set #60, handwash:

1. ML ticket #73726, set 60, carbaryl, handwash, HW check 60, 0.005 sample/mL:

$$\mu g/sample\ carbaryl = 0\ ng/mL \times (200\ mL/2.0\ mL) \times (2.0\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 0\ \mu g/sample$$

$$reported\ \mu g/sample = <1.0\ \mu g/sample$$

2. ML ticket #73726, set 60, carbaryl, handwash, HW spike 217 at 100 μg/sample, 0.005 sample/mL (Dil 1 → 20):

$$\mu g/sample\ carbaryl = 28.385\ ng/mL \times (200\ mL/2.0\ mL) \times (2.0\ mL/1) \times 20 \times 1\ \mu g/1000\ ng$$

$$= 113.54\ \mu g/sample$$

$$reported\ \mu g/sample = 114\ \mu g/sample$$

$$\%\ Rec = \frac{114\ \mu g/sample}{100\ \mu g/sample} \times 100$$

$$= 114\%$$

3. ML ticket #73534, set 60, carbaryl, handwash, FS-25-HW-01, 0.005 sample/mL (Dil 1 → 20):

$$\mu g/sample\ carbaryl = 30.744\ ng/mL \times (200\ mL/2.0\ mL) \times (2.0\ mL/1) \times 20 \times 1\ \mu g/1000\ ng$$

$$= 122.976\ \mu g/sample$$

$$reported\ \mu g/sample = 123\ \mu g/sample$$

Identification and explanations of the spreadsheet columns and the spreadsheet calculation equations for the handwash spreadsheet can be found in Appendix III.

Face/Neck Wipe Samples

The calculations for μg/sample found and percent recovery for laboratory-fortified and field-fortified samples were:

$$\mu g/sample = ng/mL\ found \times (mL\ solv./mL\ aliq.) \times (Final\ Vol.\ (mL)/Amt.\ Samp.) \times HPLC\ Dil.\ Fact. \times 1\ \mu g/1000\ ng$$

where,

ng/mL found	=	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
mL solv.	=	Volume solvent used for the extraction
mL aliq.	=	Volume of aliquot taken through procedure
Final Vol. (mL)	=	Final volume of sample extract submitted to HPLC
Amt. Samp.	=	Amount of sample taken through the extraction
HPLC Dil. Fact.	=	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
1 μg/1000 ng	=	Conversion factor

$$\%\ Rec = [reported\ \mu g/sample/Fort.\ level\ (\mu g/sample)] \times 100$$

$$Field\ Fort.\ Rec\ (\%) = [reported\ \mu g/sample/Field\ fort.\ level\ (\mu g/sample)] \times 100$$

The following examples are calculations from analytical set #16, face/neck wipes:

1. ML ticket #73585, set 16, carbaryl, face/neck wipes, FW check 16, 0.005 sample/mL:

$$\mu g/sample\ carbaryl = 0\ ng/mL \times (400\ mL/2.0\ mL) \times (1.0\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 0\ \mu g/sample$$

$$reported\ \mu g/sample = <1.0\ \mu g/sample$$

2. ML ticket #73585, set 16, carbaryl, face/neck wipes, FW spike 116 at 5.0 μg/sample, 0.005 sample/mL:

$$\mu g/sample\ carbaryl = 21.199\ ng/mL \times (400\ mL/2.0\ mL) \times (1.0\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 4.2398\ \mu g/sample$$

$$reported\ \mu g/sample = 4.24\ \mu g/sample$$

$$\%\ Rec = \frac{4.24\ \mu g/sample}{5.0\ \mu g/sample} \times 100$$

$$= 85\%$$

3. ML ticket #73461, set 16, carbaryl, face/neck wipes, FS-07-FW-01, 0.005 sample/mL (Dil 1 → 10):

$$\mu g/sample\ carbaryl = 21.771\ ng/mL \times (400\ mL/2.0\ mL) \times (1.0\ mL/1) \times 10 \times 1\ \mu g/1000\ ng$$

$$= 43.542\ \mu g/sample$$

$$reported\ \mu g/sample = 43.5\ \mu g/sample$$

Identification and explanations of the spreadsheet columns and the spreadsheet calculation equations for the face/neck wipe spreadsheet can be found in Appendix IV.

OVS Air Sampling Tubes

The calculations for μg/tube found and percent recovery for laboratory-fortified and field-fortified samples were:

$$\mu g/tube = ng/mL\ found \times (mL\ solv./mL\ aliq.) \times [Final\ Vol.\ (mL)/Amt.\ Samp.\ (tube)] \times HPLC\ Dil.\ Fact. \times 1\ \mu g/1000\ ng$$

where,

ng/mL found	=	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
mL solv.	=	Volume solvent used for the extraction
mL aliq.	=	Volume of aliquot taken through procedure
Final Vol. (mL)	=	Final volume of sample extract submitted to HPLC
Amt. Samp. (tube)	=	Amount of sample taken through the extraction
HPLC Dil. Fact.	=	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
1 μg/1000 ng	=	Conversion factor

$$\%\ Rec = [reported\ \mu g/tube/Fort.\ level\ (\mu g/tube)] \times 100$$

$$Field\ Fort.\ Rec\ (\%) = [reported\ \mu g/tube/Field\ fort.\ level\ (\mu g/tube)] \times 100$$

The following examples are calculations from analytical set #73:

1. ML ticket #73605, set 73, carbaryl, sorbent tube (whole), OVS check 73, 0.5 tube/mL:

$$\mu g/tube\ carbaryl = 0\ ng/mL \times (10\ mL/4.0\ mL) \times (0.8\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 0\ \mu g/tube$$

$$reported\ \mu g/tube = <0.01\ \mu g/tube$$

2. ML ticket #73605, set 73, carbaryl, sorbent tube (whole), OVS spike 242 at 0.03 μg/tube, 0.5 tube/mL:

$$\mu g/tube\ carbaryl = 14.433\ ng/mL \times (10\ mL/4.0\ mL) \times (0.8\ mL/1) \times 1 \times 1\ \mu g/1000\ ng$$

$$= 0.028866\ \mu g/tube$$

$$reported\ \mu g/tube = 0.0289\ \mu g/tube$$

$$\%\ Rec = \frac{0.0289\ \mu g/tube}{0.03\ \mu g/tube} \times 100$$

$$= 96\%$$

3. ML ticket #73498, set 73, carbaryl, sorbent tube (whole), FS-14-OV-01, 0.5 tube/mL (Dil 1 → 50):

$$\mu g/tube\ carbaryl = 45.739\ ng/mL \times (10\ mL/4.0\ mL) \times (0.8\ mL/1) \times 50 \times 1\ \mu g/1000\ ng$$

$$= 4.5739\ \mu g/tube$$

$$reported\ \mu g/tube = 4.57\ \mu g/tube$$

Identification and explanations of the spreadsheet columns and the spreadsheet calculation equations for the OVS air sampling tube spreadsheet can be found in Appendix V.

Retain Analysis Discussion

1. Because of the wide range of residue levels for carbaryl on the inner and outer dosimeters, the samples were analyzed by one of two extraction schemes depending on the expected levels for those samples. Samples expected to contain <500 μg/section were automatically taken through the Florisil cleanup resulting in an LOQ of 1.0 μg/section. Samples expected to contain residues >500 μg/section did not utilize the Florisil cleanup which resulted in an LOQ of 20 μg/section. Since the actual levels did not always fall in line with the expected level, a retain analysis (a second or third aliquot as applicable taken from the original sample) was sometimes required utilizing a more appropriate extraction scheme in order to accurately quantitate all analyte responses.

2. The chromatographic runs that were generated for retain analyses were identified by the analytical set # and a letter designation. The values generated for the check and spike samples on the retain chromatographic run were calculated and reported on the carbaryl spreadsheets. For retain field samples, the retain values were the only results that were reported for those samples. Original results were maintained as support data.

3. Retain analysis was conducted on inner dosimeter set #'s 26 through 40, 44, 45, 46 and 47. In all cases but one, the retain analyses of applicable samples confirmed a residue value >500 μg/section. Retain analysis of field sample, FS-24-ID-RT, from set #39a yielded 435 μg/section. A carbaryl contamination was observed in the control samples for retain analysis of set #'s 44a, 45a and 46a therefore retain analysis set #'s 44b, 45b and 46b were conducted. The retain control samples for set #'s 44b, 45b and 46b did not contain carbaryl. Original analysis results for set #'s 44, 45 and 46 were maintained as support data.

4. Retain analysis was conducted on outer dosimeter set #'s 62 and 64 due to carbaryl contamination observed in the control samples. The retain control samples for set #'s 62a and 64a did not contain carbaryl.

5. Retain analysis was conducted on low-level field-fortified outer dosimeter set #'s 56 and 75 due to the abnormally low and sporadic field-fortified recoveries observed. Retain analysis of set #'s 56c and 75a was conducted according to Meth-103 with Morse Laboratories, Inc. modifications dated 5/2/97 and method deviation dated May 5, 1997. Analysis results for set #'s 56, 56a, and 75 were maintained as support data. Due to an oversight when assigning analytical set #'s, there is no set #56b.

6. Face/neck wipe set #'s 19, 20 and 21 each yielded one laboratory-fortified spike at <70%. Low laboratory-fortified spike recoveries were traced to one package of face/neck wipes purchased by Morse Laboratories, Inc. for use as QC samples. Because the field-fortified recoveries in the above sets were acceptable and greater than the laboratory-fortified recoveries and the field sample residue followed the trend for face/neck wipe samples, it was concluded that the laboratory QC samples were the only aberrant samples. Retain analysis of set #21 confirmed low recoveries occurred during the extraction phase of the method and not elsewhere. Set #21 was maintained as support data.

Study Discussion

1. Carbaryl break-through trials were conducted on OVS air sampling tubes which demonstrated the retain capacity of the OVS tube out to 4 hours when attached to an air sampling pump with a flow rate of 2 L/minute.

2. A container adhesion trial was conducted using 0.01% Aerosol® OT-75 solution which demonstrated that at a concentration of 500 μg/sample carbaryl does not adhere to Kapak bags.

3. Eight sets of carbaryl field fortification solutions were prepared in acetonitrile at 500 μg/mL, 50 μg/mL, 5.0 μg/mL and 0.50 μg/mL as per the Study Director's memorandum, dated January 23, 1997. These solutions were shipped to the Study Director and used for fortification of all field-fortified samples. Retain standard solutions at each concentration for each set were maintained in frozen storage by the laboratory.

4. Analysis of the odd numbered event (e.g., 01, 03, ...) field-fortified samples was initially requested by the Study Director. A memorandum generated by the Study Director dated April 3, 1997 requested analysis of high-level and low-level field-fortified samples from events 01, 04 and 08 only. All field-fortified samples other than events 01, 04 and 08 which were already in various stages of analysis were taken to completion.

   Mid-level field-fortified inner dosimeters from event 04 were inadvertently extracted after April 3, 1997. The Study Director was notified of this oversight.

5. The chromatographic runs that were generated for the diluted samples contained check and spike samples required to validate the results obtained. The values generated for the check and spike samples on the dilution chromatographic run were labeled as "reinjection" and were calculated and reported on the carbaryl spreadsheets.

6. All recoveries outside the range of 70% to 120% were communicated to and approved by the Study Director via Morse Laboratories, Inc. memoranda.

7. All final values were reported as less than the limit of quantitation (<LOQ) or to three significant figures. Recoveries were reported to one decimal place.

8. Initiation of the storage stability in matrix and storage stability in solvent are currently underway. Data contained in this report does not reflect these analyses. An addendum summary, QA Statement and Statement of Compliance will be submitted with the stability data.

Storage of Raw Data

The Study Director requested that the laboratory retain all original raw data during the course of the study. Spreadsheet results were sent via facsimile to the Study Director as data was generated during the course of the study. The original documents (with the exception of Morse Laboratories, Inc. tickets and chain of custody documents) will be forwarded to Agrisearch Incorporated at the end of the study.

All original facility-specific raw data, including but not limited to, temperature logs, equipment maintenance logbooks, laboratory tickets and chain of custody documents will be archived at Morse Laboratories, Inc.

Study Personnel

The following personnel were responsible for the conduct of the study. Signatures and initials of the personnel may be found on the "Certification of Authenticity/Signature Page" documents that have been submitted with the raw data.

	Job Title
Sample Preparation:	
Lan Tran	Laboratory Technician II
Stacy Frentzen	Laboratory Technician II
Jeanine Swensson	Laboratory Technician II
Extractions:	
Lan Tran	Laboratory Technician II
Stacy Frentzen	Laboratory Technician II
Jeanine Swensson	Laboratory Technician II
Cari Brushia	Laboratory Technician II
Alex Elmido	Laboratory Technician II
Instrumentation:	
Eileen Rogers	Chief HPLC Chemist
Mike Percoski	HPLC/GC Technician
Calculations:	
Andrea Westberg	Administrator
Yvonne Nelson	Data Specialist
Reviewer of Data:	
Nancy Maliani	Analytical Project Coordinator
Project Director:	
Susan Clark	Analytical Project Coordinator

APPENDIX I

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Inner Dosimeter Samples

Copies of Spreadsheets for Carbaryl in Inner Dosimeters

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Inner Dosimeters

Spreadsheet Columns

A.	M.L. Ticket No.	-	Assigned by Morse Laboratories, Inc.
B.	Sample Identification	-	As submitted by the Sponsor with "ck" and "spk" notations added by the laboratory for QC samples
C.	Set No.	-	Assigned by Morse Laboratories, Inc.
D.	Sample Type	-	Sample matrix differentiation for inner and outer dosimeters
E.	Fort. Level (μg/sect)	-	Fortification level for spike samples in μg/section
F.	Field fort. level (μg/sect.)	-	Level of fortification added in the field for field-fortified samples only
G.	Extr. Date	-	Date of initial extraction
H.	Instr. Date	-	Date of GC injection as noted on the chromatogram
I.	Amt. Samp. (sect.)	-	Amount of sample taken through the extraction
J.	mL solv.	-	Volume solvent used for the extraction
K.	mL aliq.	-	Volume of aliquot taken through procedure
L.	Final Vol. (mL)	-	Final volume of sample extract submitted to HPLC
M.	Inj. Vol. (μL)	-	Volume of sample extract injected into the HPLC

N.	HPLC Dil. Fact.	-	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
O.	Peak Ht.	-	The peak height response of sample
P.	ng/mL found	-	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
Q.	μg/section	-	μg/section of sample calculated by the spreadsheet equation
R.	reported μg/section	-	Manually entered value that has been rounded to three significant figures or <LOQ
S.	% Rec	-	% recovery value for fortified samples only (spikes); calculated by the spreadsheet equation (rounded to one decimal place)
T.	Field Fort. Rec (%)	-	Recovery value for field-fortified samples only; calculated by the spreadsheet equation

Spreadsheet Calculation Equations

For μg/section carbaryl:

$$Q = P \times (J/K) \times (L/I) \times N \times (1/1000)$$

For the laboratory-fortified control, percent recovery value:

$$S = (R/E) \times 100$$

For the field-fortified control, percent recovery value:

$$T = (R/F) \times 100$$

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73380	ML check 2	2	inner dosimeters			02/10/97	02/13/97	1	2500	25.0	2.0	50	1	0	0.000	0	<1.0		
73380	ML spike 15	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	784	14.666	2.9332	2.93	98	
73380	ML spike 16	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	768	14.37	2.874	2.87	96	
73380	ML spike 17	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	763	14.272	2.8544	2.85	95	
73380	ML spike 18	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	769	14.395	2.879	2.88	96	
73380	ML spike 19	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	768	14.37	2.874	2.87	96	
73380	ML spike 20	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	803	15.01	3.002	3.00	100	
73380	ML spike 21	2	inner dosimeters	3.0		02/10/97	02/13/97	1	2500	25.0	2.0	50	1	792	14.813	2.9626	2.96	99	
73397	ID check 7	7	inner dosimeters			02/19/97	02/20/97	1	2500	1.0	1.6	50	1	0	0.000	0	<20		
73397	ID spike 57	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	640	11.782	47.128	47.1	94	
73397	ID spike 58	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	645	11.88	47.52	47.5	95	
73397	ID spike 59	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	647	11.904	47.616	47.6	95	
73397	ID spike 60	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	651	11.978	47.912	47.9	96	
73397	ID spike 61	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	636	11.709	46.836	46.8	94	
73397	ID spike 62	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	639	11.758	47.032	47.0	94	
73397	ID spike 63	7	inner dosimeters	50		02/19/97	02/20/97	1	2500	1.0	1.6	50	1	660	12.149	48.596	48.6	97	
73397	ID spike 64	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1401	25.752	515.04	515	103	
73397	ID spike 65	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1392	25.58	511.6	512	102	
73397	ID spike 66	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1387	25.483	509.66	510	102	
73397	ID spike 67	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1431	26.29	525.8	526	105	
73397	ID spike 68	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1423	26.143	522.86	523	105	
73397	ID spike 69	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1400	25.727	514.54	515	103	
73397	ID spike 70	7	inner dosimeters	500		02/19/97	02/20/97	1	2500	1.0	1.6	50	5	1371	25.189	503.78	504	101	
73467	ID FT ck 13	13	inner dosimeters			03/14/97	03/18/97	1	2500	25.0	2.0	50	1	0	0.000	0	<1.0		
73467	ID FT spk 110	13	inner dosimeters	5.0		03/14/97	03/18/97	1	2500	25.0	2.0	50	1	5247	25.509	5.1018	5.10	102	
73467	ID FT spk 111	13	inner dosimeters	50		03/14/97	03/18/97	1	2500	25.0	2.0	50	5	10055	49.012	49.012	49.0	98	
73462	FF-01-ID-M1	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9648	47.022	47.022	47.0		94
73462	FF-01-ID-M2	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	10026	48.87	48.87	48.9		98
73462	FF-01-ID-M3	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9895	48.23	48.23	48.2		96
73462	FF-01-ID-M4	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9643	46.998	46.998	47.0		94
73462	FF-01-ID-M5	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9849	48.005	48.005	48.0		96
73462	FF-02-ID-M1	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9689	47.223	47.223	47.2		94
73462	FF-02-ID-M2	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9667	47.115	47.115	47.1		94
73462	FF-02-ID-M3	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9403	45.825	45.825	45.8		92
73462	FF-02-ID-M4	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	9762	47.58	47.58	47.6		95
73462	FF-02-ID-M5	13	inner dosimeters		50	03/14/97	03/18/97	1	2500	25.0	2.0	50	5	10169	49.569	49.569	49.6		99
73467	FT ID ck 25	25	inner dosimeters			03/26/97	03/27/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	FT ID spk 134	25	inner dosimeters	5.0		03/26/97	03/27/97	1	2500	25.0	2.0	50	1	5211	25.912	5.1824	5.18	104	
73467	FT ID spk 135	25	inner dosimeters	500		03/26/97	03/27/97	1	2500	25.0	2.0	50	50	10334	51.216	512.16	512	102	
73462	FF-01-ID-C1	25	inner dosimeters			03/26/97	03/27/97	1	2500	25.0	2.0	50	0	0	0	0	<1.0		
73462	FF-01-ID-H1	25	inner dosimeters		500	03/26/97	03/27/97	1	2500	25.0	2.0	50	50	10010	49.616	496.16	496		99
73462	FF-01-ID-H2	25	inner dosimeters		500	03/26/97	03/27/97	1	2500	25.0	2.0	50	50	9752	48.341	483.41	483		97
73462	FF-01-ID-H3	25	inner dosimeters		500	03/26/97	03/27/97	1	2500	25.0	2.0	50	50	10252	50.811	508.11	508		102
73462	FF-01-ID-H4	25	inner dosimeters		500	03/26/97	03/27/97	1	2500	25.0	2.0	50	50	10404	51.562	515.62	516		103
73462	FF-01-ID-H5	25	inner dosimeters		500	03/26/97	03/28/97	1	2500	25.0	2.0	50	50	10925	54.135	541.35	541		108
73462	FF-01-ID-L1	25	inner dosimeters		5	03/26/97	03/28/97	1	2500	25.0	2.0	50	1	5003	24.884	4.9768	4.98		100
73462	FF-01-ID-L2	25	inner dosimeters		5	03/26/97	03/28/97	1	2500	25.0	2.0	50	1	5133	25.526	5.1052	5.11		102
73462	FF-01-ID-L3	25	inner dosimeters		5	03/26/97	03/28/97	1	2500	25.0	2.0	50	1	5152	25.62	5.124	5.12		102
73462	FF-01-ID-L4	25	inner dosimeters		5	03/26/97	03/28/97	1	2500	25.0	2.0	50	1	5597	27.818	5.5636	5.56		111
73462	FF-01-ID-L5	25	inner dosimeters		5	03/26/97	03/28/97	1	2500	25.0	2.0	50	1	5108	25.403	5.0806	5.08		102

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	RT ID ck 26	26	inner dosimeters			04/01/97	04/02/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	RT ID spk 136	26	inner dosimeters	5.0		04/01/97	04/02/97	1	2500	25.0	2.0	50	1	5096	27.566	5.5132	5.51	110	
73467	RT ID spk 137	26	inner dosimeters	50		04/01/97	04/02/97	1	2500	25.0	2.0	50	5	9987	53.719	53.719	53.7	107	
73499	FF-03-ID-C1	26	inner dosimeters			04/01/97	04/02/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73499	FF-03-ID-L1	26	inner dosimeters		5	04/01/97	04/02/97	1	2500	25.0	2.0	50	1	4644	25.149	5.0298	5.03		101
73499	FF-03-ID-L2	26	inner dosimeters		5	04/01/97	04/02/97	1	2500	25.0	2.0	50	1	4575	24.78	4.956	4.96		99
73499	FF-03-ID-L3	26	inner dosimeters		5	04/01/97	04/02/97	1	2500	25.0	2.0	50	1	6483	34.982	6.9964	7.00		140
73499	FF-03-ID-L4	26	inner dosimeters		5	04/01/97	04/02/97	1	2500	25.0	2.0	50	1	4791	25.935	5.187	5.19		104
73499	FF-03-ID-L5	26	inner dosimeters		5	04/01/97	04/02/97	1	2500	25.0	2.0	50	1	4931	26.683	5.3366	5.34		107
73460	FS-01-ID-LA	26a	inner dosimeters			04/01/97	04/04/97	1	2500	1.0	1.6	50	4	5913	32.087	513.392	513		
73460	FS-01-ID-UA	26	inner dosimeters			04/01/97	04/03/97	1	2500	25.0	2.0	50	4	3332	18.133	14.5064	14.5		
73460	FS-01-ID-FT	26	inner dosimeters			04/01/97	04/03/97	1	2500	25.0	2.0	50	10	8448	45.489	90.978	91.0		
73460	FS-01-ID-RT	26	inner dosimeters			04/01/97	04/03/97	1	2500	25.0	2.0	50	10	5149	27.849	55.698	55.7		
73460	FS-01-ID-LL	26	inner dosimeters			04/01/97	04/03/97	1	2500	25.0	2.0	50	5	5342	28.881	28.881	28.9		
73460	FS-01-ID-UL	26	inner dosimeters			04/01/97	04/03/97	1	2500	25.0	2.0	50	10	6439	34.747	69.494	69.5		
73467	RT ID ck 26	26a	inner dosimeters			04/01/97	04/04/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	RT ID spk 137	26a	inner dosimeters	50		04/01/97	04/04/97	1	2500	1.0	1.6	50	1	2525	13.794	55.176	55.2	110	
73467	ID UA ck 27	27	inner dosimeters			04/02/97	04/03/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	ID UA spk 138	27	inner dosimeters	5.0		04/02/97	04/03/97	1	2500	25.0	2.0	50	1	4701	25.864	5.1728	5.17	103	
73467	ID UA spk 139	27	inner dosimeters	50		04/02/97	04/03/97	1	2500	25.0	2.0	50	5	10051	54.833	54.833	54.8	110	
73499	FF-03-ID-M1	27	inner dosimeters		50	04/02/97	04/03/97	1	2500	25.0	2.0	50	5	9406	51.341	51.341	51.3		103
73499	FF-03-ID-M2	27	inner dosimeters		50	04/02/97	04/03/97	1	2500	25.0	2.0	50	5	9448	51.568	51.568	51.6		103
73499	FF-03-ID-M3	27	inner dosimeters		50	04/02/97	04/03/97	1	2500	25.0	2.0	50	5	9337	50.967	50.967	51.0		102
73499	FF-03-ID-M4	27	inner dosimeters		50	04/02/97	04/03/97	1	2500	25.0	2.0	50	5	9608	52.434	52.434	52.4		105
73499	FF-03-ID-M5	27	inner dosimeters		50	04/02/97	04/03/97	1	2500	25.0	2.0	50	5	9908	54.059	54.059	54.1		108
73460	FS-02-ID-LA	27a	inner dosimeters			04/02/97	04/07/97	1	2500	1.0	1.6	50	5	1479	29.852	597.04	597		
73460	FS-02-ID-UA	27	inner dosimeters			04/02/97	04/03/97	1	2500	25.0	2.0	50	5	4409	24.283	24.283	24.3		
73460	FS-02-ID-FT	27	inner dosimeters			04/02/97	04/03/97	1	2500	25.0	2.0	50	20	4304	23.714	94.856	94.9		
73460	FS-02-ID-RT	27	inner dosimeters			04/02/97	04/04/97	1	2500	25.0	2.0	50	20	4686	25.783	103.132	103		
73460	FS-02-ID-LL	27	inner dosimeters			04/02/97	04/04/97	1	2500	25.0	2.0	50	20	4975	27.347	109.388	109		
73460	FS-02-ID-UL	27	inner dosimeters			04/02/97	04/04/97	1	2500	25.0	2.0	50	5	6198	33.97	33.97	34.0		
73467	ID UA ck 27	27a	inner dosimeters			04/02/97	04/07/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	ID UA spk 139	27a	inner dosimeters	50		04/02/97	04/07/97	1	2500	1.0	1.6	50	1	714	14.562	58.248	58.2	116	
73467	ID LA ck 28	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	ID LA spk 140	28	inner dosimeters	5.0		04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4881	26.515	5.303	5.30	106	
73467	ID LA spk 141	28	inner dosimeters	50		04/03/97	04/04/97	1	2500	25.0	2.0	50	5	9818	53.173	53.173	53.2	106	
73532	FF-05-ID-C1	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	1	342	2.0065	0.4013	<1.0		
73532	FF-05-ID-L1	28	inner dosimeters		5	04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4768	25.905	5.181	5.18		104
73532	FF-05-ID-L2	28	inner dosimeters		5	04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4645	25.241	5.0482	5.05		101
73532	FF-05-ID-L3	28	inner dosimeters		5	04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4649	25.262	5.0524	5.05		101
73532	FF-05-ID-L4	28	inner dosimeters		5	04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4872	26.467	5.2934	5.29		106
73532	FF-05-ID-L5	28	inner dosimeters		5	04/03/97	04/04/97	1	2500	25.0	2.0	50	1	4738	25.743	5.1486	5.15		103
73460	FS-03-ID-LA	28a	inner dosimeters			04/03/97	04/07/97	1	2500	1.0	1.6	50	10	2304	46.342	1853.68	1850		
73460	FS-03-ID-UA	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	5	7503	40.673	40.673	40.7		
73460	FS-03-ID-FT	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	40	4988	27.093	216.744	217		
73460	FS-03-ID-RT	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	20	5628	30.549	122.196	122		
73460	FS-03-ID-LL	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	5	7175	38.902	38.902	38.9		
73460	FS-03-ID-UL	28	inner dosimeters			04/03/97	04/04/97	1	2500	25.0	2.0	50	10	6517	35.349	70.698	70.7		
73467	ID LA ck 28	28a	inner dosimeters			04/03/97	04/07/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	ID LA spk 141	28a	inner dosimeters	50		04/03/97	04/07/97	1	2500	1.0	1.6	50	1	751	15.301	61.204	61.2	122	

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	ID RT ck 29	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	ID RT spk 142	29	inner dosimeters	5.0		04/04/97	04/07/97	1	2500	25.0	2.0	50	1	4610	25.554	5.1108	5.11	102	
73467	ID RT spk 143	29	inner dosimeters	50		04/04/97	04/07/97	1	2500	25.0	2.0	50	5	9597	52.932	52.932	52.9	106	
73467	ID RT spk 144	29	inner dosimeters	600		04/04/97	04/07/97	1	2500	25.0	2.0	50	100	6580	36.369	727.38	727	121	
73460	FS-04-ID-LA	29a	inner dosimeters			04/04/97	04/11/97	1	2500	1.0	1.6	50	20	2415	46.676	3734.08	3730		
73460	FS-04-ID-UA	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	25	6249	34.552	172.76	173		
73460	FS-04-ID-FT	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	50	8063	44.51	445.1	445		
73460	FS-04-ID-RT	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	25	8323	45.938	229.69	230		
73460	FS-04-ID-UL	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	20	5859	32.41	129.64	130		
73460	FS-04-ID-LL	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	20	8590	47.403	189.612	190		
73460	FS-05-ID-LA	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	10	6491	35.88	71.76	71.8		
73460	FS-05-ID-UA	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	10	2651	14.799	29.598	29.6		
73460	FS-05-ID-FT	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	10	5577	30.862	61.724	61.7		
73460	FS-05-ID-RT	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	10	5299	29.336	58.672	58.7		
73460	FS-05-ID-UL	29	inner dosimeters			04/04/97	04/07/97	1	2500	25.0	2.0	50	10	1400	7.9311	15.8622	15.9		
73460	FS-05-ID-LL	29	inner dosimeters			04/04/97	04/08/97	1	2500	25.0	2.0	50	5	3174	17.67	17.67	17.7		
73499	FF-04-ID-L1	29	inner dosimeters		5	04/04/97	04/08/97	1	2500	25.0	2.0	50	1	4410	24.456	4.8912	4.89		98
73499	FF-04-ID-L2	29	inner dosimeters		5	04/04/97	04/08/97	1	2500	25.0	2.0	50	1	4379	24.285	4.857	4.86		97
73467	ID RT ck 29	29a	inner dosimeters			04/04/97	04/10/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	ID RT spk 143	29a	inner dosimeters	50		04/04/97	04/10/97	1	2500	1.0	1.6	50	1	753	14.765	59.06	59.1	118	
73467	ID LA ck 30	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73467	ID LA spk 145	30	inner dosimeters	5.0		04/07/97	04/09/97	1	2500	25.0	2.0	50	1	4960	26.762	5.3524	5.35	107	
73467	ID UA spk 146	30	inner dosimeters	50		04/07/97	04/09/97	1	2500	25.0	2.0	50	5	9757	52.371	52.371	52.4	105	
73467	ID UA spk 147	30	inner dosimeters	2000		04/07/97	04/09/97	1	2500	25.0	2.0	50	200	9907	53.172	2126.88	2130	107	
73460	FS-06-ID-LA	30a	inner dosimeters			04/07/97	04/11/97	1	2500	1.0	1.6	50	4	1865	36.116	577.856	578		
73460	FS-06-ID-UA	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	5	9432	50.636	50.636	50.6		
73460	FS-06-ID-FT	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	4	10112	54.266	43.4128	43.4		
73460	FS-06-ID-RT	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	10	5469	29.479	58.958	59.0		
73460	FS-06-ID-LL	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	10	7121	38.299	76.598	76.6		
73460	FS-06-ID-UL	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	4	8425	45.26	36.208	36.2		
73460	FS-07-ID-LA	30a	inner dosimeters			04/07/97	04/11/97	1	2500	1.0	1.6	50	5	2361	45.639	912.78	913		
73460	FS-07-ID-UA	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	2	10151	54.474	21.7896	21.8		
73460	FS-07-ID-FT	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	10	7226	38.859	77.718	77.7		
73460	FS-07-ID-RT	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	10	5652	30.456	60.912	60.9		
73460	FS-07-ID-LL	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	4	7834	42.105	33.684	33.7		
73460	FS-07-ID-UL	30	inner dosimeters			04/07/97	04/09/97	1	2500	25.0	2.0	50	10	5226	28.182	56.364	56.4		
73499	FF-04-ID-L3	30	inner dosimeters		5	04/07/97	04/09/97	1	2500	25.0	2.0	50	1	4387	23.703	4.7406	4.74		95
73499	FF-04-ID-L4	30	inner dosimeters		5	04/07/97	04/09/97	1	2500	25.0	2.0	50	1	4576	24.712	4.9424	4.94		99
73467	ID LA ck 30	30a	inner dosimeters			04/07/97	04/11/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	ID UA spk 146	30a	inner dosimeters	50		04/07/97	04/11/97	1	2500	1.0	1.6	50	1	724	14.208	56.832	56.8	114	

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID RT ck 31	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	1	1	0	0	<1.0		
73603	ID RT spk 148	31	inner dosimeters	5.0		04/08/97	04/09/97	1	2500	25.0	2.0	50	1	1482	27.134	5.4268	5.43	109	
73603	ID RT spk 149	31	inner dosimeters	50		04/08/97	04/09/97	1	2500	25.0	2.0	50	5	2965	54.126	54.126	54.1	108	
73603	ID RT spk 150	31	inner dosimeters	5000		04/08/97	04/11/97	1	2500	25.0	2.0	50	1000	1416	27.495	5499	5500	110	
73460	FS-08-ID-LA	31a	inner dosimeters			04/08/97	04/11/97	1	2500	1.0	1.6	50	5	2654	51.265	1025.3	1030		
73460	FS-08-ID-UA	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	1274	23.348	23.348	23.3		
73460	FS-08-ID-FT	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	2404	43.915	43.915	43.9		
73460	FS-08-ID-RT	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	2790	50.941	50.941	50.9		
73460	FS-08-ID-LL	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	10	2652	48.429	96.858	96.9		
73460	FS-08-ID-UL	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	2234	40.821	40.821	40.8		
73460	FS-09-ID-LA	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	40	1566	28.663	229.304	229		
73460	FS-09-ID-UA	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	2	2620	47.847	19.1388	19.1		
73460	FS-09-ID-FT	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	20	1581	28.936	115.744	116		
73460	FS-09-ID-RT	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	2127	38.874	38.874	38.9		
73460	FS-09-ID-LL	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	3231	58.967	58.967	59.0		
73460	FS-09-ID-UL	31	inner dosimeters			04/08/97	04/09/97	1	2500	25.0	2.0	50	5	1587	29.045	29.045	29.0		
73499	FF-04-ID-L5	31	inner dosimeters		5	04/08/97	04/09/97	1	2500	25.0	2.0	50	1	1321	24.204	4.8408	4.84		97
73603	ID RT ck 31	31a	inner dosimeters			04/08/97	04/11/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID RT spk 149	31a	inner dosimeters	50		04/08/97	04/11/97	1	2500	1.0	1.6	50	1	744	14.592	58.368	58.4	117	
73603	ID RT ck 31	31R	inner dosimeters			04/08/97	04/11/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID RT ck 32	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID RT spk 151	32	inner dosimeters	5.0		04/08/97	04/10/97	1	2500	25.0	2.0	50	1	1414	26.758	5.3516	5.35	107	
73603	ID RT spk 152	32	inner dosimeters	200		04/08/97	04/10/97	1	2500	25.0	2.0	50	40	1414	26.758	214.064	214	107	
73603	ID RT spk 153	32	inner dosimeters	5000		04/08/97	04/10/97	1	2500	25.0	2.0	50	1000	1318	24.984	4996.8	5000	100	
73460	FS-10-ID-LA	32a	inner dosimeters			04/08/97	04/15/97	1	2500	1.0	1.6	50	20	1735	31.712	2536.96	2540		
73460	FS-10-ID-UA	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	5	1998	37.555	37.555	37.6		
73460	FS-10-ID-FT	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	40	1427	26.999	215.992	216		
73460	FS-10-ID-RT	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	20	1428	27.017	108.068	108		
73460	FS-10-ID-LL	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	10	2636	49.351	98.702	98.7		
73460	FS-10-ID-UL	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	10	1706	32.157	64.314	64.3		
73497	FS-11-ID-LA	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	5	1587	29.957	29.957	30.0		
73497	FS-11-ID-UA	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	1	1360	25.76	5.152	5.15		
73497	FS-11-ID-FT	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	2	2896	54.158	21.6632	21.7		
73497	FS-11-ID-RT	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	4	1516	28.644	22.9152	22.9		
73497	FS-11-ID-LL	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	1	341	6.9208	1.38416	1.38		
73497	FS-11-ID-UL	32	inner dosimeters			04/08/97	04/10/97	1	2500	25.0	2.0	50	1	1426	26.98	5.396	5.40		
73499	FF-04-ID-M1	32	inner dosimeters		50	04/08/97	04/10/97	1	2500	25.0	2.0	50	5	2640	49.425	49.425	49.4		99
73499	FF-04-ID-M2	32	inner dosimeters		50	04/08/97	04/10/97	1	2500	25.0	2.0	50	5	2677	50.109	50.109	50.1		100
73603	ID RT ck 32	32a	inner dosimeters			04/08/97	04/15/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID RT spk 152	32a	inner dosimeters	200		04/08/97	04/15/97	1	2500	1.0	1.6	50	2	1436	26.214	209.712	210	105	

