ENTOMOLOGICAL SPECIAL STUDY NO. 44-019-75/76. PESTICIDE ANALYSIS OF SURFACE WATER SAMPLES COLLECTED IN THE DEPARTMENT OF THE ARMY PESTICIDE MONITORING PROGRAM, 1 SEPTEMBER 1972 - 31 DECEMBER 1974

ARMY ENVIRONMENTAL HYGIENE AGENCY,
ABERDEEN PROVING GROUND, MARYLAND

15 OCTOBER 1975

ENTOMOLOGICAL SPECIAL STUDY NO. 44-019-75/7
PESTICIDE ANALYSIS OF SURFACE WATER SAMPLES
COLLECTED IN THE DEPARTMENT OF THE ARMY
PESTICIDE MONITORING PROGRAM
1 SEPTEMBER 1972 - 31 DECEMBER 1974

US ARMY
ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MD 21010

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This report gives pertinent analytical details, specific collection locations, and analytical results of surface water analyses of samples collected from the scheduled component of the Department of the Army Pesticide Monitoring Program during the period of 1 September 1972 thru 31 December 1974. A total of 206 surface water samples collected from 44 military installations were analyzed. Thirteen samples representing five military installations were positive for residues. Four different pesticides, including dieldrin, diazinon, aldrin,

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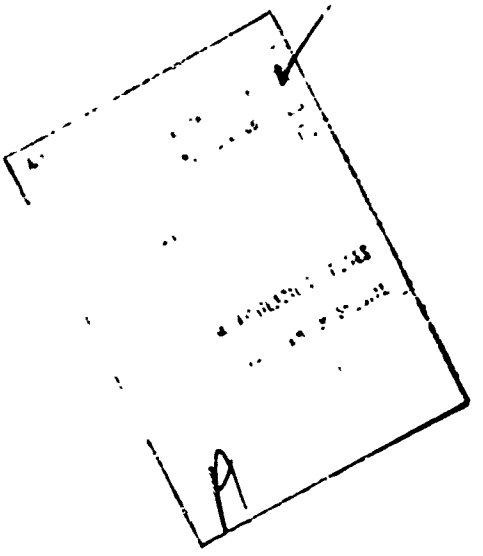
and endrin, were found in the water samples. Dieldrin was the most prevalent pesticide residue detected in the samples. Discussions regarding the possible origin of the positive pesticide findings noted are also presented in this report.



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
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HSE-RE/WP

15 OCT 1976

ENTOMOLOGICAL SPECIAL STUDY NO. 44-019-75/76 PESTICIDE ANALYSIS OF SURFACE WATER SAMPLES COLLECTED IN THE DEPARTMENT OF THE ARMY PESTICIDE MONITORING PROGRAM 1 SEPTEMBER 1972 - 31 DECEMBER 1974

ABSTRACT

This is a final report giving pertinent analytical details, specific collection locations and analytical results of surface water analyses of samples collected from the scheduled component of the Department of the Army Pesticide Monitoring Program.

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-RE/WP

ENTOMOLOGICAL SPECIAL STUDY NO. 44-019-75/76
PESTICIDE ANALYSIS OF SURFACE WATER SAMPLES
COLLECTED IN THE DEPARTMENT OF THE ARMY
PESTICIDE MONITORING PROGRAM
1 SEPTEMBER 1972 - 31 DECEMBER 1974

1. REFERENCES.

a. AR 40-5, Health and Environment, 25 September 1974.

b. Public Law 92-516, 21 October 1972, Federal Environmental Pesticide Control Act of 1972.

c. USAEHA Entomological Special Study No. 44-017-73, Implementation of Department of the Army Pesticide Monitoring Program, transmitted 30 November 1972.

d. USAEHA Entomological Special Study No. 44-003-73/75, Army Pesticide Monitoring Pilot Program - January 1973 - April 1974.

e. USAEHA Entomological Special Study No. 44-004-74/75, Department of the Army Pesticide Monitoring Program, Evaluation of Data from Environmental Samples Collected Prior to 1 January 1974. Part I, Soil, Sediment, Water, 1 September 1974.

f. USAEHA Entomological Special Study No. 44-004-74/75, Revised Department of the Army Pesticide Monitoring Program, 1 April 1975.