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID FT ck 33	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID FT spk 154	33	inner dosimeters	5.0		04/09/97	04/10/97	1	2500	25.0	2.0	50	1	5175	28.946	5.7892	5.79	116	
73603	ID FT spk 155	33	inner dosimeters	500		04/09/97	04/10/97	1	2500	25.0	2.0	50	100	5093	28.49	569.8	570	114	
73603	ID FT spk 156	33	inner dosimeters	1000		04/09/97	04/10/97	1	2500	25.0	2.0	50	200	5071	28.368	1134.72	1130	113	
73497	FS-12-ID-LA	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	20	7904	44.12	176.48	176		
73497	FS-12-ID-UA	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	4	4868	27.239	21.7912	21.8		
73497	FS-12-ID-FT	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	10	4766	26.672	53.344	53.3		
73497	FS-12-ID-RT	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	10	4330	24.248	48.496	48.5		
73497	FS-12-ID-LL	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	5	8324	46.455	46.455	46.5		
73497	FS-12-ID-UL	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	4	4215	23.609	18.8872	18.9		
73497	FS-13-ID-LA	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	10	6754	37.726	75.452	75.5		
73497	FS-13-ID-UA	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	4	3649	20.462	16.3696	16.4		
73497	FS-13-ID-FT	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	4	5588	31.243	24.9944	25.0		
73497	FS-13-ID-RT	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	4	8582	47.89	38.312	38.3		
73497	FS-13-ID-LL	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	2	4663	26.1	10.44	10.4		
73497	FS-13-ID-UL	33	inner dosimeters			04/09/97	04/10/97	1	2500	25.0	2.0	50	1	8119	45.315	9.063	9.06		
73499	FF-04-ID-M3	33	inner dosimeters		50	04/09/97	04/11/97	1	2500	25.0	2.0	50	5	9183	51.231	51.231	51.2		102
73499	FF-04-ID-M4	33	inner dosimeters		50	04/09/97	04/11/97	1	2500	25.0	2.0	50	5	9053	50.509	50.509	50.5		101
73603	ID FT ck 34	34	inner dosimeters			04/09/97	04/11/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID FT spk 157	34	inner dosimeters	5.0		04/09/97	04/11/97	1	2500	25.0	2.0	50	1	4212	26.467	5.2934	5.29	106	
73603	ID FT spk 158	34	inner dosimeters	500		04/09/97	04/11/97	1	2500	25.0	2.0	50	100	4390	27.581	551.62	552	110	
73603	ID FT spk 159	34	inner dosimeters	1000		04/09/97	04/11/97	1	2500	25.0	2.0	50	200	4549	28.576	1143.04	1140	114	
73497	FS-14-ID-LA	34	inner dosimeters			04/09/97	04/11/97	1	2500	25.0	2.0	50	20	8002	50.184	200.736	201		
73497	FS-14-ID-UA	34	inner dosimeters			04/09/97	04/11/97	1	2500	25.0	2.0	50	1	9335	58.526	11.7052	11.7		
73497	FS-14-ID-FT	34	inner dosimeters			04/09/97	04/11/97	1	2500	25.0	2.0	50	10	7760	48.67	97.34	97.3		
73497	FS-14-ID-RT	34	inner dosimeters			04/09/97	04/11/97	1	2500	25.0	2.0	50	20	3949	24.821	99.284	99.3		
73497	FS-14-ID-LL	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	5	5723	35.922	35.922	35.9		
73497	FS-14-ID-UL	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	4	6249	39.214	31.3712	31.4		
73497	FS-15-ID-LA	34a	inner dosimeters			04/09/97	04/15/97	1	2500	1.0	1.6	50	5	1866	34.121	682.42	682		
73497	FS-15-ID-UA	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	4	5844	36.68	29.344	29.3		
73497	FS-15-ID-FT	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	20	4454	27.981	111.924	112		
73497	FS-15-ID-RT	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	20	6116	38.382	153.528	154		
73497	FS-15-ID-LL	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	2	5607	35.196	14.0784	14.1		
73497	FS-15-ID-UL	34	inner dosimeters			04/09/97	04/12/97	1	2500	25.0	2.0	50	2	5074	31.861	12.7444	12.7		
73499	FF-04-ID-M5	34	inner dosimeters		50	04/09/97	04/12/97	1	2500	25.0	2.0	50	5	8244	51.698	51.698	51.7		103
73603	ID FT ck 34	34a	inner dosimeters			04/09/97	04/15/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID FT spk 158	34a	inner dosimeters	500		04/09/97	04/15/97	1	2500	1.0	1.6	50	5	1483	27.078	541.56	542	108	

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID FT ck 35	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID FT spk 160	35	inner dosimeters	5.0		04/10/97	04/11/97	1	2500	25.0	2.0	50	1	1496	28.222	5.6444	5.64	113	
73603	ID FT spk 161	35	inner dosimeters	100		04/10/97	04/11/97	1	2500	25.0	2.0	50	20	1477	27.867	111.468	111	111	
73603	ID RT spk 162	35	inner dosimeters	2500		04/10/97	04/11/97	1	2500	25.0	2.0	50	400	1833	34.53	2762.4	2760	110	
73497	FS-16-ID-LA	35a	inner dosimeters			04/10/97	04/17/97	1	2500	1.0	1.6	50	10	3643	26.454	1058.16	1060		
73497	FS-16-ID-UA	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	5	2229	41.941	41.941	41.9		
73497	FS-16-ID-FT	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	20	1477	27.867	111.468	111		
73497	FS-16-ID-RT	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	10	2380	44.768	89.536	89.5		
73497	FS-16-ID-LL	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	4	1615	30.45	24.36	24.4		
73497	FS-16-ID-UL	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	4	1445	27.268	21.8144	21.8		
73535	FS-17-ID-LA	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	20	2654	49.896	199.584	200		
73535	FS-17-ID-UA	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	4	1185	22.402	17.9216	17.9		
73535	FS-17-ID-FT	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	10	1860	35.035	70.07	70.1		
73535	FS-17-ID-RT	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	20	2387	44.899	179.596	180		
73535	FS-17-ID-LL	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	2	1213	22.926	9.1704	9.17		
73535	FS-17-ID-UL	35	inner dosimeters			04/10/97	04/11/97	1	2500	25.0	2.0	50	2	1628	30.693	12.2772	12.3		
73499	FF-04-ID-H1	35	inner dosimeters		500	04/10/97	04/11/97	1	2500	25.0	2.0	50	50	2690	50.57	505.7	506		101
73499	FF-04-ID-H2	35	inner dosimeters		500	04/10/97	04/11/97	1	2500	25.0	2.0	50	50	2782	52.291	522.91	523		105
73603	ID FT ck 35	35a	inner dosimeters			04/10/97	04/17/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID FT spk 161	35a	inner dosimeters	100		04/10/97	04/17/97	1	2500	1.0	1.6	50	1	4076	29.621	118.484	118	118	
73603	ID UA ck 36	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 163	36	inner dosimeters	5.0		04/10/97	04/14/97	1	2500	25.0	2.0	50	1	1398	24.84	4.968	4.97	99	
73603	ID UA spk 164	36	inner dosimeters	100		04/10/97	04/14/97	1	2500	25.0	2.0	50	20	1484	26.35	105.4	105	105	
73603	ID UA spk 165	36	inner dosimeters	2500		04/10/97	04/14/97	1	2500	25.0	2.0	50	400	1761	31.216	2497.28	2500	100	
73535	FS-18-ID-LA	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	50	2429	42.95	429.5	430		
73535	FS-18-ID-UA	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	10	1357	24.119	48.238	48.2		
73535	FS-18-ID-FT	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	25	1987	36.346	181.73	182		
73535	FS-18-ID-RT	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	10	1549	28.292	56.584	56.6		
73535	FS-18-ID-LL	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	4	1393	25.423	20.3384	20.3		
73535	FS-18-ID-UL	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	10	2194	40.152	80.304	80.3		
73535	FS-19-ID-LA	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	20	2168	39.674	158.696	159		
73535	FS-19-ID-UA	36	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	4	1857	33.955	27.164	27.2		
73535	FS-19-ID-FT	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	10	2243	39.683	79.366	79.4		
73535	FS-19-ID-RT	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	25	2436	43.073	215.365	215		
73535	FS-19-ID-LL	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	2	2181	38.593	15.4372	15.4		
73535	FS-19-ID-UL	36	inner dosimeters			04/10/97	04/14/97	1	2500	25.0	2.0	50	4	2239	39.612	31.6896	31.7		
73499	FF-04-ID-H3	36	inner dosimeters		500	04/10/97	04/14/97	1	2500	25.0	2.0	50	50	2607	46.076	460.76	461		92
73499	FF-04-ID-H4	36	inner dosimeters		500	04/10/97	04/14/97	1	2500	25.0	2.0	50	50	2652	46.867	468.67	469		94
73603	ID UA ck 36	36R	inner dosimeters			04/10/97	04/15/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 164	36R	inner dosimeters	100		04/10/97	04/15/97	1	2500	25.0	2.0	50	20	1402	25.589	102.356	102	102	

M.L.Project No: ML96-0662-RHP Protocol No: 1517 — Residue results for Carbaryl in Dermal Dosimeter samples — Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID UA ck 37	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 166	37	inner dosimeters	5.0		04/11/97	04/14/97	1	2500	25.0	2.0	50	1	4602	24.967	4.9934	4.99	100	
73603	ID UA spk 167	37	inner dosimeters	50		04/11/97	04/14/97	1	2500	25.0	2.0	50	5	9349	50.608	50.608	50.6	101	
73535	FS-20-ID-LA	37a	inner dosimeters			04/11/97	04/17/97	1	2500	1.0	1.6	50	50	7598	55.387	11077.4	11100		
73535	FS-20-ID-UA	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	20	6693	36.261	145.044	145		
73535	FS-20-ID-FT	37a	inner dosimeters			04/11/97	04/17/97	1	2500	1.0	1.6	50	4	5562	40.493	647.888	648		
73535	FS-20-ID-RT	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	40	5171	28.04	224.32	224		
73535	FS-20-ID-UL	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	40	6416	34.765	278.12	278		
73535	FS-20-ID-LL	37a	inner dosimeters			04/11/97	04/17/97	1	2500	1.0	1.6	50	4	6502	47.369	757.904	758		
73535	FS-21-ID-LA	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	40	4513	24.486	195.888	196		
73535	FS-21-ID-UA	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	2	7647	41.415	16.566	16.6		
73535	FS-21-ID-FT	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	5	8206	44.434	44.434	44.4		
73535	FS-21-ID-RT	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	5	6428	34.83	34.83	34.8		
73535	FS-21-ID-UL	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	4	6760	36.623	29.2984	29.3		
73535	FS-21-ID-LL	37	inner dosimeters			04/11/97	04/14/97	1	2500	25.0	2.0	50	5	7517	40.712	40.712	40.7		
73499	FF-04-ID-H5	37	inner dosimeters		500	04/11/97	04/14/97	1	2500	25.0	2.0	50	50	9154	49.555	495.55	496		99
73603	ID UA ck 37	37a	inner dosimeters			04/11/97	04/17/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID UA spk 167	37a	inner dosimeters	50		04/11/97	04/17/97	1	2500	1.0	1.6	50	1	2119	15.305	61.22	61.2	122	
73603	ID LA ck 38	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 168	38	inner dosimeters	5.0		04/14/97	04/16/97	1	2500	25.0	2.0	50	1	3702	25.408	5.0816	5.08	102	
73603	ID LA spk 169	38	inner dosimeters	100		04/14/97	04/16/97	1	2500	25.0	2.0	50	20	3723	25.554	102.216	102	102	
73535	FS-22-ID-LA	38a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	10	6395	44.838	1793.52	1790		
73535	FS-22-ID-UA	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	10	4367	30.009	60.018	60.0		
73535	FS-22-ID-FT	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	40	4505	30.964	247.712	248		
73535	FS-22-ID-RT	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	20	6360	43.796	175.184	175		
73535	FS-22-ID-UL	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	10	3797	26.066	52.132	52.1		
73535	FS-22-ID-LL	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	50	3386	23.222	232.22	232		
73535	FS-23-ID-LA	38a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	5	6341	44.458	889.16	889		
73535	FS-23-ID-UA	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	4	3649	25.042	20.0336	20.0		
73535	FS-23-ID-FT	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	10	5770	39.715	79.43	79.4		
73535	FS-23-ID-RT	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	10	5677	39.071	78.142	78.1		
73535	FS-23-ID-UL	38	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	10	3877	26.619	53.238	53.2		
73535	FS-23-ID-LL	38	inner dosimeters			04/14/97	04/23/97	1	2500	25.0	2.0	50	5	4682	31.822	31.822	31.8		
73593	FF-08-ID-L5	38	inner dosimeters		5	04/14/97	04/24/97	1	2500	25.0	2.0	50	1	4173	28.346	5.6692	5.67		113
73603	ID LA ck 38	38a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID LA spk 169	38a	inner dosimeters	100		04/14/97	04/18/97	1	2500	1.0	1.6	50	1	3927	27.467	109.868	110	110	
73603	ID LA ck 38	38R	inner dosimeters			04/14/97	04/23/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 168	38R	inner dosimeters	5.0		04/14/97	04/23/97	1	2500	25.0	2.0	50	1	3805	25.833	5.1666	5.17	103	

M L Project No. ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID LA ck 39	39	inner dosimeters			04/14/97	04/15/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 170	39	inner dosimeters	5.0		04/14/97	04/15/97	1	2500	25.0	2.0	50	1	1403	25.968	5.1936	5.19	104	
73603	ID LA spk 171	39	inner dosimeters	200		04/14/97	04/15/97	1	2500	25.0	2.0	50	25	2233	41.407	207.035	207	104	
73535	FS-24-ID-LA	39a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	40	5228	36.624	5859.84	5860		
73535	FS-24-ID-UA	39	inner dosimeters			04/14/97	04/15/97	1	2500	25.0	2.0	50	10	2625	48.699	97.398	97.4		
73535	FS-24-ID-FT	39	inner dosimeters			04/14/97	04/15/97	1	2500	25.0	2.0	50	50	2445	45.35	453.5	454		
73535	FS-24-ID-RT	39a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	4	3891	27.214	435.424	435		
73535	FS-24-ID-UL	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	40	1568	29.037	232.296	232		
73535	FS-24-ID-LL	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	25	1930	35.771	178.855	179		
73535	FS-25-ID-LA	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	20	1296	23.978	95.912	95.9		
73535	FS-25-ID-UA	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	2	1503	27.828	11.1312	11.1		
73535	FS-25-ID-FT	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	4	2424	44.96	35.968	36.0		
73535	FS-25-ID-RT	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	4	1281	23.699	18.9592	19.0		
73535	FS-25-ID-UL	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	4	1219	22.545	18.036	18.0		
73535	FS-25-ID-LL	39	inner dosimeters			04/14/97	04/16/97	1	2500	25.0	2.0	50	1	1875	34.748	6.9496	6.95		
73593	FF-08-ID-L3	39	inner dosimeters		5	04/14/97	04/16/97	1	2500	25.0	2.0	50	1	1474	27.289	5.4578	5.46		109
73593	FF-08-ID-L4	39	inner dosimeters		5	04/14/97	04/16/97	1	2500	25.0	2.0	50	1	1765	32.702	6.5404	6.54		131
73603	ID LA ck 39	39a	inner dosimeters			04/14/97	04/18/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID LA spk 171	39a	inner dosimeters	200		04/14/97	04/18/97	1	2500	1.0	1.6	50	2	3748	26.207	209.656	210	105	
73603	ID LA ck 40	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 172	40	inner dosimeters	5.0		04/15/97	04/16/97	1	2500	25.0	2.0	50	1	1523	26.405	5.281	5.28	106	
73603	ID LA spk 173	40	inner dosimeters	200		04/15/97	04/16/97	1	2500	25.0	2.0	50	40	1708	29.606	236.848	237	119	
73603	ID LA spk 174	40	inner dosimeters	10000		04/15/97	04/16/97	1	2500	25.0	2.0	50	2000	1568	27.184	10873.6	10900	109	
73535	FS-26-ID-LA	40a	inner dosimeters			04/15/97	04/22/97	1	2500	1.0	1.6	50	20	4581	30.992	2479.36	2480		
73535	FS-26-ID-UA	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	10	1457	25.263	50.526	50.5		
73535	FS-26-ID-FT	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	10	2470	42.791	85.582	85.6		
73535	FS-26-ID-RT	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	10	1862	32.271	64.542	64.5		
73535	FS-26-ID-UL	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	5	2443	42.324	42.324	42.3		
73535	FS-26-ID-LL	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	5	1997	34.607	34.607	34.6		
73562	FS-27-ID-LA	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	4	2708	46.909	37.5272	37.5		
73562	FS-27-ID-UA	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	1	396	6.9047	1.38094	1.38		
73562	FS-27-ID-FT	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	2	1487	25.782	10.3128	10.3		
73562	FS-27-ID-RT	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	2	1232	21.37	8.548	8.55		
73562	FS-27-ID-UL	40	inner dosimeters			04/15/97	04/16/97	1	2500	25.0	2.0	50	1	856	14.864	2.9728	2.97		
73562	FS-27-ID-LL	40	inner dosimeters			04/15/97	04/17/97	1	2500	25.0	2.0	50	1	736	12.788	2.5576	2.56		
73593	FF-08-ID-L1	40	inner dosimeters		5	04/15/97	04/17/97	1	2500	25.0	2.0	50	1	1692	29.329	5.8658	5.87		117
73593	FF-08-ID-L2	40	inner dosimeters		5	04/15/97	04/17/97	1	2500	25.0	2.0	50	1	1579	27.374	5.4748	5.47		109
73603	ID LA ck 40	40a	inner dosimeters			04/15/97	04/22/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID LA spk 173	40a	inner dosimeters	200		04/15/97	04/22/97	1	2500	1.0	1.6	50	2	3997	27.048	216.384	216	108	

M L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories,Inc.

M L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID UA ck 41	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 175	41	inner dosimeters	5.0		04/16/97	04/17/97	1	2500	25.0	2.0	50	1	3774	25.852	5.1704	5.17	103	
73603	ID UA spk 176	41	inner dosimeters	50		04/16/97	04/17/97	1	2500	25.0	2.0	50	10	3774	25.852	51.704	51.7	103	
73562	FS-28-ID-LA	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	50	6616	45.387	453.87	454		
73562	FS-28-ID-UA	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	4	3778	25.879	20.7032	20.7		
73562	FS-28-ID-FT	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	40	4599	31.523	252.184	252		
73562	FS-28-ID-RT	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	20	4569	31.316	125.264	125		
73562	FS-28-ID-UL	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	4	3750	25.687	20.5496	20.5		
73562	FS-28-ID-LL	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	2	7273	49.903	19.9612	20.0		
73562	FS-29-ID-LA	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	20	5099	34.96	139.84	140		
73562	FS-29-ID-UA	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	1	3674	25.164	5.0328	5.03		
73562	FS-29-ID-FT	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	2	6251	42.878	17.1512	17.2		
73562	FS-29-ID-RT	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	2	6079	41.696	16.6784	16.7		
73562	FS-29-ID-UL	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	1	3590	24.587	4.9174	4.92		
73562	FS-29-ID-LL	41	inner dosimeters			04/16/97	04/17/97	1	2500	25.0	2.0	50	1	2116	14.455	2.891	2.89		
73603	ID LA ck 42	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 177	42	inner dosimeters	5.0		04/16/97	04/18/97	1	2500	25.0	2.0	50	1	3751	26.708	5.3416	5.34	107	
73603	ID LA spk 178	42	inner dosimeters	500		04/16/97	04/18/97	1	2500	25.0	2.0	50	100	3746	26.672	533.44	533	107	
73562	FS-30-ID-LA	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	40	5834	40.889	327.112	327		
73562	FS-30-ID-UA	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	2	5279	36.983	14.7932	14.8		
73562	FS-30-ID-FT	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	20	5664	39.693	158.772	159		
73562	FS-30-ID-RT	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	20	4606	32.246	128.984	129		
73562	FS-30-ID-UL	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	4	3333	23.286	18.6288	18.6		
73562	FS-30-ID-LL	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	5739	40.221	8.0442	8.04		
73562	FS-31-ID-LA	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	10	5742	40.965	81.93	81.9		
73562	FS-31-ID-UA	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	4927	35.129	7.0258	7.03		
73562	FS-31-ID-FT	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	2	6024	42.984	17.1936	17.2		
73562	FS-31-ID-RT	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	7047	50.309	10.0618	10.1		
73562	FS-31-ID-UL	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	5631	40.17	8.034	8.03		
73562	FS-31-ID-LL	42	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	4392	31.298	6.2596	6.26		
73603	ID LA ck 42	42R	inner dosimeters			04/16/97	04/18/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID LA spk 177	42R	inner dosimeters	5.0		04/16/97	04/18/97	1	2500	25.0	2.0	50	1	3480	24.321	4.8642	4.86	97	
73603	ID RT ck 43	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID RT spk 179	43	inner dosimeters	5.0		04/17/97	04/18/97	1	2500	25.0	2.0	50	1	1184	25.018	5.0036	5.00	100	
73603	ID RT spk 180	43	inner dosimeters	500		04/17/97	04/18/97	1	2500	25.0	2.0	50	100	1226	25.916	518.32	518	104	
73562	FS-32-ID-LA	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	10	1724	36.562	73.124	73.1		
73562	FS-32-ID-UA	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	2	1145	24.184	9.6736	9.67		
73562	FS-32-ID-FT	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	5	2280	48.449	48.449	48.4		
73562	FS-32-ID-RT	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	4	1443	30.555	24.444	24.4		
73562	FS-32-ID-UL	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	2	704	14.756	5.9024	5.90		
73562	FS-32-ID-LL	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	1	2163	45.947	9.1894	9.19		
73562	FS-33-ID-LA	43b	inner dosimeters			04/17/97	04/23/97	1	2500	1.0	1.6	50	10	6806	46.328	1853.12	1850		
73562	FS-33-ID-UA	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	10	1456	30.833	61.666	61.7		
73562	FS-33-ID-FT	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	20	1627	34.488	137.952	138		
73562	FS-33-ID-RT	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	20	1627	34.488	137.952	138		
73562	FS-33-ID-UL	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	5	1897	40.261	40.261	40.3		
73562	FS-33-ID-LL	43	inner dosimeters			04/17/97	04/18/97	1	2500	25.0	2.0	50	10	1829	38.807	77.614	77.6		
73603	ID RT ck 43	43b	inner dosimeters			04/17/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID RT spk 180	43b	inner dosimeters	500		04/17/97	04/23/97	1	2500	1.0	1.6	50	5	4028	27.356	547.12	547	109	

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID UA ck 44	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 181	44	inner dosimeters	5.0		04/17/97	04/19/97	1	2500	25.0	2.0	50	1	3704	25.753	5.1506	5.15	103	
73603	ID UA spk 182	44	inner dosimeters	200		04/17/97	04/19/97	1	2500	25.0	2.0	50	40	3633	25.26	202.08	202	101	
73603	ID UA spk 183	44	inner dosimeters	20000		04/17/97	04/19/97	1	2500	25.0	2.0	50	4000	4127	28.689	22951.2	23000	115	
73562	FS-34-ID-LA	44b	inner dosimeters			04/17/97	04/23/97	1	2500	1.0	1.6	50	10	7392	50.33	2013.2	2010		
73562	FS-34-ID-UA	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	2793	19.43	15.544	15.5		
73562	FS-34-ID-FT	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	20	3953	27.482	109.928	110		
73562	FS-34-ID-RT	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	10	3808	26.475	52.95	53.0		
73562	FS-34-ID-UL	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	3592	24.976	19.9808	20.0		
73562	FS-34-ID-LL	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	6138	42.648	34.1184	34.1		
73562	FS-35-ID-LA	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	20	6254	43.453	173.812	174		
73562	FS-35-ID-UA	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	4146	28.821	23.0568	23.1		
73562	FS-35-ID-FT	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	10	6513	45.25	90.5	90.5		
73562	FS-35-ID-RT	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	10	4183	29.078	58.156	58.2		
73562	FS-35-ID-UL	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	4024	27.974	22.3792	22.4		
73562	FS-35-ID-LL	44	inner dosimeters			04/17/97	04/19/97	1	2500	25.0	2.0	50	4	3462	24.074	19.2592	19.3		
73593	FF-08-ID-H1	44	inner dosimeters		500	04/17/97	04/19/97	1	2500	25.0	2.0	50	50	6940	48.214	482.14	482		96
73593	FF-08-ID-H2	44	inner dosimeters		500	04/17/97	04/19/97	1	2500	25.0	2.0	50	50	7118	49.45	494.5	494		99
73603	ID UA ck 44	44b	inner dosimeters			04/17/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID UA spk 182	44b	inner dosimeters	200		04/17/97	04/23/97	1	2500	1.0	1.6	50	2	3919	26.612	212.896	213	107	
73603	ID FT ck 45	45	inner dosimeters			04/18/97	04/18/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID FT spk 184	45	inner dosimeters	5.0		04/18/97	04/18/97	1	2500	25.0	2.0	50	1	1252	26.935	5.387	5.39	108	
73603	ID FT spk 185	45	inner dosimeters	100		04/18/97	04/18/97	1	2500	25.0	2.0	50	20	1277	27.476	109.904	110	110	
73603	ID FT spk 186	45	inner dosimeters	2000		04/18/97	04/18/97	1	2500	25.0	2.0	50	400	1262	27.151	2172.08	2170	109	
73562	FS-36-ID-LA	45b	inner dosimeters			04/18/97	04/23/97	1	2500	1.0	1.6	50	10	7398	50.371	2014.84	2010		
73562	FS-36-ID-UA	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	2	1894	40.828	16.3312	16.3		
73562	FS-36-ID-FT	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	20	1186	25.506	102.024	102		
73562	FS-36-ID-RT	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	10	2129	45.914	91.828	91.8		
73562	FS-36-ID-UL	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	10	1433	30.852	61.704	61.7		
73562	FS-36-ID-LL	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	4	1187	25.528	20.4224	20.4		
73591	FS-37-ID-LA	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	10	1498	32.258	64.516	64.5		
73591	FS-37-ID-UA	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	1	822	17.629	3.5258	3.53		
73591	FS-37-ID-FT	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	4	951	20.421	16.3368	16.3		
73591	FS-37-ID-RT	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	5	2008	43.295	43.295	43.3		
73591	FS-37-ID-UL	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	2	1106	23.775	9.51	9.51		
73591	FS-37-ID-LL	45	inner dosimeters			04/18/97	04/19/97	1	2500	25.0	2.0	50	1	977	20.983	4.1966	4.20		
73593	FF-08-ID-H3	45	inner dosimeters		500	04/18/97	04/19/97	1	2500	25.0	2.0	50	50	2323	50.112	501.12	501		100
73593	FF-08-ID-H4	45	inner dosimeters		500	04/18/97	04/19/97	1	2500	25.0	2.0	50	50	2346	50.61	506.1	506		101
73603	ID FT ck 45	45b	inner dosimeters			04/18/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID FT spk 185	45b	inner dosimeters	100		04/18/97	04/23/97	1	2500	1.0	1.6	50	1	3900	26.482	105.928	106	106	

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	ID RT ck 46	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID RT spk 187	46	inner dosimeters	5.0		04/18/97	04/22/97	1	2500	25.0	2.0	50	1	1061	25.734	5.1468	5.15	103	
73603	ID RT spk 188	46	inner dosimeters	50		04/18/97	04/22/97	1	2500	25.0	2.0	50	10	1071	25.977	51.954	52.0	104	
73591	FS-38-ID-LA	46b	inner dosimeters			04/18/97	04/23/97	1	2500	1.0	1.6	50	10	5941	40.421	1616.84	1620		
73591	FS-38-ID-UA	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	10	1104	26.779	53.558	53.6		
73591	FS-38-ID-FT	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	20	1419	34.43	137.72	138		
73591	FS-38-ID-RT	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	20	1405	34.09	136.36	136		
73591	FS-38-ID-UL	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	10	1311	31.807	63.614	63.6		
73591	FS-38-ID-LL	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	10	1609	39.045	78.09	78.1		
73591	FS-39-ID-LA	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	40	1782	43.247	345.976	346		
73591	FS-39-ID-UA	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	1	1056	25.613	5.1226	5.12		
73591	FS-39-ID-FT	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	4	1711	41.522	33.2176	33.2		
73591	FS-39-ID-RT	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	5	1634	39.652	39.652	39.7		
73591	FS-39-ID-UL	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	2	1422	34.503	13.8012	13.8		
73591	FS-39-ID-LL	46	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	1	1379	33.458	6.6916	6.69		
73593	FF-08-ID-H5	46	inner dosimeters		500	04/18/97	04/22/97	1	2500	25.0	2.0	50	50	2058	49.951	499.51	500		100
73603	ID RT ck 46	46b	inner dosimeters			04/18/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID RT spk 188	46b	inner dosimeters	50		04/18/97	04/23/97	1	2500	1.0	1.6	50	1	2035	13.745	54.98	55.0	110	
73603	ID UA ck 47	47	inner dosimeters			04/18/97	04/21/97	1	2500	25.0	2.0	50	1	0	0	0	<1.0		
73603	ID UA spk 189	47	inner dosimeters	5.0		04/18/97	04/21/97	1	2500	25.0	2.0	50	1	3528	24.859	4.9718	4.97	99	
73603	ID UA spk 190	47	inner dosimeters	500		04/18/97	04/21/97	1	2500	25.0	2.0	50	100	4138	29.157	583.14	583	117	
73591	FS-40-ID-LA	47a	inner dosimeters			04/18/97	04/22/97	1	2500	1.0	1.6	50	5	7635	51.62	1032.4	1030		
73591	FS-40-ID-UA	47	inner dosimeters			04/18/97	04/21/97	1	2500	25.0	2.0	50	5	6714	47.303	47.303	47.3		
73591	FS-40-ID-FT	47	inner dosimeters			04/18/97	04/21/97	1	2500	25.0	2.0	50	10	4692	33.059	66.118	66.1		
73591	FS-40-ID-RT	47	inner dosimeters			04/18/97	04/21/97	1	2500	25.0	2.0	50	20	4309	30.361	121.444	121		
73591	FS-40-ID-UL	47	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	20	4496	31.678	126.712	127		
73591	FS-40-ID-LL	47	inner dosimeters			04/18/97	04/22/97	1	2500	25.0	2.0	50	10	4240	29.875	59.75	59.8		
73603	ID UA ck 47	47a	inner dosimeters			04/18/97	04/22/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	ID UA spk 190	47a	inner dosimeters	500		04/18/97	04/22/97	1	2500	1.0	1.6	50	5	4410	29.837	596.74	597	119	

APPENDIX II

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Outer Dosimeter Samples

Copies of Spreadsheets for Carbaryl in Outer Dosimeters

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Outer Dosimeters

Spreadsheet Columns

A.	M.L. Ticket No.	-	Assigned by Morse Laboratories, Inc.
B.	Sample Identification	-	As submitted by the Sponsor with "ck" and "spk" notations added by the laboratory for QC samples
C.	Set No.	-	Assigned by Morse Laboratories, Inc.
D.	Sample Type	-	Sample matrix differentiation for inner and outer dosimeters
E.	Fort. Level (μg/sect)	-	Fortification level for spike samples in μg/section
F.	Field fort. level (μg/sect.)	-	Level of fortification added in the field for field-fortified samples only
G.	Extr. Date	-	Date of initial extraction
H.	Instr. Date	-	Date of GC injection as noted on the chromatogram
I.	Amt. Samp. (sect.)	-	Amount of sample taken through the extraction
J.	mL solv.	-	Volume solvent used for the extraction
K.	mL aliq.	-	Volume of aliquot taken through procedure
L.	Final Vol. (mL)	-	Final volume of sample extract submitted to HPLC
M.	Inj. Vol. (μL)	-	Volume of sample extract injected into the HPLC

N.	HPLC Dil. Fact.	-	Instrumentation dilution from applicable chromatogram, "1" equals no dilution
O.	Peak Ht.	-	The peak height response of sample
P.	ng/mL found	-	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
Q.	μg/section	-	μg/section of sample calculated by the spreadsheet equation
R.	reported μg/section	-	Manually entered value that has been rounded to three significant figures or <LOQ
S.	% Rec	-	% recovery value for fortified samples only (spikes); calculated by the spreadsheet equation (rounded to one decimal place)
T.	Field Fort. Rec (%)	-	Recovery value for field-fortified samples only; calculated by the spreadsheet equation

Spreadsheet Calculation Equations

For μg/section carbaryl:

$$Q = P \times (J/K) \times (L/I) \times N \times (1/1000)$$

For the laboratory-fortified control, percent recovery value:

$$S = (R/E) \times 100$$

For the field-fortified control, percent recovery value:

$$T = (R/F) \times 100$$

M.L. Project No. ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73380	ML check 1	1	outer dosimeters			02/06/97	02/12/97	1	2500	1.0	1.6	50	1	0	0.000	0	<20		
73380	ML spike 1	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	635	11.751	47.004	47.0	94	
73380	ML spike 2	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	644	11.91	47.64	47.6	95	
73380	ML spike 3	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	648	11.984	47.936	47.9	96	
73380	ML spike 4	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	643	11.886	47.544	47.5	95	
73380	ML spike 5	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	643	11.886	47.544	47.5	95	
73380	ML spike 6	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	648	11.984	47.936	47.9	96	
73380	ML spike 7	1	outer dosimeters	50		02/06/97	02/12/97	1	2500	1.0	1.6	50	1	635	11.739	46.956	47.0	94	
73380	ML spike 8	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1411	26.011	520.22	520	104	
73380	ML spike 9	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1392	25.668	513.36	513	103	
73380	ML spike 10	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1359	25.054	501.08	501	100	
73380	ML spike 11	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1400	25.815	516.3	516	103	
73380	ML spike 12	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1392	25.668	513.36	513	103	
73380	ML spike 13	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1392	25.668	513.36	513	103	
73380	ML spike 14	1	outer dosimeters	500		02/06/97	02/12/97	1	2500	1.0	1.6	50	5	1363	25.128	502.56	503	101	
73380	OD check 6	6	outer dosimeters			02/18/97	02/19/97	1	2500	25.0	2.0	50	1	0	0.000	0	<1.0		
73380	OD spike 50	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	677	12.361	2.4722	2.47	82	
73380	OD spike 51	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	728	13.294	2.6588	2.66	89	
73380	OD spike 52	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	755	13.785	2.757	2.76	92	
73380	OD spike 53	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	733	13.38	2.676	2.68	89	
73380	OD spike 54	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	773	14.129	2.8258	2.83	94	
73397	OD spike 55	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	763	13.932	2.7864	2.79	93	
73397	OD spike 56	6	outer dosimeters	3.0		02/18/97	02/19/97	1	2500	25.0	2.0	50	1	775	14.153	2.8306	2.83	94	
73467	OD FT ck 12	12	outer dosimeters			03/12/97	03/13/97	1	2500	25.0	2.0	50	1	0	0.000	0	<1.0		
73467	OD FT spk 108	12	outer dosimeters	5.0		03/12/97	03/13/97	1	2500	25.0	2.0	50	1	1347	21.191	4.2382	4.24	85	
73467	OD FT spk 109	12	outer dosimeters	50		03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2443	38.308	38.308	38.3	77	
73462	FF-01-OD-M1	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2841	44.534	44.534	44.5		89
73462	FF-01-OD-M2	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2671	41.868	41.868	41.9		84
73462	FF-01-OD-M3	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2896	45.388	45.388	45.4		91
73462	FF-01-OD-M4	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2813	44.097	44.097	44.1		88
73462	FF-01-OD-M5	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2797	43.847	43.847	43.8		88
73462	FF-02-OD-M1	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2636	41.327	41.327	41.3		83
73462	FF-02-OD-M2	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2736	42.889	42.889	42.9		86
73462	FF-02-OD-M3	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2855	44.742	44.742	44.7		89
73462	FF-02-OD-M4	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2663	41.743	41.743	41.7		83
73462	FF-02-OD-M5	12	outer dosimeters		50	03/12/97	03/13/97	1	2500	25.0	2.0	50	5	2571	40.307	40.307	40.3		81

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	OD-FT ck 48	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-FT spk 192	48	outer dosimeters	1000		04/21/97	04/22/97	1	2500	1.0	1.6	50	10	3914	27.143	1085.72	1090	109	
73467	OD-FT spk 196	48	outer dosimeters	100		04/21/97	04/22/97	1	2500	1.0	1.6	50	1	3838	26.615	106.46	106	106	
73460	FS-01-OD-LA	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	40	5639	39.122	6259.52	6260		
73460	FS-01-OD-UA	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	4	6166	42.782	684.512	685		
73460	FS-01-OD-FT	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	10	5186	35.976	1439.04	1440		
73460	FS-01-OD-RT	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	5	7073	49.08	981.6	982		
73460	FS-01-OD-LL	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	200	4356	30.212	24169.6	24200		
73460	FS-01-OD-UL	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	50	5796	40.212	8042.4	8040		
73460	FS-02-OD-LA	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	10	5685	39.441	1577.64	1580		
73460	FS-02-OD-UA	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	100	4478	31.06	12424	12400		
73460	FS-02-OD-FT	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	20	5907	40.983	3278.64	3280		
73460	FS-02-OD-RT	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	20	4305	29.858	2388.64	2390		
73460	FS-02-OD-LL	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	100	4884	33.879	13551.6	13600		
73460	FS-02-OD-UL	48	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	40	4967	34.455	5512.8	5510		
73462	FF-01-OD-H1	48	outer dosimeters		500	04/21/97	04/22/97	1	2500	1.0	1.6	50	4	4685	32.497	519.952	520		104
73462	FF-01-OD-H2	48	outer dosimeters		500	04/21/97	04/22/97	1	2500	1.0	1.6	50	4	4781	33.164	530.624	531		106
73467	OD-RT ck 49	49	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-RT spk 194	49	outer dosimeters	10000		04/21/97	04/22/97	1	2500	1.0	1.6	50	100	4015	27.317	10926.8	10900	109	
73467	OD-RT spk 195	49	outer dosimeters	100		04/21/97	04/22/97	1	2500	1.0	1.6	50	1	3927	26.721	106.884	107	107	
73460	FS-03-OD-LA	49	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	50	6490	44.063	8812.6	8810		
73460	FS-03-OD-UA	49	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	5	6949	47.169	943.38	943		
73460	FS-03-OD-FT	49	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	10	6946	47.149	1885.96	1890		
73460	FS-03-OD-RT	49	outer dosimeters			04/21/97	04/22/97	1	2500	1.0	1.6	50	10	4455	30.294	1211.76	1210		
73460	FS-03-OD-LL	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	100	4816	32.737	13094.8	13100		
73460	FS-03-OD-UL	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	50	5755	39.09	7818	7820		
73460	FS-04-OD-LA	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	200	5204	35.362	28289.6	28300		
73460	FS-04-OD-UA	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	50	5828	39.584	7916.8	7920		
73460	FS-04-OD-FT	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	100	3811	25.387	10154.8	10200		
73460	FS-04-OD-RT	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	50	4082	27.188	5437.6	5440		
73460	FS-04-OD-LL	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	200	6953	46.272	37017.6	37000		
73460	FS-04-OD-UL	49	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	200	7261	48.319	38655.2	38700		
73462	FF-01-OD-H3	49	outer dosimeters		500	04/21/97	04/23/97	1	2500	1.0	1.6	50	4	4883	32.512	520.192	520		104
73462	FF-01-OD-H4	49	outer dosimeters		500	04/21/97	04/23/97	1	2500	1.0	1.6	50	4	4641	30.904	494.464	494		99
73462	FF-01-OD-H5	49	outer dosimeters		500	04/21/97	04/23/97	1	2500	1.0	1.6	50	4	4763	31.715	507.44	507		101
73467	OD-RT ck 49	49R	outer dosimeters			04/21/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-RT spk 195	49R	outer dosimeters	100		04/21/97	04/23/97	1	2500	1.0	1.6	50	1	4107	27.354	109.416	109	109	

M.L. Project #: ML96-0662-RHP Protocol #: 1517 Residue results for Carbaryl in Dermal Dosimeter samples Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	OD-UA ck 50	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-UA spk 197	50	outer dosimeters	100		04/22/97	04/23/97	1	2500	1.0	1.6	50	1	1285	26.649	106.596	107	107	
73467	OD-UA spk 198	50	outer dosimeters	200		04/22/97	04/23/97	1	2500	1.0	1.6	50	2	1255	26.026	208.208	208	104	
73460	FS-05-OD-LA	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	10	1944	40.331	1613.24	1610		
73460	FS-05-OD-UA	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	2	1490	30.905	247.24	247		
73460	FS-05-OD-FT	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	2	1583	32.836	262.688	263		
73460	FS-05-OD-RT	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	4	1509	31.3	500.8	501		
73460	FS-05-OD-LL	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	10	1343	27.853	1114.12	1110		
73460	FS-05-OD-UL	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	10	1201	24.905	996.2	996		
73460	FS-06-OD-LA	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	50	1951	40.476	8095.2	8100		
73460	FS-06-OD-UA	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	5	1895	39.314	786.28	786		
73460	FS-06-OD-FT	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	10	2019	41.888	1675.52	1680		
73460	FS-06-OD-RT	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	10	1752	36.345	1453.8	1450		
73460	FS-06-OD-LL	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	100	1482	30.739	12295.6	12300		
73460	FS-06-OD-UL	50	outer dosimeters			04/22/97	04/23/97	1	2500	1.0	1.6	50	50	1496	31.03	6206	6210		
73499	FF-04-OD-H1	50	outer dosimeters		500	04/22/97	04/23/97	1	2500	1.0	1.6	50	4	1505	31.217	499.472	499		100
73467	OD-LA ck 52	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-LA spk 201	52	outer dosimeters	100		04/22/97	04/24/97	1	2500	1.0	1.6	50	1	1251	27.343	109.372	109	109	
73467	OD-LA spk 202	52	outer dosimeters	500		04/22/97	04/24/97	1	2500	1.0	1.6	50	5	1150	25.128	502.56	503	101	
73460	FS-07-OD-LA	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	40	1212	26.488	4238.08	4240		
73460	FS-07-OD-UA	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	4	1631	35.679	570.864	571		
73460	FS-07-OD-FT	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	10	1335	29.186	1167.44	1170		
73460	FS-07-OD-RT	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	5	2041	44.672	893.44	893		
73460	FS-07-OD-LL	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	10	1857	40.636	1625.44	1630		
73460	FS-07-OD-UL	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	20	1501	32.827	2626.16	2630		
73460	FS-08-OD-LA	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	20	2344	51.319	4105.52	4110		
73460	FS-08-OD-UA	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	4	1526	33.375	534	534		
73460	FS-08-OD-FT	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	4	2175	47.612	761.792	762		
73460	FS-08-OD-RT	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	10	1266	27.672	1106.88	1110		
73460	FS-08-OD-LL	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	100	1582	34.604	13841.6	13800		
73460	FS-08-OD-UL	52	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	20	2106	46.098	3687.84	3690		
73467	OD-LL ck 54	54	outer dosimeters			04/22/97	04/24/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-LL spk 205	54	outer dosimeters	100		04/22/97	04/24/97	1	2500	1.0	1.6	50	1	3918	26.462	105.848	106	106	
73467	OD-LL spk 206	54	outer dosimeters	5000		04/22/97	04/24/97	1	2500	1.0	1.6	50	40	5025	33.89	5422.4	5420	108	
73460	FS-09-OD-LA	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	100	5101	34.4	13760	13800		
73460	FS-09-OD-UA	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	10	5146	34.702	1388.08	1390		
73460	FS-09-OD-FT	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	20	4932	33.266	2661.28	2660		
73460	FS-09-OD-RT	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	10	5040	33.991	1359.64	1360		
73460	FS-09-OD-LL	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	100	6512	43.867	17546.8	17500		
73460	FS-09-OD-UL	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	200	4750	32.045	25636	25600		
73460	FS-10-OD-LA	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	200	4863	32.803	26242.4	26200		
73460	FS-10-OD-UA	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	10	4596	31.012	1240.48	1240		
73460	FS-10-OD-FT	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	25	5928	39.949	3994.9	3990		
73460	FS-10-OD-RT	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	5	6669	44.921	898.42	898		
73460	FS-10-OD-LL	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	200	4491	30.307	24245.6	24200		
73460	FS-10-OD-UL	54	outer dosimeters			04/22/97	04/25/97	1	2500	1.0	1.6	50	100	7583	51.054	20421.6	20400		

M.L. Project No: ML96-0662-RHP Protocol No. 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	OD-RT ck 56	56c	outer dosimeters			04/23/97	05/06/97	1	2500	12.5	1.0	50	1	0	0	0	<1.0		
73467	OD-RT spk 209	56c	outer dosimeters	3.0		04/23/97	05/06/97	1	2500	25.0	2.0	50	1	1955	14.741	2.9482	2.95	98	
73467	OD-RT spk 210	56c	outer dosimeters	5.0		04/23/97	05/06/97	1	2500	25.0	2.0	50	1	3220	24.22	4.844	4.84	97	
73462	FF-01-OD-L1	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3091	23.254	4.6508	4.65		93
73462	FF-01-OD-L2	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	6.25	0.5	50	1	3425	25.756	5.1512	5.15		103
73462	FF-01-OD-L3	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	10.0	0.8	50	1	3494	26.273	5.2546	5.25		105
73462	FF-01-OD-L4	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	25.0	2.0	50	1	3241	24.378	4.8756	4.88		98
73462	FF-01-OD-L5	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3386	25.464	5.0928	5.09		102
73462	FF-01-OD-C1	56c	outer dosimeters			04/23/97	05/06/97	1	2500	12.5	1.0	50	1	0	0	0	<1.0		
73499	FF-04-OD-L1	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3226	24.265	4.853	4.85		97
73499	FF-04-OD-L2	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3395	25.532	5.1064	5.11		102
73499	FF-04-OD-L3	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3151	23.703	4.7406	4.74		95
73499	FF-04-OD-L4	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3336	25.09	5.018	5.02		100
73499	FF-04-OD-L5	56c	outer dosimeters		5	04/23/97	05/06/97	1	2500	12.5	1.0	50	1	3331	25.052	5.0104	5.01		100
73467	OD-UA ck 57	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-UA spk 211	57	outer dosimeters	100		04/23/97	04/25/97	1	2500	1.0	1.6	50	1	4074	28.091	112.364	112	112	
73467	OD-UA spk 212	57	outer dosimeters	20000		04/23/97	04/25/97	1	2500	1.0	1.6	50	200	3899	26.883	21506.4	21500	108	
73497	FS-11-OD-LA	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	20	5160	35.586	2846.88	2850		
73497	FS-11-OD-UA	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	1	6838	47.166	188.664	189		
73497	FS-11-OD-FT	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	5	5681	39.181	783.62	784		
73497	FS-11-OD-RT	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	4	4782	32.977	527.632	528		
73497	FS-11-OD-LL	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	2	2124	14.634	117.072	117		
73497	FS-11-OD-UL	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	2	5338	36.814	294.512	295		
73497	FS-12-OD-LA	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	40	5365	37.001	5920.16	5920		
73497	FS-12-OD-UA	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	4	5109	35.234	563.744	564		
73497	FS-12-OD-FT	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	5	6980	48.146	962.92	963		
73497	FS-12-OD-RT	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	10	5412	37.325	1493	1490		
73497	FS-12-OD-LL	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	10	7462	51.472	2058.88	2060		
73497	FS-12-OD-UL	57	outer dosimeters			04/23/97	04/25/97	1	2500	1.0	1.6	50	10	8069	55.661	2226.44	2230		
73499	FF-04-OD-H2	57	outer dosimeters		500	04/23/97	04/29/97	1	2500	1.0	1.6	50	5	1894	24.36	487.2	487		97
73467	OD-UA ck 57	57R	outer dosimeters			04/23/97	04/29/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-UA spk 211	57R	outer dosimeters	100		04/23/97	04/29/97	1	2500	1.0	1.6	50	1	2049	26.364	105.456	105	105	
73467	OD-LA ck 59	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-LA spk 215	59	outer dosimeters	100		04/23/97	04/26/97	1	2500	1.0	1.6	50	1	3783	25.135	100.54	101	101	
73467	OD-LA spk 216	59	outer dosimeters	50000		04/23/97	04/26/97	1	2500	1.0	1.6	50	400	4886	32.411	51857.6	51900	104	
73497	FS-13-OD-LA	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	100	908	6.1697	2467.88	2470		
73497	FS-13-OD-UA	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	2	4877	32.351	258.808	259		
73497	FS-13-OD-FT	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	4	3943	26.19	419.04	419		
73497	FS-13-OD-RT	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	4	4481	29.739	475.824	476		
73497	FS-13-OD-LL	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	4	5101	33.829	541.264	541		
73497	FS-13-OD-UL	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	2	4848	32.16	257.28	257		
73497	FS-14-OD-LA	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	20	5935	39.33	3146.4	3150		
73497	FS-14-OD-UA	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	4	4489	29.792	476.672	477		
73497	FS-14-OD-FT	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	4	5922	39.244	627.904	628		
73497	FS-14-OD-RT	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	10	3146	20.933	837.32	837		
73497	FS-14-OD-LL	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	20	4841	32.114	2569.12	2570		
73497	FS-14-OD-UL	59	outer dosimeters			04/23/97	04/26/97	1	2500	1.0	1.6	50	10	7569	50.109	2004.36	2000		

M L Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73467	OD-UL ck 62	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73467	OD-UL spk 221	62a	outer dosimeters	100		04/24/97	04/29/97	1	2500	1.0	1.6	50	1	1974	25.831	103.324	103	103	
73467	OD-UL spk 222	62a	outer dosimeters	500		04/24/97	04/29/97	1	2500	1.0	1.6	50	4	2738	35.82	573.12	573	115	
73497	FS-15-OD-LA	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	50	4573	59.814	11962.8	12000		
73497	FS-15-OD-UA	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	5	3230	42.254	845.08	845		
73497	FS-15-OD-FT	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	5	4032	52.74	1054.8	1050		
73497	FS-15-OD-RT	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	10	4173	54.584	2183.36	2180		
73497	FS-15-OD-LL	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	4	3430	44.869	717.904	718		
73497	FS-15-OD-UL	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	10	3237	42.345	1693.8	1690		
73497	FS-16-OD-LA	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	50	2466	32.264	6452.8	6450		
73497	FS-16-OD-UA	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	2	3792	49.602	396.816	397		
73497	FS-16-OD-FT	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	4	4073	53.277	852.432	852		
73497	FS-16-OD-RT	62a	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	5	4281	55.996	1119.92	1120		
73497	FS-16-OD-LL	62a	outer dosimeters			04/24/97	04/30/97	1	2500	1.0	1.6	50	2	3627	47.445	379.56	380		
73497	FS-16-OD-UL	62a	outer dosimeters			04/24/97	04/30/97	1	2500	1.0	1.6	50	10	2271	29.714	1188.56	1190		
73499	FF-04-OD-H3	62a	outer dosimeters		500	04/24/97	04/30/97	1	2500	1.0	1.6	50	5	1985	25.974	519.48	519		104
73603	OD-RT ck 63	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-RT spk 223	63	outer dosimeters	100		04/24/97	04/29/97	1	2500	1.0	1.6	50	1	1984	25.524	102.096	102	102	
73603	OD-RT spk 224	63	outer dosimeters	2000		04/24/97	04/29/97	1	2500	1.0	1.6	50	20	2254	29.016	2321.28	2320	116	
73535	FS-17-OD-LA	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	20	2667	34.357	2748.56	2750		
73535	FS-17-OD-UA	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	4	2379	30.632	490.112	490		
73535	FS-17-OD-FT	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	2	3205	41.316	330.528	331		
73535	FS-17-OD-RT	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	10	3794	48.934	1957.36	1960		
73535	FS-17-OD-LL	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	5	3865	49.852	997.04	997		
73535	FS-17-OD-UL	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	4	3263	42.066	673.056	673		
73535	FS-18-OD-LA	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	200	2511	32.34	25872	25900		
73535	FS-18-OD-UA	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	20	2733	35.211	2816.88	2820		
73535	FS-18-OD-FT	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	20	2534	32.637	2610.96	2610		
73535	FS-18-OD-RT	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	5	2944	37.94	758.8	759		
73535	FS-18-OD-LL	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	50	2651	34.15	6830	6830		
73535	FS-18-OD-UL	63	outer dosimeters			04/24/97	04/29/97	1	2500	1.0	1.6	50	100	2594	33.413	13365.2	13400		
73499	FF-04-OD-H4	63	outer dosimeters		500	04/24/97	04/29/97	1	2500	1.0	1.6	50	5	1881	24.191	483.82	484		97
73603	OD-FT ck 64	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-FT spk 225	64a	outer dosimeters	100		04/24/97	05/02/97	1	2500	1.0	1.6	50	1	1173	26.737	106.948	107	107	
73603	OD-FT spk 226	64a	outer dosimeters	10000		04/24/97	05/02/97	1	2500	1.0	1.6	50	100	1180	26.901	10760.4	10800	108	
73535	FS-19-OD-LA	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	20	1846	42.533	3402.64	3400		
73535	FS-19-OD-UA	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	5	1251	28.568	571.36	571		
73535	FS-19-OD-FT	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	4	1434	32.863	525.808	526		
73535	FS-19-OD-RT	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	10	2349	54.339	2173.56	2170		
73535	FS-19-OD-UL	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	10	1443	33.074	1322.96	1320		
73535	FS-19-OD-LL	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	2	1872	43.143	345.144	345		
73535	FS-20-OD-LA	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	400	1841	42.416	67865.6	67900		
73535	FS-20-OD-UA	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	20	2170	50.138	4011.04	4010		
73535	FS-20-OD-FT	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	100	1134	25.821	10328.4	10300		
73535	FS-20-OD-RT	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	10	2138	49.387	1975.48	1980		
73535	FS-20-OD-UL	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	200	1925	44.387	35509.6	35500		
73535	FS-20-OD-LL	64a	outer dosimeters			04/24/97	05/02/97	1	2500	1.0	1.6	50	100	1258	28.732	11492.8	11500		

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	OD-UA ck 66	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-UA spk 229	66	outer dosimeters	100		04/25/97	04/29/97	1	2500	1.0	1.6	50	1	3772	27.958	111.832	112	112	
73603	OD-UA spk 230	66	outer dosimeters	500		04/25/97	04/29/97	1	2500	1.0	1.6	50	4	4529	33.565	537.04	537	107	
73535	FS-21-OD-LA	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	100	6062	44.92	17968	18000		
73535	FS-21-OD-UA	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	5	6174	45.75	915	915		
73535	FS-21-OD-FT	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	40	5143	38.113	6098.08	6100		
73535	FS-21-OD-RT	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	20	3894	28.862	2308.96	2310		
73535	FS-21-OD-LL	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	10	5947	44.068	1762.72	1760		
73535	FS-21-OD-UL	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	10	5491	40.691	1627.64	1630		
73535	FS-22-OD-LA	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	200	3275	24.277	19421.6	19400		
73535	FS-22-OD-UA	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	20	5148	38.15	3052	3050		
73535	FS-22-OD-FT	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	10	7021	52.023	2080.92	2080		
73535	FS-22-OD-RT	66	outer dosimeters			04/25/97	05/01/97	1	2500	1.0	1.6	50	20	3845	28.507	2280.56	2280		
73535	FS-22-OD-LL	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	100	3925	29.092	11636.8	11600		
73535	FS-22-OD-UL	66	outer dosimeters			04/25/97	04/29/97	1	2500	1.0	1.6	50	40	5128	38.002	6080.32	6080		
73499	FF-04-OD-H5	66	outer dosimeters		500	04/25/97	04/29/97	1	2500	1.0	1.6	50	5	3591	26.618	532.36	532		106
73603	OD-UA ck 66	66R	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-UA spk 230	66R	outer dosimeters	500		04/25/97	04/30/97	1	2500	1.0	1.6	50	4	4480	33.203	531.248	531	106	
73603	OD-LA ck 68	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-LA spk 233	68	outer dosimeters	100		04/25/97	04/30/97	1	2500	1.0	1.6	50	1	3509	26.022	104.088	104	104	
73603	OD-LA spk 234	68	outer dosimeters	1000		04/25/97	04/30/97	1	2500	1.0	1.6	50	10	3710	27.508	1100.32	1100	110	
73535	FS-23-OD-LA	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	100	4322	32.034	12813.6	12800		
73535	FS-23-OD-UA	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	5	6565	48.623	972.46	972		
73535	FS-23-OD-FT	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	20	4684	34.712	2776.96	2780		
73535	FS-23-OD-RT	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	10	6609	48.948	1957.92	1960		
73535	FS-23-OD-LL	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	4	4897	36.287	580.592	581		
73535	FS-23-OD-UL	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	20	4712	34.919	2793.52	2790		
73535	FS-24-OD-LA	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	400	3717	27.56	44096	44100		
73535	FS-24-OD-UA	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	10	5200	38.528	1541.12	1540		
73535	FS-24-OD-FT	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	20	6165	45.664	3653.12	3650		
73535	FS-24-OD-RT	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	20	3735	27.693	2215.44	2220		
73535	FS-24-OD-LL	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	50	5608	41.545	8309	8310		
73535	FS-24-OD-UL	68	outer dosimeters			04/25/97	04/30/97	1	2500	1.0	1.6	50	50	6129	45.398	9079.6	9080		
73603	OD-RT ck 69	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-RT spk 235	69	outer dosimeters	100		04/28/97	04/30/97	1	2500	1.0	1.6	50	1	1210	26.522	106.088	106	106	
73603	OD-RT spk 236	69	outer dosimeters	500		04/28/97	04/30/97	1	2500	1.0	1.6	50	4	1613	35.3	564.8	565	113	
73535	FS-25-OD-LA	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	20	1976	43.207	3456.56	3460		
73535	FS-25-OD-UA	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	2	1173	25.716	205.728	206		
73535	FS-25-OD-FT	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	2	1348	29.528	236.224	236		
73535	FS-25-OD-RT	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	2	2294	50.134	401.072	401		
73535	FS-25-OD-LL	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	1	1563	34.211	136.844	137		
73535	FS-25-OD-UL	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	4	1504	32.926	526.816	527		
73535	FS-26-OD-LA	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	50	1755	38.393	7678.6	7680		
73535	FS-26-OD-UA	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	4	1764	38.59	617.44	617		
73535	FS-26-OD-FT	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	4	1702	37.239	595.824	596		
73535	FS-26-OD-RT	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	5	2402	52.486	1049.72	1050		
73535	FS-26-OD-LL	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	4	1647	36.041	576.656	577		
73535	FS-26-OD-UL	69	outer dosimeters			04/28/97	04/30/97	1	2500	1.0	1.6	50	10	1602	35.061	1402.44	1400		
73593	FF-08-OD-H1	69	outer dosimeters		500	04/28/97	05/01/97	1	2500	1.0	1.6	50	5	1286	28.178	563.56	564		113

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	OD-FT ck 72	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-FT spk 240	72	outer dosimeters	100		04/28/97	05/01/97	1	2500	1.0	1.6	50	1	1235	25.87	103.48	103	103	
73603	OD-FT spk 241	72	outer dosimeters	5000		04/28/97	05/01/97	1	2500	1.0	1.6	50	40	1514	31.732	5077.12	5080	102	
73562	FS-27-OD-LA	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	5	2203	46.209	924.18	924		
73562	FS-27-OD-UA	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	4	324	6.729	107.664	108		
73562	FS-27-OD-FT	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	1245	26.08	104.32	104		
73562	FS-27-OD-RT	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	1286	26.942	107.768	108		
73562	FS-27-OD-LL	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	1312	27.488	109.952	110		
73562	FS-27-OD-UL	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	2	1726	36.186	289.488	289		
73562	FS-28-OD-LA	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	50	1905	39.947	7989.4	7990		
73562	FS-28-OD-UA	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	1190	24.924	996.96	997		
73562	FS-28-OD-FT	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	1958	41.061	1642.44	1640		
73562	FS-28-OD-RT	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	1643	34.442	1377.68	1380		
73562	FS-28-OD-LL	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	2194	46.019	1840.76	1840		
73562	FS-28-OD-UL	72	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	25	2164	45.389	4538.9	4540		
73593	FF-08-OD-H2	72	outer dosimeters		500	04/28/97	05/01/97	1	2500	1.0	1.6	50	5	1213	25.408	508.16	508		102
73603	OD-UA ck 74	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-UA spk 244	74	outer dosimeters	100		04/28/97	05/01/97	1	2500	1.0	1.6	50	1	3629	26.105	104.42	104	104	
73603	OD-UA spk 245	74	outer dosimeters	20000		04/28/97	05/01/97	1	2500	1.0	1.6	50	200	3853	27.735	22188	22200	111	
73562	FS-29-OD-LA	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	5934	42.874	1714.96	1710		
73562	FS-29-OD-UA	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	4576	32.995	131.98	132		
73562	FS-29-OD-FT	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	6825	49.356	197.424	197		
73562	FS-29-OD-RT	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	5553	40.103	160.412	160		
73562	FS-29-OD-LL	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	1	4619	33.308	133.232	133		
73562	FS-29-OD-UL	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	5580	40.299	1611.96	1610		
73562	FS-30-OD-LA	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	40	5467	39.477	6316.32	6320		
73562	FS-30-OD-UA	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	4	6593	47.669	762.704	763		
73562	FS-30-OD-FT	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	10	4600	33.169	1326.76	1330		
73562	FS-30-OD-RT	74	outer dosimeters			04/28/97	05/01/97	1	2500	1.0	1.6	50	5	6568	47.487	949.74	950		
73562	FS-30-OD-LL	74	outer dosimeters			04/28/97	05/02/97	1	2500	1.0	1.6	50	10	4688	33.81	1352.4	1350		
73562	FS-30-OD-UL	74	outer dosimeters			04/28/97	05/02/97	1	2500	1.0	1.6	50	20	5468	39.484	3158.72	3160		
73603	OD-LA ck 75	75a	outer dosimeters			04/29/97	05/03/97	1	2500	25.0	2.0	50	1	315	2.4604	0.49208	<1.0		
73603	OD-LA spk 246	75a	outer dosimeters	3.0		04/29/97	05/03/97	1	2500	25.0	2.0	50	1	2122	15.767	3.1534	3.15	105	
73603	OD-LA spk 247	75a	outer dosimeters	5.0		04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3429	25.392	5.0784	5.08	102	
73593	FF-08-OD-L1	75a	outer dosimeters		5	04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3651	27.027	5.4054	5.41		108
73593	FF-08-OD-L2	75a	outer dosimeters		5	04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3475	25.731	5.1462	5.15		103
73593	FF-08-OD-L3	75a	outer dosimeters		5	04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3296	24.412	4.8824	4.88		98
73593	FF-08-OD-L4	75a	outer dosimeters		5	04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3422	25.34	5.068	5.07		101
73593	FF-08-OD-L5	75a	outer dosimeters		5	04/29/97	05/03/97	1	2500	25.0	2.0	50	1	3180	23.558	4.7116	4.71		94

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories, Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	OD-RT ck 77	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-RT spk 250	77	outer dosimeters	100		04/29/97	05/02/97	1	2500	1.0	1.6	50	1	3559	26.118	104.472	104	104	
73603	OD-RT spk 251	77	outer dosimeters	2000		04/29/97	05/02/97	1	2500	1.0	1.6	50	20	3804	27.914	2233.12	2230	112	
73562	FS-31-OD-LA	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	10	6488	47.588	1903.52	1900		
73562	FS-31-OD-UA	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	2	4528	33.221	265.768	266		
73562	FS-31-OD-FT	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	2	4858	35.64	285.12	285		
73562	FS-31-OD-RT	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	4112	30.172	482.752	483		
73562	FS-31-OD-LL	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	2	3974	29.16	233.28	233		
73562	FS-31-OD-UL	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	3680	27.005	432.08	432		
73562	FS-32-OD-LA	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	20	7158	52.499	4199.92	4200		
73562	FS-32-OD-UA	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	2	6436	47.206	377.648	378		
73562	FS-32-OD-FT	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	4137	30.355	485.68	486		
73562	FS-32-OD-RT	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	4741	34.782	556.512	557		
73562	FS-32-OD-LL	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	3997	29.329	469.264	469		
73562	FS-32-OD-UL	77	outer dosimeters			04/29/97	05/02/97	1	2500	1.0	1.6	50	4	4876	35.772	572.352	572		
73593	FF-08-OD-H3	77	outer dosimeters		500	04/29/97	05/02/97	1	2500	1.0	1.6	50	5	3524	25.862	517.24	517		103
73603	OD-FT ck 79	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-FT spk 254	79	outer dosimeters	100		04/29/97	05/05/97	1	2500	1.0	1.6	50	1	3602	25.792	103.168	103	103	
73603	OD-FT spk 255	79	outer dosimeters	1000		04/29/97	05/05/97	1	2500	1.0	1.6	50	10	3529	25.266	1010.64	1010	101	
73562	FS-33-OD-LA	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	200	3846	27.547	22037.6	22000		
73562	FS-33-OD-UA	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	10	6977	50.074	2002.96	2000		
73562	FS-33-OD-FT	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	20	3848	27.561	2204.88	2200		
73562	FS-33-OD-RT	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	20	6092	43.707	3496.56	3500		
73562	FS-33-OD-LL	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	10	6819	48.937	1957.48	1960		
73562	FS-33-OD-UL	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	10	7337	52.664	2106.56	2110		
73562	FS-34-OD-LA	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	100	5438	39.001	15600.4	15600		
73562	FS-34-OD-UA	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	4	4868	34.9	558.4	558		
73562	FS-34-OD-RT	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	5	5554	39.836	796.72	797		
73562	FS-34-OD-FT	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	20	5566	39.922	3193.76	3190		
73562	FS-34-OD-LL	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	5	7351	52.765	1055.3	1060		
73562	FS-34-OD-UL	79	outer dosimeters			04/29/97	05/05/97	1	2500	1.0	1.6	50	10	5927	42.519	1700.76	1700		
73603	OD-UA ck 81	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-UA spk 258	81	outer dosimeters	100		04/30/97	05/03/97	1	2500	1.0	1.6	50	1	3457	26.079	104.316	104	104	
73603	OD-UA spk 259	81	outer dosimeters	2000		04/30/97	05/03/97	1	2500	1.0	1.6	50	20	3623	27.341	2187.28	2190	110	
73562	FS-35-OD-LA	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	40	4973	37.606	6016.96	6020		
73562	FS-35-OD-UA	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	3415	25.759	1030.36	1030		
73562	FS-35-OD-FT	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	5776	43.711	1748.44	1750		
73562	FS-35-OD-RT	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	5186	39.225	1569	1570		
73562	FS-35-OD-LL	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	3562	26.877	1075.08	1080		
73562	FS-35-OD-UL	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	5972	45.201	1808.04	1810		
73562	FS-36-OD-LA	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	100	4469	33.773	13509.2	13500		
73562	FS-36-OD-UA	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	5	6464	48.942	978.84	979		
73562	FS-36-OD-FT	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	6012	45.506	1820.24	1820		
73562	FS-36-OD-RT	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	5	5708	43.194	863.88	864		
73562	FS-36-OD-LL	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	4	5378	40.685	650.96	651		
73562	FS-36-OD-UL	81	outer dosimeters			04/30/97	05/03/97	1	2500	1.0	1.6	50	10	3723	28.101	1124.04	1120		
73593	FF-08-OD-H4	81	outer dosimeters		500	04/30/97	05/03/97	1	2500	1.0	1.6	50	5	3305	24.923	498.46	498		100

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Dermal Dosimeter samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Sample Type	Fort. Level (ug/sect)	Field fort. level (ug/sect.)	Extr. Date	Instr. Date	Amt. Samp. (sect.)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/section	reported ug/section	% Rec	Field Fort. Rec (%)
73603	OD-LA ck 83	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-LA spk 262	83	outer dosimeters	100		04/30/97	05/04/97	1	2500	1.0	1.6	50	1	3488	26.533	106.132	106	106	
73603	OD-LA spk 263	83	outer dosimeters	10000		04/30/97	05/04/97	1	2500	1.0	1.6	50	100	3684	28.016	11206.4	11200	112	
73591	FS-37-OD-LA	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	20	5168	39.245	3139.6	3140		
73591	FS-37-OD-UA	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	4	3538	26.912	430.592	431		
73591	FS-37-OD-FT	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	4	5371	40.781	652.496	652		
73591	FS-37-OD-RT	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	4	3219	24.498	391.968	392		
73591	FS-37-OD-LL	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	2	5112	38.821	310.568	311		
73591	FS-37-OD-UL	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	4	5786	43.921	702.736	703		
73591	FS-38-OD-LA	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	100	4155	31.58	12632	12600		
73591	FS-38-OD-UA	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	10	5864	44.511	1780.44	1780		
73591	FS-38-OD-FT	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	10	6094	46.251	1850.04	1850		
73591	FS-38-OD-RT	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	20	5583	42.385	3390.8	3390		
73591	FS-38-OD-LL	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	10	5376	40.819	1632.76	1630		
73591	FS-38-OD-UL	83	outer dosimeters			04/30/97	05/04/97	1	2500	1.0	1.6	50	25	6219	47.197	4719.7	4720		
73593	FF-08-OD-H5	83	outer dosimeters		500	04/30/97	05/04/97	1	2500	1.0	1.6	50	5	3616	27.502	550.04	550		110
73603	OD-FT ck 84	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-FT spk 264	84	outer dosimeters	100		05/01/97	05/07/97	1	2500	1.0	1.6	50	1	2857	20.696	82.784	82.8	83	
73603	OD-FT spk 265	84	outer dosimeters	50000		05/01/97	05/07/97	1	2500	1.0	1.6	50	400	4657	33.721	53953.6	54000	108	
73591	FS-39-OD-LA	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	20	6621	47.933	3834.64	3830		
73591	FS-39-OD-UA	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	4	2573	18.641	298.256	298		
73591	FS-39-OD-FT	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	4	4246	30.747	491.952	492		
73591	FS-39-OD-RT	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	2	3992	28.909	231.272	231		
73591	FS-39-OD-LL	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	2	4671	33.823	270.584	271		
73591	FS-39-OD-UL	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	5	5574	40.357	807.14	807		
73591	FS-40-OD-LA	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	20	4688	33.946	2715.68	2720		
73591	FS-40-OD-UA	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	4	4256	30.82	493.12	493		
73591	FS-40-OD-FT	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	5	5213	37.745	754.9	755		
73591	FS-40-OD-RT	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	4	6244	45.205	723.28	723		
73591	FS-40-OD-LL	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	10	6862	49.677	1987.08	1990		
73591	FS-40-OD-UL	84	outer dosimeters			05/01/97	05/07/97	1	2500	1.0	1.6	50	25	6203	44.909	4490.9	4490		
73603	OD-RT ck 85	85	outer dosimeters			05/06/97	05/06/97	1	2500	1.0	1.6	50	1	0	0	0	<20		
73603	OD-RT spk 266	85	outer dosimeters	100000		05/06/97	05/06/97	1	2500	1.0	1.6	50	1000	1235	26.895	107580	108000	108	

APPENDIX III

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Handwash Samples

Copies of Spreadsheets for Carbaryl in Handwash Samples

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Handwash Samples

Spreadsheet Columns

A.	M.L. Ticket No.	-	Assigned by Morse Laboratories, Inc.
B.	Sample Identification	-	As submitted by the Sponsor with "ck" and "spk" notations added by the laboratory for QC samples
C.	Set No.	-	Assigned by Morse Laboratories, Inc.
D.	Fort. level (μg/sample)	-	Fortification level for spike samples in μg/sample
E.	Field fort. level (μg/sample)	-	Level of fortification added in the field for field-fortified samples only
F.	Extr. Date	-	Date of initial extraction
G.	Instr. Date	-	Date of GC injection as noted on the chromatogram
H.	Amt. Samp.	-	Amount of sample taken through the extraction
I.	mL solv.	-	Volume solvent used for the extraction
J.	mL aliq.	-	Volume of aliquot taken through procedure
K.	Final Vol. (mL)	-	Final volume of sample extract submitted to HPLC
L.	Inj. Vol. (μL)	-	Volume of sample extract injected into the HPLC
M.	HPLC Dil. Fact.	-	Instrumentation dilution from applicable chromatogram, "1" equals no dilution

N.	Peak Ht.	-	The peak height response of sample
O.	ng/mL found	-	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
P.	μg/sample	-	μg/sample of sample calculated by the spreadsheet equation
Q.	reported μg/sample	-	Manually entered value that has been rounded to three significant figures or <LOQ
R.	% Rec	-	% recovery value for fortified samples only (spikes); calculated by the spreadsheet equation (rounded to one decimal place)
S.	Field Fort. Rec (%)	-	Recovery value for field-fortified samples only; calculated by the spreadsheet equation

Spreadsheet Calculation Equations

For μg/sample carbaryl:

$$P = O \times (I/J) \times (K/H) \times M \times (1/1000)$$

For the laboratory-fortified control, percent recovery value:

$$R = (Q/D) \times 100$$

For the field-fortified control, percent recovery value:

$$S = (Q/E) \times 100$$

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Handwash samples

Morse Laboratories,Inc.

Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
HW ck 4	4			02/13/97	02/14/97	1	200	2.0	2.0	50	1	0	0.000	0	<1.0		
HW spk 29	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2801	48.185	48.185	48.2	96	
HW spk 30	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2761	47.499	47.499	47.5	95	
HW spk 31	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2703	46.493	46.493	46.5	93	
HW spk 32	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2744	47.202	47.202	47.2	94	
HW spk 33	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2713	46.676	46.676	46.7	93	
HW spk 34	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2463	42.377	42.377	42.4	85	
HW spk 35	4	50		02/13/97	02/14/97	1	200	2.0	2.0	50	5	2739	47.122	47.122	47.1	94	
HW spk 36	4	500		02/13/97	02/14/97	1	200	2.0	2.0	50	50	2817	48.46	484.6	485	97	
HW spk 37	4	500		02/13/97	02/14/97	1	200	2.0	2.0	50	50	2810	48.334	483.34	483	97	
HW spk 38	4	500		02/13/97	02/14/97	1	200	2.0	2.0	50	50	2816	48.437	484.37	484	97	
HW spk 39	4	500		02/13/97	02/14/97	1	200	2.0	2.0	50	50	3091	53.147	531.47	531	106	
HW spk 40	4	500		02/13/97	02/14/97	1	200	2.0	2.0	50	50	2813	48.391	483.91	484	97	
HW spk 41	4	500		02/13/97	02/15/97	1	200	2.0	2.0	50	50	2847	48.974	489.74	490	98	
HW spk 42	4	500		02/13/97	02/15/97	1	200	2.0	2.0	50	50	2847	48.963	489.63	490	98	
HW ck 9	9			02/21/97	02/25/97	1	200	2.0	2.0	50	1	0	0.000	0	<1.0		
HW spk 85	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	803	15.373	3.0746	3.07	102	
HW spk 86	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	807	15.448	3.0896	3.09	103	
HW spk 87	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	781	14.969	2.9938	2.99	100	
HW spk 88	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	776	14.868	2.9736	2.97	99	
HW spk 89	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	781	14.969	2.9938	2.99	100	
HW spk 90	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	771	14.767	2.9534	2.95	98	
HW spk 91	9	3.0		02/21/97	02/25/97	1	200	2.0	2.0	50	1	771	14.767	2.9534	2.95	98	
HW ck 51	51			04/22/97	04/24/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 199	51	5.0		04/22/97	04/24/97	1	200	2.0	2.0	50	1	3806	25.358	5.0716	5.07	101	
HW spk 200	51	5000		04/22/97	04/24/97	1	200	2.0	2.0	50	1000	3760	25.054	5010.8	5010	100	
FF-01-HW-C1	51			04/22/97	04/24/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
FF-01-HW-L1	51		5	04/22/97	04/24/97	1	200	2.0	2.0	50	1	3747	24.968	4.9936	4.99		100
FF-01-HW-L2	51		5	04/22/97	04/24/97	1	200	2.0	2.0	50	1	3722	24.803	4.9606	4.96		99
FF-01-HW-L3	51		5	04/22/97	04/24/97	1	200	2.0	2.0	50	1	3690	24.591	4.9182	4.92		98
FF-01-HW-L4	51		5	04/22/97	04/24/97	1	200	2.0	2.0	50	1	3649	24.32	4.864	4.86		97
FF-01-HW-L5	51		5	04/22/97	04/24/97	1	200	2.0	2.0	50	1	3650	24.327	4.8654	4.87		97
FS-06-HW-01	51			04/22/97	04/24/97	1	200	2.0	2.0	50	20	5862	38.955	155.82	156		
FS-07-HW-01	51			04/22/97	04/24/97	1	200	2.0	2.0	50	400	7331	48.67	3893.6	3890		
FS-08-HW-01	51			04/22/97	04/24/97	1	200	2.0	2.0	50	1000	4038	26.893	5378.6	5380		
FS-09-HW-01	51			04/22/97	04/24/97	1	200	2.0	2.0	50	40	5581	37.097	296.776	297		
FS-10-HW-01	51			04/22/97	04/24/97	1	200	2.0	2.0	50	1000	6123	40.681	8136.2	8140		
HW ck 53	53			04/22/97	04/24/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 203	53	5.0		04/22/97	04/26/97	1	200	2.0	2.0	50	1	2348	26.841	5.3682	5.37	107	
HW spk 204	53	500		04/22/97	04/24/97	1	200	2.0	2.0	50	100	3877	25.869	517.38	517	103	
FS-01-HW-01	53			04/22/97	04/24/97	1	200	2.0	2.0	50	10	6501	43.46	86.92	86.9		
FS-02-HW-01	53			04/22/97	04/24/97	1	200	2.0	2.0	50	200	3437	22.919	916.76	917		
FS-03-HW-01	53			04/22/97	04/24/97	1	200	2.0	2.0	50	1000	4320	28.839	5767.8	5770		
FS-04-HW-01	53			04/22/97	04/24/97	1	200	2.0	2.0	50	2000	4690	31.319	12527.6	12500		
FS-05-HW-01	53			04/22/97	04/24/97	1	200	2.0	2.0	50	40	5934	39.659	317.272	317		
FF-01-HW-H1	53		500	04/22/97	04/24/97	1	200	2.0	2.0	50	50	7765	51.934	519.34	519		104
FF-01-HW-H2	53		500	04/22/97	04/24/97	1	200	2.0	2.0	50	50	8569	57.324	573.24	573		115
FF-01-HW-H3	53		500	04/22/97	04/24/97	1	200	2.0	2.0	50	50	7778	52.021	520.21	520		104
FF-01-HW-H4	53		500	04/22/97	04/24/97	1	200	2.0	2.0	50	50	7542	50.439	504.39	504		101
FF-01-HW-H5	53		500	04/22/97	04/24/97	1	200	2.0	2.0	50	50	7682	51.378	513.78	514		103
HW ck 53	53R			04/22/97	04/26/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Handwash samples

Morse Laboratories,Inc.

Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
HW ck 55	55			04/23/97	04/26/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 207	55	50		04/23/97	04/26/97	1	200	2.0	2.0	50	10	2434	27.806	55.612	55.6	111	
HW spk 208	55	1000		04/23/97	04/26/97	1	200	2.0	2.0	50	100	4566	51.73	1034.6	1030	103	
FS-11-HW-01	55			04/23/97	04/26/97	1	200	2.0	2.0	50	1	2186	25.023	5.0046	5.00		
FS-12-HW-01	55			04/23/97	04/26/97	1	200	2.0	2.0	50	20	4878	55.231	220.924	221		
FS-13-HW-01	55			04/23/97	04/26/97	1	200	2.0	2.0	50	1000	2155	24.676	4935.2	4940		
FS-14-HW-01	55			04/23/97	04/26/97	1	200	2.0	2.0	50	500	3955	44.874	4487.4	4490		
FS-15-HW-01	55			04/23/97	04/26/97	1	200	2.0	2.0	50	40	2594	29.602	236.816	237		
FF-04-HW-H1	55		500	04/23/97	04/26/97	1	200	2.0	2.0	50	50	4727	53.537	535.37	535		107
FF-04-HW-H2	55		500	04/23/97	04/26/97	1	200	2.0	2.0	50	50	4487	50.844	508.44	508		102
FF-04-HW-H3	55		500	04/23/97	04/26/97	1	200	2.0	2.0	50	50	4546	51.528	515.28	515		103
FF-04-HW-H4	55		500	04/23/97	04/26/97	1	200	2.0	2.0	50	50	4384	49.688	496.88	497		99
FF-04-HW-H5	55		500	04/23/97	04/26/97	1	200	2.0	2.0	50	50	4573	51.809	518.09	518		104
HW ck 58	58			04/23/97	04/26/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 213	58	250		04/23/97	04/27/97	1	200	2.0	2.0	50	50	2423	26.606	266.06	266	106	
HW spk 214	58	10000		04/23/97	04/27/97	1	200	2.0	2.0	50	2000	2439	26.782	10712.8	10700	107	
FF-04-HW-L1	58		5	04/23/97	04/27/97	1	200	2.0	2.0	50	1	2269	24.914	4.9828	4.98		100
FF-04-HW-L2	58		5	04/23/97	04/27/97	1	200	2.0	2.0	50	1	2184	23.98	4.796	4.80		96
FF-04-HW-L3	58		5	04/23/97	04/27/97	1	200	2.0	2.0	50	1	2246	24.661	4.9322	4.93		99
FF-04-HW-L4	58		5	04/23/97	04/27/97	1	200	2.0	2.0	50	1	2237	24.563	4.9126	4.91		98
FF-04-HW-L5	58		5	04/23/97	04/27/97	1	200	2.0	2.0	50	1	2194	24.09	4.818	4.82		96
FS-16-HW-01	58			04/23/97	04/27/97	1	200	2.0	2.0	50	2000	2381	26.145	10458	10500		
FS-17-HW-01	58			04/23/97	04/29/97	1	200	2.0	2.0	50	50	4045	45.408	454.08	454		
FS-18-HW-01	58			04/23/97	04/27/97	1	200	2.0	2.0	50	20	3734	41.01	164.04	164		
FS-19-HW-01	58			04/23/97	04/27/97	1	200	2.0	2.0	50	2000	2636	28.946	11578.4	11600		
FS-20-HW-01	58			04/23/97	04/27/97	1	200	2.0	2.0	50	2000	2702	29.671	11868.4	11900		
HW ck 58	58R			04/23/97	04/29/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 213	58R	250		04/23/97	04/29/97	1	200	2.0	2.0	50	50	2275	25.546	255.46	255	102	
HW ck 60	60			04/24/97	04/26/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 217	60	100		04/24/97	04/26/97	1	200	2.0	2.0	50	20	4161	28.385	113.54	114	114	
HW spk 218	60	10000		04/24/97	04/26/97	1	200	2.0	2.0	50	2000	4233	28.874	11549.6	11500	115	
FS-21-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	10	5356	36.509	73.018	73.0		
FS-22-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	50	6482	44.164	441.64	442		
FS-23-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	1000	5351	36.475	7295	7300		
FS-24-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	4000	4518	30.812	24649.6	24600		
FS-25-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	20	4508	30.744	122.976	123		
FS-26-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	500	6384	43.498	4349.8	4350		
FS-27-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	5	2850	19.472	19.472	19.5		
FS-28-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	25	7541	51.364	256.82	257		
FS-29-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	500	5677	38.691	3869.1	3870		
FS-30-HW-01	60			04/24/97	04/26/97	1	200	2.0	2.0	50	1000	4383	29.894	5978.8	5980		

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Handwash samples

Morse Laboratories,Inc.

Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
HW ck 61	61			04/24/97	04/28/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 219	61	250		04/24/97	04/28/97	1	200	2.0	2.0	50	50	2221	24.94	249.4	249	100	
HW spk 220	61	20000		04/24/97	04/28/97	1	200	2.0	2.0	50	2500	3562	39.988	19994	20000	100	
FS-31-HW-01	61			04/24/97	04/28/97	1	200	2.0	2.0	50	10	3513	39.438	78.876	78.9		
FS-32-HW-01	61			04/24/97	04/28/97	1	200	2.0	2.0	50	10	2606	29.26	58.52	58.5		
FS-33-HW-01	61			04/24/97	04/28/97	1	200	2.0	2.0	50	1000	2290	25.715	5143	5140		
FS-34-HW-01	61			04/24/97	04/28/97	1	200	2.0	2.0	50	500	4073	45.722	4572.2	4570		
FS-35-HW-01	61			04/24/97	04/28/97	1	200	2.0	2.0	50	4	3717	41.727	33.3816	33.4		
FF-08-HW-H1	61		500	04/24/97	04/28/97	1	200	2.0	2.0	50	50	4937	55.417	554.17	554		111
FF-08-HW-H2	61		500	04/24/97	04/28/97	1	200	2.0	2.0	50	50	4684	52.578	525.78	526		105
FF-08-HW-H3	61		500	04/24/97	04/28/97	1	200	2.0	2.0	50	50	3321	37.284	372.84	373		75
FF-08-HW-H4	61		500	04/24/97	04/28/97	1	200	2.0	2.0	50	50	4631	51.983	519.83	520		104
FF-08-HW-H5	61		500	04/24/97	04/28/97	1	200	2.0	2.0	50	50	5296	59.446	594.46	594		119
HW ck 65	65			04/25/97	04/27/97	1	200	2.0	2.0	50	1	0	0	0	<1.0		
HW spk 227	65	5.0		04/25/97	04/27/97	1	200	2.0	2.0	50	1	2351	26.084	5.2168	5.22	104	
HW spk 228	65	5000		04/25/97	04/27/97	1	200	2.0	2.0	50	1000	2127	23.601	4720.2	4720	94	
FS-36-HW-01	65			04/25/97	04/27/97	1	200	2.0	2.0	50	1000	3080	34.163	6832.6	6830		
FS-37-HW-01	65			04/25/97	04/27/97	1	200	2.0	2.0	50	10	2274	25.23	50.46	50.5		
FS-38-HW-01	65			04/25/97	04/27/97	1	200	2.0	2.0	50	20	4899	54.322	217.288	217		
FS-39-HW-01	65			04/25/97	04/27/97	1	200	2.0	2.0	50	1000	4093	45.389	9077.8	9080		
FS-40-HW-01	65			04/25/97	04/27/97	1	200	2.0	2.0	50	1000	3448	38.241	7648.2	7650		
FF-08-HW-L1	65		5	04/25/97	04/27/97	1	200	2.0	2.0	50	1	2258	25.053	5.0106	5.01		100
FF-08-HW-L2	65		5	04/25/97	04/27/97	1	200	2.0	2.0	50	1	2208	24.499	4.8998	4.90		98
FF-08-HW-L3	65		5	04/25/97	04/27/97	1	200	2.0	2.0	50	1	2839	31.492	6.2984	6.30		126
FF-08-HW-L4	65		5	04/25/97	04/27/97	1	200	2.0	2.0	50	1	2337	25.928	5.1856	5.19		104
FF-08-HW-L5	65		5	04/25/97	04/27/97	1	200	2.0	2.0	50	1	2291	25.419	5.0838	5.08		102
HW ck 70	70			04/28/97	04/29/97	1	200	2.0	2.0	50	1	301	3.3956	0.67912	<1.0		
HW spk 237	70	30000		04/28/97	04/29/97	1	200	2.0	2.0	50	4000	3680	41.312	33049.6	33000	110	

APPENDIX IV

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Face/Neck Wipe Samples

Copies of Spreadsheets for Carbaryl in Face/Neck Wipes

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in Face/Neck Wipe Samples

Spreadsheet Columns

A.	M.L. Ticket No.	-	Assigned by Morse Laboratories, Inc.
B.	Sample Identification	-	As submitted by the Sponsor with "ck" and "spk" notations added by the laboratory for QC samples
C.	Set No.	-	Assigned by Morse Laboratories, Inc.
D.	Fort. level (μg/sample)	-	Fortification level for spike samples in μg/sample
E.	Field fort. level (μg/sample)	-	Level of fortification added in the field for field-fortified samples only
F.	Extr. Date	-	Date of initial extraction
G.	Instr. Date	-	Date of GC injection as noted on the chromatogram
H.	Amt. Samp.	-	Amount of sample taken through the extraction
I.	mL solv.	-	Volume solvent used for the extraction
J.	mL aliq.	-	Volume of aliquot taken through procedure
K.	Final Vol. (mL)	-	Final volume of sample extract submitted to HPLC
L.	Inj. Vol. (μL)	-	Volume of sample extract injected into the HPLC
M.	HPLC Dil. Fact.	-	Instrumentation dilution from applicable chromatogram, "1" equals no dilution

N.	Peak Ht.	-	The peak height response of sample
O.	ng/mL found	-	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
P.	μg/sample	-	μg/sample of sample calculated by the spreadsheet equation
Q.	reported μg/sample	-	Manually entered value that has been rounded to three significant figures or <LOQ
R.	% Rec	-	% recovery value for fortified samples only (spikes); calculated by the spreadsheet equation (rounded to one decimal place)
S.	Field Fort. Rec (%)	-	Recovery value for field-fortified samples only; calculated by the spreadsheet equation

Spreadsheet Calculation Equations

For μg/sample carbaryl:

$$P = O \times (I/J) \times (K/H) \times M \times (1/1000)$$

For the laboratory-fortified control, percent recovery value:

$$R = (Q/D) \times 100$$

For the field-fortified control, percent recovery value:

$$S = (Q/E) \times 100$$

M L Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Face/Neck Wipe samples

Morse Laboratories,Inc.

M L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort Rec (%)
73397	FNW ck 3	3			02/12/97	02/13/97	1	400	2.0	1.0	50	1	0	0.000	0	<1.0		
73397	FNW spk 22	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	733	12.853	2.5706	2.57	86	
73397	FNW spk 23	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	765	13.408	2.6816	2.68	89	
73397	FNW spk 24	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	725	12.714	2.5428	2.54	85	
73397	FNW spk 25	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	752	13.177	2.6354	2.64	88	
73397	FNW spk 26	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	756	13.246	2.6492	2.65	88	
73397	FNW spk 27	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	736	12.899	2.5798	2.58	86	
73397	FNW spk 28	3	3.0		02/12/97	02/13/97	1	400	2.0	1.0	50	1	768	13.455	2.691	2.69	90	
73397	FNW ck 8	8			02/20/97	02/21/97	1	400	2.0	1.0	50	1	0	0.000	0	<1.0		
73397	FNW spk 71	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1876	38.613	38.613	38.6	77	
73397	FNW spk 72	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1891	38.929	38.929	38.9	78	
73397	FNW spk 73	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1819	37.447	37.447	37.4	75	
73397	FNW spk 74	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1799	37.022	37.022	37.0	74	
73397	FNW spk 75	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1797	36.995	36.995	37.0	74	
73397	FNW spk 76	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1765	36.336	36.336	36.3	73	
73397	FNW spk 77	8	50		02/20/97	02/21/97	1	400	2.0	1.0	50	5	1760	36.226	36.226	36.2	72	
73397	FNW spk 78	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	1973	40.616	406.16	406	81	
73397	FNW spk 79	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	2021	41.603	416.03	416	83	
73397	FNW spk 80	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	2059	42.371	423.71	424	85	
73397	FNW spk 81	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	2061	42.426	424.26	424	85	
73397	FNW spk 82	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	2039	41.96	419.6	420	84	
73397	FNW spk 83	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	1965	40.451	404.51	405	81	
73397	FNW spk 84	8	500		02/20/97	02/21/97	1	400	2.0	1.0	50	50	2035	41.877	418.77	419	84	
73169	FW ck 11	11			03/03/97	03/04/97	1	400	2.0	1.0	50	1	0	0.000	0	<1.0		
73169	FW spk 106	11	5.0		03/03/97	03/04/97	1	400	2.0	1.0	50	1	1259	21.352	4.2704	4.27	85	
73169	FW spk 107	11	50		03/03/97	03/04/97	1	400	2.0	1.0	50	5	2259	38.325	38.325	38.3	77	
73464	FF-01-FW-C1	11			03/03/97	03/04/97	1	400	2.0	1.0	50	1	0	0.000	0	<1.0		
73464	FF-01-FW-C2	11			03/03/97	03/04/97	1	400	2.0	1.0	50	1	0	0.000	0	<1.0		
73464	FF-01-FW-L1	11		5	03/03/97	03/04/97	1	400	2.0	1.0	50	1	1276	21.646	4.3292	4.33		87
73464	FF-01-FW-L2	11		5	03/03/97	03/04/97	1	400	2.0	1.0	50	1	1240	21.035	4.207	4.21		84
73464	FF-01-FW-L3	11		5	03/03/97	03/04/97	1	400	2.0	1.0	50	1	2048	34.749	6.9498	6.95		139
73464	FF-01-FW-L4	11		5	03/03/97	03/04/97	1	400	2.0	1.0	50	1	1151	19.519	3.9038	3.90		78
73464	FF-01-FW-L5	11		5	03/03/97	03/04/97	1	400	2.0	1.0	50	1	1173	19.904	3.9808	3.98		80
73464	FF-01-FW-M1	11		50	03/03/97	03/04/97	1	400	2.0	1.0	50	5	2427	41.176	41.176	41.2		82
73464	FF-01-FW-M2	11		50	03/03/97	03/04/97	1	400	2.0	1.0	50	5	2236	37.94	37.94	37.9		76
73464	FF-01-FW-M3	11		50	03/03/97	03/04/97	1	400	2.0	1.0	50	5	2309	39.185	39.185	39.2		78
73464	FF-01-FW-M4	11		50	03/03/97	03/04/97	1	400	2.0	1.0	50	5	2253	38.234	38.234	38.2		76
73464	FF-01-FW-M5	11		50	03/03/97	03/04/97	1	400	2.0	1.0	50	5	2296	38.958	38.958	39.0		78
73169	FW ck 14	14			03/18/97	03/19/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73169	FW spk 112	14	50		03/18/97	03/19/97	1	400	2.0	1.0	50	5	9028	45.249	45.249	45.2	90	
73169	FW spk 113	14	1000		03/18/97	03/19/97	1	400	2.0	1.0	50	100	8941	44.812	896.24	896	90	
73461	FS-01-FW-01	14			03/18/97	03/19/97	1	400	2.0	1.0	50	10	10494	52.602	105.204	105		
73461	FS-02-FW-01	14			03/18/97	03/19/97	1	400	2.0	1.0	50	20	6507	32.604	130.416	130		
73461	FS-03-FW-01	14			03/18/97	03/19/97	1	400	2.0	1.0	50	10	9789	49.066	98.132	98.1		
73461	FS-04-FW-01	14			03/18/97	03/19/97	1	400	2.0	1.0	50	20	10708	53.675	214.7	215		
73461	FS-05-FW-01	14			03/18/97	03/19/97	1	400	2.0	1.0	50	4	7025	35.202	28.1616	28.2		
73464	FF-01-FW-H1	14		500	03/18/97	03/19/97	1	400	2.0	1.0	50	50	8702	43.613	436.13	436		87
73464	FF-01-FW-H2	14		500	03/18/97	03/19/97	1	400	2.0	2.0	25	50	8661	43.408	868.16	434		87
73464	FF-01-FW-H3	14		500	03/18/97	03/19/97	1	400	2.0	1.0	50	50	8684	43.523	435.23	435		87
73464	FF-01-FW-H4	14		500	03/18/97	03/20/97	1	400	2.0	1.0	50	50	8777	43.99	439.9	440		88
73464	FF-01-FW-H5	14		500	03/18/97	03/20/97	1	400	2.0	1.0	50	50	8697	43.588	435.88	436		87

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Face/Neck Wipe samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
73169	FW ck 15	15			03/19/97	03/20/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73585	FW spk 114	15	5.0		03/19/97	03/20/97	1	400	2.0	1.0	50	1	4273	21.937	4.3874	4.39	88	
73585	FW spk 115	15	50		03/19/97	03/20/97	1	400	2.0	1.0	50	5	8423	42.983	42.983	43.0	86	
73500	FF-03-FW-C1	15			03/19/97	03/20/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73500	FF-03-FW-M1	15		50	03/19/97	03/20/97	1	400	2.0	1.0	50	5	9257	47.213	47.213	47.2		94
73500	FF-03-FW-M2	15		50	03/19/97	03/20/97	1	400	2.0	1.0	50	5	8024	40.96	40.96	41.0		82
73500	FF-03-FW-M3	15		50	03/19/97	03/20/97	1	400	2.0	1.0	50	5	8108	41.386	41.386	41.4		83
73500	FF-03-FW-M4	15		50	03/19/97	03/20/97	1	400	2.0	1.0	50	5	8153	41.614	41.614	41.6		83
73500	FF-03-FW-M5	15		50	03/19/97	03/20/97	1	400	2.0	1.0	50	5	8270	42.207	42.207	42.2		84
73500	FF-03-FW-L1	15		5	03/19/97	03/20/97	1	400	2.0	1.0	50	1	4377	22.464	4.4928	4.49		90
73500	FF-03-FW-L2	15		5	03/19/97	03/20/97	1	400	2.0	1.0	50	1	4042	20.765	4.153	4.15		83
73500	FF-03-FW-L3	15		5	03/19/97	03/20/97	1	400	2.0	1.0	50	1	3926	20.177	4.0354	4.04		81
73500	FF-03-FW-L4	15		5	03/19/97	03/20/97	1	400	2.0	1.0	50	1	4068	20.897	4.1794	4.18		84
73500	FF-03-FW-L5	15		5	03/19/97	03/20/97	1	400	2.0	1.0	50	1	3964	20.37	4.074	4.07		81
73585	FW ck 16	16			03/19/97	03/21/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73585	FW spk 116	16	5.0		03/19/97	03/21/97	1	400	2.0	1.0	50	1	1166	21.199	4.2398	4.24	85	
73585	FW spk 117	16	500		03/19/97	03/21/97	1	400	2.0	1.0	50	50	2298	41.418	414.18	414	83	
73461	FS-06-FW-01	16			03/19/97	03/21/97	1	400	2.0	1.0	50	5	1942	35.06	35.06	35.1		
73461	FS-07-FW-01	16			03/19/97	03/21/97	1	400	2.0	1.0	50	10	1198	21.771	43.542	43.5		
73461	FS-08-FW-01	16			03/19/97	03/21/97	1	400	2.0	1.0	50	5	1477	26.754	26.754	26.8		
73461	FS-09-FW-01	16			03/19/97	03/21/97	1	400	2.0	1.0	50	20	1520	27.522	110.088	110		
73461	FS-10-FW-01	16			03/19/97	03/21/97	1	400	2.0	1.0	50	20	2493	44.901	179.604	180		
73500	FF-03-FW-H1	16		500	03/19/97	03/21/97	1	400	2.0	1.0	50	50	2321	41.829	418.29	418		84
73500	FF-03-FW-H2	16		500	03/19/97	03/21/97	1	400	2.0	1.0	50	50	2319	41.793	417.93	418		84
73500	FF-03-FW-H3	16		500	03/19/97	03/21/97	1	400	2.0	1.0	50	50	2313	41.686	416.86	417		83
73500	FF-03-FW-H4	16		500	03/19/97	03/21/97	1	400	2.0	1.0	50	50	2256	40.668	406.68	407		81
73500	FF-03-FW-H5	16		500	03/19/97	03/21/97	1	400	2.0	1.0	50	50	2314	41.704	417.04	417		83
73585	FW ck 17	17			03/20/97	03/21/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73585	FW spk 118	17	5.0		03/20/97	03/21/97	1	400	2.0	1.0	50	1	4416	22.139	4.4278	4.43	89	
73585	FW spk 119	17	50		03/20/97	03/21/97	1	400	2.0	1.0	50	5	8459	42.078	42.078	42.1	84	
73533	FF-05-FW-C1	17			03/20/97	03/21/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73533	FF-05-FW-L1	17		5	03/20/97	03/21/97	1	400	2.0	1.0	50	1	4474	22.425	4.485	4.48		90
73533	FF-05-FW-L2	17		5	03/20/97	03/21/97	1	400	2.0	1.0	50	1	4401	22.065	4.413	4.41		88
73533	FF-05-FW-L3	17		5	03/20/97	03/21/97	1	400	2.0	1.0	50	1	4215	21.147	4.2294	4.23		85
73533	FF-05-FW-L4	17		5	03/20/97	03/21/97	1	400	2.0	1.0	50	1	4403	22.075	4.415	4.42		88
73533	FF-05-FW-L5	17		5	03/20/97	03/21/97	1	400	2.0	1.0	50	1	4427	22.193	4.4386	4.44		89
73533	FF-05-FW-M1	17		50	03/20/97	03/21/97	1	400	2.0	1.0	50	5	8552	42.537	42.537	42.5		85
73533	FF-05-FW-M2	17		50	03/20/97	03/21/97	1	400	2.0	1.0	50	5	8490	42.231	42.231	42.2		84
73533	FF-05-FW-M3	17		50	03/20/97	03/21/97	1	400	2.0	1.0	50	5	9391	46.675	46.675	46.7		93
73533	FF-05-FW-M4	17		50	03/20/97	03/21/97	1	400	2.0	1.0	50	5	8598	42.764	42.764	42.8		86
73533	FF-05-FW-M5	17		50	03/20/97	03/21/97	1	400	2.0	1.0	50	5	8828	43.898	43.898	43.9		88

M.L. Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Face/Neck Wipe samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
73585	FW ck 18	18			03/21/97	03/24/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73585	FW spk 120	18	5.0		03/21/97	03/24/97	1	400	2.0	1.0	50	1	1230	22.152	4.4304	4.43	89	
73585	FW spk 121	18	500		03/21/97	03/24/97	1	400	2.0	1.0	50	50	2622	46.46	464.6	465	93	
73498	FS-11-FW-01	18			03/21/97	03/24/97	1	400	2.0	1.0	50	2	1679	29.993	11.9972	12.0		
73498	FS-12-FW-01	18			03/21/97	03/24/97	1	400	2.0	1.0	50	5	1790	31.931	31.931	31.9		
73498	FS-13-FW-01	18			03/21/97	03/24/97	1	400	2.0	1.0	50	5	1293	23.253	23.253	23.3		
73498	FS-14-FW-01	18			03/21/97	03/24/97	1	400	2.0	1.0	50	10	1726	30.814	61.628	61.6		
73498	FS-15-FW-01	18			03/21/97	03/24/97	1	400	2.0	1.0	50	10	1444	25.889	51.778	51.8		
73533	FF-05-FW-H1	18		500	03/21/97	03/24/97	1	400	2.0	1.0	50	50	2497	44.277	442.77	443		89
73533	FF-05-FW-H2	18		500	03/21/97	03/24/97	1	400	2.0	1.0	50	50	2482	44.015	440.15	440		88
73533	FF-05-FW-H3	18		500	03/21/97	03/24/97	1	400	2.0	1.0	50	50	2468	43.771	437.71	438		88
73533	FF-05-FW-H4	18		500	03/21/97	03/24/97	1	400	2.0	1.0	50	50	2522	44.714	447.14	447		89
73533	FF-05-FW-H5	18		500	03/21/97	03/24/97	1	400	2.0	1.0	50	50	2464	43.701	437.01	437		87
73594	FW ck 19	19			03/21/97	03/24/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73594	FW spk 122	19	5.0		03/21/97	03/24/97	1	400	2.0	1.0	50	1	3459	19.89	3.978	3.98	80	
73594	FW spk 123	19	200		03/21/97	03/25/97	1	400	2.0	1.0	50	20	3966	22.817	91.268	91.3	46	
73498	FS-16-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	5	7525	43.36	43.36	43.4		
73534	FS-17-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	10	5308	30.563	61.126	61.1		
73534	FS-18-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	50	3925	22.58	225.8	226		
73534	FS-19-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	10	5681	32.716	65.432	65.4		
73534	FS-20-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	50	4562	26.257	262.57	263		
73534	FS-21-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	20	5607	32.289	129.156	129		
73534	FS-22-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	20	5056	29.109	116.436	116		
73534	FS-23-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	50	4861	27.983	279.83	280		
73534	FS-24-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	10	6376	36.728	73.456	73.5		
73534	FS-25-FW-01	19			03/21/97	03/25/97	1	400	2.0	1.0	50	2	4969	28.606	11.4424	11.4		
73594	FW ck 20	20			03/22/97	03/24/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73594	FW spk 124	20	5.0		03/22/97	03/24/97	1	400	2.0	1.0	50	1	2221	12.179	2.4358	2.44	49	
73594	FW spk 125	20	500		03/22/97	03/24/97	1	400	2.0	1.0	50	50	6948	37.485	374.85	375	75	
73564	FF-07-FW-H1	20		500	03/22/97	03/24/97	1	400	2.0	1.0	50	50	8205	44.215	442.15	442		88
73564	FF-07-FW-H2	20		500	03/22/97	03/24/97	1	400	2.0	1.0	50	50	7944	42.818	428.18	428		86
73564	FF-07-FW-H3	20		500	03/22/97	03/24/97	1	400	2.0	1.0	50	50	7595	40.949	409.49	409		82
73564	FF-07-FW-H4	20		500	03/22/97	03/24/97	1	400	2.0	1.0	50	50	7848	42.304	423.04	423		85
73564	FF-07-FW-H5	20		500	03/22/97	03/24/97	1	400	2.0	1.0	50	50	7911	42.641	426.41	426		85
73564	FF-07-FW-M1	20		50	03/22/97	03/24/97	1	400	2.0	1.0	50	5	8275	44.59	44.59	44.6		89
73564	FF-07-FW-M2	20		50	03/22/97	03/24/97	1	400	2.0	1.0	50	5	7928	42.732	42.732	42.7		85
73564	FF-07-FW-M3	20		50	03/22/97	03/24/97	1	400	2.0	1.0	50	5	8092	43.61	43.61	43.6		87
73564	FF-07-FW-M4	20		50	03/22/97	03/24/97	1	400	2.0	1.0	50	5	8071	43.497	43.497	43.5		87
73564	FF-07-FW-M5	20		50	03/22/97	03/24/97	1	400	2.0	1.0	50	5	7984	43.032	43.032	43.0		86

M L.Project No: ML96-0662-RHP Protocol No. 1517

Residue results for Carbaryl in Face/Neck Wipe samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
73594	FW ck 21	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	1	0	0	0	<1.0		
73594	FW spk 126	21a	5.0		03/22/97	03/31/97	1	400	2.0	1.0	50	1	3738	18.485	3.697	3.70	74	
73594	FW spk 127	21a	200		03/22/97	03/31/97	1	400	2.0	1.0	50	20	6885	33.654	134.616	135	68	
73534	FS-26-FW-01	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	5	6341	31.032	31.032	31.0		
73563	FS-27-FW-01	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	2	4519	22.249	8.8996	8.90		
73563	FS-28-FW-01	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	20	7689	37.53	150.12	150		
73563	FS-29-FW-01	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	2	6086	29.803	11.9212	11.9		
73563	FS-30-FW-01	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	10	7574	36.975	73.95	74.0		
73564	FF-07-FW-C1	21a			03/22/97	03/31/97	1	400	2.0	1.0	50	1	165	1.2618	0.25236	<1.0		
73564	FF-07-FW-L1	21a		5	03/22/97	03/31/97	1	400	2.0	1.0	50	1	4620	22.736	4.5472	4.55		91
73564	FF-07-FW-L2	21a		5	03/22/97	03/31/97	1	400	2.0	1.0	50	1	4589	22.587	4.5174	4.52		90
73564	FF-07-FW-L3	21a		5	03/22/97	03/31/97	1	400	2.0	1.0	50	1	4739	23.31	4.662	4.66		93
73564	FF-07-FW-L4	21a		5	03/22/97	03/31/97	1	400	2.0	1.0	50	1	4575	22.519	4.5038	4.50		90
73564	FF-07-FW-L5	21a		5	03/22/97	03/31/97	1	400	2.0	1.0	50	1	4844	23.816	4.7632	4.76		95
73594	FW ck 22	22			03/24/97	03/27/97	1	400	2.0	1.0	50	1	126	0.73809	0.147618	<1.0		
73594	FW spk 128	22	50		03/24/97	03/27/97	1	400	2.0	1.0	50	5	7864	38.662	38.662	38.7	77	
73594	FW spk 129	22	200		03/24/97	03/27/97	1	400	2.0	1.0	50	20	7466	36.711	146.844	147	74	
73563	FS-31-FW-01	22			03/24/97	03/27/97	1	400	2.0	1.0	50	2	3949	19.474	7.7896	7.79		
73563	FS-32-FW-01	22			03/24/97	03/27/97	1	400	2.0	1.0	50	10	1954	9.697	19.394	19.4		
73563	FS-33-FW-01	22			03/24/97	03/27/97	1	400	2.0	1.0	50	10	4159	20.504	41.008	41.0		
73563	FS-34-FW-01	22			03/24/97	03/27/97	1	400	2.0	1.0	50	10	3350	16.539	33.078	33.1		
73563	FS-35-FW-01	22			03/24/97	03/27/97	1	400	2.0	1.0	50	20	8045	39.549	158.196	158		
73592	FF-08-FW-M1	22		50	03/24/97	03/27/97	1	400	2.0	1.0	50	5	8348	41.034	41.034	41.0		82
73592	FF-08-FW-M2	22		50	03/24/97	03/27/97	1	400	2.0	1.0	50	5	8242	40.514	40.514	40.5		81
73592	FF-08-FW-M3	22		50	03/24/97	03/27/97	1	400	2.0	1.0	50	5	8439	41.48	41.48	41.5		83
73592	FF-08-FW-M4	22		50	03/24/97	03/27/97	1	400	2.0	1.0	50	5	8451	41.539	41.539	41.5		83
73592	FF-08-FW-M5	22		50	03/24/97	03/27/97	1	400	2.0	1.0	50	5	8954	44.004	44.004	44.0		88
73594	FW ck 23	23			03/24/97	03/27/97	1	400	2.0	1.0	50	1	63	1.3548	0.27096	<1.0		
73594	FW spk 130	23	5.0		03/24/97	03/27/97	1	400	2.0	1.0	50	1	1245	23.399	4.6798	4.68	94	
73594	FW spk 131	23	500		03/24/97	03/27/97	1	400	2.0	1.0	50	50	2264	42.404	424.04	424	85	
73563	FS-36-FW-01	23			03/24/97	03/27/97	1	400	2.0	1.0	50	10	2773	51.897	103.794	104		
73590	FS-37-FW-01	23			03/24/97	03/27/97	1	400	2.0	1.0	50	5	1287	24.183	24.183	24.2		
73590	FS-38-FW-01	23			03/24/97	03/27/97	1	400	2.0	1.0	50	20	1377	25.861	103.444	103		
73590	FS-39-FW-01	23			03/24/97	03/27/97	1	400	2.0	1.0	50	5	1077	20.266	20.266	20.3		
73590	FS-40-FW-01	23			03/24/97	03/27/97	1	400	2.0	1.0	50	10	1112	20.919	41.838	41.8		
73592	FF-08-FW-L1	23		5	03/24/97	03/27/97	1	400	2.0	1.0	50	1	1271	23.884	4.7768	4.78		96
73592	FF-08-FW-L2	23		5	03/24/97	03/27/97	1	400	2.0	1.0	50	1	1219	22.915	4.583	4.58		92
73592	FF-08-FW-L3	23		5	03/24/97	03/27/97	1	400	2.0	1.0	50	1	1257	23.623	4.7246	4.72		94
73592	FF-08-FW-L4	23		5	03/24/97	03/27/97	1	400	2.0	1.0	50	1	1207	22.691	4.5382	4.54		91
73592	FF-08-FW-L5	23		5	03/24/97	03/27/97	1	400	2.0	1.0	50	1	1226	23.045	4.609	4.61		92