2. PURPOSE. To provide pertinent analytical details, specific collection locations and analytical results of surface water analyses of sample collections from the scheduled component of the Department of the Army Pesticide Monitoring Program.

3. GENERAL.

a. The procedures used for water sample collection are described in reference 1c.

b. Pertinent aspects of the analytical methods and procedures used in analysis of water samples are available in Appendix A. Appendix A is organized as follows:

(1) Part I - Methodology for water extraction, cleanup and analysis.

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(2) Part II - Routine pesticide analysis list and limits of detectability in water.

(3) Part III - Methodology proof and evaluation.

4. RESULTS.

a. A compilation of the results of water sample analyses performed during the period 1 September 1972 to 31 December 1974 are shown in Appendices B and C.

b. Appendix B lists those samples in which no positive pesticide findings were indicated. In this Appendix the following information is listed for each sample: name of installation where collected; year of collection; and USAEHA Sample No. The installations listed in Appendix B are grouped according to the US Army Medical Laboratory areas of responsibility, which were located at Fort George G. Meade, Fort McPherson, Fort Sam Houston, St Louis, and Fort Baker. Within their respective groupings the installations are listed alphabetically. (Note: On 1 October 1974, these laboratories came under the jurisdiction of this Agency.)

c. Appendix C lists those samples in which positive pesticide findings were indicated. In this Appendix the following information is listed for each sample: name of installation where collected; specific location of collection; month/year of collection; USAEHA Sample No.; and results of analysis. The installations listed in Appendix C are arranged alphabetically, without regard to US Army Medical Laboratory areas of responsibility.

d. The failure to detect a pesticide on the routine monitoring list shown in Part II of Appendix A means that these pesticides, if present, did not occur at concentrations equal to or greater than the minimum detection limits stipulated in this list. No attempts were made to determine pesticides not on the routine monitoring list.

5. SUMMARY AND DISCUSSION.

a. Shown below is a numerical summary of the findings listed in Appendices B and C.

Total No. of Samples Collected	306
No. of Positive Samples	13
Percent of Positive Samples	4.2
No. of Installations Sampled	44
No. of Installations Where Positive Samples Were Found	5
Percent of Positive Installations	11.4

b. With regards to the type and frequency of pesticides detected, these findings are summarized below:

Pesticide Detected	No. of Samples Where Detected	No. of Installations Where Detected
dieldrin	9	3
diazinon	3	2
aldrin	3	1
endrin	1	1

c. As is evident from paragraph 5a above, only 4.2 percent of all surface water samples collected during the period 1 September 1972 to 31 December 1974 contained detectable quantities of pesticides. This very low percentage of positive pesticide findings is not unexpected considering the transient and dynamic nature of surface water, coupled with the known insolubility of most pesticides in water. For these reasons it was decided not to include further routine water sampling and analyses in the revised Department of the Army Pesticide Monitoring Program (see reference 1f).

d. Thirteen water samples collected from five installations were positive for one or more of the pesticides on the routine monitoring list. The possible origins of these positive pesticide findings are discussed below on an installation-by-installation basis. Information on the possible origins of positive pesticide findings was gathered through various sources including pesticide use reports (DD 1532), discussions with sample collection personnel, discussions with installation entomologists, pest controllers and engineers, studies of installation maps and installation geographical features, and studies of present and past installation activities involving pesticides, such as manufacture, storage and disposal.

(1) Fort Carson. A satisfactory explanation for the presence of diazinon in USAEHA Sample No. 00932 collected from Clover Ditch cannot be given. The presence of diazinon (or any other organophosphorus pesticide) in a water sample is most unusual and unexpected. Other water samples collected from Clover Ditch 3 months prior and 3 months after the collection of Sample No. 00932 contained no detectable quantities of diazinon.