M L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Face/Neck Wipe samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/samp)	Field fort. level (ug/samp)	Extr. Date	Instr. Date	Amt. Samp.	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/sample	reported ug/sample	% Rec	Field Fort. Rec (%)
73594	FW ck 24	24			03/25/97	03/27/97	1	400	2.0	1.0	50	1	55	1.5561	0.31122	<1.0		
73594	FW spk 132	24	5.0		03/25/97	03/27/97	1	400	2.0	1.0	50	1	1195	24.454	4.8908	4.89	98	
73594	FW spk 133	24	500		03/25/97	03/27/97	1	400	2.0	1.0	50	50	2411	48.878	488.78	489	98	
73592	FF-08-FW-H1	24		500	03/25/97	03/27/97	1	400	2.0	1.0	50	50	2510	50.867	508.67	509		102
73592	FF-08-FW-H2	24		500	03/25/97	03/27/97	1	400	2.0	1.0	50	50	2393	48.517	485.17	485		97
73592	FF-08-FW-H3	24		500	03/25/97	03/28/97	1	400	2.0	1.0	50	50	2401	48.677	486.77	487		97
73592	FF-08-FW-H4	24		500	03/25/97	03/28/97	1	400	2.0	1.0	50	50	2565	51.971	519.71	520		104
73592	FF-08-FW-H5	24		500	03/25/97	03/28/97	1	400	2.0	1.0	50	50	2381	48.276	482.76	483		97

APPENDIX V

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in OVS Air Sampling Tubes

Copies of Spreadsheets for Carbaryl in OVS Air Sampling Tubes

Identification and Explanation of Spreadsheet Columns and Calculation Equations for Carbaryl in OVS Air Sampling Tubes

Spreadsheet Columns

A.	M.L. Ticket No.	-	Assigned by Morse Laboratories, Inc.
B.	Sample Identification	-	As submitted by the Sponsor with "ck" and "spk" notations added by the laboratory for QC samples
C.	Set No.	-	Assigned by Morse Laboratories, Inc.
D.	Fort. level (μg/tube)	-	Fortification level for spike samples only in μg/tube
E.	Field fort. level (μg/tube)	-	Level of fortification added in the field for field-fortified samples
F.	Extr. Date	-	Date of initial extraction
G.	Instr. Date	-	Date of GC injection as noted on the chromatogram
H.	Amt. Samp. (tube)	-	Amount of sample taken through the extraction
I.	mL solv.	-	Volume solvent used for the extraction
J.	mL aliq.	-	Volume of aliquot taken through procedure
K.	Final Vol. (mL)	-	Final volume of sample extract submitted to HPLC
L.	Inj. Vol. (μL)	-	Volume of sample extract injected into the HPLC
M.	HPLC Dil. Fact.	-	Instrumentation dilution from applicable chromatogram, "1" equals no dilution

N.	Peak Ht.	-	The peak height response of sample
O.	ng/mL found	-	ng/mL found as determined by the Thermo Separation Products PC 1000 linear regression program
P.	μg/tube	-	μg/tube of sample calculated by the spreadsheet equation
Q.	reported μg/tube	-	Manually entered value that has been rounded to three significant figures or <LOQ
R.	% Rec	-	% recovery value for fortified samples only (spikes); calculated by the spreadsheet equation (rounded to one decimal place)
S.	Field Fort. Rec (%)	-	Recovery value for field-fortified samples only; calculated by the spreadsheet equation

Spreadsheet Calculation Equations

For μg/tube carbaryl:

$$P = O \times (I/J) \times (K/H) \times M \times (1/1000)$$

For the laboratory-fortified control, percent recovery value:

$$R = (Q/D) \times 100$$

For the field-fortified control, percent recovery value:

$$S = (Q/E) \times 100$$

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Sorbent (OVS) Tube samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/tube)	Field fort. level (ug/tube)	Extr. Date	Instr. Date	Amt. Samp. (tube)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/tube	reported ug/tube	% Rec	Field Fort. Rec (%)
73362	OVS ck 5	5			02/14/97	02/18/97	1	10.0	4.0	0.8	50	1	0.0	0.000	0	<0.01		
73362	OVS spk 43	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1452	24.966	2.4966	2.50	83	
73362	OVS spk 44	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1491	25.624	2.5624	2.56	85	
73362	OVS spk 45	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1464	25.171	2.5171	2.52	84	
73362	OVS spk 46	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1539	26.441	2.6441	2.64	88	
73362	OVS spk 47	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1516	26.055	2.6055	2.61	87	
73362	OVS spk 48	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1265	21.79	2.179	2.18	73	
73362	OVS spk 49	5	3.0		02/14/97	02/18/97	1	10.0	4.0	0.8	50	50	1489	25.59	2.559	2.56	85	
73437	OVS ck 10	10			02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	0.0	0.000	0	<0.01		
73437	OVS spk 92	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	757	14.259	0.028518	0.0285	95	
73437	OVS spk 93	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	748	14.084	0.028168	0.0282	94	
73437	OVS spk 94	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	740	13.934	0.027868	0.0279	93	
73437	OVS spk 95	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	752	14.159	0.028318	0.0283	94	
73437	OVS spk 96	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	710	13.378	0.026756	0.0268	89	
73437	OVS spk 97	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	720	13.559	0.027118	0.0271	90	
73437	OVS spk 98	10	0.03		02/24/97	02/25/97	1	10.0	4.0	0.8	50	1	721	13.584	0.027168	0.0272	91	
73437	OVS spk 99	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2499	46.905	0.46905	0.469	94	
73437	OVS spk 100	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2491	46.755	0.46755	0.468	94	
73437	OVS spk 101	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2435	45.705	0.45705	0.457	91	
73437	OVS spk 102	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2451	46.005	0.46005	0.460	92	
73437	OVS spk 103	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2464	46.255	0.46255	0.463	93	
73437	OVS spk 104	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2437	45.755	0.45755	0.458	92	
73437	OVS spk 105	10	0.5		02/24/97	02/25/97	1	10.0	4.0	0.8	50	5	2440	45.805	0.45805	0.458	92	
73605	OVS ck 67	67			04/25/97	04/30/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 231	67	0.03		04/25/97	04/30/97	1	10	4.0	0.8	50	1	2043	15.095	0.03019	0.0302	101	
73605	OVS spk 232	67	100		04/25/97	04/30/97	1	10	4.0	0.8	50	2000	3176	23.539	94.156	94.2	94	
73461	FS-01-OV-01	67			04/25/97	04/30/97	1	10	4.0	0.8	50	50	5780	42.948	4.2948	4.29		
73461	FS-02-OV-01	67			04/25/97	04/30/97	1	10	4.0	0.8	50	500	4955	36.799	36.799	36.8		
73461	FS-03-OV-01	67			04/25/97	04/30/97	1	10	4.0	0.8	50	400	4438	32.946	26.3568	26.4		
73461	FS-04-OV-01	67			04/25/97	04/30/97	1	10	4.0	0.8	50	400	2705	20.029	16.0232	16.0		
73461	FS-05-OV-01	67			04/25/97	04/30/97	1	10	4.0	0.8	50	50	2524	18.68	1.868	1.87		
73464	FF-01-OV-H1	67		5	04/25/97	05/02/97	1	10	4.0	0.8	50	100	3311	23.9	4.78	4.78		96
73464	FF-01-OV-H2	67		5	04/25/97	05/02/97	1	10	4.0	0.8	50	100	3299	23.812	4.7624	4.76		95
73464	FF-01-OV-H3	67		5	04/25/97	05/02/97	1	10	4.0	0.8	50	100	3490	25.217	5.0434	5.04		101
73464	FF-01-OV-H4	67		5	04/25/97	05/02/97	1	10	4.0	0.8	50	100	2952	21.259	4.2518	4.25		85
73464	FF-01-OV-H5	67		5	04/25/97	05/02/97	1	10	4.0	0.8	50	100	3090	22.274	4.4548	4.45		89
73605	OVS ck 67	67R			04/25/97	05/02/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 231	67R	0.03		04/25/97	05/02/97	1	10	4.0	0.8	50	1	2103	15.012	0.030024	0.0300	100	

M.L.Project No: ML96-0662-RHP Protocol No: 1517

Residue results for Carbaryl in Sorbent (OVS) Tube samples

Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/tube)	Field fort. level (ug/tube)	Extr. Date	Instr. Date	Amt. Samp. (tube)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/tube	reported ug/tube	% Rec	Field Fort. Rec (%)
73605	OVS ck 71	71			04/28/97	05/01/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 238	71	0.03		04/28/97	05/01/97	1	10	4.0	0.8	50	1	1975	14.491	0.028982	0.0290	97	
73605	OVS spk 239	71	50		04/28/97	05/01/97	1	10	4.0	0.8	50	1000	3245	23.446	46.892	46.9	94	
73461	FS-06-OV-01	71			04/28/97	05/01/97	1	10	4.0	0.8	50	200	4093	29.914	11.9656	12.0		
73461	FS-07-OV-01	71			04/28/97	05/01/97	1	10	4.0	0.8	50	200	5956	43.481	17.3924	17.4		
73461	FS-08-OV-01	71			04/28/97	05/01/97	1	10	4.0	0.8	50	200	5765	42.09	16.836	16.8		
73461	FS-09-OV-01	71			04/28/97	05/01/97	1	10	4.0	0.8	50	200	4916	35.907	14.3628	14.4		
73461	FS-10-OV-01	71			04/28/97	05/01/97	1	10	4.0	0.8	50	200	3524	25.771	10.3084	10.3		
73464	FF-01-OV-L2	71		0.05	04/28/97	05/01/97	1	10	4.0	0.8	50	1	3398	24.558	0.049116	0.0491		98
73464	FF-01-OV-L3	71		0.05	04/28/97	05/01/97	1	10	4.0	0.8	50	1	3317	23.969	0.047938	0.0479		96
73464	FF-01-OV-L4	71		0.05	04/28/97	05/01/97	1	10	4.0	0.8	50	1	3274	23.657	0.047314	0.0473		95
73464	FF-01-OV-L5	71		0.05	04/28/97	05/01/97	1	10	4.0	0.8	50	1	3276	23.671	0.047342	0.0473		95
73464	FF-01-OV-C1	71			04/28/97	05/01/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS ck 71	71R			04/28/97	05/01/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS ck 73	73			04/28/97	05/01/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 242	73	0.03		04/28/97	05/01/97	1	10	4.0	0.8	50	1	2005	14.433	0.028866	0.0289	96	
73605	OVS spk 243	73	5.0		04/28/97	05/01/97	1	10	4.0	0.8	50	100	3554	25.692	5.1384	5.14	103	
73498	FS-11-OV-01	73			04/28/97	05/01/97	1	10	4.0	0.8	50	50	4768	34.516	3.4516	3.45		
73498	FS-12-OV-01	73			04/28/97	05/01/97	1	10	4.0	0.8	50	200	5665	41.036	16.4144	16.4		
73498	FS-13-OV-01	73			04/28/97	05/01/97	1	10	4.0	0.8	50	25	7111	51.547	2.57735	2.58		
73498	FS-14-OV-01	73			04/28/97	05/01/97	1	10	4.0	0.8	50	50	6312	45.739	4.5739	4.57		
73498	FS-15-OV-01	73			04/28/97	05/01/97	1	10	4.0	0.8	50	100	5130	37.147	7.4294	7.43		
73501	FF-04-OV-H1	73		5	04/28/97	05/01/97	1	10	4.0	0.8	50	100	3396	24.544	4.9088	4.91		98
73501	FF-04-OV-H2	73		5	04/28/97	05/01/97	1	10	4.0	0.8	50	100	3456	24.98	4.996	5.00		100
73501	FF-04-OV-H3	73		5	04/28/97	05/01/97	1	10	4.0	0.8	50	100	3495	25.263	5.0526	5.05		101
73501	FF-04-OV-H4	73		5	04/28/97	05/01/97	1	10	4.0	0.8	50	100	3650	26.39	5.278	5.28		106
73501	FF-04-OV-H5	73		5	04/28/97	05/01/97	1	10	4.0	0.8	50	100	3618	26.157	5.2314	5.23		105
73605	OVS ck 76	76			04/29/97	05/02/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 248	76	0.03		04/29/97	05/02/97	1	10	4.0	0.8	50	1	2017	14.379	0.028758	0.0288	96	
73605	OVS spk 249	76	5.0		04/29/97	05/02/97	1	10	4.0	0.8	50	100	3971	28.756	5.7512	5.75	115	
73501	FF-04-OV-L1	76		0.05	04/29/97	05/02/97	1	10	4.0	0.8	50	1	3304	23.848	0.047696	0.0477		95
73501	FF-04-OV-L2	76		0.05	04/29/97	05/02/97	1	10	4.0	0.8	50	1	3293	23.767	0.047534	0.0475		95
73501	FF-04-OV-L3	76		0.05	04/29/97	05/02/97	1	10	4.0	0.8	50	1	3271	23.606	0.047212	0.0472		94
73501	FF-04-OV-L4	76		0.05	04/29/97	05/02/97	1	10	4.0	0.8	50	1	3294	23.775	0.04755	0.0476		95
73501	FF-04-OV-L5	76		0.05	04/29/97	05/02/97	1	10	4.0	0.8	50	1	3299	23.812	0.047624	0.0476		95
73498	FS-16-OV-01	76			04/29/97	05/02/97	1	10	4.0	0.8	50	200	4040	29.264	11.7056	11.7		
73534	FS-17-OV-01	76			04/29/97	05/02/97	1	10	4.0	0.8	50	200	3906	28.278	11.3112	11.3		
73534	FS-18-OV-01	76			04/29/97	05/02/97	1	10	4.0	0.8	50	400	4564	33.119	26.4952	26.5		
73534	FS-19-OV-01	76			04/29/97	05/02/97	1	10	4.0	0.8	50	200	3776	27.321	10.9284	10.9		
73534	FS-20-OV-01	76			04/29/97	05/02/97	1	10	4.0	0.8	50	500	4986	36.224	36.224	36.2		

M.L.Project No: ML96-0662-RHP Protocol No: 1517 — Residue results for Carbaryl in Sorbent (OVS) Tube samples — Morse Laboratories,Inc.

M.L. Ticket No.	Sample Identification	Set No.	Fort. level (ug/tube)	Field fort. level (ug/tube)	Extr. Date	Instr. Date	Amt. Samp. (tube)	mL solv.	mL aliq.	Final Vol. (mL)	Inj. Vol. (uL)	HPLC Dil. Fact.	Peak Ht.	ng/mL found	ug/tube	reported ug/tube	% Rec	Field Fort. Rec (%)
73605	OVS ck 78	78			04/29/97	05/03/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73605	OVS spk 252	78	0.03		04/29/97	05/03/97	1	10	4.0	0.8	50	1	1989	14.854	0.029708	0.0297	99	
73605	OVS spk 253	78	25		04/29/97	05/03/97	1	10	4.0	0.8	50	400	4506	33.485	26.788	26.8	107	
73534	FS-21-OV-01	78			04/29/97	05/03/97	1	10	4.0	0.8	50	400	4547	33.788	27.0304	27.0		
73534	FS-22-OV-01	78			04/29/97	05/03/97	1	10	4.0	0.8	50	400	5638	41.864	33.4912	33.5		
73534	FS-23-OV-01	78			04/29/97	05/03/97	1	10	4.0	0.8	50	200	5651	41.96	16.784	16.8		
73534	FS-24-OV-01	78			04/29/97	05/03/97	1	10	4.0	0.8	50	400	5637	41.857	33.4856	33.5		
73534	FS-25-OV-01	78			04/29/97	05/03/97	1	10	4.0	0.8	50	100	3833	28.503	5.7006	5.70		
73592	FF-08-OV-H1	78		5	04/29/97	05/03/97	1	10	4.0	0.8	50	100	3448	25.654	5.1308	5.13		103
73592	FF-08-OV-H2	78		5	04/29/97	05/03/97	1	10	4.0	0.8	50	100	3562	26.497	5.2994	5.30		106
73592	FF-08-OV-H3	78		5	04/29/97	05/03/97	1	10	4.0	0.8	50	100	3702	27.534	5.5068	5.51		110
73592	FF-08-OV-H4	78		5	04/29/97	05/03/97	1	10	4.0	0.8	50	100	3629	26.993	5.3986	5.40		108
73592	FF-08-OV-H5	78		5	04/29/97	05/03/97	1	10	4.0	0.8	50	100	3799	28.252	5.6504	5.65		113
73605	OVS ck 80	80			04/29/97	05/05/97	1	10	4.0	0.8	50	1	262	1.8669	0.0037338	<0.01		
73605	OVS spk 256	80	0.03		04/29/97	05/05/97	1	10	4.0	0.8	50	1	1940	14.574	0.029148	0.0291	97	
73605	OVS spk 257	80	2.0		04/29/97	05/05/97	1	10	4.0	0.8	50	25	5734	43.304	2.1652	2.17	109	
73534	FS-26-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	200	3945	29.757	11.9028	11.9		
73563	FS-27-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	40	4825	36.421	2.91368	2.91		
73563	FS-28-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	1000	4688	35.383	70.766	70.8		
73563	FS-29-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	100	3770	28.431	5.6862	5.69		
73563	FS-30-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	200	4920	37.14	14.856	14.9		
73563	FS-31-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	100	5697	43.024	8.6048	8.60		
73563	FS-32-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	100	3465	26.122	5.2244	5.22		
73563	FS-33-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	400	5808	43.864	35.0912	35.1		
73563	FS-34-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	200	4762	35.943	14.3772	14.4		
73563	FS-35-OV-01	80			04/29/97	05/05/97	1	10	4.0	0.8	50	100	3441	25.94	5.188	5.19		
73437	OVS ck 82	82			04/30/97	05/03/97	1	10	4.0	0.8	50	1	0	0	0	<0.01		
73437	OVS spk 260	82	0.03		04/30/97	05/03/97	1	10	4.0	0.8	50	1	1899	14.661	0.029322	0.0293	98	
73437	OVS spk 261	82	2.0		04/30/97	05/03/97	1	10	4.0	0.8	50	25	4908	37.969	1.89845	1.90	95	
73563	FS-36-OV-01	82			04/30/97	05/03/97	1	10	4.0	0.8	50	50	6012	46.521	4.6521	4.65		
73590	FS-37-OV-01	82			04/30/97	05/03/97	1	10	4.0	0.8	50	40	5204	40.262	3.22096	3.22		
73590	FS-38-OV-01	82			04/30/97	05/03/97	1	10	4.0	0.8	50	400	5201	40.239	32.1912	32.2		
73590	FS-39-OV-01	82			04/30/97	05/03/97	1	10	4.0	0.8	50	40	4137	31.997	2.55976	2.56		
73590	FS-40-OV-01	82			04/30/97	05/03/97	1	10	4.0	0.8	50	200	3770	29.154	11.6616	11.7		
73592	FF-08-OV-L1	82		0.05	04/30/97	05/04/97	1	10	4.0	0.8	50	1	3273	25.304	0.050608	0.0506		101
73592	FF-08-OV-L2	82		0.05	04/30/97	05/04/97	1	10	4.0	0.8	50	1	3313	25.614	0.051228	0.0512		102
73592	FF-08-OV-L3	82		0.05	04/30/97	05/04/97	1	10	4.0	0.8	50	1	3546	27.419	0.054838	0.0548		110
73592	FF-08-OV-L4	82		0.05	04/30/97	05/04/97	1	10	4.0	0.8	50	1	3541	27.38	0.05476	0.0548		110
73592	FF-08-OV-L5	82		0.05	04/30/97	05/04/97	1	10	4.0	0.8	50	1	3383	26.157	0.052314	0.0523		105

APPENDIX VI

Example Inner Dosimeter Chromatograms, Representative Standard Injections and Standard Curve Graph

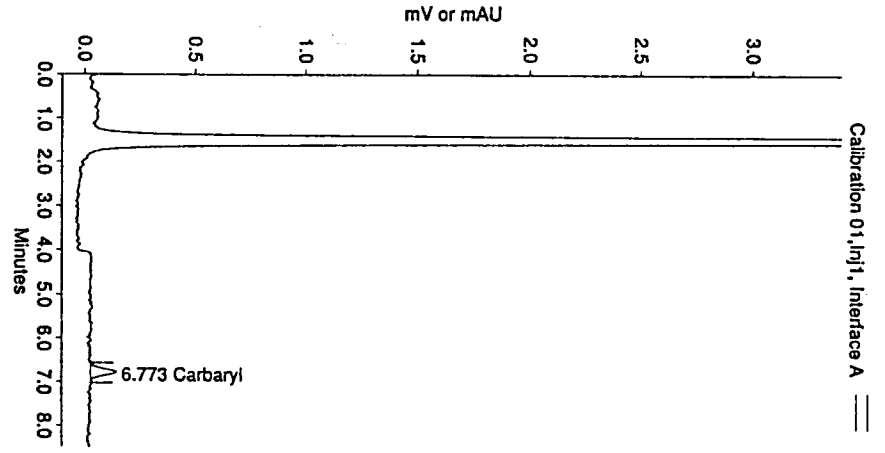
Example Outer Dosimeter Chromatograms, Representative Standard Injections and Standard Curve Graph

Example Handwash Chromatograms, Representative Standard Injections and Standard Curve Graph

Example Face/Neck Wipe Chromatograms, Representative Standard Injections and Standard Curve Graph

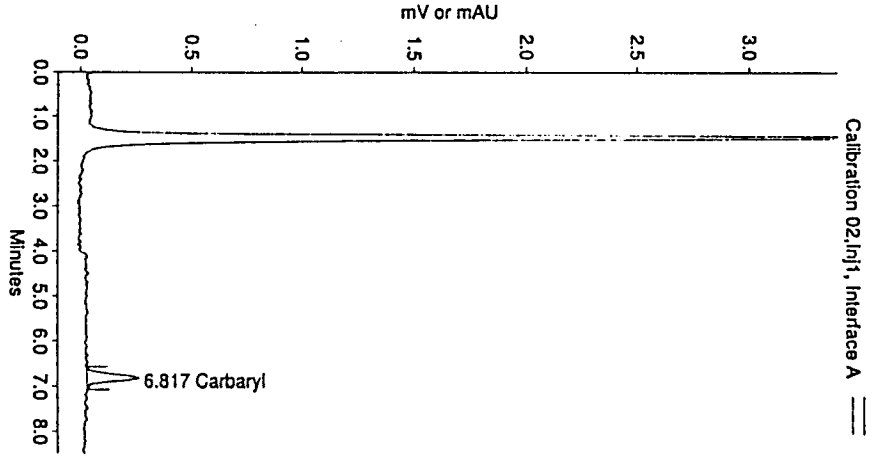
Example OVS Air Sampling Tube Chromatograms, Representative Injections and Standard Curve Graph

EXAMPLE HPLC CHROMATOGRAMS OF INNER DOSIMETER STANDARDS, SET #45



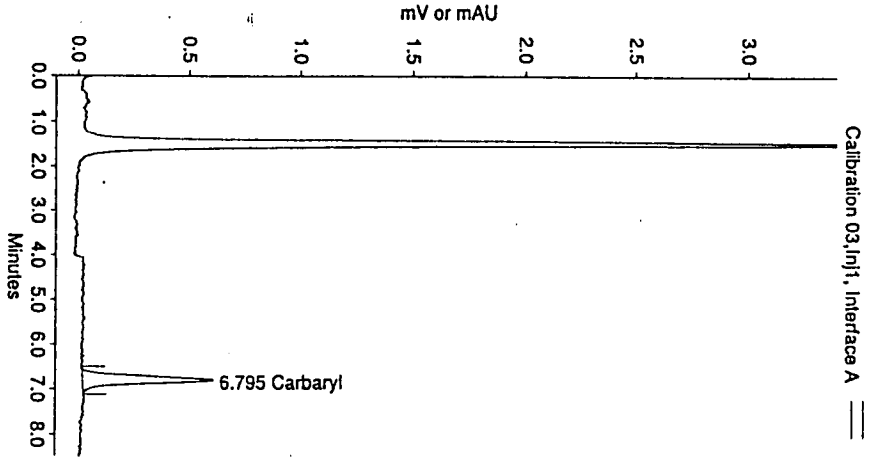
Carbaryl
2.5 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.773	1183	114	2.5	Resolved
Totals		1183	114	2.5	



Carbaryl
5.0 ng/mL Standard

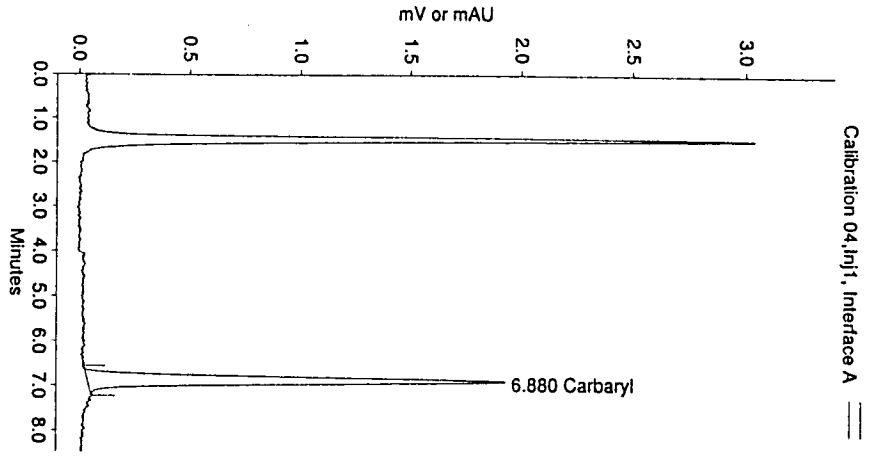
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.817	2365	231	5	Resolved
Totals		2365	231	5	



Carbaryl
12.5 ng/mL Standard

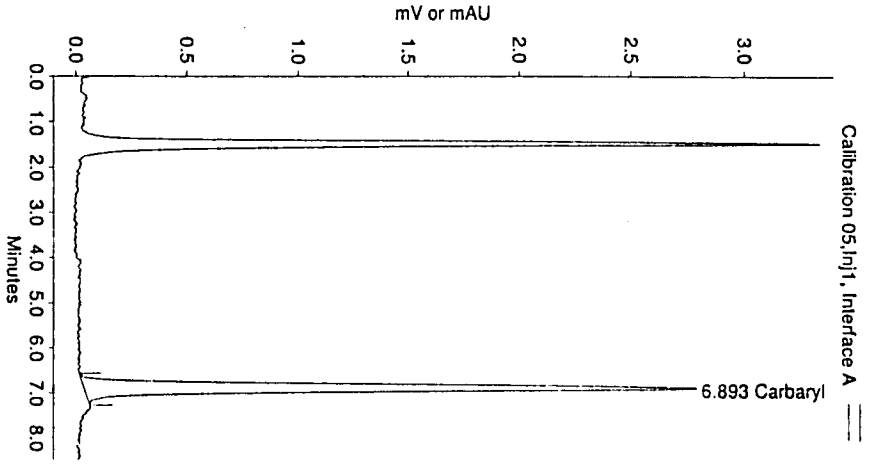
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.795	6418	590	12.5	Resolved
Totals		6418	590	12.5	

EXAMPLE HPLC CHROMATOGRAMS OF INNER DOSIMETER STANDARDS AND STANDARD CURVE, SET #45



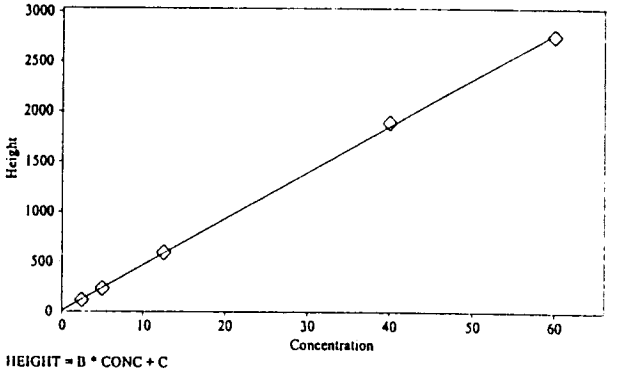
Carbaryl
40 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.880	20253	1890	40	Resolved
Totals		20253	1890	40	



Carbaryl
60 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.893	30276	2757	60	Resolved
Totals		30276	2757	60	

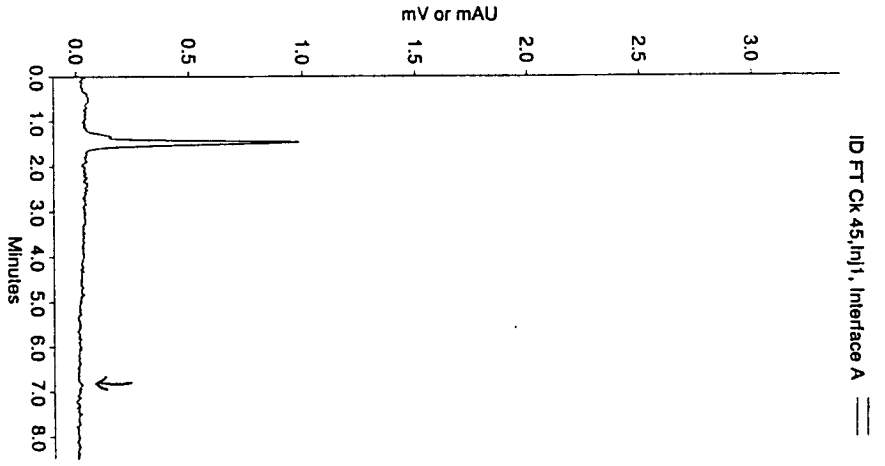


Carbaryl
Standard Curve

HEIGHT = B * CONC + C
B = 4.6208e+001, C = 7.4038e+000, RELIABILITY = 99.965%, CORR COEFF = 0.9998

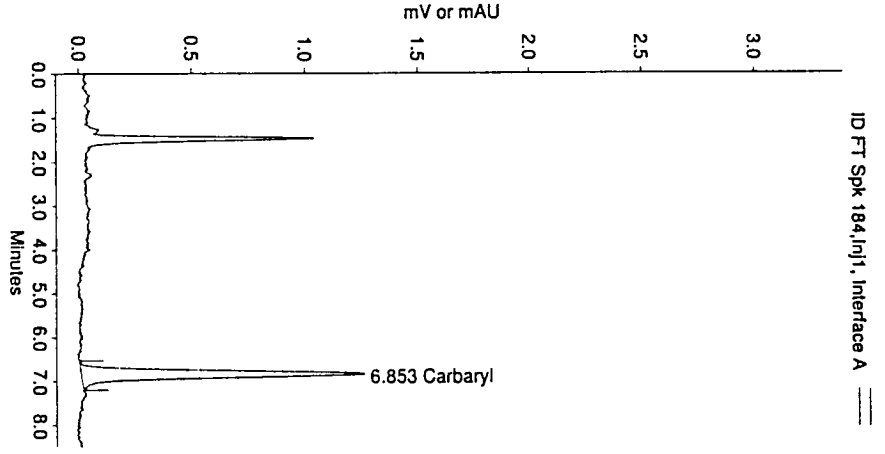
Component	RT(min)	Linear Coeff	Const Coeff	%Rel	Corr
Carbaryl	6.893	4.62082e+001	7.40379e+000	99.965	0.9998

EXAMPLE HPLC CHROMATOGRAMS OF INNER DOSIMETER CHECK, SPIKE AND FIELD SAMPLE, SET #45



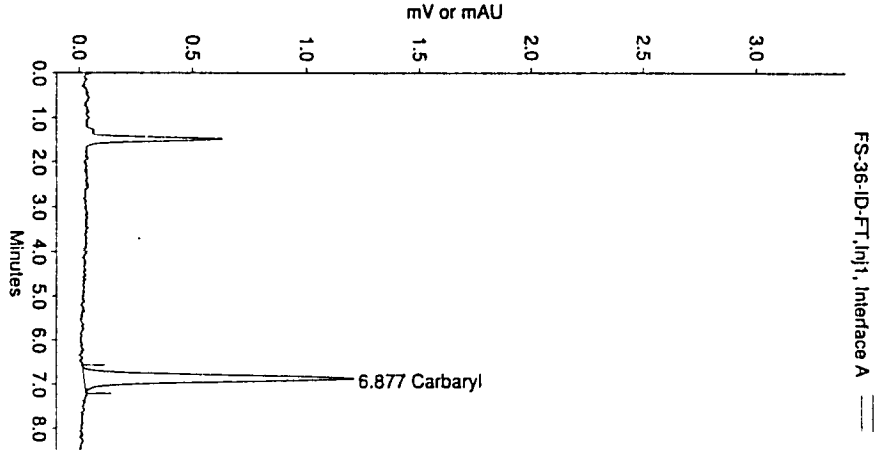
ID FT Check 45
50.0 μL of
0.005 sect/mL
injected
<1.0 μg/sect found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.800	0	0	0	NF
Totals		0	0	0.0	



ID FT Spike 184 at
5.0 μg/sect
50.0 μL of
0.005 sect/mL
injected
5.39 μg/sect found
108% Recovery

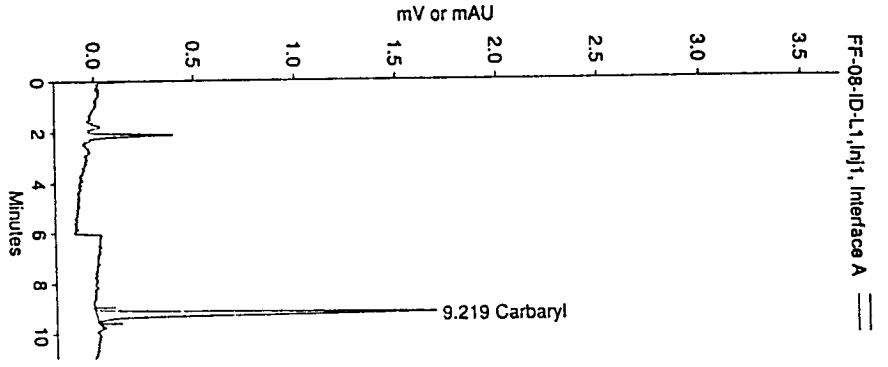
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.853	13529	1252	26.935	Resolved
Totals		13529	1252	26.935	



FS-36-ID-FT
50.0 μL of
0.005 sect/mL
(1 → 20 Dil.)
injected
102 μg/sect found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.877	12410	1186	25.506	Resolved
Totals		12410	1186	25.506	

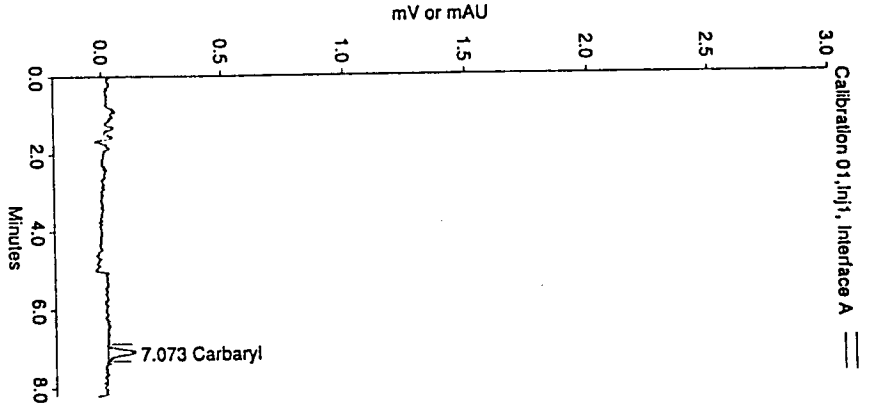
EXAMPLE HPLC CHROMATOGRAM OF INNER DOSIMETER FIELD-FORTIFIED SAMPLE, SET #40



FF-08-ID-L1
50.0 μL of
0.005 sect/mL
injected
5.87 μg/sect found

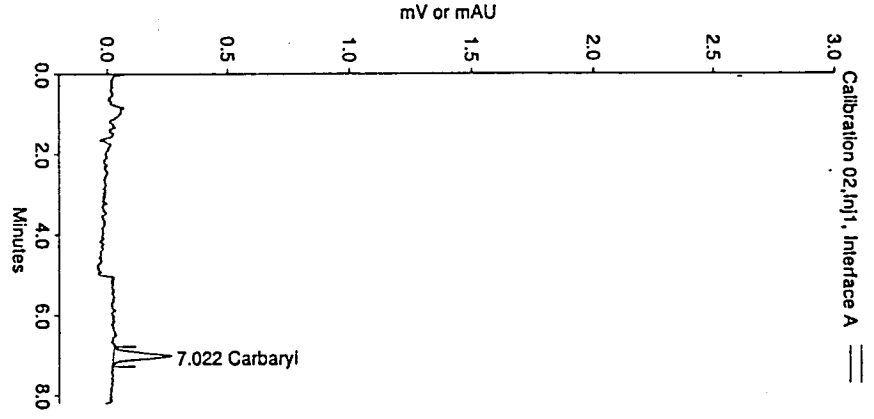
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	9.219	15689	1692	29.329	Resolved
Totals		15689	1692	29.329	

EXAMPLE HPLC CHROMATOGRAMS OF OUTER DOSIMETER STANDARDS, SET #52



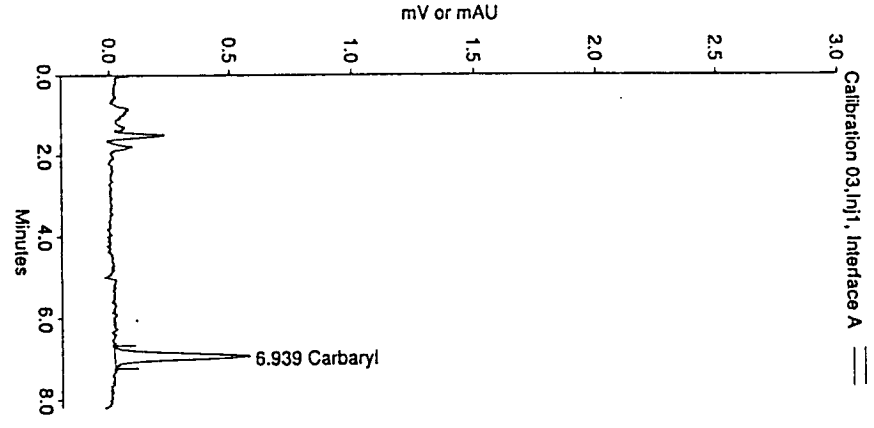
Carbaryl
2.5 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.073	1181	113	2.5	Resolved
Totals		1181	113	2.5	



Carbaryl
5.0 ng/mL Standard

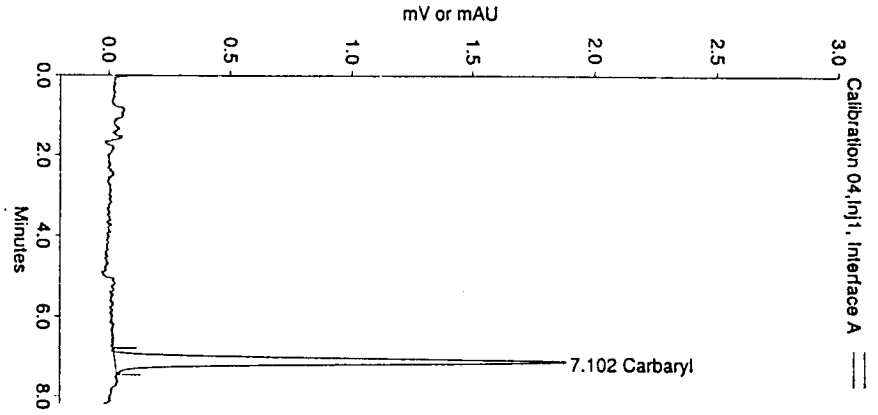
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.022	2391	239	5	Resolved
Totals		2391	239	5	



Carbaryl
12.5 ng/mL Standard

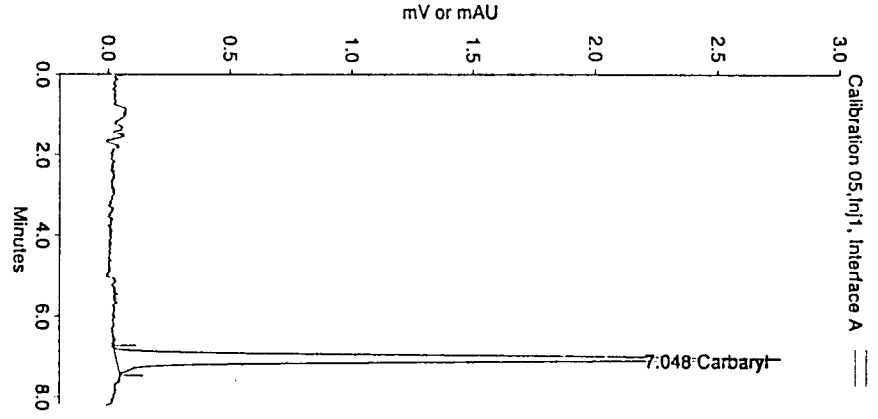
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.939	5894	562	12.5	Resolved
Totals		5894	562	12.5	

EXAMPLE HPLC CHROMATOGRAMS OF OUTER DOSIMETER STANDARDS AND STANDARD CURVE, SET #52



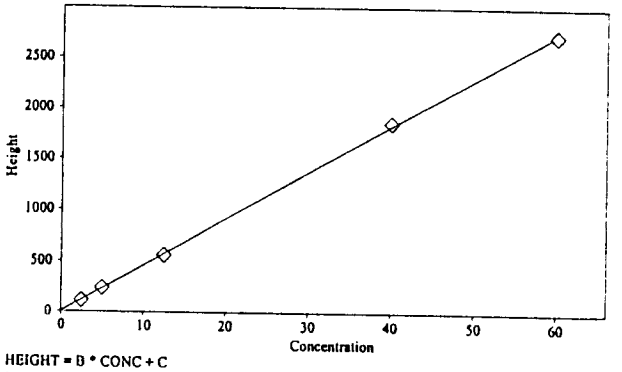
Carbaryl
40 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.102	19918	1855	40	Resolved
Totals		19918	1855	40	



Carbaryl
60 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.048	30530	2724	60	Resolved
Totals		30530	2724	60	

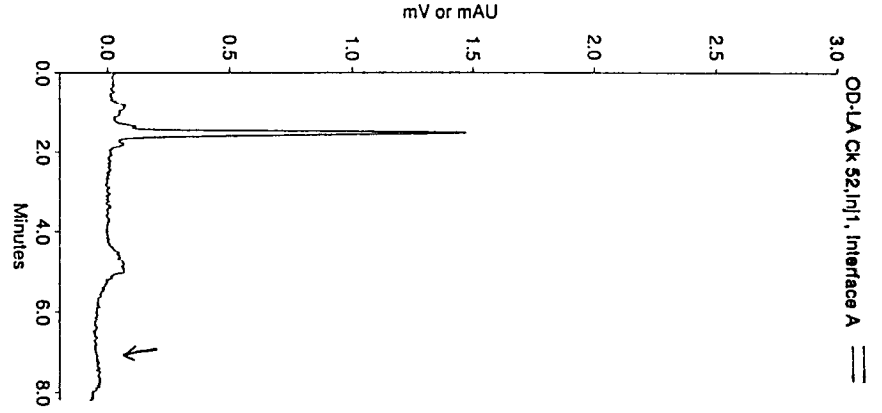


Carbaryl
Standard Curve

HEIGHT = B * CONC + C
B = 4.5587e+001, C = 4.5015e+000, RELIABILITY = 99.977%, CORR COEFF = 0.9999

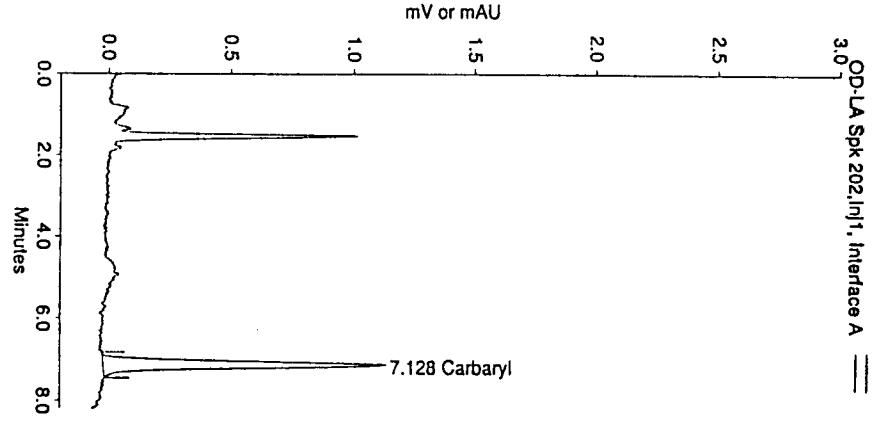
Component	RT(min)	Linear Coeff	Const Coeff	%Rel	Corr
Carbaryl	7.048	4.55874e+001	4.50150e+000	99.977	0.9999

EXAMPLE HPLC CHROMATOGRAMS OF OUTER DOSIMETER CHECK, SPIKE AND FIELD SAMPLE, SET #52



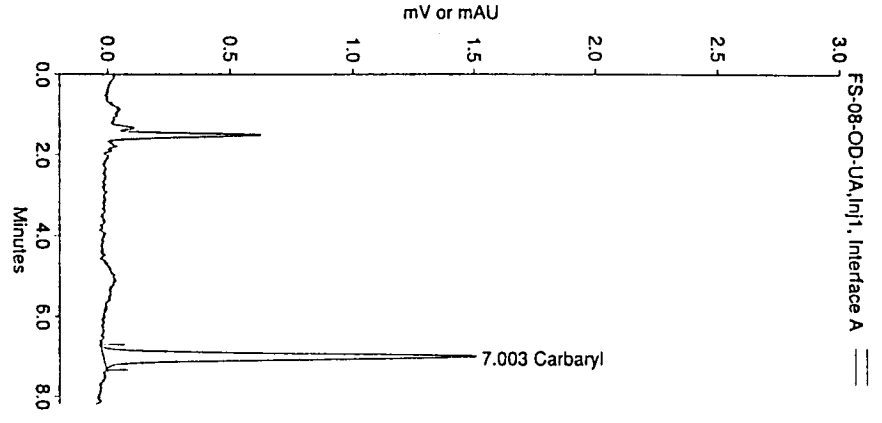
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.700	0	0	0	NF
Totals		0	0	0.0	

OD LA Check 52
50.0 μL of
0.00025 sect/mL
injected
<20 μg/sect found



Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.128	12781	1150	25.128	Resolved
Totals		12781	1150	25.128	

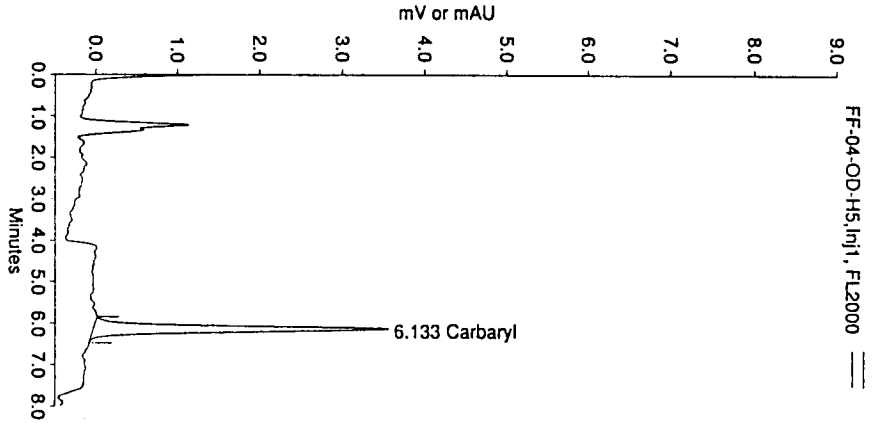
OD LA Spike 202 at
500 μg/sect
0.00025 sect/mL
(1 → 5 Dil.)
injected
503 μg/sect found
101% Recovery



Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	7.003	16019	1526	33.375	Resolved
Totals		16019	1526	33.375	

FS-08-OD-UA
50.0 μL of
0.00025 sect/mL
(1 → 4 Dil.)
injected
534 μg/sect found

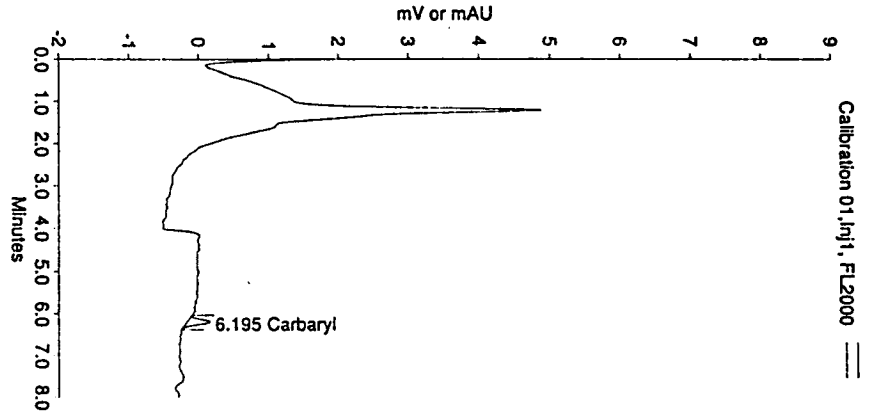
EXAMPLE HPLC CHROMATOGRAM OF OUTER DOSIMETER FIELD-FORTIFIED SAMPLE, SET #66



FF-04-OD-H5
50.0 μL of
0.00025 sect/mL
(1 → 5 Dil.)
injected
532 μg/sect found

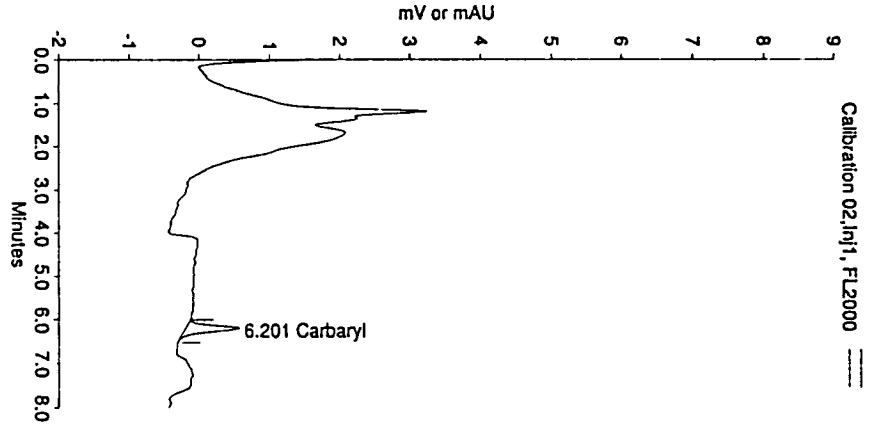
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.133	34949	3591	26.618	Resolved
Totals		34949	3591	26.618	

EXAMPLE HPLC CHROMATOGRAMS OF HANDWASH STANDARDS, SET #60



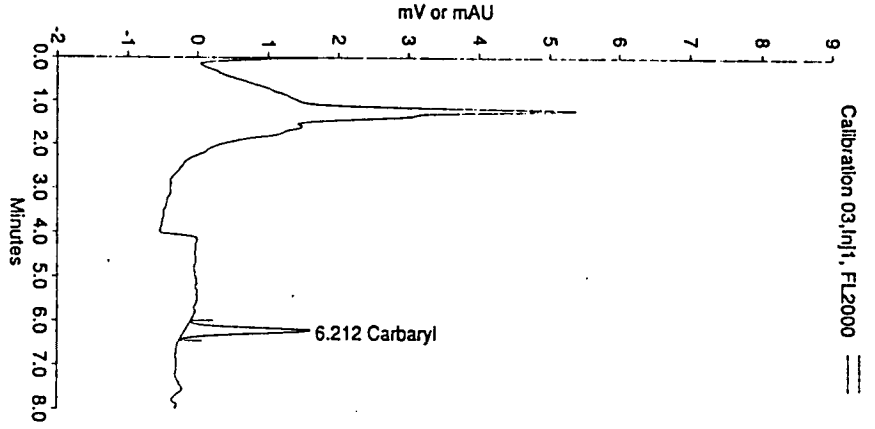
Carbaryl
2.5 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.195	2688	327	2.5	Resolved
Totals		2688	327	2.5	



Carbaryl
5.0 ng/mL Standard

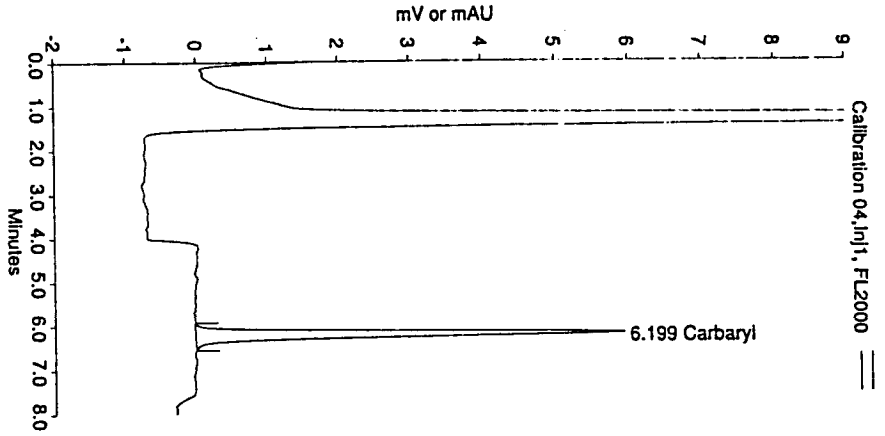
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.201	7256	758	5	Resolved
Totals		7256	758	5	



Carbaryl
12.5 ng/mL Standard

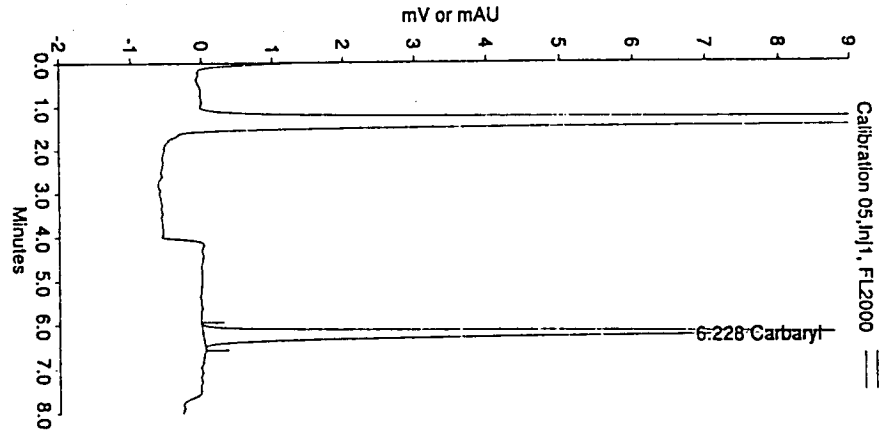
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.212	16256	1775	12.5	Resolved
Totals		16256	1775	12.5	

EXAMPLE HPLC CHROMATOGRAMS OF HANDWASH STANDARDS AND STANDARD CURVE, SET #60



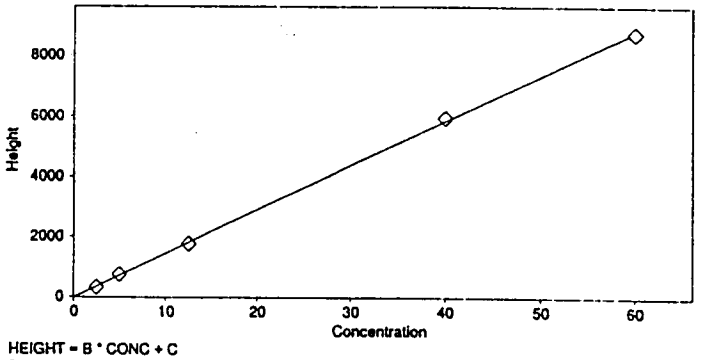
Carbaryl
40 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.199	56323	5962	40	Resolved
Totals		56323	5962	40	



Carbaryl
60 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.228	82774	8758	60	Resolved
Totals		82774	8758	60	

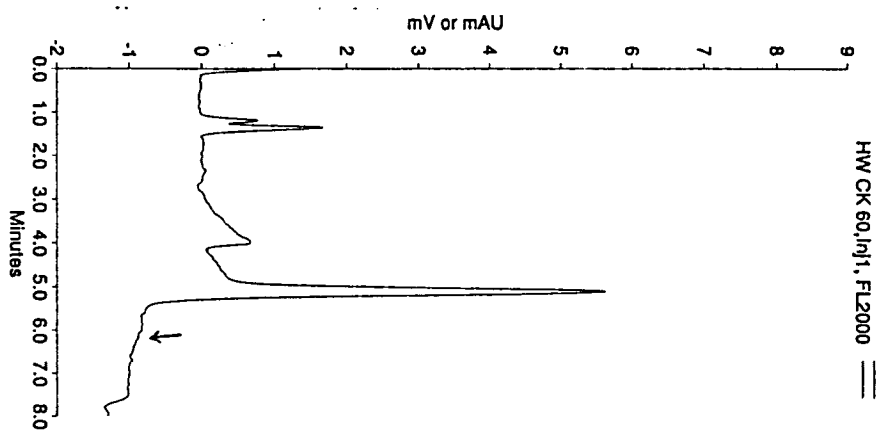


Carbaryl
Standard Curve

HEIGHT = B * CONC + C
B = 1.4709e+002, C = -1.4225e+001, RELIABILITY = 99.971%, CORR COEFF = 0.9999

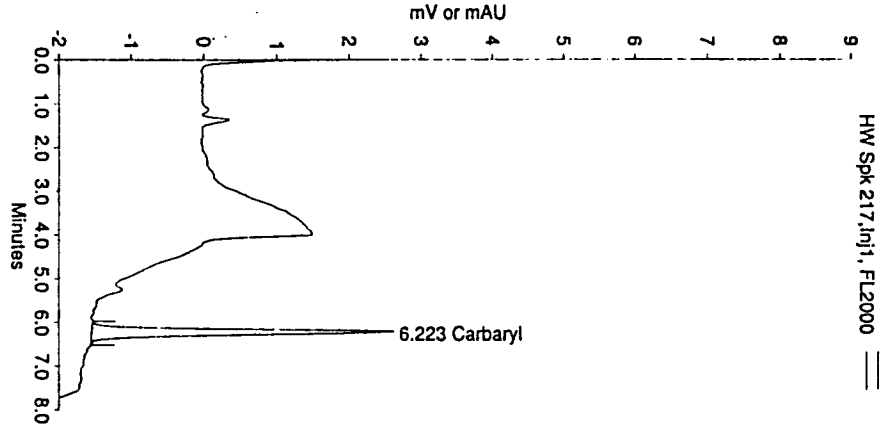
Component	RT(min)	Linear Coeff	Const Coeff	%Rel	Corr
Carbaryl	6.228	1.47093e+002	-1.42253e+001	99.971	0.9999

EXAMPLE HPLC CHROMATOGRAMS OF HANDWASH CHECK AND SPIKE SAMPLES, SET #60



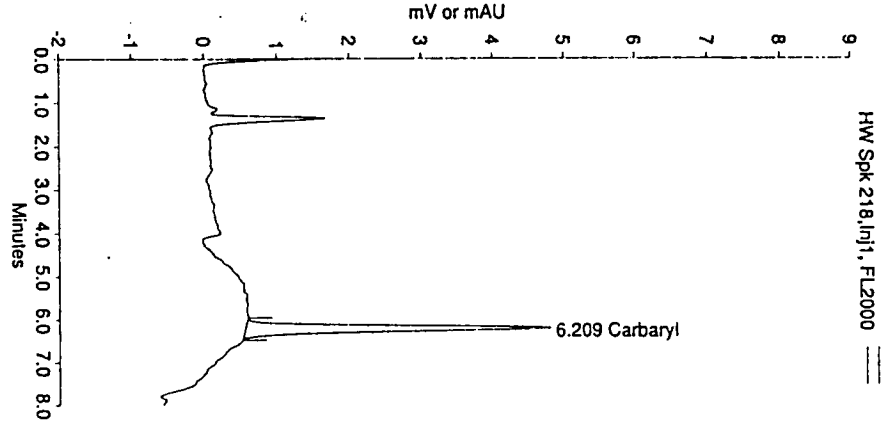
HW Check 60
50.0 μL of
0.005 spl/mL
injected
<1.0 μg/spl found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.200	0	0	0	NF
Totals		0	0	0.0	



HW Spike 217 at
100 μg/spl
50.0 μL of
0.005 spl/mL
(1 → 20 Dil.)
injected
114 μg/spl found
114% Recovery

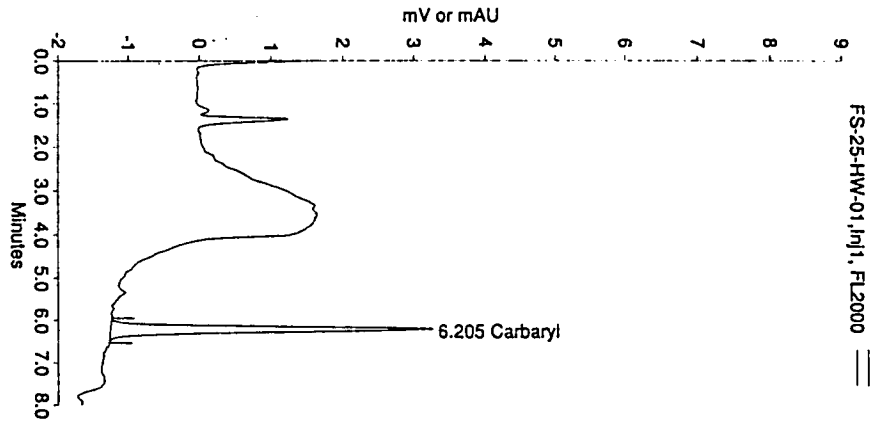
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.223	35884	4161	28.385	Resolved
Totals		35884	4161	28.385	



HW Spike 218 at
10,000 μg/spl
50.0 μL of
0.005 spl/mL
(1 → 2000 Dil.)
injected
11,500 μg/spl found
115% Recovery

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.209	39129	4233	28.874	Modified
Totals		39129	4233	28.874	

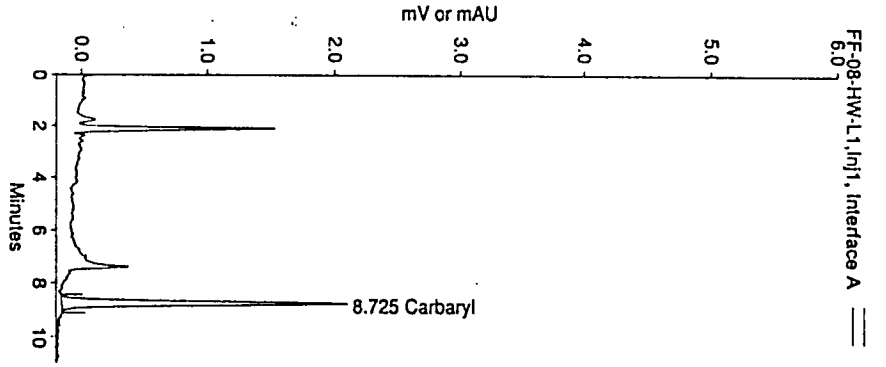
EXAMPLE HPLC CHROMATOGRAM OF HANDWASH FIELD SAMPLE, SET #60



FS-25-HW-01
50.0 μL of
0.005 spl/mL
(1 → 20 Dil.)
injected
123 μg/spl found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.205	40721	4508	30.744	Resolved
Totals		40721	4508	30.744	

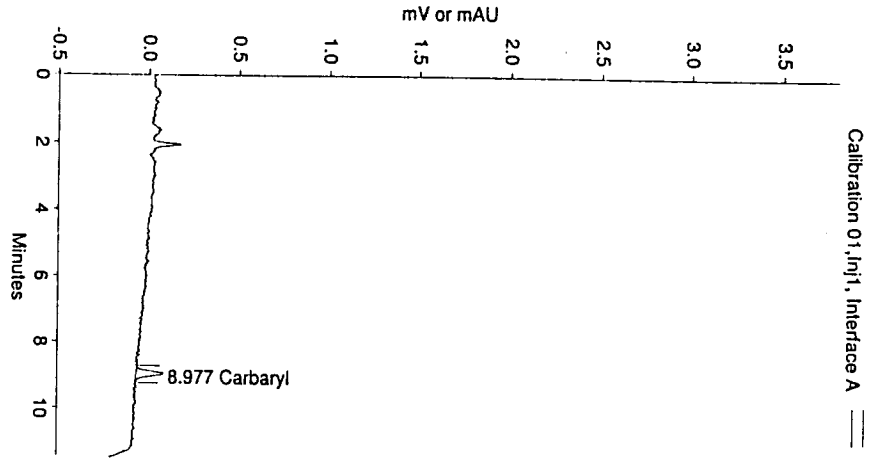
EXAMPLE HPLC CHROMATOGRAM OF HANDWASH FIELD-FORTIFIED SAMPLE, SET #65



FF-08-HW-L1
50.0 μL of
0.005 spl/mL
injected
5.01 μg/spl found

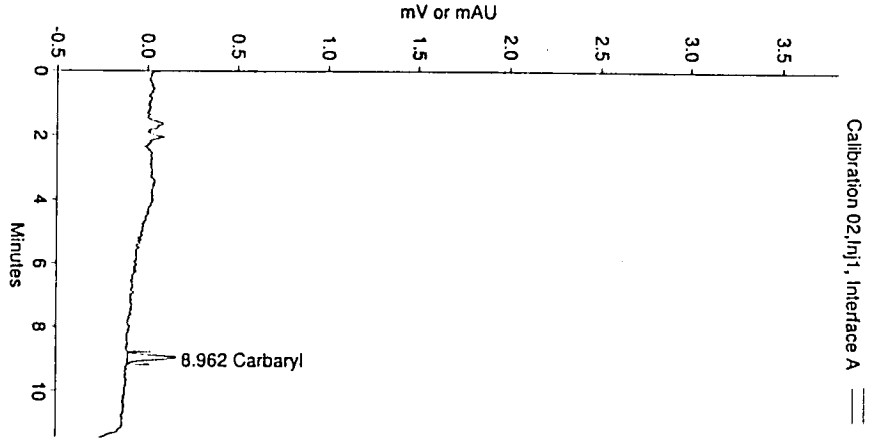
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.725	24715	2258	25.053	Resolved
Totals		24715	2258	25.053	

EXAMPLE HPLC CHROMATOGRAMS OF FACE/NECK WIPE STANDARDS, SET #16



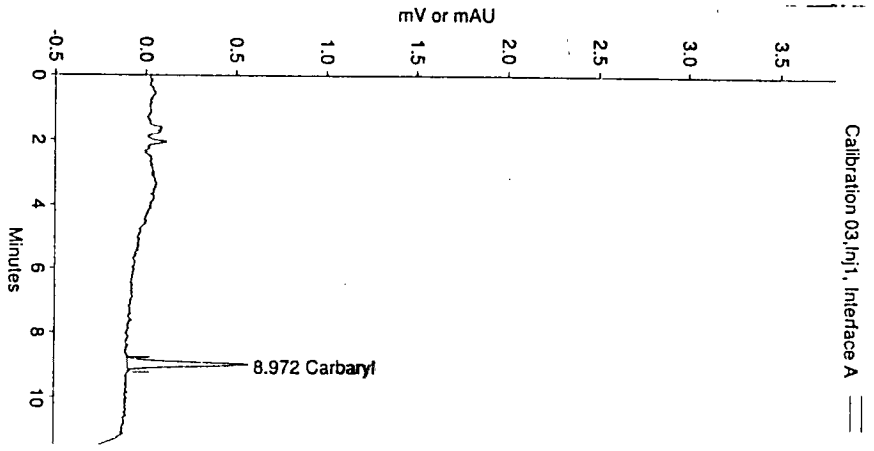
Carbaryl
2.5 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.977	1481	146	2.5	Resolved
Totals		1481	146	2.5	



Carbaryl
5.0 ng/mL Standard

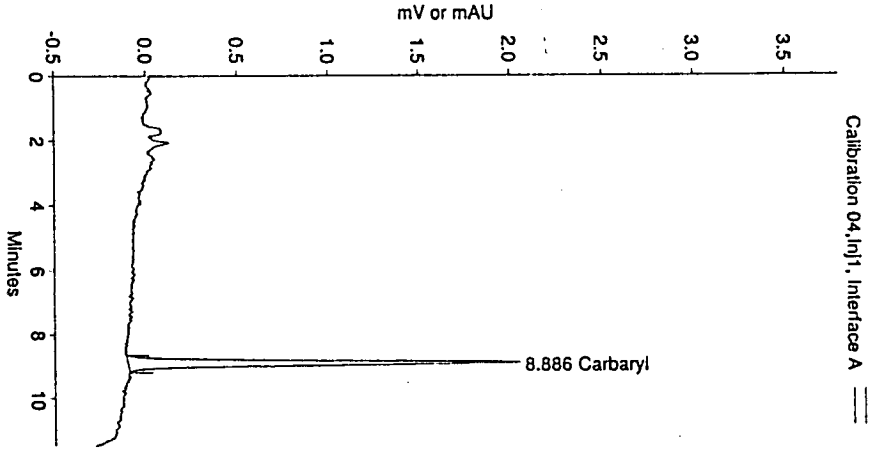
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.962	2506	268	5	Resolved
Totals		2506	268	5	



Carbaryl
12.5 ng/mL Standard

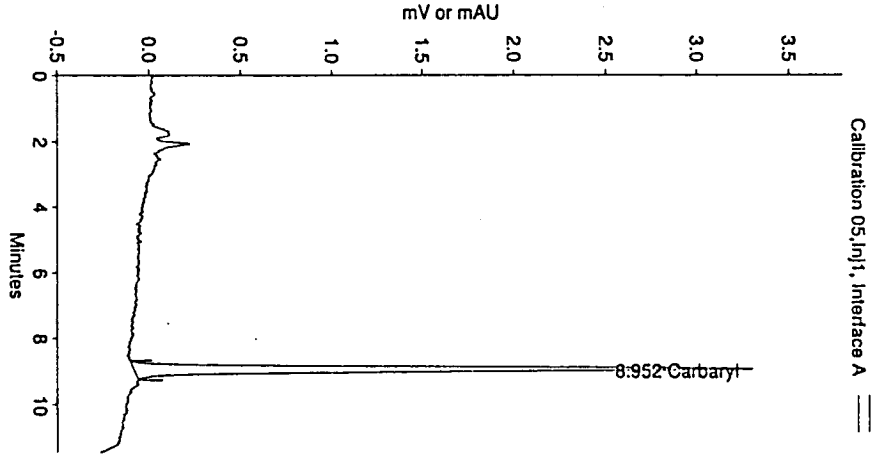
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.972	6480	664	12.5	Resolved
Totals		6480	664	12.5	

EXAMPLE HPLC CHROMATOGRAMS OF FACE/NECK WIPE STANDARDS AND STANDARD CURVE, SET #16



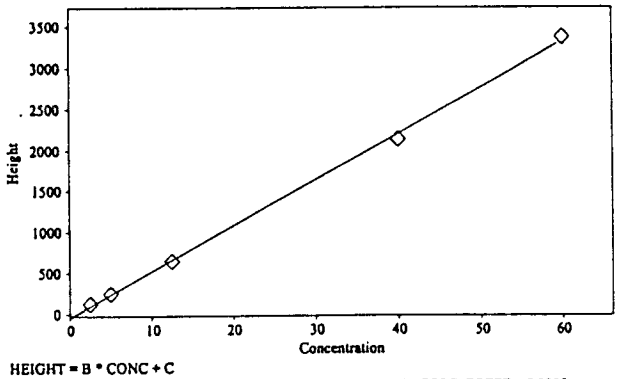
Carbaryl
40 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.886	21472	2152	40	Resolved
Totals		21472	2152	40	



Carbaryl
60 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.952	34223	3384	60	Resolved
Totals		34223	3384	60	