(2) Fort Knox. The presence of diazinon in USAEHA Sample No. 00838 collected from Mill Creek also cannot be satisfactorily explained. A subsequent sample (USAEHA Sample No. 00931) taken 3 months after Sample No. 00838 from the same location on Mill Creek indicated barely detectable levels of diazinon.

(3) Rocky Mountain Arsenal. Four water samples (USAEHA Samples No. 00361, 00512, 00570 and 00920) collected from two different locations over a period of almost 2 years showed positive findings for one or more of the

cyclodiene pesticides, aldrin, dieldrin and endrin. The presence of these pesticides in the above listed water samples is most probably due to the presence of a Shell Chemical Company insecticide manufacturing plant located on a leased portion of Rocky Mountain Arsenal. This plant has been manufacturing cyclodiene insecticides for a number of years and some contamination of the area surrounding the plant may have inevitably occurred.

(4) Yakima Firing Center. A sample (USAEHA Sample No. 00683) collected from Juvenile Fishing Pond contained dieldrin at a barely detectable concentration. This finding of relatively insignificant levels of dieldrin in Sample No. 00683 was not considered worthy of any followup investigations.

(5) Yuma Proving Ground. Detectable quantities of dieldrin were found in five water samples (USAEHA Samples No. 00122, 00250, 00353, 00491 and 00565) collected from Boy Scout Pond over a period from November 1972 through February 1974. The persistent findings of dieldrin in Boy Scout Pond is most likely related to the use of dieldrin in the cantonment area for the control of earwigs and related insect pests. Virtually all of the runoff from the cantonment area is received by Boy Scout Pond.

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APPENDIX A

PART I. METHODOLOGY FOR WATER EXTRACTION, CLEANUP AND ANALYSIS.

A. SCOPE AND APPLICATION. This method has been shown to be applicable for the analysis of those pesticides (organochlorine and organophosphorus) listed in Part II of Appendix A.

B. APPARATUS AND MATERIALS.

1. GLC Material.

a. Gas Chromatograph: Equipped with glass lined injection ports (Tracor MT-220 or equivalent).

b. Detector options: Electron-capture (Ni_{63}), Flame Photometric and Electrolyte Conductivity.

c. Recorder: Potentiometric strip chart (10 in, 1 mv).

d. Gas Chromatographic Columns:

(1) Solid supports - Gas Chrom Q (80-100 mesh), Chromasorb W (80-100 mesh)

(2) Liquid Phases - expressed as weight - percent coated on solid supports:

3 percent OV-1
1.5 percent OV-17/1.95 percent QF-1
5 percent OV-210
4 percent SE-30/6 percent QF-1

e. Routine Analysis Parameters for GLC:

(1) Oven temperature - 200°C

(2) Injection post temperature - 235°C

(3) Outlet temperature - 250°C

(4) Carrier gas flow (Nitrogen) - 60 ml/min

(5) Detector temperature - 300°C - electron capture; 200°C - flame photometric:

f. Sensitivity - Electron-capture: 1.7×10^{-9} amps full scale (Input 10^2; Output 16)

g. Recorder speed: 0.5 in/min

2. Glassware.

a. Separatory funnel - 500 ml

b. Kuderma - Danish apparatus - 250 ml, 500 ml flasks, 10 ml concentrator tubes, Synder columns