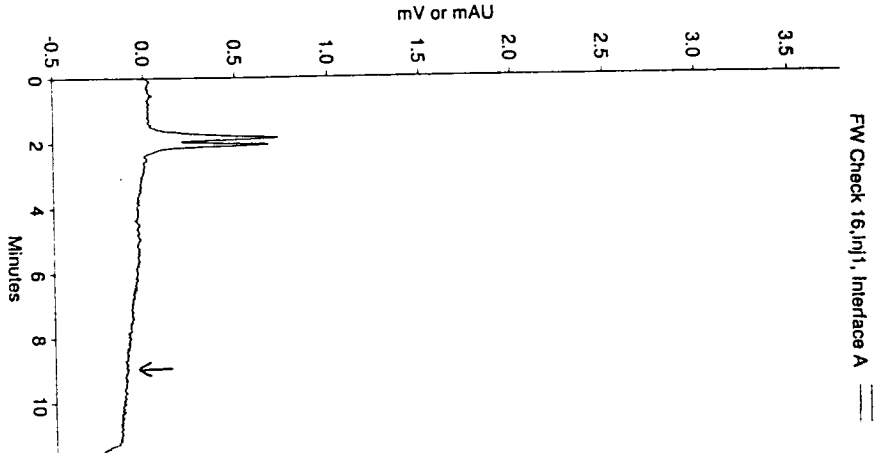


Carbaryl
Standard Curve

HEIGHT = B * CONC + C
B = 5.5988e+001, C = -2.0903e+001, RELIABILITY = 99.904%, CORR COEFF = 0.9995

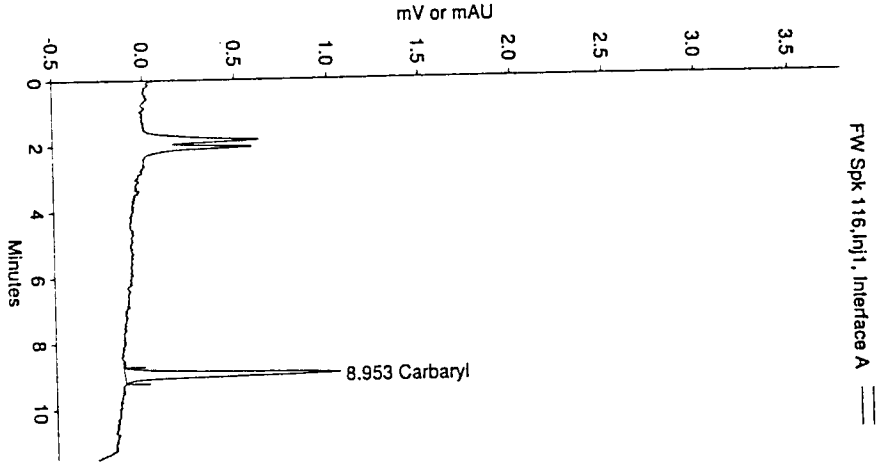
Component	RT(min)	Linear Coeff	Const Coeff	%Rel	Corr
Carbaryl	8.952	5.59876e+001	-2.09033e+001	99.904	0.9995

EXAMPLE HPLC CHROMATOGRAMS OF FACE/NECK WIPE CHECK AND SPIKE SAMPLES, SET #16



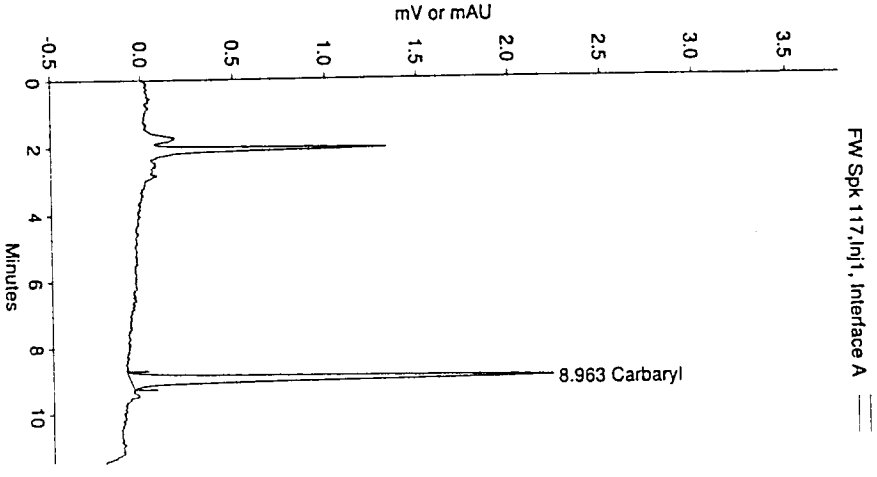
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	9.000	0	0	0	NF
Totals		0	0	0.0	

FW Check 16
50.0 μL of
0.005 spl/mL
injected
<1.0 μg/spl found



Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.953	11525	1166	21.199	Resolved
Totals		11525	1166	21.199	

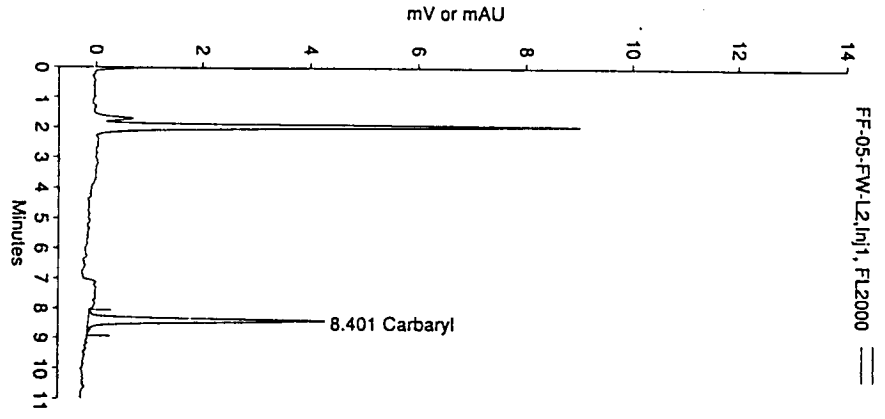
FW Spike 116 at
5.0 μg/spl
50.0 μL of
0.005 spl/mL
injected
4.24 μg/spl found
85% Recovery



Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.963	22945	2298	41.418	Resolved
Totals		22945	2298	41.418	

FW Spike 117 at
500 μg/spl
50.0 μL of
0.005 spl/mL
(1 → 50 Dil.)
injected
414 μg/spl found
83% Recovery

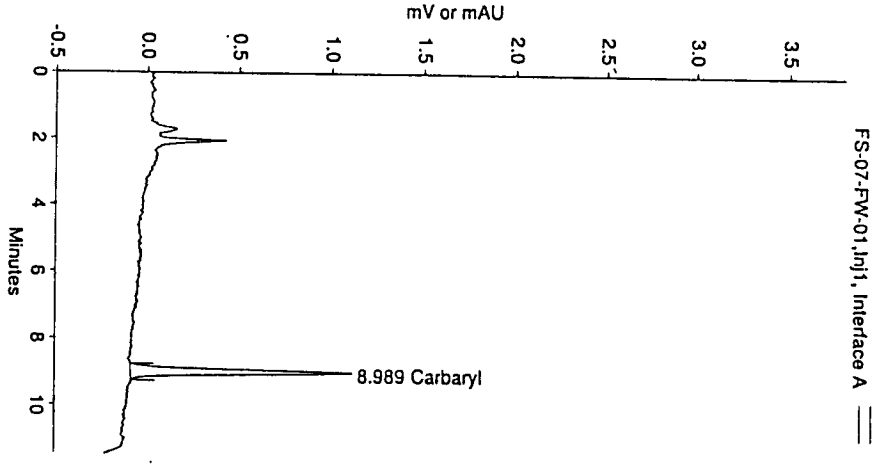
EXAMPLE HPLC CHROMATOGRAM OF FACE/NECK WIPE FIELD SAMPLE, SET #16



FS-07-FW-01
50.0 μL of
0.005 spl/mL
(1 → 10 Dil.)
injected
43.5 μg/spl found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.401	40621	4401	22.065	Resolved
Totals		40621	4401	22.065	

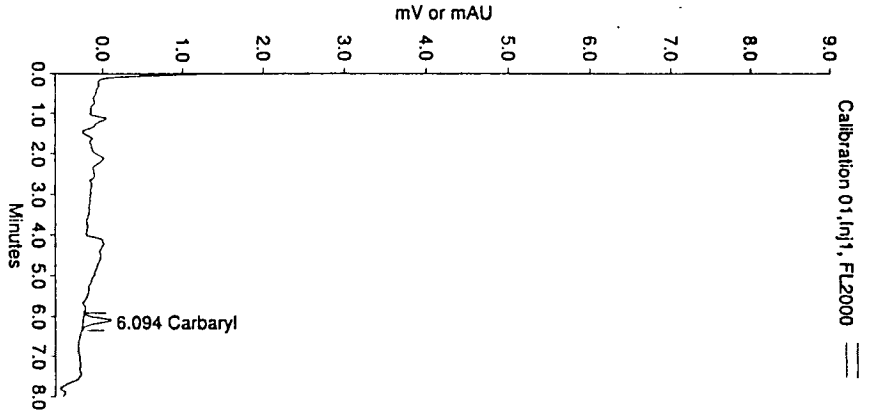
EXAMPLE HPLC CHROMATOGRAM OF FACE/NECK WIPE FIELD-FORTIFIED SAMPLE, SET #17



FF-05-FW-L2
50.0 μL of
0.005 spl/mL
injected
4.41 μg/spl found

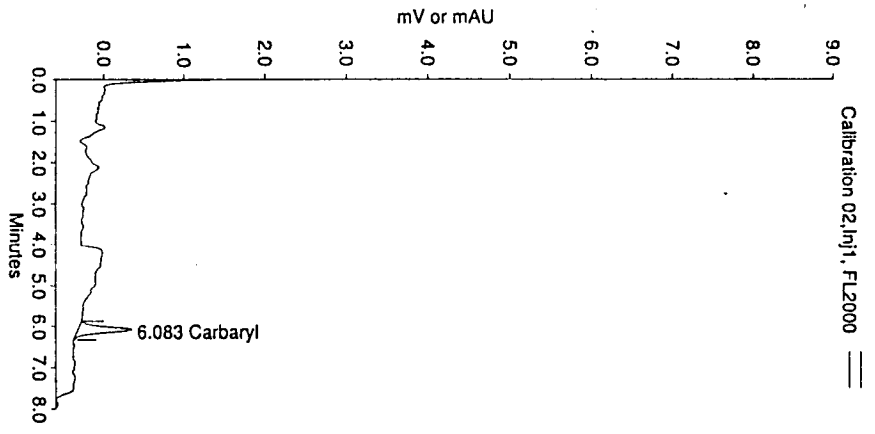
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	8.989	11849	1198	21.771	Resolved
Totals		11849	1198	21.771	

EXAMPLE HPLC CHROMATOGRAMS OF OVS AIR SAMPLING TUBE (WHOLE) STANDARDS, SET #73



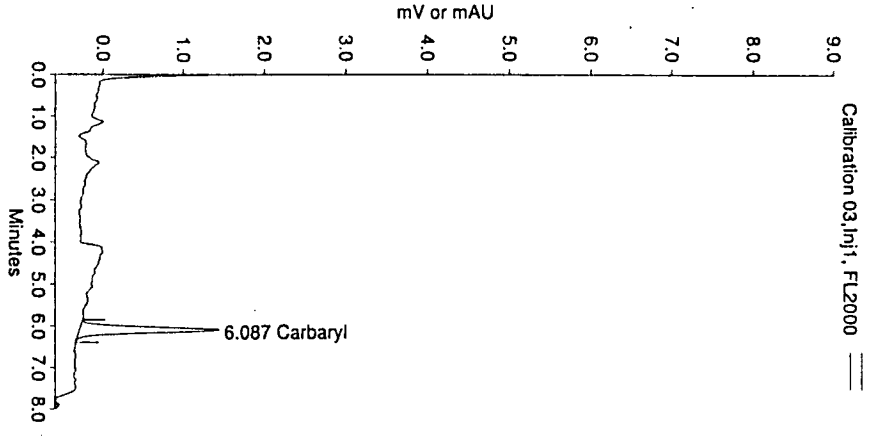
Carbaryl
2.5 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.094	3325	353	2.5	Resolved
Totals		3325	353	2.5	



Carbaryl
5.0 ng/mL Standard

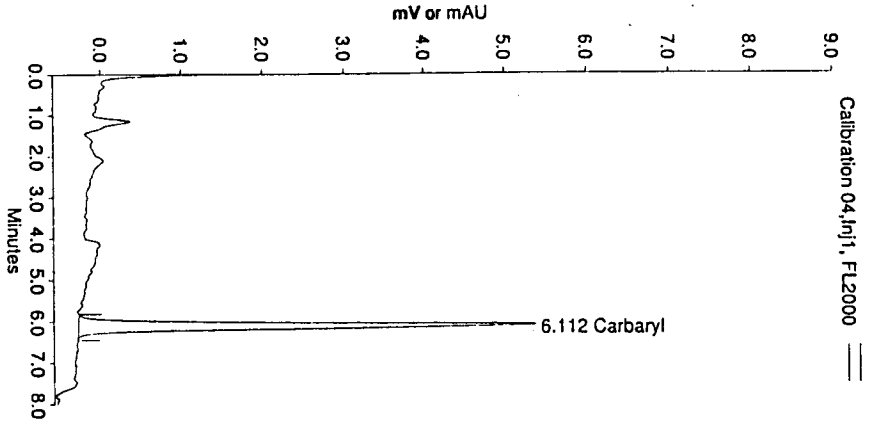
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.083	6535	675	5	Resolved
Totals		6535	675	5	



Carbaryl
12.5 ng/mL Standard

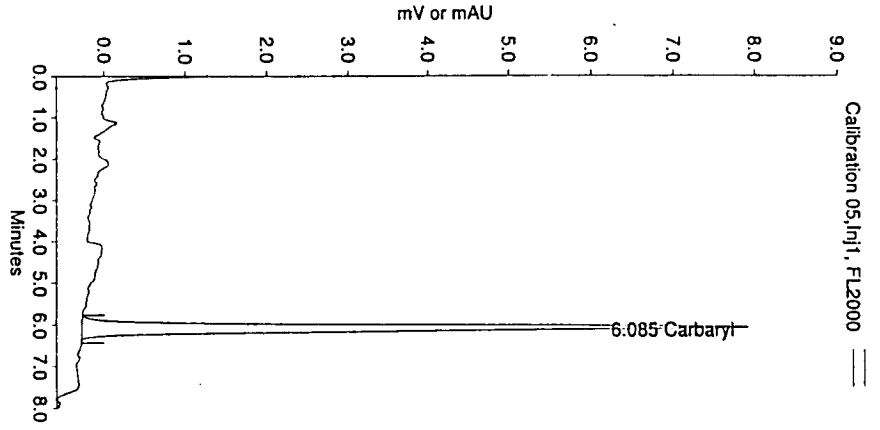
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.087	16490	1733	12.5	Resolved
Totals		16490	1733	12.5	

EXAMPLE HPLC CHROMATOGRAMS OF OVS AIR SAMPLING TUBE (WHOLE) STANDARDS AND STANDARD CURVE, SET #73



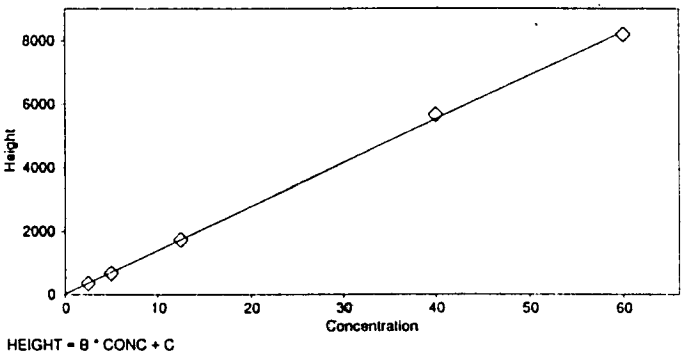
Carbaryl
40 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.112	54391	5655	40	Resolved
Totals		54391	5655	40	



Carbaryl
60 ng/mL Standard

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.085	79693	8190	60	Resolved
Totals		79693	8190	60	

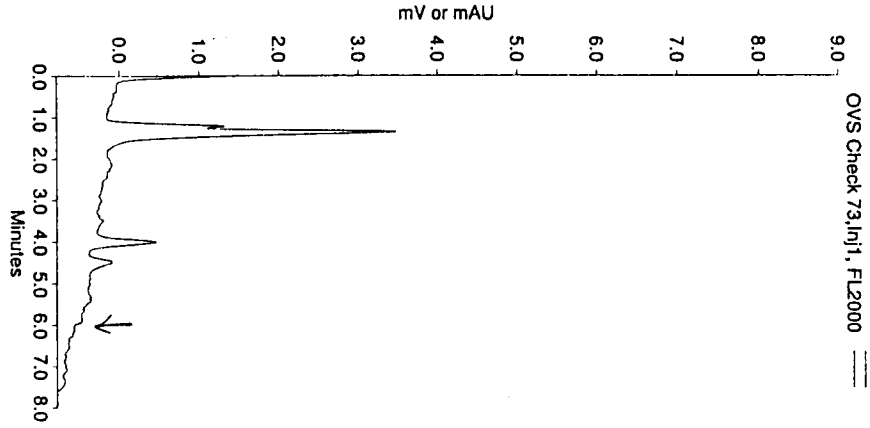


Carbaryl
Standard Curve

HEIGHT = B * CONC + C
B = 1.3758e+002, C = 1.9336e+001, RELIABILITY = 99.946%, CORR COEFF = 0.9997

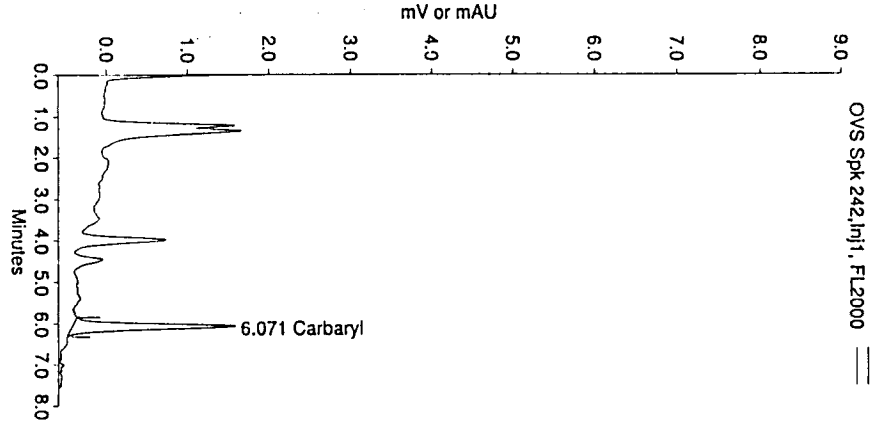
Component	RT(min)	Linear Coeff	Const Coeff	%Rel	Corr
Carbaryl	6.085	1.37578e+002	1.93360e+001	99.946	0.9997

EXAMPLE HPLC CHROMATOGRAMS OF OVS AIR SAMPLING TUBE (WHOLE) CHECK AND SPIKE SAMPLES, SET #73



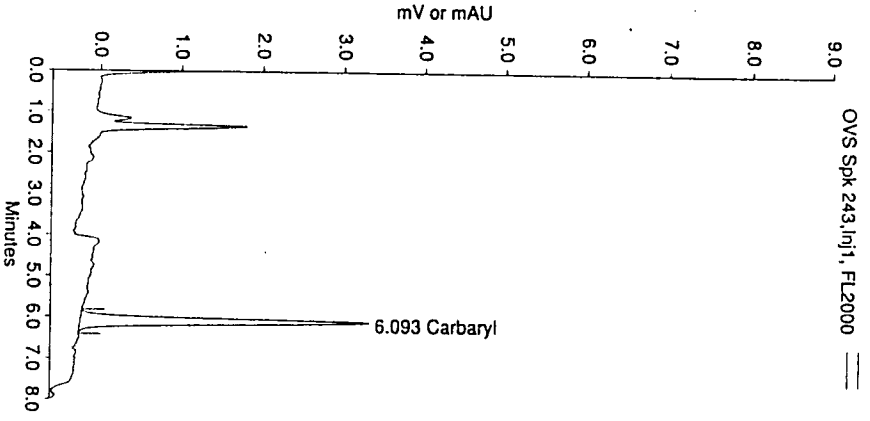
OVS Check 73
50.0 μL of
0.5 tube/mL
injected
<0.01 μg/tube found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.200	0	0	0	NF
Unident0002	9.971	1345	209	0.0	Resolved
Totals		1345	209	0.0	



OVS Spike 242 at
0.03 μg/tube
50.0 μL of
0.5 tube/mL
injected
0.0289 μg/tube found
96% Recovery

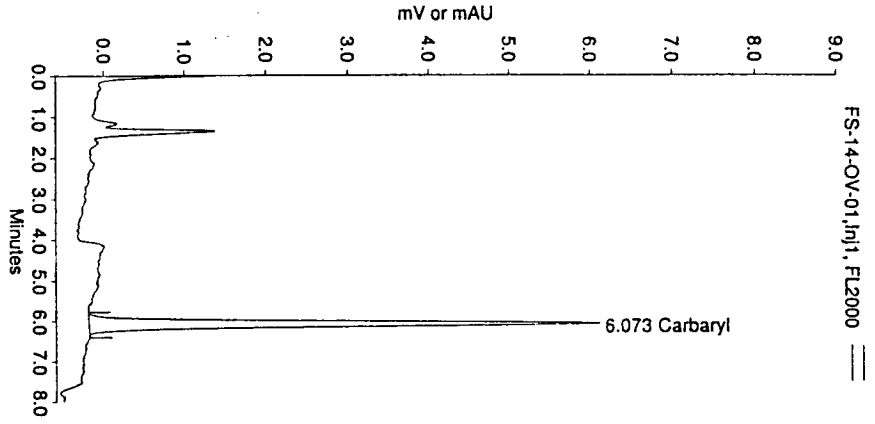
Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.071	19119	2005	14.433	Resolved
Unident0002	9.973	1426	235	0.0	Resolved
Totals		20545	2240	14.433	



OVS Spike 243 at
5.0 μg/tube
50.0 μL of
0.5 tube/mL
(1 → 100 Dil.)
injected
5.14 μg/tube found
103% Recovery

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.093	34121	3554	25.692	Resolved
Totals		34121	3554	25.692	

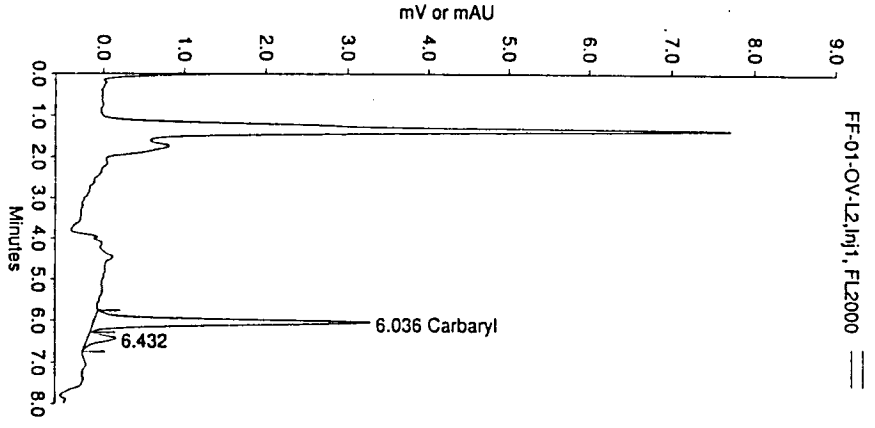
EXAMPLE HPLC CHROMATOGRAM OF OVS AIR SAMPLING TUBE (WHOLE) FIELD SAMPLE, SET #73



FS-14-OV-01
50.0 μL of
0.5 tube/mL
(1 → 50 Dil.)
injected
4.57 μg/tube found

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.073	60163	6312	45.739	Resolved
Totals		60163	6312	45.739	

EXAMPLE HPLC CHROMATOGRAM OF OVS AIR SAMPLING TUBE (WHOLE) FIELD-FORTIFIED SAMPLE, SET #71



FF-01-OV-L2
50.0 μL of
0.5 tube/mL
injected
0.0491μg/tubefound

Component	RT(min)	Area	Height	nG/mL	Peak Type
Carbaryl	6.036	32168	3398	24.558	Fused
Unident0002	6.432	3783	354	0.0	Fused
Unident0003	10.019	4662	814	0.0	Fused
Unident0004	10.177	11309	1775	0.0	Fused
Totals		51922	6341	24.558	

APPENDIX VII

Agrisearch Protocol Amendment No. 1, Analytical Phase
to Agrisearch Protocol 1517

Morse Laboratories, Inc. Protocol Deviation, dated May 3, 1997

Morse Laboratories, Inc. Protocol Deviation, dated May 7, 1997

Morse Laboratories, Inc. Protocol Deviation, dated May 10, 1997

PROTOCOL AMENDMENT NO. 1
ANALYTICAL PHASE

STUDY TITLE:	Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional
AGRISEARCH PROJECT NO.:	1517
RHONE POULENC AG CO. NO.:	10565
AMENDED:	Add all items in this amendment to the protocol.
REASON FOR AMENDMENT:	To define analytical phase for the analysis of field samples.
PROPOSED ANALYTICAL START DATE:	January 10, 1997
PROPOSED ANALYTICAL TERMINATION DATE:	July 30, 1997

THIS IS AN AUTHENTIC COPY OF THE ORIGINAL DOCUMENT IF STAMPED IN RED
BY: SM
DATE: 2-7-97

PROTOCOL AMENDMENT ACCEPTANCE:

Dennis R Klonne — 1-9-97

Dennis R. Klonne, Ph.D., Sponsor Representative — Date
Rhone-Poulenc Ag Company
2 TW Alexander Drive
Research Triangle Park, NC 27709
(919) 549-2170 Voice
(919) 549-2925 FAX

1-8-97

D. Larry Merricks, Ph.D., Study Director — Date
Agrisearch Incorporated
5734 Industry Lane
Frederick, MD 21704
(301) 662-2203 Voice
(301) 694-6765 FAX

2-7-97

Susan E. Clark, Principal Investigator — Date
Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825
(916) 481-3141 Voice
(916) 481-2959 FAX

PROTOCOL AMENDMENT NO. 1

ANALYTICAL METHOD

Carbaryl Applicator Exposure Study during Application of Sevin 10 Dust to Dogs by the Non-Professional

Performing Laboratory/Principal Investigator

Susan E. Clark
Morse Laboratories
1525 Fulton Avenue
Sacramento, CA 95825

Reference Substance

The reference substance, analytical grade carbaryl, 1-naphthyl methylcarbamate, will be provided by the Sponsor. Information including lot number, stated purity, receipt and storage conditions will be documented in the raw data.

Preliminary Analytical Trials

The extraction efficiency of carbaryl and control matrix backgrounds for all sample containers, inner and outer dosimeters, handwashes, face/neck wipes and OVS tubes will be assessed using the analytical procedures for this study. The breakthrough of carbaryl from OVS tubes in operating personal air sampling pumps calibrated at 2 liters per minute will be determined prior to the field study. If there are unacceptable losses from OVS tubes during the breakthrough trials, alternative air sampling systems will be assessed.

Method Validation

Each method will be validated prior to its use in the study. The OVS tube analytical method must be capable of analyzing the glass fiber filter and xad2 resin sorbent separately as well as combined. Seven replicates of each matrix per fortification level (3 to 5X, 30 to 50X, and 300 to 500X method LOQs) and two controls will be analyzed using the analytical method to determine efficiency. These analyses can be broken into multiple sets for each fortification level for ease of analysis. Fortification solutions will be prepared using analytical grade carbaryl. Results will be reported in percent recovery.

Sample Analysis

Samples will be analyzed using validated methods in analytical sets. Laboratory quality control samples will be extracted and analyzed with the field samples and will demonstrate method performance. The calibration standard curve for each analytical set will contain four or five standard levels which bracket extract levels. Analytical standards will be interspersed throughout the sample set so that at least one confirming standard is run for each four to five test samples-use all four or five standard curve concentration levels.

All data shall be measured against a standard curve (four or five point) that brackets the levels of all samples in the set. A solvent blank shall be injected prior to test samples but after the standard solutions for each run.

At least two laboratory recoveries will be run with each analytical set. For large sets one recovery per ten field samples is required. The lowest spike concentration must be three to five times the LOQ and the highest spike will be agreed upon with the Study Director. High residue levels in each analytical set must be bracketed with a high level fresh laboratory recovery as soon as possible. For example if a test sample residue is measured at 6420 µg, follow it with a fresh laboratory recovery at 7000 µg. The samples and extracts will be stored at freezer temperatures.

The inner surface of the foil wrapping, if used, for inner and outer dosimeters will be rinsed with at least 50 mL of extraction solvent, which will be added to the total extract volume. The final volume of solvent used must be documented.

Unless otherwise specified use Morse SOPs for all laboratory GLP and analytical procedures.

Storage Stability

Stability in Matrix - Storage stability will be initiated in the laboratory using each sample matrix. Nine sets of samples of each matrix will be fortified in triplicate with analytical carbaryl at the same levels as method validation. The samples will be stored in the freezer until analysis. The storage stability samples will be analyzed as follows:

Set 1	at fortification,		
Set 2	1 week,	Set 6	16 weeks,
Set 3	2 weeks,	Set 7	32 weeks,
Set 4	4 weeks,	Set 8	future use,
Set 5	8 weeks,	Set 9	future use.

Fresh laboratory recovery samples plus a control will be run with sets 2 through 9.

Stability in Solvent - A storage stability study will be initiated in the laboratory using final extract solvent stock solutions of carbaryl for each analytical method (only if each has a different solvent). Validation samples will be stored under freezer conditions to validate sample retains. Three replicates each of three fortification levels will be tested for stability. An aliquot from each sample will be analyzed for carbaryl approximately on days 1, 5, 7, 28, and 56. Each remaining solution will be stored for the duration of the study.

Sample Description

Control matrix for the study (i.e. worker exposure samples) will be supplied by Agrisearch. The Agrisearch sample list is included in this amendment. The laboratory may assign their own numbers as long as each Agrisearch number is cross referenced and documented. All samples and retain extracts will be stored frozen.

Bias and Acceptable Recovery Range

Bias is controlled in this study by the use of replicate samples. Acceptable recoveries for laboratory and field QC samples, method validation, and storage stability samples will be in the range of 70% to 120%. Any recoveries outside this range will be communicated to the Study Director immediately.

Statistical Methods

HPLC chromatographic quantitation will use a standard curve obtained from injections of four or five concentrations of standards. The standard curve will be a linear regression according to Morse SOPs.

Records to be Maintained

All study-specific original documents and data generated in the course of this study, including but not limited to the following, shall be maintained and turned over to Agrisearch at the completion of the study:

(1) analytical methods,
(2) laboratory notebooks or bench sheets used to record details of the analyses,
(3) chromatograms and/or machine-generated analysis reports and data,
(4) spreadsheets and other calculated data,
(5) chain-of-custody records.

Agrisearch will send all original study specific raw data to the Sponsor for final archival.

In addition to the above study-specific raw data, the following records must also be kept, and original or true copies submitted with the raw data:

(1) storage conditions for reference substances and samples,
(2) reference substance use log,
(3) balance and instrument log book pages,
(4) communications logs or records.

REPORT

At the completion of the analytical phase, Morse Laboratories will prepare an analytical summary report. The report should contain the following:

(1) A GLPS compliance statement (40 CFR 160) signed by the Principal Investigator,
(2) A Morse QAU statement giving dates of inspections and dates that findings were reported to the Study Director and Management,
(3) A detailed description of the methods,
(4) Example calculations,
(5) A summary of recovery data presented as percent recovery,
(6) Representative chromatograms of control, treated, field and laboratory fortified samples and calibration standards,
(7) A typical standard curve.

Specific details can be worked out by the Study Director in the draft report.

Amendments and Deviations

Amendments - Additional amendments to the protocol must be approved by the Study Director and be acknowledged by the Sponsor. All amendments will be retained with the protocol.

Deviations - Any deviations to the protocol, SOPs or GLPS, or situations that may affect the integrity of the study must be communicated to the Study Director in a timely manner. Protocol deviations are to be documented with the dated signature from the Study Director. SOP deviations are to be documented and authorized by the Study Director.

GLPS deviations are to be documented on the "Statement of GLPS Compliance" in the report. The Study Director must be notified of any GLPS deviations as they occur.

QUALITY ASSURANCE

The performing laboratory quality assurance unit will inspect the study at appropriate intervals and will review the analytical phase report for consistency with the protocol, internal SOPs, and raw data. All findings obtained during QAU inspections and the corrective actions taken must be reported promptly to the performing laboratory's management, to the Study Director, and to the Study Director's management.