c. Graduated cylinders - 50 ml, 250 ml, 500 ml

d. Erlenmeyer flasks - 250 ml, 500 ml, 1,000 ml

e. Glass funnel

f. Chromatographic column - 22 mm x 300 mm

g. Volumetric flask - 200 ml

h. Graduated centrifuge tubes - 15 ml

i. 1 oz screw cap bottles with foil cap liners

j. 1-ml disposable pipets

3. Reagents, Solvents, Standards.

a. Hexane - nanograde

b. Petroleum ether - nanograde

c. Ethyl ether - nanograde

d. Ethyl alcohol - absolute

e. Hydrochloric acid - concentrated - reagent grade

f. Whatman No. 43 filter paper - pre-extracted

g. Sodium sulfate - anhydrous - hexane washed

h. Sodium chloride - hexane washed

i. Glass wool - silanized - hexane washed

j. Florisil® - PR Grade (60-100 mesh) purchased activated at 1250°F and stored in dark in glass containers with glass stoppers or foil-lined screw caps. Before use, each batch is activated overnight at 130°C in foil-covered glass containers or in chromatographic columns.

k. Pesticide standards - reference grade

C. EXTRACTION AND CLEANUP PROCEDURES.

1. Extraction.

a. Pour 250 ml of water sample into a 500 ml separatory funnel equipped with a Teflon® stopcock. NOTE: Water samples are not normally filtered prior to extraction unless large quantities of suspended matter are present.

b. Acidify the sample by addition of 0.2 ml of concentrated hydrochloric acid.

c. Extract the sample successively with two 50 ml portions of hexane, shaking the separatory funnel 3 minutes for the first extraction and 2 minutes for the second extraction. NOTE: With some water samples (particularly those of high organic content and/or high turbidity) emulsions will form in the hexane layer during the extraction. Emulsions can be broken-up by the following procedures:

(1) Add 10-20 g of hexane-washed sodium chloride to the separatory funnel, swirl the funnel for 1-2 minutes, and allow the layers to separate.

(2) Most emulsion will break-up using the above described procedure. However, in the case of severe emulsions the following additional procedure is required: filter the hexane layer including the associated emulsion through a funnel lined with pre-extracted filter paper and glass wool into an Erlenmeyer flask containing a small amount of hexane-washed sodium sulfate. After filtration, rinse the funnel with an additional 10-15 ml of hexane.

d. Combine the hexane extracts from step (c) in a 250 ml Kuderna - Danish evaporative concentrator and concentrate the hexane extracts to 10 ml.

e. Transfer the concentrated extracts to a hexane-rinsed 1 oz screw cap bottle with foil capliner and label each bottle appropriately.

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® Teflon is a registered trademark of E. I. du Pont de Nemours & Co., Inc., Wilmington, DE.

c. Proceed with GLC analysis. NOTE: On occasion, after a screening analysis on the gas chromatograph, a sample may require further cleanup and/or separation of suspected pesticides on a Florisil column. If so, then proceed with the Florisil column cleanup procedure outlined below.

2. Florisil Column Cleanup.

a. Prepare a Florisil column that contains 4 inches activated Florisil topped with one-half inch anhydrous sodium sulfate. Prewet column with 40-50 ml hexane. Place collection container under column.

b. Transfer sample extract (5-10 ml) to column and rinse walls of chromatographic column with additional small portions of hexane. Eluate column at about 5 ml/min with 200 ml 6 percent ethyl ether/petroleum ether mixture. Change receivers and eluate at 5 ml/min with 200 ml 15 percent ethyl ether/petroleum ether mixture. Change receivers and eluate at 5 ml/min with 200 ml 50 percent ethyl ether/petroleum ether mixture.

c. Concentrate each eluate portion in Kuderna - Danish evaporative concentrators to 10 ml.

d. Transfer the concentrates to hexane-washed 1 oz screw cap bottles with foil cap liners and label each bottle appropriately.

e. Proceed with GLC analysis.

3. GLC Analysis.

a. The hexane extract of each water sample is screened using the electron-capture detector.

b. Most of the water samples do not contain any peaks (of greater than 10 percent deflection on chart paper) which correspond to or interfere with the peaks from those pesticides being analyzed for.

c. Those samples that do contain peaks corresponding to or interfering with peaks from those pesticides being analyzed for undergo the following steps:

(1) The sample is re-extracted to confirm the original screening analysis results.

(2) If step (1) is confirmatory then the sample is subjected to a Florisil column cleanup procedure. The Florisil column will remove many interfering "artifact" peaks and will separate those pesticides being analyzed for among three eluate fractions. To be considered present in a sample a suspected pesticide must fall in its correct Florisil eluate fraction.

(3) To further confirm a suspected pesticide peak, the sample is analyzed using another chromatographic column on which the pesticide being confirmed behaves differently in regard to its relative retention time or its order of column elution relative to other pesticides.

(4) Finally, the identity of a suspected pesticide can be confirmed using more element-specific detectors than the electron capture detector, which is a relatively nonspecific detector. Element-specific detectors used are: flame-photometric (for phosphorus or sulfur-containing pesticides) and electrolytic conductivity (for chlorine-containing pesticides).

PART II. ROUTINE PESTICIDE ANALYSIS LIST AND LIMITS OF DETECTABILITY IN WATER. Listed below are those pesticides which were routinely analyzed for in water samples collected under the Army Pesticide Monitoring Program during the period 1 September 1972 to 31 December 1974. Listed with each pesticide is its corresponding limits of detectability in water using the methodology described in Part I of this Appendix.

Pesticides Analyzed for	Limits of Detectability (ppb)
α-BHC	0.03
β-BHC	0.10
aldrin	0.08
chlordane	0.60
o,p'-DDD	0.20
p,p'-DDD	0.16
o,p'-DDE	0.20
p,p'-DDE	0.16
o,p'-DDT	0.20
p,p'-DDT	0.30
dieldrin	0.12
endrin	0.21
heptachlor	0.03
hept. epoxide	0.08
lindane	0.04
methoxychlor	0.80
mirex	0.20
toxaphene	8.0
chlorpyrifos	0.12
diazinon	0.52
malathion	0.80
methyl parathion	0.30
parathion	0.20

PART III. METHODOLOGY PROOF AND EVALUATION

A. Percent recovery studies were carried out using 10 pesticides representative of the routine analysis list.

B. Pooled surface water samples previously analyzed and determined to be free of detectable pesticides were used in the recovery studies.

C. Percent recovery studies were carried out using three different concentration levels of each pesticide. Additionally, each concentration level was replicated three times. Therefore, a total of nine replicates were obtained for each pesticide studied.

D. The average percent recovery for the nine replicates of each pesticide studied are summarized below:

Pesticide Studied	Average Percent Recovery For Nine Replicates
α-BHC	66.2
o,p'-DDD	84.4
p,p'-DDE	87.5
p,p'-DDT	79.8
dieldrin	73.2
hept. epoxide	87.7
lindane	84.0
mirex	75.7
chlorpyrifos	74.5
parathion	78.8

APPENDIX B

LISTING OF SURFACE WATER SAMPLES COLLECTED DURING PERIOD 1 SEPTEMBER 1972 TO 31 DECEMBER 1974 IN WHICH NO POSITIVE PESTICIDE FINDINGS WERE INDICATED

Installation Where Collected	Year of Collection	USAEHA Sample No.
Aberdeen Proving Ground, MD	1972	00094
	1972	00098
	1972	00100
	1972	00103
Fort Belvoir, VA	1973	00211
	1973	00212
	1973	00354
	1973	00355
	1974	00583
	1974	00584
	1974	00585
Camp Drum, NY	1972	00111
	1972	00112
	1972	00113
Fort Devens, MA	1972	00114
	1972	00116
	1973	00321
Fort Dix, NJ	1973	00183
	1973	00184
	1973	00236
	1973	00239
	1973	00326
	1973	00334
	1973	00502
	1973	00503
	1974	00568
	1974	00569
	1974	00804
	1974	00808
	1974	00928