Sample List: Face/Neck Wipe, Handwash, OVS Tube

FS-01-FW-01	FS-01-HW-01	FS-01-OV-01
FS-02-FW-01	FS-02-HW-01	FS-02-OV-01
FS-03-FW-01	FS-03-HW-01	FS-03-OV-01
FS-04-FW-01	FS-04-HW-01	FS-04-OV-01
FS-05-FW-01	FS-05-HW-01	FS-05-OV-01
FS-06-FW-01	FS-06-HW-01	FS-06-OV-01
FS-07-FW-01	FS-07-HW-01	FS-07-OV-01
FS-08-FW-01	FS-08-HW-01	FS-08-OV-01
FS-09-FW-01	FS-09-HW-01	FS-09-OV-01
FS-10-FW-01	FS-10-HW-01	FS-10-OV-01
FS-11-FW-01	FS-11-HW-01	FS-11-OV-01
FS-12-FW-01	FS-12-HW-01	FS-12-OV-01
FS-13-FW-01	FS-13-HW-01	FS-13-OV-01
FS-14-FW-01	FS-14-HW-01	FS-14-OV-01
FS-15-FW-01	FS-15-HW-01	FS-15-OV-01
FS-16-FW-01	FS-16-HW-01	FS-16-OV-01
FS-17-FW-01	FS-17-HW-01	FS-17-OV-01
FS-18-FW-01	FS-18-HW-01	FS-18-OV-01
FS-19-FW-01	FS-19-HW-01	FS-19-OV-01
FS-20-FW-01	FS-20-HW-01	FS-20-OV-01
FS-21-FW-01	FS-21-HW-01	FS-21-OV-01
FS-22-FW-01	FS-22-HW-01	FS-22-OV-01
FS-23-FW-01	FS-23-HW-01	FS-23-OV-01
FS-24-FW-01	FS-24-HW-01	FS-24-OV-01
FS-25-FW-01	FS-25-HW-01	FS-25-OV-01
FS-26-FW-01	FS-26-HW-01	FS-26-OV-01
FS-27-FW-01	FS-27-HW-01	FS-27-OV-01
FS-28-FW-01	FS-28-HW-01	FS-28-OV-01
FS-29-FW-01	FS-29-HW-01	FS-29-OV-01
FS-30-FW-01	FS-30-HW-01	FS-30-OV-01
FS-31-FW-01	FS-31-HW-01	FS-31-OV-01
FS-32-FW-01	FS-32-HW-01	FS-32-OV-01
FS-33-FW-01	FS-33-HW-01	FS-33-OV-01
FS-34-FW-01	FS-34-HW-01	FS-34-OV-01
FS-35-FW-01	FS-35-HW-01	FS-35-OV-01
FS-36-FW-01	FS-36-HW-01	FS-36-OV-01
FS-37-FW-01	FS-37-HW-01	FS-37-OV-01
FS-38-FW-01	FS-38-HW-01	FS-38-OV-01
FS-39-FW-01	FS-39-HW-01	FS-39-OV-01
FS-40-FW-01	FS-40-HW-01	FS-40-OV-01

Sample List: Inner and Outer Dosimeters

FS-01-OD-LA	FS-02-OD-LA	FS-03-OD-LA	FS-04-OD-LA	FS-05-OD-LA
FS-01-OD-UA	FS-02-OD-UA	FS-03-OD-UA	FS-04-OD-UA	FS-05-OD-UA
FS-01-OD-FT	FS-02-OD-FT	FS-03-OD-FT	FS-04-OD-FT	FS-05-OD-FT
FS-01-OD-RT	FS-02-OD-RT	FS-03-OD-RT	FS-04-OD-RT	FS-05-OD-RT
FS-01-OD-LL	FS-02-OD-LL	FS-03-OD-LL	FS-04-OD-LL	FS-05-OD-LL
FS-01-OD-UL	FS-02-OD-UL	FS-03-OD-UL	FS-04-OD-UL	FS-05-OD-UL
FS-01-ID-LA	FS-02-ID-LA	FS-03-ID-LA	FS-04-ID-LA	FS-05-ID-LA
FS-01-ID-UA	FS-02-ID-UA	FS-03-ID-UA	FS-04-ID-UA	FS-05-ID-UA
FS-01-ID-FT	FS-02-ID-FT	FS-03-ID-FT	FS-04-ID-FT	FS-05-ID-FT
FS-01-ID-RT	FS-02-ID-RT	FS-03-ID-RT	FS-04-ID-RT	FS-05-ID-RT
FS-01-ID-LL	FS-02-ID-LL	FS-03-ID-LL	FS-04-ID-LL	FS-05-ID-LL
FS-01-ID-UL	FS-02-ID-UL	FS-03-ID-UL	FS-04-ID-UL	FS-05-ID-UL
FS-06-OD-LA	FS-07-OD-LA	FS-08-OD-LA	FS-09-OD-LA	FS-10-OD-LA
FS-06-OD-UA	FS-07-OD-UA	FS-08-OD-UA	FS-09-OD-UA	FS-10-OD-UA
FS-06-OD-FT	FS-07-OD-FT	FS-08-OD-FT	FS-09-OD-FT	FS-10-OD-FT
FS-06-OD-RT	FS-07-OD-RT	FS-08-OD-RT	FS-09-OD-RT	FS-10-OD-RT
FS-06-OD-LL	FS-07-OD-LL	FS-08-OD-LL	FS-09-OD-LL	FS-10-OD-LL
FS-06-OD-UL	FS-07-OD-UL	FS-08-OD-UL	FS-09-OD-UL	FS-10-OD-UL
FS-06-ID-LA	FS-07-ID-LA	FS-08-ID-LA	FS-09-ID-LA	FS-10-ID-LA
FS-06-ID-UA	FS-07-ID-UA	FS-08-ID-UA	FS-09-ID-UA	FS-10-ID-UA
FS-06-ID-FT	FS-07-ID-FT	FS-08-ID-FT	FS-09-ID-FT	FS-10-ID-FT
FS-06-ID-RT	FS-07-ID-RT	FS-08-ID-RT	FS-09-ID-RT	FS-10-ID-RT
FS-06-ID-LL	FS-07-ID-LL	FS-08-ID-LL	FS-09-ID-LL	FS-10-ID-LL
FS-06-ID-UL	FS-07-ID-UL	FS-08-ID-UL	FS-09-ID-UL	FS-10-ID-UL
FS-11-OD-LA	FS-12-OD-LA	FS-13-OD-LA	FS-14-OD-LA	FS-15-OD-LA
FS-11-OD-UA	FS-12-OD-UA	FS-13-OD-UA	FS-14-OD-UA	FS-15-OD-UA
FS-11-OD-FT	FS-12-OD-FT	FS-13-OD-FT	FS-14-OD-FT	FS-15-OD-FT
FS-11-OD-RT	FS-12-OD-RT	FS-13-OD-RT	FS-14-OD-RT	FS-15-OD-RT
FS-11-OD-LL	FS-12-OD-LL	FS-13-OD-LL	FS-14-OD-LL	FS-15-OD-LL
FS-11-OD-UL	FS-12-OD-UL	FS-13-OD-UL	FS-14-OD-UL	FS-15-OD-UL
FS-11-ID-LA	FS-12-ID-LA	FS-13-ID-LA	FS-14-ID-LA	FS-15-ID-LA
FS-11-ID-UA	FS-12-ID-UA	FS-13-ID-UA	FS-14-ID-UA	FS-15-ID-UA
FS-11-ID-FT	FS-12-ID-FT	FS-13-ID-FT	FS-14-ID-FT	FS-15-ID-FT
FS-11-ID-RT	FS-12-ID-RT	FS-13-ID-RT	FS-14-ID-RT	FS-15-ID-RT
FS-11-ID-LL	FS-12-ID-LL	FS-13-ID-LL	FS-14-ID-LL	FS-15-ID-LL
FS-11-ID-UL	FS-12-ID-UL	FS-13-ID-UL	FS-14-ID-UL	FS-15-ID-UL
FS-16-OD-LA	FS-17-OD-LA	FS-18-OD-LA	FS-19-OD-LA	FS-20-OD-LA
FS-16-OD-UA	FS-17-OD-UA	FS-18-OD-UA	FS-19-OD-UA	FS-20-OD-UA
FS-16-OD-FT	FS-17-OD-FT	FS-18-OD-FT	FS-19-OD-FT	FS-20-OD-FT
FS-16-OD-RT	FS-17-OD-RT	FS-18-OD-RT	FS-19-OD-RT	FS-20-OD-RT
FS-16-OD-LL	FS-17-OD-LL	FS-18-OD-LL	FS-19-OD-LL	FS-20-OD-LL
FS-16-OD-UL	FS-17-OD-UL	FS-18-OD-UL	FS-19-OD-UL	FS-20-OD-UL
FS-16-ID-LA	FS-17-ID-LA	FS-18-ID-LA	FS-19-ID-LA	FS-20-ID-LA
FS-16-ID-UA	FS-17-ID-UA	FS-18-ID-UA	FS-19-ID-UA	FS-20-ID-UA
FS-16-ID-FT	FS-17-ID-FT	FS-18-ID-FT	FS-19-ID-FT	FS-20-ID-FT
FS-16-ID-RT	FS-17-ID-RT	FS-18-ID-RT	FS-19-ID-RT	FS-20-ID-RT
FS-16-ID-LL	FS-17-ID-LL	FS-18-ID-LL	FS-19-ID-LL	FS-20-ID-LL
FS-16-ID-UL	FS-17-ID-UL	FS-18-ID-UL	FS-19-ID-UL	FS-20-ID-UL

Sample List: Inner and Outer Dosimeters

FS-21-OD-LA	FS-22-OD-LA	FS-23-OD-LA	FS-24-OD-LA	FS-25-OD-LA
FS-21-OD-UA	FS-22-OD-UA	FS-23-OD-UA	FS-24-OD-UA	FS-25-OD-UA
FS-21-OD-FT	FS-22-OD-FT	FS-23-OD-FT	FS-24-OD-FT	FS-25-OD-FT
FS-21-OD-RT	FS-22-OD-RT	FS-23-OD-RT	FS-24-OD-RT	FS-25-OD-RT
FS-21-OD-LL	FS-22-OD-LL	FS-23-OD-LL	FS-24-OD-LL	FS-25-OD-LL
FS-21-OD-UL	FS-22-OD-UL	FS-23-OD-UL	FS-24-OD-UL	FS-25-OD-UL
FS-21-ID-LA	FS-22-ID-LA	FS-23-ID-LA	FS-24-ID-LA	FS-25-ID-LA
FS-21-ID-UA	FS-22-ID-UA	FS-23-ID-UA	FS-24-ID-UA	FS-25-ID-UA
FS-21-ID-FT	FS-22-ID-FT	FS-23-ID-FT	FS-24-ID-FT	FS-25-ID-FT
FS-21-ID-RT	FS-22-ID-RT	FS-23-ID-RT	FS-24-ID-RT	FS-25-ID-RT
FS-21-ID-LL	FS-22-ID-LL	FS-23-ID-LL	FS-24-ID-LL	FS-25-ID-LL
FS-21-ID-UL	FS-22-ID-UL	FS-23-ID-UL	FS-24-ID-UL	FS-25-ID-UL
FS-26-OD-LA	FS-27-OD-LA	FS-28-OD-LA	FS-29-OD-LA	FS-30-OD-LA
FS-26-OD-UA	FS-27-OD-UA	FS-28-OD-UA	FS-29-OD-UA	FS-30-OD-UA
FS-26-OD-FT	FS-27-OD-FT	FS-28-OD-FT	FS-29-OD-FT	FS-30-OD-FT
FS-26-OD-RT	FS-27-OD-RT	FS-28-OD-RT	FS-29-OD-RT	FS-30-OD-RT
FS-26-OD-LL	FS-27-OD-LL	FS-28-OD-LL	FS-29-OD-LL	FS-30-OD-LL
FS-26-OD-UL	FS-27-OD-UL	FS-28-OD-UL	FS-29-OD-UL	FS-30-OD-UL
FS-26-ID-LA	FS-27-ID-LA	FS-28-ID-LA	FS-29-ID-LA	FS-30-ID-LA
FS-26-ID-UA	FS-27-ID-UA	FS-28-ID-UA	FS-29-ID-UA	FS-30-ID-UA
FS-26-ID-FT	FS-27-ID-FT	FS-28-ID-FT	FS-29-ID-FT	FS-30-ID-FT
FS-26-ID-RT	FS-27-ID-RT	FS-28-ID-RT	FS-29-ID-RT	FS-30-ID-RT
FS-26-ID-LL	FS-27-ID-LL	FS-28-ID-LL	FS-29-ID-LL	FS-30-ID-LL
FS-26-ID-UL	FS-27-ID-UL	FS-28-ID-UL	FS-29-ID-UL	FS-30-ID-UL
FS-31-OD-LA	FS-32-OD-LA	FS-33-OD-LA	FS-34-OD-LA	FS-35-OD-LA
FS-31-OD-UA	FS-32-OD-UA	FS-33-OD-UA	FS-34-OD-UA	FS-35-OD-UA
FS-31-OD-FT	FS-32-OD-FT	FS-33-OD-FT	FS-34-OD-FT	FS-35-OD-FT
FS-31-OD-RT	FS-32-OD-RT	FS-33-OD-RT	FS-34-OD-RT	FS-35-OD-RT
FS-31-OD-LL	FS-32-OD-LL	FS-33-OD-LL	FS-34-OD-LL	FS-35-OD-LL
FS-31-OD-UL	FS-32-OD-UL	FS-33-OD-UL	FS-34-OD-UL	FS-35-OD-UL
FS-31-ID-LA	FS-32-ID-LA	FS-33-ID-LA	FS-34-ID-LA	FS-35-ID-LA
FS-31-ID-UA	FS-32-ID-UA	FS-33-ID-UA	FS-34-ID-UA	FS-35-ID-UA
FS-31-ID-FT	FS-32-ID-FT	FS-33-ID-FT	FS-34-ID-FT	FS-35-ID-FT
FS-31-ID-RT	FS-32-ID-RT	FS-33-ID-RT	FS-34-ID-RT	FS-35-ID-RT
FS-31-ID-LL	FS-32-ID-LL	FS-33-ID-LL	FS-34-ID-LL	FS-35-ID-LL
FS-31-ID-UL	FS-32-ID-UL	FS-33-ID-UL	FS-34-ID-UL	FS-35-ID-UL
FS-36-OD-LA	FS-37-OD-LA	FS-38-OD-LA	FS-39-OD-LA	FS-40-OD-LA
FS-36-OD-UA	FS-37-OD-UA	FS-38-OD-UA	FS-39-OD-UA	FS-40-OD-UA
FS-36-OD-FT	FS-37-OD-FT	FS-38-OD-FT	FS-39-OD-FT	FS-40-OD-FT
FS-36-OD-RT	FS-37-OD-RT	FS-38-OD-RT	FS-39-OD-RT	FS-40-OD-RT
FS-36-OD-LL	FS-37-OD-LL	FS-38-OD-LL	FS-39-OD-LL	FS-40-OD-LL
FS-36-OD-UL	FS-37-OD-UL	FS-38-OD-UL	FS-39-OD-UL	FS-40-OD-UL
FS-36-ID-LA	FS-37-ID-LA	FS-38-ID-LA	FS-39-ID-LA	FS-40-ID-LA
FS-36-ID-UA	FS-37-ID-UA	FS-38-ID-UA	FS-39-ID-UA	FS-40-ID-UA
FS-36-ID-FT	FS-37-ID-FT	FS-38-ID-FT	FS-39-ID-FT	FS-40-ID-FT
FS-36-ID-RT	FS-37-ID-RT	FS-38-ID-RT	FS-39-ID-RT	FS-40-ID-RT
FS-36-ID-LL	FS-37-ID-LL	FS-38-ID-LL	FS-39-ID-LL	FS-40-ID-LL
FS-36-ID-UL	FS-37-ID-UL	FS-38-ID-UL	FS-39-ID-UL	FS-40-ID-UL

Sample List: Field Fortifications

FF-01-OD-H1	FF-01-ID-H1	FF-01-HW-H1	FF-01-FW-H1	FF-01-OV-H1
FF-01-OD-H2	FF-01-ID-H2	FF-01-HW-H2	FF-01-FW-H2	FF-01-OV-H2
FF-01-OD-H3	FF-01-ID-H3	FF-01-HW-H3	FF-01-FW-H3	FF-01-OV-H3
FF-01-OD-H4	FF-01-ID-H4	FF-01-HW-H4	FF-01-FW-H4	FF-01-OV-H4
FF-01-OD-H5	FF-01-ID-H5	FF-01-HW-H5	FF-01-FW-H5	FF-01-OV-H5
FF-01-OD-M1	FF-01-ID-M1	FF-01-HW-M1	FF-01-FW-M1	FF-01-OV-M1
FF-01-OD-M2	FF-01-ID-M2	FF-01-HW-M2	FF-01-FW-M2	FF-01-OV-M2
FF-01-OD-M3	FF-01-ID-M3	FF-01-HW-M3	FF-01-FW-M3	FF-01-OV-M3
FF-01-OD-M4	FF-01-ID-M4	FF-01-HW-M4	FF-01-FW-M4	FF-01-OV-M4
FF-01-OD-M5	FF-01-ID-M5	FF-01-HW-M5	FF-01-FW-M5	FF-01-OV-M5
FF-01-OD-L1	FF-01-ID-L1	FF-01-HW-L1	FF-01-FW-L1	FF-01-OV-L1
FF-01-OD-L2	FF-01-ID-L2	FF-01-HW-L2	FF-01-FW-L2	FF-01-OV-L2
FF-01-OD-L3	FF-01-ID-L3	FF-01-HW-L3	FF-01-FW-L3	FF-01-OV-L3
FF-01-OD-L4	FF-01-ID-L4	FF-01-HW-L4	FF-01-FW-L4	FF-01-OV-L4
FF-01-OD-L5	FF-01-ID-L5	FF-01-HW-L5	FF-01-FW-L5	FF-01-OV-L5
FF-01-OD-C1	FF-01-ID-C1	FF-01-HW-C1	FF-01-FW-C1	FF-01-OV-C1
FF-01-OD-C2	FF-01-ID-C2	FF-01-HW-C2	FF-01-FW-C2	FF-01-OV-C2
FF-02-OD-H1	FF-02-ID-H1	FF-02-HW-H1	FF-02-FW-H1	FF-02-OV-H1
FF-02-OD-H2	FF-02-ID-H2	FF-02-HW-H2	FF-02-FW-H2	FF-02-OV-H2
FF-02-OD-H3	FF-02-ID-H3	FF-02-HW-H3	FF-02-FW-H3	FF-02-OV-H3
FF-02-OD-H4	FF-02-ID-H4	FF-02-HW-H4	FF-02-FW-H4	FF-02-OV-H4
FF-02-OD-H5	FF-02-ID-H5	FF-02-HW-H5	FF-02-FW-H5	FF-02-OV-H5
FF-02-OD-M1	FF-02-ID-M1	FF-02-HW-M1	FF-02-FW-M1	FF-02-OV-M1
FF-02-OD-M2	FF-02-ID-M2	FF-02-HW-M2	FF-02-FW-M2	FF-02-OV-M2
FF-02-OD-M3	FF-02-ID-M3	FF-02-HW-M3	FF-02-FW-M3	FF-02-OV-M3
FF-02-OD-M4	FF-02-ID-M4	FF-02-HW-M4	FF-02-FW-M4	FF-02-OV-M4
FF-02-OD-M5	FF-02-ID-M5	FF-02-HW-M5	FF-02-FW-M5	FF-02-OV-M5
FF-02-OD-L1	FF-02-ID-L1	FF-02-HW-L1	FF-02-FW-L1	FF-02-OV-L1
FF-02-OD-L2	FF-02-ID-L2	FF-02-HW-L2	FF-02-FW-L2	FF-02-OV-L2
FF-02-OD-L3	FF-02-ID-L3	FF-02-HW-L3	FF-02-FW-L3	FF-02-OV-L3
FF-02-OD-L4	FF-02-ID-L4	FF-02-HW-L4	FF-02-FW-L4	FF-02-OV-L4
FF-02-OD-L5	FF-02-ID-L5	FF-02-HW-L5	FF-02-FW-L5	FF-02-OV-L5
FF-02-OD-C1	FF-02-ID-C1	FF-02-HW-C1	FF-02-FW-C1	FF-02-OV-C1
FF-02-OD-C2	FF-02-ID-C2	FF-02-HW-C2	FF-02-FW-C2	FF-02-OV-C2
FF-03-OD-H1	FF-03-ID-H1	FF-03-HW-H1	FF-03-FW-H1	FF-03-OV-H1
FF-03-OD-H2	FF-03-ID-H2	FF-03-HW-H2	FF-03-FW-H2	FF-03-OV-H2
FF-03-OD-H3	FF-03-ID-H3	FF-03-HW-H3	FF-03-FW-H3	FF-03-OV-H3
FF-03-OD-H4	FF-03-ID-H4	FF-03-HW-H4	FF-03-FW-H4	FF-03-OV-H4
FF-03-OD-H5	FF-03-ID-H5	FF-03-HW-H5	FF-03-FW-H5	FF-03-OV-H5
FF-03-OD-M1	FF-03-ID-M1	FF-03-HW-M1	FF-03-FW-M1	FF-03-OV-M1
FF-03-OD-M2	FF-03-ID-M2	FF-03-HW-M2	FF-03-FW-M2	FF-03-OV-M2
FF-03-OD-M3	FF-03-ID-M3	FF-03-HW-M3	FF-03-FW-M3	FF-03-OV-M3
FF-03-OD-M4	FF-03-ID-M4	FF-03-HW-M4	FF-03-FW-M4	FF-03-OV-M4
FF-03-OD-M5	FF-03-ID-M5	FF-03-HW-M5	FF-03-FW-M5	FF-03-OV-M5
FF-03-OD-L1	FF-03-ID-L1	FF-03-HW-L1	FF-03-FW-L1	FF-03-OV-L1
FF-03-OD-L2	FF-03-ID-L2	FF-03-HW-L2	FF-03-FW-L2	FF-03-OV-L2
FF-03-OD-L3	FF-03-ID-L3	FF-03-HW-L3	FF-03-FW-L3	FF-03-OV-L3
FF-03-OD-L4	FF-03-ID-L4	FF-03-HW-L4	FF-03-FW-L4	FF-03-OV-L4
FF-03-OD-L5	FF-03-ID-L5	FF-03-HW-L5	FF-03-FW-L5	FF-03-OV-L5
FF-03-OD-C1	FF-03-ID-C1	FF-03-HW-C1	FF-03-FW-C1	FF-03-OV-C1
FF-03-OD-C2	FF-03-ID-C2	FF-03-HW-C2	FF-03-FW-C2	FF-03-OV-C2

Sample List: Field Fortifications

FF-04-OD-H1	FF-04-ID-H1	FF-04-HW-H1	FF-04-FW-H1	FF-04-OV-H1
FF-04-OD-H2	FF-04-ID-H2	FF-04-HW-H2	FF-04-FW-H2	FF-04-OV-H2
FF-04-OD-H3	FF-04-ID-H3	FF-04-HW-H3	FF-04-FW-H3	FF-04-OV-H3
FF-04-OD-H4	FF-04-ID-H4	FF-04-HW-H4	FF-04-FW-H4	FF-04-OV-H4
FF-04-OD-H5	FF-04-ID-H5	FF-04-HW-H5	FF-04-FW-H5	FF-04-OV-H5
FF-04-OD-M1	FF-04-ID-M1	FF-04-HW-M1	FF-04-FW-M1	FF-04-OV-M1
FF-04-OD-M2	FF-04-ID-M2	FF-04-HW-M2	FF-04-FW-M2	FF-04-OV-M2
FF-04-OD-M3	FF-04-ID-M3	FF-04-HW-M3	FF-04-FW-M3	FF-04-OV-M3
FF-04-OD-M4	FF-04-ID-M4	FF-04-HW-M4	FF-04-FW-M4	FF-04-OV-M4
FF-04-OD-M5	FF-04-ID-M5	FF-04-HW-M5	FF-04-FW-M5	FF-04-OV-M5
FF-04-OD-L1	FF-04-ID-L1	FF-04-HW-L1	FF-04-FW-L1	FF-04-OV-L1
FF-04-OD-L2	FF-04-ID-L2	FF-04-HW-L2	FF-04-FW-L2	FF-04-OV-L2
FF-04-OD-L3	FF-04-ID-L3	FF-04-HW-L3	FF-04-FW-L3	FF-04-OV-L3
FF-04-OD-L4	FF-04-ID-L4	FF-04-HW-L4	FF-04-FW-L4	FF-04-OV-L4
FF-04-OD-L5	FF-04-ID-L5	FF-04-HW-L5	FF-04-FW-L5	FF-04-OV-L5
FF-04-OD-C1	FF-04-ID-C1	FF-04-HW-C1	FF-04-FW-C1	FF-04-OV-C1
FF-04-OD-C2	FF-04-ID-C2	FF-04-HW-C2	FF-04-FW-C2	FF-04-OV-C2
FF-05-OD-H1	FF-05-ID-H1	FF-05-HW-H1	FF-05-FW-H1	FF-05-OV-H1
FF-05-OD-H2	FF-05-ID-H2	FF-05-HW-H2	FF-05-FW-H2	FF-05-OV-H2
FF-05-OD-H3	FF-05-ID-H3	FF-05-HW-H3	FF-05-FW-H3	FF-05-OV-H3
FF-05-OD-H4	FF-05-ID-H4	FF-05-HW-H4	FF-05-FW-H4	FF-05-OV-H4
FF-05-OD-H5	FF-05-ID-H5	FF-05-HW-H5	FF-05-FW-H5	FF-05-OV-H5
FF-05-OD-M1	FF-05-ID-M1	FF-05-HW-M1	FF-05-FW-M1	FF-05-OV-M1
FF-05-OD-M2	FF-05-ID-M2	FF-05-HW-M2	FF-05-FW-M2	FF-05-OV-M2
FF-05-OD-M3	FF-05-ID-M3	FF-05-HW-M3	FF-05-FW-M3	FF-05-OV-M3
FF-05-OD-M4	FF-05-ID-M4	FF-05-HW-M4	FF-05-FW-M4	FF-05-OV-M4
FF-05-OD-M5	FF-05-ID-M5	FF-05-HW-M5	FF-05-FW-M5	FF-05-OV-M5
FF-05-OD-L1	FF-05-ID-L1	FF-05-HW-L1	FF-05-FW-L1	FF-05-OV-L1
FF-05-OD-L2	FF-05-ID-L2	FF-05-HW-L2	FF-05-FW-L2	FF-05-OV-L2
FF-05-OD-L3	FF-05-ID-L3	FF-05-HW-L3	FF-05-FW-L3	FF-05-OV-L3
FF-05-OD-L4	FF-05-ID-L4	FF-05-HW-L4	FF-05-FW-L4	FF-05-OV-L4
FF-05-OD-L5	FF-05-ID-L5	FF-05-HW-L5	FF-05-FW-L5	FF-05-OV-L5
FF-05-OD-C1	FF-05-ID-C1	FF-05-HW-C1	FF-05-FW-C1	FF-05-OV-C1
FF-05-OD-C2	FF-05-ID-C2	FF-05-HW-C2	FF-05-FW-C2	FF-05-OV-C2
FF-06-OD-H1	FF-06-ID-H1	FF-06-HW-H1	FF-06-FW-H1	FF-06-OV-H1
FF-06-OD-H2	FF-06-ID-H2	FF-06-HW-H2	FF-06-FW-H2	FF-06-OV-H2
FF-06-OD-H3	FF-06-ID-H3	FF-06-HW-H3	FF-06-FW-H3	FF-06-OV-H3
FF-06-OD-H4	FF-06-ID-H4	FF-06-HW-H4	FF-06-FW-H4	FF-06-OV-H4
FF-06-OD-H5	FF-06-ID-H5	FF-06-HW-H5	FF-06-FW-H5	FF-06-OV-H5
FF-06-OD-M1	FF-06-ID-M1	FF-06-HW-M1	FF-06-FW-M1	FF-06-OV-M1
FF-06-OD-M2	FF-06-ID-M2	FF-06-HW-M2	FF-06-FW-M2	FF-06-OV-M2
FF-06-OD-M3	FF-06-ID-M3	FF-06-HW-M3	FF-06-FW-M3	FF-06-OV-M3
FF-06-OD-M4	FF-06-ID-M4	FF-06-HW-M4	FF-06-FW-M4	FF-06-OV-M4
FF-06-OD-M5	FF-06-ID-M5	FF-06-HW-M5	FF-06-FW-M5	FF-06-OV-M5
FF-06-OD-L1	FF-06-ID-L1	FF-06-HW-L1	FF-06-FW-L1	FF-06-OV-L1
FF-06-OD-L2	FF-06-ID-L2	FF-06-HW-L2	FF-06-FW-L2	FF-06-OV-L2
FF-06-OD-L3	FF-06-ID-L3	FF-06-HW-L3	FF-06-FW-L3	FF-06-OV-L3
FF-06-OD-L4	FF-06-ID-L4	FF-06-HW-L4	FF-06-FW-L4	FF-06-OV-L4
FF-06-OD-L5	FF-06-ID-L5	FF-06-HW-L5	FF-06-FW-L5	FF-06-OV-L5
FF-06-OD-C1	FF-06-ID-C1	FF-06-HW-C1	FF-06-FW-C1	FF-06-OV-C1
FF-06-OD-C2	FF-06-ID-C2	FF-06-HW-C2	FF-06-FW-C2	FF-06-OV-C2

Sample List: Field Fortifications

FF-07-OD-H1	FF-07-ID-H1	FF-07-HW-H1	FF-07-FW-H1	FF-07-OV-H1
FF-07-OD-H2	FF-07-ID-H2	FF-07-HW-H2	FF-07-FW-H2	FF-07-OV-H2
FF-07-OD-H3	FF-07-ID-H3	FF-07-HW-H3	FF-07-FW-H3	FF-07-OV-H3
FF-07-OD-H4	FF-07-ID-H4	FF-07-HW-H4	FF-07-FW-H4	FF-07-OV-H4
FF-07-OD-H5	FF-07-ID-H5	FF-07-HW-H5	FF-07-FW-H5	FF-07-OV-H5
FF-07-OD-M1	FF-07-ID-M1	FF-07-HW-M1	FF-07-FW-M1	FF-07-OV-M1
FF-07-OD-M2	FF-07-ID-M2	FF-07-HW-M2	FF-07-FW-M2	FF-07-OV-M2
FF-07-OD-M3	FF-07-ID-M3	FF-07-HW-M3	FF-07-FW-M3	FF-07-OV-M3
FF-07-OD-M4	FF-07-ID-M4	FF-07-HW-M4	FF-07-FW-M4	FF-07-OV-M4
FF-07-OD-M5	FF-07-ID-M5	FF-07-HW-M5	FF-07-FW-M5	FF-07-OV-M5
FF-07-OD-L1	FF-07-ID-L1	FF-07-HW-L1	FF-07-FW-L1	FF-07-OV-L1
FF-07-OD-L2	FF-07-ID-L2	FF-07-HW-L2	FF-07-FW-L2	FF-07-OV-L2
FF-07-OD-L3	FF-07-ID-L3	FF-07-HW-L3	FF-07-FW-L3	FF-07-OV-L3
FF-07-OD-L4	FF-07-ID-L4	FF-07-HW-L4	FF-07-FW-L4	FF-07-OV-L4
FF-07-OD-L5	FF-07-ID-L5	FF-07-HW-L5	FF-07-FW-L5	FF-07-OV-L5
FF-07-OD-C1	FF-07-ID-C1	FF-07-HW-C1	FF-07-FW-C1	FF-07-OV-C1
FF-07-OD-C2	FF-07-ID-C2	FF-07-HW-C2	FF-07-FW-C2	FF-07-OV-C2

FF-08-OD-H1	FF-08-ID-H1	FF-08-HW-H1	FF-08-FW-H1	FF-08-OV-H1
FF-08-OD-H2	FF-08-ID-H2	FF-08-HW-H2	FF-08-FW-H2	FF-08-OV-H2
FF-08-OD-H3	FF-08-ID-H3	FF-08-HW-H3	FF-08-FW-H3	FF-08-OV-H3
FF-08-OD-H4	FF-08-ID-H4	FF-08-HW-H4	FF-08-FW-H4	FF-08-OV-H4
FF-08-OD-H5	FF-08-ID-H5	FF-08-HW-H5	FF-08-FW-H5	FF-08-OV-H5
FF-08-OD-M1	FF-08-ID-M1	FF-08-HW-M1	FF-08-FW-M1	FF-08-OV-M1
FF-08-OD-M2	FF-08-ID-M2	FF-08-HW-M2	FF-08-FW-M2	FF-08-OV-M2
FF-08-OD-M3	FF-08-ID-M3	FF-08-HW-M3	FF-08-FW-M3	FF-08-OV-M3
FF-08-OD-M4	FF-08-ID-M4	FF-08-HW-M4	FF-08-FW-M4	FF-08-OV-M4
FF-08-OD-M5	FF-08-ID-M5	FF-08-HW-M5	FF-08-FW-M5	FF-08-OV-M5
FF-08-OD-L1	FF-08-ID-L1	FF-08-HW-L1	FF-08-FW-L1	FF-08-OV-L1
FF-08-OD-L2	FF-08-ID-L2	FF-08-HW-L2	FF-08-FW-L2	FF-08-OV-L2
FF-08-OD-L3	FF-08-ID-L3	FF-08-HW-L3	FF-08-FW-L3	FF-08-OV-L3
FF-08-OD-L4	FF-08-ID-L4	FF-08-HW-L4	FF-08-FW-L4	FF-08-OV-L4
FF-08-OD-L5	FF-08-ID-L5	FF-08-HW-L5	FF-08-FW-L5	FF-08-OV-L5
FF-08-OD-C1	FF-08-ID-C1	FF-08-HW-C1	FF-08-FW-C1	FF-08-OV-C1
FF-08-OD-C2	FF-08-ID-C2	FF-08-HW-C2	FF-08-FW-C2	FF-08-OV-C2

PROTOCOL DEVIATION

MORSE LABORATORIES, INC. PROJECT #: **ML96-0662-RHP**

PROTOCOL #: **1517**

DATE: **May 3, 1997**

SUBJECT: The lowest spike level for each of the following analytical sets was not three to five times the LOQ:

Set #	Matrix	Low Spike Level (µg/sample)
14	Face/Neck Wipes	50
22	Face/Neck Wipes	50
55	Handwash	50
58	Handwash	250
60	Handwash	100
61	Handwash	250

REASON: Higher spike levels were conducted to bracket both expected sample residues and sample residues which greatly exceeded three to five times the LOQ.

IMPACT ON STUDY: It is felt that this deviation does not have an impact on the study; however, the final determination shall be made by the Study Director.

Susan Clark
MORSE LABORATORIES, INC.
Analytical Project Coordinator

May 7, 1997
Date

D. Larry Merricks, Ph.D.
AGRISEARCH, INC.
Study Director

5/8/97
Date

PROTOCOL DEVIATION

MORSE LABORATORIES, INC. PROJECT #: **ML96-0662-RHP**

PROTOCOL #: **1517**

DATE: **May 7, 1997**

SUBJECT: On Set# 62 one sample response was not bracketed by the standard curve. The peak height response for sample FS-15-OD-LA is 4573 (equivalent to 59.814 ng/mL), while the peak height response for the 60 ng/mL calibration standard is 4572.

REASON: Residue in the sample was slightly higher than that expected based on a screen of the sample prior to final HPLC analysis. At this magnitude a peak height difference of one unit is considered insignificant.

IMPACT ON STUDY: It is felt that this deviation does not have an impact on the study; however, the final determination shall be made by the Study Director.

Susan Clark
MORSE LABORATORIES, INC.
Analytical Project Coordinator

May 8, 1997
Date

D. Larry Merricks, Ph.D.
AGRISEARCH, INC.
Study Director

6-6-97
Date

PROTOCOL DEVIATION

MORSE LABORATORIES, INC. PROJECT #: **ML96-0662-RHP**

PROTOCOL #: **1517**

DATE: **May 10, 1997**

SUBJECT: Authentic copies of temperature logs for analytical standard/standard dilutions and samples will not be supplied with the raw data.

REASON: Original temperature logs are maintained at Morse Laboratories, Inc. Should the need arise, specific temperature logs will be copied and supplied to the Sponsor.

IMPACT ON STUDY: It is felt that this deviation does not have an impact on the study; however, the final determination shall be made by the Study Director.

Susan Clark
MORSE LABORATORIES, INC.
Analytical Project Coordinator

May 12, 1997
Date

D. Larry Merricks, Ph.D.
AGRISEARCH, INC.
Study Director

6-6-97
Date

APPENDIX D

Informed Consent Form

TOXICOLOGY DEPARTMENT
P.O. BOX 12014, 2 T.W. ALEXANDER DRIVE
RESEARCH TRIANGLE PARK, N.C. 27709
(919) 549-2000 TELEFAX (919) 549-2925
INTERNATIONAL TELEX NUMBER 4999378 - ANSWERBACK APC RTP

PARTICIPANT CONSENT FORM

A. Purpose and Background

Rhone-Poulenc Ag Company has contracted with Agrisearch Incorporated, to conduct an applicator exposure study. The Study Director, Dr. D. Larry Merricks of Agrisearch, will be in charge of conducting the study. The study is being conducted using Carbaryl formulated as RP-2 Liquid (21%) (a registered product). The study design for this study has been reviewed and accepted by the EPA.

The purpose of this study is to determine worker exposure to Carbaryl resulting from the mixing, loading, and application of RP-2 Liquid (21%) to fruit trees and ornamental plants. The study is being conducted at the request of the United States Environmental Protection Agency (EPA). The EPA will evaluate the results of this study to assure the safe use of Carbaryl.

B. Procedures

If I agree to be in the study, I do so freely, without coercion and with an understanding of the following:

(1) I will mix, load, and apply a batch of RP-2 Liquid spray solution to two shrubs and two trees. The test substance will be applied using commercially available hand held sprayers. I will wear label required personal protective equipment during the exposure monitoring.

(2) My inhalation exposure (the amount that can be breathed) will be monitored by a sample collection tube attached to my shirt collar and connected by tubing to a sampling pump on a belt worn around my waist.

(3) My dermal exposure (the amount that deposits on my skin) will be monitored by a technique referred to as whole-body dosimetry. I will wear a long underwear garment underneath a long-sleeved shirt and long pants similar to my normal clothing. Agrisearch will supply the long underwear and outer clothing at the beginning of my exposure period. I will be asked to dress and undress with the assistance of a field investigator from Agrisearch. A changing area will be provided for individual privacy.

(4) I will wash my hands in a mild soap solution one or more times during the course of exposure monitoring.

(5) Exposure to my face and neck will be monitored by washing them with two cloth wipes wetted with a mild soap solution.

(6) I will provide some very basic information during an interview with a field investigator from Agrisearch. The following information will be requested:

Name
Age
Weight/height
Profession
General health

(7) I will shower or bathe at home before and after I am monitored.

C. Risk/Discomforts

Rhone-Poulenc Ag Company and Agrisearch (the contractor conducting this study) do not anticipate that I will have any exposure to Carbaryl of such a level that I will have any physical distress, discomfort or even awareness of exposure.

I understand that a urine pregnancy test will be conducted by all female volunteers for this study and that pregnant volunteers will not be allowed to participate in this study. I am aware that Rhone-Poulenc Ag Company will be responsible for the cost of any medical treatment required due to my participation in this study, although no such treatment is expected.

Some discomfort may be encountered when wearing long underwear underneath normal clothing, especially on warm days. There may also be some embarrassment caused by having a same gender scientist present when I remove my long underwear; however, I will be wearing my choice of undergarments under the long underwear. No other discomforts are expected.

D. Costs/Benefits

I am aware there is no cost nor is there any direct benefit to me for participating in this study. However, my participation in this study will help evaluate possible exposures associated with spraying trees and plants for insects as well as contribute to the overall knowledge of possible exposures to the nonprofessional.

E. Alternatives

I understand that I do not have to participate in this study, nor do I need to continue to participate, and if I choose at any time not to participate, I may do so.

F. Confidentiality

I understand that my participation in this study may involve a loss of privacy. The results of all samples collected from me will be associated with my name as part of the normal sample documentation process. This information will be available, upon request, to EPA, but my name will not appear in the final report.

G. Questions

I have talked in person to Dr. Larry Merricks, the Agrisearch Study Director, about this study and my questions have been answered. I understand that if I have further questions about this study, I can contact Dr. Merricks or Dr. Klonne of Rhone-Poulenc Ag Company in person or via a collect telephone call.

H. Consent

My participation in this study is voluntary. I understand that I do not have to participate and I am free to withdraw my consent and participation at any time.

By signing this consent form, I indicate my willingness to participate in this study. In addition, my signing below indicates that I have read the information provided above and been given a copy of this consent form.

Date: _____ _____
Subject's Name (print)

_____
Subject's Signature

Study Director:

The information contained in the *Participant Consent Form* has been explained to _____ and it appears that he/she understands it.

Date: _____ _____
D. Larry Merricks, Ph.D.

For questions call:

Dr. D. Larry Merricks
Agrisearch Study Director (301) 662-2203

Dr. R. Dennis Klonne
Rhone-Poulenc Ag Co. Representative (919) 549-2170