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort Knox, KY	1973	00348
	1973	00349
	1973	00350
	1973	00543
	1974	00607
Fort Lee, VA	1973	00279
	1973	00280
	1973	00281
	1973	00338
	1973	00339
	1973	00340
	1973	00531
	1973	00532
	1973	00535
	1974	00571
	1974	00572
	1974	00573
	1974	00685
	1974	00686
	1974	00687
Fort Meade, MD	1972	00086
	1972	00089
	1972	00093
	1973	00286
	1973	00289
	1973	00290
	1973	00291
	1973	00293
Fort Monmouth, NJ	1973	00490
	1973	00498
	1974	00881
	1974	00882
West Point Military Reservation, NY	1972	00059
	1972	00062
	1972	00067
	1972	00068
	1972	00075
	1972	00084
	1974	00893

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Anniston Army Depot, AL	1973	00494
	1973	0495
Fort Benning, GA	1973	0393
	1973	00404
	1974	00748
	1974	00847
	197[illegible]	00894
	197[illegible]	0916
Fort Bragg, NC	1973	00229
	1973	00230
	1973	00231
	1973	00[illegible]
	1973	00[illegible]
	1973	0[illegible]
	1974	0[illegible]
	1974	0[illegible]
Fort Campbell, KY	1974	0[illegible]
	1974	0[illegible]
	1974	0079[illegible]
Fort Gordon, GA	1973	00166
	1973	00167
	1973	0[illegible]
	1973	00169
	1973	00170
	1973	00171
	1973	00172
	1973	00[illegible]
	1973	00[illegible]
	1973	0[illegible]
	1973	0[illegible]
	1974	00[illegible]
	1974	0[illegible]
Fort Jackson, SC	1973	00[illegible]
	1973	00[illegible]
	1973	00[illegible]
	1973	00[illegible]
	1973	00549
	1974	00[illegible]
	1974	00[illegible]
	1974	00[illegible]

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort McClellan, AL	1974	00625
	1974	00784
	1974	00815
	1974	00841
Fort McPherson, GA	1973	00347
	1973	00351
Fort Stewart, GA	1973	00450
	1974	00656
	1974	00661
Fort Bliss, TX	1973	00324
	1973	00327
	1973	00330
Fort Chaffee, AR	1973	00104
Fort Hood, TX	1973	00144
	1973	00142
	1973	00216
	1973	00225
	1974	00821
	1974	00964
Fort Sam Houston, TX	1973	00131
	1973	00133
	1973	00135
	1973	00224
	1974	00681
	1974	00701
	1974	00706
	1974	00800
	1974	00901
	1974	00905
	1974	00933
	1974	00939
Pine Bluff Arsenal, AR	1973	00129
	1973	00129

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort Polk, LA	1973	00144
	1973	00261
	1973	00262
	1973	00423
	1973	00487
	1974	00575
	1974	00576
	1974	00580
	1974	00690
	1974	00691
	1974	00692
	1974	00798
	1974	00799
	1974	00960
	1974	00961
Red River Army Depot, TX	1973	00134
	1973	00135
	1973	00194
	1973	00196
White Sands Missile Range, NM	1973	00387
	1973	00388
Fort Wingate, NM	1973	00194
Fort Wolters, TX	1973	00139
	1973	00140
	1973	00257
Fort Benjamin Harrison, IN	1973	00157
	1973	00368
	1974	00554
	1974	00646
	1974	00647
	1974	00648
	1974	00820
	1974	00821
	1974	00822
Jefferson Proving Ground, IN	1973	00161
	1973	00164
	1973	00364
	1974	00561
	1974	00586

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort Leavenworth, KS	1973	00285
	1973	00286
	1973	00407
	1973	00520
	1974	00750
	1974	00751
	1974	00752
Fort McCoy, WI	1973	00313
	1973	00378
	1973	00379
	1973	00545
	1974	00728
	1974	00729
	1974	00730
Fort Riley, KS	1973	00243
	1973	00245
	1973	00246
	1973	00410
	1973	00511
	1974	00745
	1974	00746
	1974	00747
Fort Leonard Wood, MD	1973	00151
	1973	00152
	1973	00401
	1973	00485
	1974	00626
	1974	00627
	1974	00628

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort Carson, CO	1972	00122
	1973	00129
	1973	00272
	1973	00277
	1973	00369
	1973	00370
	1973	00509
	1973	00515
	1974	00578
	1974	00579
	1974	00575
	1974	00676
	1974	00793
	1974	00794
	1974	00937
Fort Huachuca, AZ	1973	00371
	1973	00479
	1974	00577
	1974	00699
	1974	00818
Hunter-Liggett Military Reservation, CA	1973	00145
	1973	00146
	1973	00266
	1973	00268
	1973	00330
	1973	00332
	1973	00541
	1973	00542
	1974	00594
	1974	00595
	1974	00713
	1974	00715
	1974	00811
	1974	00813
	1974	00[illegible]3
	1974	0095

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Fort Lewis, WA	1973	00125
	1973	00126
	1973	00237
	1973	00238
	1973	00271
	1973	00275
	1973	00342
	1973	00345
	1973	00517
	1973	00518
	1974	00581
	1974	00582
	1974	00709
	1974	00711
	1974	00796
	1974	00797
	1974	00913
Fort Ord. CA	1973	00380
	1973	00537
	1974	00593
	1974	00718
	1974	00809
	1974	00954
Presidio of San Francisco, CA	1972	00106
	1973	00128
	1973	00206
	1973	00331
	1973	00472
	1974	00564
	1974	00664
	1974	00814
Rocky Mountain Arsenal, CO	1973	00360
	1974	00720

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Installation Where Collected	Year of Collection	USAEHA Sample No.
Yakima Firing Center, WA	1973	00343
	1973	00344
	1973	00505
	1973	00506
	1974	00587
	1974	00592
	1974	00684
	1974	00826
	1974	00828
	1974	00915
	1974	00917
Yuma Proving Ground, AZ	1973	00130
	1974	00906

APPENDIX C

LISTING OF SURFACE WATER SAMPLES COLLECTED DURING PERIOD 1 SEPTEMBER 1972 TO 31 DECEMBER 1974 IN WHICH POSITIVE PESTICIDE FINDINGS WERE INDICATED

Installation Where Collected	Specific Location of Collection	Month/Year of Collection	USAEHA Sample No.	Results (ppb*)
Fort Carson, CO	Clover Ditch (at exit from post)	Nov 74	00932	diazinon - 5.80
Fort Knox, KY	Mill Creek	Sep 74	00838	diazinon - 1.00
Fort Knox, KY	Mill Creek	Nov 74	00931	diazinon - 0.30
Rocky Mountain Arsenal, CO	First Creek on 10th between D and E Streets	Aug 73	00361	dieldrin - 1.10 endrin - 2.10
Rocky Mountain Arsenal, CO	Effluent from Sewage Oxidation Pond	Nov 73	00512	aldrin - 1.40 dieldrin - 4.50
Rocky Mountain Arsenal, CO	Effluent from Sewage Oxidation Pond	Feb 74	00570	aldrin - 1.00
Rocky Mountain Arsenal, CO	Effluent from Sewage Oxidation Pond	Nov 74	00920	aldrin - 0.60 dieldrin - 0.50
Yakima Firing Center, WA	Juvenile Fishing Pond	May 74	00683	dieldrin - 0.10
Yuma Proving Ground, AZ	Boy Scout Pond	Nov 72	00122	dieldrin - 0.60
Yuma Proving Ground, AZ	Boy Scout Pond	May 73	00250	dieldrin - 0.30
Yuma Proving Ground, AZ	Boy Scout Pond	Aug 73	00353	dieldrin - 0.40
Yuma Proving Ground, AZ	Boy Scout Pond	Nov 73	00491	dieldrin - 0.10
Yuma Proving Ground, AZ	Boy Scout Pond	Feb 74	00565	dieldrin - 0.10

* All results are reported without correction for recovery efficiencies.